

• INDIAN
• INSTITUTE OF
• TECHNOLOGY
• MADRAS



ANNUAL 2021-
REPORT 2022





2021-2022 Annual Report



Indian Institute of Technology Madras
Chennai – 600 036



The Visitor

Mr Ram Nath Kovind
President of India

Board of Governors

Dr Pawan Goenka - Chairman
(Former Managing Director, Mahindra & Mahindra)
Chairman, Indian National Space Promotion Authorization Centre
(In-SPACe), Independent Director, Sun Pharma & Bosch India

Prof. Bhaskar Ramamurthi
Prof. V. Kamakoti (from 17.1.2022)
Director, Indian Institute of Technology Madras
Chennai - 600 036

Council Nominees

Dr B Mahadevan
Professor of Operations Management
Indian Institute of Management Bangalore
Bannerghatta Road, Bengaluru 560 076

Shri Rakesh Ranjan
Additional Secretary (TE), Ministry of HRD
Shastri Bhawan, New Delhi - 110 001

Prof. Shireesh B Kedare
Department of Energy Science and Engineering
Indian Institute of Technology Bombay
Mumbai - 400 076

Dr S Kishore Kumar
DRDO Fellow
Gas Turbine Research Establishment
CV Raman Nagar, Bengaluru - 560 093

Senate Nominees

Prof. K. Rajagopal
Department of Civil Engineering
Indian Institute of Technology Madras
Chennai - 600 036

Prof. V. R. Muraleedharan (from 01.01.2022)
Department of Humanities and Social Sciences
Indian Institute of Technology Madras

Prof. N. Ramesh Babu
Department of Mechanical Engineering
Indian Institute of Technology Madras
Chennai - 600 036

Prof. C. Chandra Sekhar (from 01.01.2022)
Department of Computer Science and Engineering
Indian Institute of Technology Madras

State Government Nominees

Thiru N. Muruganadam IAS (from 02.08.2021)
Principal Secretary to Government
Industries Department
Government of Tamil Nadu

Thiru S. Krishnan, I.A.S.
Additional Chief Secretary to Government
Industries Department, Secretariat
Government of Tamil Nadu, Chennai

Dr Utpal Sharma
Principal (BRAIT) Cum Special Secretary (IT)
Dr B.R. Ambedkar Institute Technology Campus
Pahargraon, Port Blair -744 104

Thiru Ashok Kumar, I.A.S.
Secretary to Govt. (Education)
Chief Secretariat
Puducherry - 605 001

Prof. S. Mohan (from 16.02.2022)
Vice Chancellor
Puducherry Technological University
Pillaichavady, Puducherry

Secretary

Dr Jane Prasad, IP & TAFS
Registrar
Indian Institute of Technology Madras
Chennai - 600 036

Invitee

Prof. Koshy Varghese
Dean (Administration)
IIT Madras, Chennai - 600 036

Contents

1.	<i>Director's Report</i>	8
2.	<i>Administration</i>	16
3.	<i>Academic Programmes and Award of Degrees</i>	33
4.	<i>Departments</i>	54
4.1	<i>Department of Aerospace Engineering</i>	54
4.2	<i>Department of Applied Mechanics</i>	62
4.3	<i>Department of Biotechnology</i>	79
4.4	<i>Department of Chemical Engineering</i>	93
4.5	<i>Department of Chemistry</i>	124
4.6	<i>Department of Civil Engineering</i>	143
4.7	<i>Department of Computer Science and Engineering</i>	211
4.8	<i>Department of Electrical Engineering</i>	223
4.9	<i>Department of Engineering Design</i>	252
4.10	<i>Department of Humanities and Social Sciences</i>	261
4.11	<i>Department of Management Studies</i>	274
4.12	<i>Department of Mathematics</i>	286
4.13	<i>Department of Mechanical Engineering</i>	299
4.14	<i>Department of Metallurgical and Materials Engineering</i>	312
4.15	<i>Department of Ocean Engineering</i>	320
4.16	<i>Department of Physics</i>	348
5.	<i>Sophisticated Analytical Instrument Facility</i>	372
6.	<i>Centres of Special Facilities</i>	574
6.1	<i>Centre for Continuing Education</i>	
6.2	<i>Centre for Industrial Consultancy and Sponsored Research</i>	
6.3	<i>Central Electronics Centre</i>	
6.4	<i>PG Senapathy Centre for Computing Resources</i>	
6.5	<i>Central Facilities</i>	
6.5.1	<i>Central Workshop Facilities</i>	
6.5.2	<i>Central Glass Blowing Section</i>	
7.	<i>International and Alumni Affairs</i>	413
7.1	<i>Alumni and Corporate Relation</i>	
7.2	<i>Office of Global Engagement</i>	
8.	<i>Central Library</i>	440
9.	<i>Student Amenities and Activities</i>	448
10.	<i>Student's Placement</i>	460
11.	<i>Financial Assistance to Students</i>	462

11.1	Assistance to B.Tech/Dual Degree students	
11.2	Other scholarships	
11.3	M.Tech	
11.4	M.Sc.	
11.5	M.A.	
11.6	M.S.	
11.7	Ph.D	
11.8 (a)	Financial Assistance to Research Scholars for International Conferences	
11.8 (b)	National conference/seminar/symposium/workshop/visit to other laboratories, etc. within India	
12.	Weaker Section and Foreign National Students	468
12.1	BTech Programme	
12.2	Preparatory Course for Admission to BTech Programme	
12.3	MTech Programme	
12.4	MSc Programme	
12.5	Admission of Foreign National Students and Indian Nationals Residing Abroad	
13.	Campus Amenities	471
13.1	Engineering Unit	
13.2	Housing facilities	
13.3	Horticulture	
13.4	Public health	
13.5	Telephone facilities: PBX telephone system	
13.6	Local body approval	
13.7	Central Supplies Unit	
13.8	Hospital	
13.9	Guest House	
13.10	Bank	
13.11	Post office and telecom centre	
13.12	Schools	
13.13	Open-Air Theatre	
13.14	Student Activities Centre	
13.15	Cafeteria	
13.16	Crèche	
13.17	Transport services	
13.18	Security Section	
14.	Finance and Accounts	485
15.	Publications	487
16.	Appendices	634
1.	The Senate	
2.	Board of Academic Courses	
3.	Board of Academic Research	
4.	Board of Students	
5.	Board of Industrial Consultancy and Sponsored Research	
6.	Library Advisory Committee	
7.	Finance Committee	
8.	Building and Works Committee	



1

Director's Report

Presented on the 59th Convocation of IIT Madras, held on July 13, 2022

Chief Guest, Shri N. Chandrasekaran; Chairman, Board of Governors, IIT Madras, Dr. Pawan Goenka; members of the Board of Governors; members of the Senate; dearest graduands; distinguished invitees; colleagues and dearest students,

The 59th convocation of IIT Madras, held on the day of Guru Poornima, hopefully marks the beginning of the post-COVID "back-to-normal" era. Thanks to the receding pandemic, we are having our convocation physically after two years. I am sure the graduands here are rejoicing their final day as a student of this institution, as from now on they will be part of our strong and proud alumni force. I am sure the graduands are lucky to have Shri N Chandrasekaran, Chairman, Tata Group as the Chief Guest, a person who heads one of the largest globally recognised group of companies engaged in business that covers every technology area specialised by the departments of our institute, be it steel, automobiles, software or medtech. Thank you very much for accepting our invitation, Sir.

As we started rebooting our campus after lockdown, we were interrupted multiple times with sudden surge of COVID-19 cases. Thanks to the cooperation of our dear students and all residents, the selfless service of our frontline workers, doctors and the support of the Greater Chennai Corporation and State health department, we crossed these barriers and booted successfully. I hope and pray to Almighty that we launch all our campus activities in full swing in the coming days.

On a positive note, IIT Madras, has proved herself yet

again by tenaciously holding her top ranks, be it in the National Institutional Ranking Framework (NIRF) or Atal Ranking of Institutions on Innovation Achievements (ARIIA) and in the CII Innovative Award. Thanks to the students, faculty and staff for their sustained diligent efforts in making this achievable.

IIT Madras has clinched the first position among Engineering Institutes in the NIRF ranking for the sixth year since the inception of NIRF. We have also retained the number one position for the third year in a row for overall performance among all universities in India. We have been placed in the second position among Research Universities in India, a new category introduced in the NIRF ranking last year.

IIT Madras has also been ranked as the Most Innovative Educational Institute in India in the ARIIA for the third year in a row. IIT Madras has been adjudged as The Most Innovative Institute of the Year 2021 for its disruptive innovations by the Confederation of Indian Industry (CII).

IIT Madras was granted the Institute of Eminence status in early 2020. The grants received for this have been channelised to strengthen our research infrastructure and fund various research initiatives in thrust areas that have global relevance. In the first phase, around 68 projects in emerging and disruptive areas were identified and funded, to carry out exploratory research.

Excellent work has been carried out by our team leading to the formation of large multidisciplinary groups, preparing for the second phase. Through this

exercise, we aim to build at least five world-class groups working in areas of global significance. Our Strategic Plan 2021-2027 is ready to be launched shortly and will guide us in furthering our vision towards establishing ourselves as a world-class engineering institution for research, teaching and innovation.

At this convocation, nearly 2,500 graduands will receive their degrees, which includes around 300 Ph.D. students; 11 Ph.D. scholars among them will receive joint degrees with foreign universities – three with Swinburne University of Technology, Australia; two with Curtin University, Australia; one with Queensland University of Technology, Australia; one with Deakin University, Australia; one with National University of Singapore; one with Nanyang Technological University, Singapore; one with University of Duisburg, Germany and one with University of Bordeaux, France.

Forty students will also receive the Post Graduate Diploma in Management for Executives in Manufacturing, a course that is jointly offered by IIM Calcutta, IIT Kanpur and IIT Madras that aims to develop future visionary leaders for the manufacturing sector this year.

1. Degree programmes

We had commenced physical classes for the first-year UG students to enable them to complete their laboratory courses and final-year students of all batches last year to enable them complete their projects and enable them to gear up for placements. All students were called back in March 2022 for offline classes. The campus has been opened to all the students starting 1 July 2022.

In consonance with the National Education Policy, IIT Madras has launched several initiatives: the first-of-its-kind online B.Sc. degree in Programming and Data Science in the country that provides no age bar and multiple exit options has had very good reach from people in diverse fields and age groups. So far, 12,000 students have been admitted in the age group between 17 and late 60s.

As an Institute of National Importance, we had been constantly focusing on being locally relevant and making IIT Madras an Institute for All. With specific focus to reach out to rural India, the Centre for Rural Education and Appropriate Technology and Entrepreneurship (CREATE) has been formed under IIT Madras Pravartak Technologies Foundation, a Section 8 (not-for-profit) company hosted by IIT Madras and housing the Technology Innovation Hub funded by Department of Science and Technology (DST) under its National Mission on Interdisciplinary Cyber Physical Systems. We have started setting

up Rural Interaction Centres and Rural Technology Centres to interact with the rural children and youth to motivate them to pursue higher education. IIT Madras in partnership with Asha for Education has been involved in multiple programmes related to rural education, including RightStart, a teacher training programme for primary and middle school teachers. We have reached out to government school students in rural areas by providing a week-long summer programme on Science, Technology, Engineering and Mathematics (STEM).

Sanjog – a three-day orientation programme for children of war widows and Indian army officers – was conducted. NPTEL and Swayam continue to provide online certificate courses reaching several lakhs of students.

IIT Madras has launched nine international Interdisciplinary Master's degree programmes (I2MP), starting July 2022. The programme brings together innovative curricula with award-winning pedagogy and research methodology of IIT Madras. These unique two-year M.Tech. degree programmes will have international students undertaking several core and elective courses in addition to a research project in their area of interest. An interdisciplinary master's degree at IIT Madras will serve to build a generation of students trained for present-day careers at the interfaces of



Prof. V. Kamakoti, Director, IIT Madras

traditional engineering and science disciplines. The Interdisciplinary Dual Degree programme coordinators and other faculty in the institute have been enthusiastic participants in the selection process. The programme is competitive and the final onboarding of the first cohort of students is underway currently. In our attempt towards internationalisation, an inter-disciplinary M.Tech. in Energy Systems will be offered to Nepalese and other international students at the Kathmandu University campus from July 2022 as a joint degree programme. The curriculum for the programme closely mirrors other PG programmes in Energy Systems offered at IIT Madras. These students will spend the summer at the end of the first year and the third semester in the IIT Madras campus, taking a few courses and working on the M.Tech. project that will be co-guided by faculty from IIT Madras and Kathmandu University.

IIT Madras opens and aims to expand her M.A. programmes to larger sections of students. IIT Madras has partnered with Tata Consultancy Services (TCS) to launch a web-enabled, user-oriented programme on Industrial AI that is targeted at upskilling employees in corporates in the applications of AI to industrial problems.

With a vision to build the NexGen Creative India, we launched a course titled 'Out of the Box Thinking', on this Guru Poornima, for which more than 1,30,000 students starting fifth standard and above registered.

The Department of Computer Science and Engineering created a portal for free online education of core computer science courses (<http://nsm.iitm.ac.in/cse/>).

As part of the National Language Translation Mission, an R&D project on Speech Technologies in Indian Languages has been awarded to a 23-institute consortium led by Prof. Hema A. Murthy, where all kinds of speech technologies will be showcased, and various downstream applications will be developed, especially for the English-challenged citizens of our country.

The L&T-sponsored user-oriented M.Tech. programme in Construction Technology & Management is offered successfully for the past 25 years.

A web-enabled PG Diploma in Bridge Engineering is introduced from this year for enhancing conceptual planning, analysis and design skills of working professionals of L&T.

2. Academic research

Research work in the laboratories have been continuing in spite lockdowns and other standard operating procedural restrictions, thanks to the scholars and faculty who have adapted to the changing conditions swiftly and come out with quality research outputs. The new multi-disciplinary research initiatives have helped our scholars work with their peers in the other parts of the world.

IIT Madras continues to recruit high-quality faculty

to join their peers in pursuing cutting-edge research in emerging and disruptive fields. This year, we have appointed 55 promising young faculty members of whom 48, including six women, have already joined the institute.

2.1 Snapshots of research and innovations

Research in our laboratories have been translated to impact society. Some of which are highlighted here.

The National 5G Testbed project was inaugurated by our Honourable Prime Minister Shri Narendra Modi on May 18, 2022, and a 5G call on a fully indigenous network was successfully demonstrated.

Manual scavenging or human intervention for cleaning of septic tanks and sewer lines causes hundreds of deaths every year. IIT Madras team is developing the HomoSEP robot for mechanisation of septic tank cleaning, together with implementation partner Solinas. Integrity, an IITM-incubated startup, supported by CSR partners including GAIL Foundation, CapGemini, NSE Foundation and L&T Technology Services, and NGO bodies, including the Safai Karmachari Andolan. We have donated two units of the HomoSEP to Safai Enterprises being formed by widows of manual scavenging workers and are set to distribute eight more units shortly. The plans for the next year include scaling up to make and distribute larger numbers.

Some of the socially relevant technologies developed by IIT Madras include an online platform called e-Source to tackle e-waste by facilitating connections between formal and informal sectors; an efficient technique for the identification of pollution deposit level in the power transmission network; data-driven strategies to enhance road safety in Tamil Nadu; a new approach for accurate detection of earthquakes; develop new desalination techniques to convert seawater to drinking water; enhanced wearable assistive devices with latest technologies to empower people with hearing and motor impairments; virtual reality tools to combat maternal and newborn deaths in partnership with National Health Mission; algorithm to stop poaching with Harvard University researchers; next-generation battery technology that could revolutionise electric mobility; addressing societal needs for pure water through nanoscience; and, a solid waste combustor that was commissioned at BHEL Factory, Tiruchirappalli, Tamil Nadu.

Structural Integrity Management System (SIMS) for ONGC and Vessel Traffic Management System (VTMS) for major ports was carried out by the scholars of the Ocean Engineering Department.

IIT Madras researchers won the SERB-Technology Translation Award for their design of white light emitters for LED applications. Researchers from Chemical Engineering, along with their collaborators, have solved an outstanding problem in quantum information whose

roots go back to Euler, over 200 years ago.

As we move towards a connected world, cyber-physical systems are bound to take the centrestage. A cyber-physical system typically has a sensor that senses domain-specific data. Data from the sensors are collected by an edge device, which does some amount of processing. Such data processed by many such edge devices are communicated to an aggregator and many such aggregators in turn send the data to a cloud wherein certain decisions and data analytics could be done. The entire process involves multiple disciplines of engineering starting from Material Science, Electronics, Electrical, Mechatronics, Mechanical, Ocean Engineering, Computer Science, and many others. IITM Pravartak Technologies Foundation is concentrating on the most important aspect of a cyber-physical system namely Sensors, Networks, Actuators and Control Systems (SNACS). The SNACS forms an integral part of any cyber-physical system.

IITM Pravartak Technologies Foundation, are working with a goal to have hundreds of entrepreneurs working with them in multiple areas of SNACS, developing solutions for our Country. We believe that this will be a disruptive effort bringing a major change to the socio-economic landscape of our country.

IIT Madras launched the Sudha Gopalakrishnan Brain Centre to power a large-scale multi-disciplinary effort to map human brains at cellular level. This new state-of-the-art centre aims to become a leading global centre for human brain research. It has a strong international collaboration network of leading researchers in brain mapping and neuroscience, and deep linkages with medical institutions in the country. The first project of the Brain Centre, supported by the Office of Principal Scientific Adviser, is imaging post-mortem human brains through our newly developed whole-brain imaging platform. Such high-resolution maps of human brains will have a transformative impact in the fields of neuroscience and medicine.

Dr. P. Anbarasan and his team are developing sustainable methods for the enantioselective synthesis of important fine chemicals, active pharmaceutical ingredients (API) and intermediates of pharmaceuticals. This project is in-line with India's initiative on Atma Nirbhar Bharat for health care sector and is funded by DST-SERB through Swarnajayanti fellowship.

Prof. Prabhu Rajagopal developed working solutions for remote inspection and maintenance of structures using waveguide phononics and robotics. Using novel metamaterial concepts, Prof. Rajagopal has demonstrated the highest resolution reported worldwide in the ultrasonic regime. He was awarded the Swarnajayanti Fellowship for work on scaling these devices down to the micro-nanoscale yielding 'quantum sound', which is an attractive alternative to quantum light for computation and sensing.

Dr. Shweta Agrawal works in cryptography and data privacy and her work, supported by the Swarnajayanti Fellowship, identifies and solves fundamental problems that emerge in cryptography as a response to scientific revolutions. She works on designing algorithms that are secure against quantum computers. She also works on designing cryptography that allows to run machine learning algorithms on encrypted data.

It is estimated that there are 90-130 million people with locomotor disability in India. The TTK Center for Rehabilitation Research and Device Development (R2D2), one of the leading research groups working in the area of assistive devices at IIT Madras, is scripting a new narrative that moves away from disability to ability. They have successfully translated their seven years' efforts into functional, customisable and affordable technology to industry through innovative development and collaboration models. They have commercialised four products—Arise, NeoBolt, Kadam and Neofly—in the last four years, impacting people with spinal cord injury, amputation, polio and other locomotor disability. R2D2 has trained over 1,500 clinicians in India on appropriate prescription and fitting of assistive devices. This holistic approach aims for increased access to education and livelihood opportunities for people with disability to bring about social inclusion.

We are developing 3D printed semi-cryogenic rockets to launch small satellites into space orbits through one of our start-ups, Agnikul Cosmos. Called Agnibaan, the two-stage rocket consists of a cluster of up to seven 3D printed engines for the first stage, and a smaller one for the second. The static test firing of the rocket engines is undertaken at our Discovery Campus, and a Rocket Factory with full-fledged 3D printing facilities is established at the IITM Research Park. The first launch is scheduled for later this year from Sriharikota with the cooperation of ISRO through the newly instituted INSPACE.

The Avishkar Hyperloop student team has made further progress this year on contactless propulsion of their pod, besides attempting magnetic levitation. We have secured Railways' support of ₹8.34 crore to construct a 400 m long vacuum tube at our Discovery Campus by the year end. This will be the only such facility in the world available to hold international competitions after SpaceX. With this, the team will complete the full technology stack for hyperloop at subscale. A start-up company, TuTr Hyperloop, has been incubated by IIT Madras to commercialise this technology at full scale.

IIT Madras collaborates with Adyar Cancer Institute to develop a kit for early diagnosis of ovarian cancer; Road Transport Ministry on intelligent transportation systems; IISc, Indian Statistical Institute and Semantic Web India to continue COVID-19 data website operations; Tata Power on R&D, consultancy, advocacy, training and technology solutions; LTI to innovate on 5G

space; Portescap on medical innovation using robotics and gamification and Walmart Global Tech to accelerate research and skilling.

The Centre for Urbanization, Building and Environment (CUBE) set up with the support of Government of Tamil Nadu has continued to undertake challenging projects in housing and infrastructure showcasing our technological potential over the last five years.

2.2 New Research Facilities and Centres

Our research facilities and laboratories have been constantly upgraded or are equipped with new facilities to enable students pursue quality research. Some additions this year are a High-Rate Impact Measurement (HRIM) in Applied Mechanics, a VM Thomas Robotics Research and Teaching laboratory and a Design Studio in Engineering Design (with support from alumni), and a gas-atomisation system for producing steel powders in Mechanical Engineering.

A few centres have been approved or launched in the year under review. An Mphasis Quantum Information, Communication and Computing Centre at ₹21 crore, an MoRTH Centre of Excellence in Road Transport Safety at nearly ₹100 crores, an Advanced Laser Material Processing Centre at ₹3.55 crores, and a DST-NFTDC Centre for Materials & Energy Storage Platforms-H2 at ₹1.36 crores were approved. An Inter-disciplinary Water Management & Policy Centre to solve water problems in India and a Global Water and Climate Adaptation Centre were launched.

2.3 Academic distinctions by faculty and students

Our faculty continued to earn accolades during the academic year gone by. Notable among the academic honours bestowed on our faculty members are the following: Prof. Ashok Jhunjhunwala bestowed the Voice & Data Lifetime Achievement Award, Prof. T. Pradeep wins the Prince Sultan Bin Abdulaziz International Prize for Water and INSA's Vishwakarma Medal, Prof. Bhaskar Ramamurthi conferred DRDO's Academic Excellence Award, Prof. R.I. Sujith becomes first Indian to be awarded Distinguished Fellowship of International Institute of Acoustics & Vibration, Prof. Sankaran Subramanian conferred the International Zavoisky Award, Profs. Ligy Philip, Nandita Das Gupta and Preeti Aghalayam have been listed among 75 Indian Women in STEM, Prof. Sujatha Srinivasan has been bestowed TBD's National Tech Excellence Award, Profs. Dillip Kumar Chand and M. Jeganmohan have been bestowed CRSI Bronze medals, Prof. Jitendra Sangwai has been conferred National Geoscience Award and Prof. P.N. Santhosh has been bestowed the MRSI Medal.

Several young faculty members have been bestowed Young Scientist Awards or Medals. Drs Abhishek Sinha received the INSA medal, Aravind Kumar Chandiran received both INSA and NASI medals, Dr. Md. Mahiuddin

Baidya received Merck Award and Dr. Soumen Sarkar received Academy of Sciences, Chennai Award.

Our faculty have been elected as Fellows of various Academies – Prof. S. Ramaprabhu as NASI Fellow, Prof. M. Kamaraj as INAE Fellow, Prof. Hema A. Murthy as an ISCA Fellow, Prof. Sathyanarayana N. Gummadi as an IICHe Fellow and Prof. Uday Chakingal as Indian Institute of Metals Fellow. Gopalakrishnan Deshpande Centre (GDC), headed by Prof. Krishnan Balasubramanian, has been chosen for Deshpande Symposium Award for Technology Commercialisation.

Our students have also won several awards and prizes for best paper, poster and presentation at various conferences, both national and international. Some of them are Dr. Samadhan Pawar (PDF), who received the INAE Young Engineer Award; Ms. Divya Baskaran, Ms. Swetha Menon and Mr. Ankit Nagar received the GYTI Awards; Dr. Vijaya Sunder received the ASQ Global Crosby Medal; and Dr. Nitheesh Nair received the INYAS National Award for Research Excellence.

Among the honours bestowed by our institute, Prof. Bhaskar Ramamurthi has been awarded the Institute's Lifetime Achievement Award (the Senior-Level R&D Award), while Prof. Srinivas Rao Bakshi has been awarded the Mid-Career R&D Award, and Drs Ethayaraja Mani, Arnab Rit and Dr. Pallab Sinha Mahapatra have been awarded the Early Career R&D Award. Dr. Anubhab Roy and Dr. Mitesh Khapra have been awarded the Srimathi Marti Annapurna Gurunath Award for Excellence in Teaching.

2.4 Industrial Consultancy and Sponsored Research

The institute continues to attract substantial funding for its research and consultancy activities from the ministries of the Government of India and industry. In 2021-22, the institute received sanction for 186 ministry-sponsored projects for a total value of ₹611.46 crores that is almost 70 per cent more than last year. Our collaboration with industry has been increasing year after year, and this year, 609 consultancy and industry-sponsored research projects have been received amounting to ₹279.61 crore.

We filed for 239 patents during the year of which 70 are international filings and were granted 148 Indian and eight international patents. Our faculty has undertaken nearly 47 projects in various research areas under the corporate social responsibility (CSR) activities at a total value of ₹106.80 crore.

IIT Madras has launched the Consortium for VR/AR/MR Engineering Mission in India (CAVE), a first-of-its-kind in the country in the virtual reality space.

IIT Madras Shaastra, a bimonthly science and technology magazine of IIT Madras launched early last year, showcasing the development in science and technology and its impact on society, both nationally and internationally, has been well received by the

scientific community.

3. Research Park and our deep-tech startup incubation system

IITM Incubation Cell and its sector-specific incubators for medical technology, biosciences, cyber physical systems and rural technologies continue to incubate around 40-50 companies annually with a cumulative portfolio of 260 deep-tech start-ups. Founded by IITM faculty, staff, students and alumni and external entrepreneurs, the companies span the breadth of deep-tech areas in globally critical domains, including manufacturing, robotics, data sciences, IoT, e-mobility, energy, water, healthcare, biotech and agri-tech. Of these, 27 per cent companies have raised investments from angel investors/VCs: several companies started a few years ago have received Series A funding and are now attracting Series B/C funding at significant valuations.

IITM-incubated companies are together valued at ₹30,000 crore, based on their last investment data; 106 startups are in the market, having generated, despite the pandemic, a revenue of ₹650 crore in FY21-22 and created more than 7,000 direct jobs. IITM start-ups have filed over 210 patents, and 10 per cent of the start-ups are founded by women, and 16 per cent by IITM faculty. It is pertinent to note that all these are deep-technology start-ups that incorporate sophisticated engineering and high-end manufacturing in their products.

Over the years, IITM Incubation Cell (IITMIC) has created a thriving ecosystem consisting of feeder channels within IITM, a global mentor network comprising more than 100 alumni, industry, tech leaders, serial entrepreneurs and investor, partners among angel, VCs, industry CSR funds and banks, managers of central start-up schemes (for example, oil and gas), and agencies, along with a vast array of support services.

All of this helps us to support our startups, over a wider period, with a flexible or 'exit when you want' approach, steering them through the very challenging initial years where other sources of support or funders are more cautious to move into the slow-starting deep-tech space.

Going forward, IITMIC's focus is to set an agenda and charter the course for the coming years. We wish to stabilise our growth and make it sustainable, while also continue to lead as a national hub for deep-tech startups. IC envisions becoming an aspirational force for young entrepreneurs across the country, as 'the place to be' to build global brands from Indian technological innovations, eventually expanding our presence in the ASEAN and Africa region.

IITMIC is presently developing ways to replicate its model nationally and support large population of

young start-ups in the country. As a key step in this process, it has initiated formal engagements with tier-2 or 3 or 4 colleges (10 in Tamil Nadu, Andhra Pradesh and Karnataka, so far) helping them strengthen their entrepreneurial ecosystems and co-incubating their start-ups.

4. International collaborations

The Office of Global Engagement has facilitated IITM in furthering her international collaborations and working towards increasing the exchange of scholars and students. The global office also had visited Nepal, Sri Lanka, and Bangladesh to intensify relations.

In the year under review, IITM has signed 20 MoUs and renewed 15 active ones that enable student exchanges and faculty collaborations, taking the total number of active MoUs to around 287. The total number of Joint Degree PhDs are 19.

IIT Madras received 46 international students during the academic year and sent 63 of our own students to various universities abroad under the exchange programmes. A total of 72 scholars are enrolled in joint Ph.D. programmes with our partner universities.

The International Immersion Experience Program was conceived to partially support up to 100 graduate IITM students going abroad on exchange programmes, and nearly 45 students stand benefitted this year. IIT Madras partnered with the African-Asian Rural Development Organisation (AARDO) to provide scholarships to students in the M.S. Research programme in projects focusing on rural development and three students from African countries have enrolled in January 2022. The International Immersion Experience Program will partially support up to 100 graduate IITM students going abroad on exchange programmes through a competitive proposal call.

5. Human resources

In the year under review, 53 staff members have been promoted or newly joined the institute. To enable our staff equip themselves with the necessary competencies, they have been provided opportunities to undergo various training programmes not only in their area of expertise, but also in ISO and the official language. An online training programme on POSH (Prevention of Sexual Harassment at the Workplace) was also arranged to create awareness among faculty, staff and students. An inclusive education sensitisation workshop for faculty coordinators was also arranged.

6. Infrastructure development

IIT Madras, while continuously improving and maintaining her infrastructure facilities such as research labs, classrooms, residential facilities, has taken due care to use sustainable construction practices and maintain biodiversity, with energy conservation, use

of renewable energy, effective reuse and recycling of liquid and solid waste being top priorities. Safe disposal of biomedical and hazardous wastes is mandated as per local by-laws.

A New Mandakini hostel with G+9 floors at 32,168 sqm to house 1,225 students, an extension to the Electrical Sciences Block with G+6 floors at 4,747 sqm, and a quarter to house 64 married research scholars with Stilt+8 floors at 4,085 sqm are some major infrastructure projects that have been completed.

A.M.M. Arunachalam Auditorium at the IC&SR – a modern facility for hosting conferences, workshops and seminars for the benefit of students, researchers and faculty – was inaugurated on April 7, 2021, thanks to the generous contribution from Mr. M.A. Alagappan and the A.M.M. Foundation.

IIT Madras had inaugurated an auditorium, T.T. Jagannathan Auditorium on August 6, 2021, in honour of our Distinguished Alumnus, Mr. T.T. Jagannathan, Chairman of TTK Prestige, in recognition of his achievements. He has generously donated to the research work carried out in the R2D2 centre.

At the IIT Madras Discovery campus at Thaiyur village, a Port Centre that comprises state-of-the-art virtual simulator of all major ports in the country and an advanced shallow water wave basin to simulate and test ship models, has been completed at a total cost of ₹30 crore. The construction of the academic block, hostel block, food court and other utility services are under construction and is expected to be completed within a year.

The proactive sustainable water management plan of IIT Madras has enabled to reduce the freshwater demand from 3MLD in 2016 to 1.80MLD in 2022 despite the increase in student and faculty strength. This has been made possible by the establishment of state-of-the-art 4MLD sewerage treatment plant with zero discharge standards, at minimal installation cost and reduced energy consumption. The treated water is utilised to water the campus lawns and gardens, all centralised AC chiller plant cooling units at IITM and IITMRP and for flushing in institute buildings. The lake in the institute has also been deepened to hold 270 ML from 165ML for rainwater harvesting, and a facility of lake water treatment up to 8 lakh liters per day has been established to meet the additional freshwater requirement.

The other infrastructure projects that have been completed involve upgrade of 24 numbers of faculty housing with additional rooms, painting of academic and hostel buildings. Thanks to the alumni for contributing to the face-lifting of corridors in Ganga hostel.

A new girls' hostel, by replacing existing rear wing of Sarayu Hostel, is nearing completion. To accommodate increase in both faculty and student strengths and to house new interdisciplinary centres, some of the G+1 laboratories were demolished and construction of a G+6

buildings are in progress. To conserve energy, a well-monitored water chiller plant is being implemented. A state-of-the-art Cryo Lab facility is under construction at a total project cost of ₹624 lakh.

General Electrics has established Expanded Gas Turbine Combustor Testing Facility at National Centre for Combustion Research and Development (NCCRD), the first such facility in academia globally.

To provide more space for incubation and entrepreneurship development, the Centre for Innovation (CFI) is being reconstructed, thanks to our Distinguished Alumnus Mr. V. Shankar, who has very generously donated nearly 60 per cent of the project cost, and the alumni of 1982, 1990, 1991 and 1992 batches for contributing to this effort.

Housing for staff and faculty, a state-of-the-art new hostel Vaigai to accommodate 2,000 students, a new dining facility to cater 3,200 students, a new research visitor's guest house to accommodate 300 visitors, a multi-game facility and a new academic complex are the other projects that are in the pipeline.

7. Student co-curricular and extra-curricular activities

Saarang 2022, the annual cultural festival of IIT Madras was successfully held online from January 6-9, 2022 and witnessed participation of 9,000 students from across the country. The professional shows had performances by Raghav Meattle, Corner Cafe Chronicles, Malavika Sundar and Palak Muchhal, along with six world fest acts by international artists. G.V. Prakash, Parvati Nair, G. Karthikeyan, Dhruv Sehgal and Aditi Ashok were some of the major attractions in the Spotlight line-up. The first ever edition of Saarang IndiaFest and AltFest were also conducted.

Shaastra, the annual technical festival, was held in hybrid mode from January 13-16, 2022. It featured spotlight lectures by Dr Stefan Hell, Dr Jane Goodall, Shri R.C. Lahoti, Ms Carolina Marin and Dr Shashi Tharoor to name a few. Unmute, a social campaign to raise awareness on menstrual hygiene management and self-defense, and Nudge-it that pushed for behavioral solutions to societal problems were a few events that featured in Shaastra this year. The team donated about ₹1,50,000 to charitable trusts. The team had reached out to school children by conducting Shaastra Juniors from September 24-26 and October 1-3, 2021, that comprised lectures, workshops, exhibition of tech-startups, among others.

The Centre for Innovation had a buzzing year. It conducted 200 sessions of online summer school that had 1,200 participants. CLinsti app for waste management and redressal of issues regarding cleanliness in IIT Madras and Chennai Waterlogging Platform that enables public to report waterlogging details for disaster preparedness were developed here.

Raftar, the Formula Racing team, won the second place Overall at Formula Bharat's FSEV-2021 and won Overall in FB Virtuals. Avishkar Hyperloop was awarded the Most Scalable Design Award at EHW 2021. Abhiyaan cleared round I of IGVC 2022 and reached the simulation round finale. Anveshak, current rover, and Dora, a more robust, modular and stable one, will participate in URC 2022.

Abhyuday was the first-ever rocketry team across IITs to qualify for Spaceport America Cup (USA, June 2022). The IIT Madras iGEM team secured a Gold Medal and the Best Computational Project at GOGEC-2021 and Unique Idea Award in NBC 2022.

The Extra-Mural Lecture (EML), a student-run lecture series, witnessed 11 lectures throughout the last year, covering a diverse set of personalities – the spiritual guru Sri Sri Ravi Shankar, Bharatnatyam exponent Mallika Sarabhai, the first differently abled woman to top UPSC IAS Ira Singhal, CEA Dr. Krishnamurthy Subramanian, and vernacular lectures of Subodh Bhawe (Marathi), Arivu (Tamil), and Aman Dhattarwal (Hindi).

The Entrepreneurship Cell and Nirmaan, the pre-incubation cell, continue to provide the necessary exposure and develop entrepreneurship skills to convert their creative projects into start-ups.

8. Student welfare

The Office of Hostel Management has been stupendously shouldering the onerous task of taking care of our students in the hostels with several faculty volunteering help. MiTr and Saathi continue to provide counselling to stressed or anxious students and conduct various programmes that help them feel at home.

9. Placement

In 2021-22, the institute witnessed a record-breaking placement season with 1,430 job offers, of which 52 per cent were in core engineering and R&D companies; 29 per cent in analytics, consulting and finance; and 17 per cent in Information Technology. The placement season also saw a 24 per cent increase in pre-placement offers (PPOs) over last year. A total of 121 companies provided internship offers to 708 students.

10. Alumni matters

In 2022, we have honoured 11 of our alumni with the Distinguished Alumnus Awards for their outstanding achievements in their respective fields. They are Prof. Mini Shaji Thomas, Ms Shuba Kumar, Prof. Rajan Varadarajan, Prof. Venkatraghavan Ganesan, Prof. Subbarao Kambhampati, Prof. Madhav Marathe, Dr Nagaraja Rao Harshadeep, Dr Jayarao 'Bob' Balaram, Dr Shankar Doraiswamy, Mr Chakrapani R. V. and Mr Anand Kripalu.

The Institute Advisory Board (IAB) continues to advise us on initiatives to accelerate growth, augment and

manage endowments and implement best practices from across the globe.

In 2021-22, our Office of Alumni and Corporate Relations and the Office of Institutional Advancement raised ₹131.12 crore, nearly a 30 per cent increase over the last year. On behalf of the institute, I wish to thank all our alumni, corporates and well-wishers, who have made this achievement possible.

In addition to the infrastructure projects mentioned earlier, alumni have supported institution of Chairs—the Surendra and Dorothea Shah Chair and Venkataraman and Sita Srinivasan Chair and supported nearly 290 students with scholarships. They have not only contributed financially, but also mentored many alumni students under Nirmaan and CFI.

IIT Madras has in 2021, to facilitate the achievements of her young alumni who have been successful or have shown promise in their professional journeys, introduced an award category—the Young Alumni Achiever Award (YAAA). This year, Prof. Vyas Sekar and Dr Nikhil Handigo have been chosen for the YAAA.

A coffee table book to showcase the commendable work carried out by the IITM faculty under the CSR initiative of various industries has been released.

11. Acknowledgements

All these activities at scale and accomplishments of our institute would not have been possible without the committed participation and support of all stakeholders—our faculty, students and staff; agencies and industries sponsoring R&D and consultancy projects; professionals from other organisations who assist us in various capacities; and our alumni and corporate donors with their generous support to our various activities.

I would like to thank office-bearers such as Heads of Departments, Deans, Chairpersons, Wardens, Advisors and Professors-in-charge of various Cells and Centres, hospital and hostel staff for the selfless work they put in to keep the institute ticking. The institute is grateful to the Ministry of Education, Government of India, for its continued and sustained encouragement and support. I also wish to thank the Government of Tamil Nadu for all the support it continues to extend in multiple ways.

I wish to thank my predecessor Prof. Bhaskar Ramamurthi, Dr. Pawan Goenka, our Chairman, Board of Governors, and all Board members for their wise counsel, support and guidance, enabling us to scale new heights. I would like to express my heartfelt gratitude to our Chief Guest, Padma Bhushan awardee Shri N. Chandrasekaran for gracing this convocation.

Before I end, I would like to congratulate the prize winners once again and wish all our graduands happiness, professional success, and fulfillment from a life of service to their profession, family and country. God bless you all.

Jai Hind!



Administration

2.1. General

The Indian Institute of Technology Madras (IIT Madras) is an autonomous statutory organisation functioning within the Institutes of Technologies Act 1961, as amended by the Institute of Technology Amendment Act, 1963. The IITs are administrated centrally by the Councils of IITs, an apex body established by the Government of India (GoI) to coordinate the activities of these institutes. The Minister for Education, GoI is the Chairperson of the Council. Each IIT has a Board of Governors responsible for overall administration and control.

The Senate decides the academic policies of IIT Madras. It approves and controls the curricula,

courses, examinations and declaration of results. It appoints various committees to consider specific academic matters arising from time to time. The teaching, training and research activities of various departments at the institute are constantly under review to improve facilities and standards. The Director of the institute is the Chairman of the Senate. The members of the Senate are listed in Appendix 1. The Finance Committee provides financial advice. The Buildings and Works Committee advises the institute on matters relating to buildings and works activities. The compositions of these committees and boards, together with a list of other officers, are provided in the appendix.

2.2. Faculty and Staff Position

As on 31 March 2022, 600 faculty members and 551 non-faculty members were in position.

Number of faculty or staff in position

Faculty Members	Visiting Faculty	Group A Officers	Scientific Officer	Technical Staff	Administrative Staff
600	14	74	-	219	258

Number of faculty and employees appointed during 2021-22

Professors	Associate Professors	Assistant Professors	Visiting Faculty and other faculty	Administrative and Technical
38	27	19	32	-

Faculty/Employees appointed between 1 April 2021 and 31 March 2022

S. No.	ID No.	Name	Designation	Department/Section	Date of Joining
1	8977	Narendran Kumar	AP Gr. I	Ocean Engineering	19 April 2021
2	8978	Swapna Singha Rabha	AP Gr. I	Chemical Engineering	3 May 2021
3	8979	Aishwarya Thiruvengadam	AP Gr. II	Computer Science and Engineering	25 May 2021
4	8980	Devaprakash Muniraj	AP Gr. II	Aerospace Engineering	23 June 2021
5	8981	Arumugam Rajavelu	AP Gr. I	Biotechnology	1 July 2021
6	8983	Barun Sarkar	AP Gr. I	Mathematics	30 July 2021
7	8982	Vartika Srivastava	AP Gr. II	Management Studies	30 July 2021
8	8984	Prashant Rawat (on contract for 3 years)	AP Gr. I	Aerospace Engineering	4 August 2021
9	8985	Greeshma Thrivikraman	AP Gr. I	Biotechnology	1 September 2021
10	8986	Santhosh Sethuramanujam	AP Gr. I	Biotechnology	1 September 2021
11	8987	Chandra Shekar Lakshminarayanan	AP Gr. I	Computer Science and Engineering	1 September 2021
12	8988	Jayant Jha	AP Gr. I	Mathematics	2 September 2021
13	8989	Prasanta Kumar Muduli	AP Gr. I	Physics	6 September 2021
14	8990	Rajesh Singh	AP Gr. I	Physics	1 October 2021
15	8992	Krishna Malakar	AP Gr. II	Humanities and Social Sciences	1 November 2021
16	8991	Surjit Kumar	AP Gr. I	Mathematics	2 November 2021
17	8993	Manish Anand	AP Gr. II	Mechanical Engineering	15 November 2021
18	8994	Bijo Sebastian	AP Gr. II	Engineering Design	17 November 2021
19	8995	Sudharsanan Srinivasan	AP Gr. I	Electrical Engineering	24 January 2022

Visiting faculty and others

S. No.	Name	Designation	Department	Date of Joining
1	Dr Nicolas Gheeraert	Visiting Faculty (YIF Scheme)	Physics	14 December 2021
2	Dr S. Pandian	Visiting Faculty	Applied Mechanics	15 November 2021
3	Dr Raghu Pasupathy	Visiting Faculty	Computer Science and Engineering	17 January 2022
4	Dr Soo Jin Shim	Visiting Faculty	Humanities and Social Sciences	2 August 2021
5	Dr Stefan Borik	Visiting Faculty	Electrical Engineering	5 January 2022
6	Prof. Balasubramaniam Natarajan	Visiting Faculty Fellow	Applied Mechanics	18 December 2021
7	Dr Dipankar Das	Visiting Faculty	Aerospace Engineering	16 February 2022
8	Prof. Surendra P Singh	Visiting Faculty	Physics	9 February 2022
9	Prof. Johannes Reuther	Visiting Faculty Fellow	Physics	1 March 2022

Ramalingaswami Re-Entry Fellowship

S. No.	Name	Designation	Department	Date of Joining
1	Dr Narayanan Madaboosi Srinivasan	Ramalingaswami Re-Entry Fellowship	Physics	1 May 2021

Professor Emeritus

S. No.	Name	Designation	Department	Date of Joining
1	Prof. Ashok Jhunjhunwala	Professor Emeritus	Electrical Engineering	1 July 2021
2	Prof. Karunakaran D	Professor Emeritus	Biotechnology	1 July 2021
3	Prof. M.V. Sangaranarayanan	Professor Emeritus	Chemistry	1 July 2021
4	Prof. Neelima M. Gupte	Professor Emeritus	Physics	1 July 2021
5	Prof. Krishna Kumar R	Professor Emeritus	Engineering Design	1 July 2021

Professor (Re-employed)

S. No.	Name	Designation	Department	Date of Joining
1	Prof. V. Jagadeesh Kumar	Re-employed	Electrical Engineering	1 August 2021
2	Prof. T. Sundararajan	Re-employed	Mechanical Engineering	1 August 2021
3	Prof. T.S. Sampath Kumar	Re-employed	Metallurgical and Materials Engineering	1 September 2021
4	Prof. A. Veeraragavan	Re-employed	Civil Engineering	1 September 2021
5	Prof. K. Srinivasan	Re-employed	Civil Engineering	1 October 2021
6	Prof. K Mangala Sundar	Re-employed	Chemistry	1 November 2021
7	Prof. P Krishnankutty (NPS)	Re-employed	Ocean Engineering	1 December 2021

Professor of Practice

S. No.	Name	Designation	Department	Date of Joining
1	Dr D. Srinagesh	Professor of Practice	Civil Engineering	1 September 2021
2	Dr Christopher	Professor of Practice	Electrical Engineering	1 July 2021
3	Dr Rear Admiral A George NM	Professor of Practice	Aerospace Engineering	14 December 2021

VAJRA Faculty

S. No.	Name	Designation	Department	Date of Joining
1	Ravinder Kumar Jain	VAJRA Visiting Faculty	Electrical Engineering	9 October 2021
2	Philip L-F. Liu	VAJRA Visiting Faculty	Ocean Engineering	8 October 2021
3	Graham Cooks	VAJRA Visiting Faculty	Chemistry	18 October 2021
4	Sashi Satpathy	VAJRA Visiting Faculty	Physics	17 October 2021
5	Jerome Martin	VAJRA Visiting Faculty	Physics	21 October 2021
6	Srinivasan Chandrasekar	VAJRA Visiting Faculty	Engineering Design	11 October 2021
7	Chongmin Song	VAJRA Visiting Faculty	Mechanical Engineering	18 October 2021

Employees promoted during April 2021 to March 2022

S.No.	ID No.	Name	Designation	Department	Date of Promotion	Recruitment & Promotion Norms/ Advertisement
1.	2984	K.V. Rama	Senior Technical Officer	Sophisticated Analytical Instrument Facility	20 April 2021	Advt
2.	897	Narayanan A	Senior Technical Officer	Chemistry	22 April 2021	Advt
3.	937	Karthiyayini N	Senior Technical Officer	Central Electronics Centre	21 April 2021	Advt
4.	621	Dhanabalan S	Senior Technical Officer	Electrical Engineering	21 April 2021	Advt
5.	8050	Roslin Gilda A	Assistant Executive Engineer (Civil)	Engineering Unit	4 April 2022	Advt
6.	8747	Chitrapavai G	Joint Registrar	Internal Audit	12 May 2021	RPN
7.	684	Sulochana K	Senior Technical Officer	Central Electronics Centre	3 November 2021	RPN
8.	872	Ravichandran S	Senior Technical Officer	Computer Science and Engineering	3 November 2021	RPN
9.	900	Ram Kumar V	Senior Technical Officer	Chemistry	3 November 2021	RPN
10.	799	Jeevan Doss C R	Senior Technical Officer	Central Electronics Centre	3 November 2021	RPN
11.	8427	Ramesh Kumar A	Technical Officer (SS)	Mechanical Engineering	3 November 2021	RPN
12.	1756	P Murugan	Technical Officer	Electrical Engineering	25 March 2022	RPN
13.	746	P V Suguna	Technical Officer	Humanities and Social Sciences	25 March 2022	RPN
14.	8004	P Sadasivam	Technical Officer	Central Electronics Centre	25 March 2022	RPN
15.	8532	K Udayakumar	Technical Superintendent	Electrical Engineering	23 March 2020*	
16.	8453	G B Rajan	Technical Superintendent	Physics	23 March 2020*	
17.	8037	B Arumugam	Senior Attendant	Electrical Engineering	30 June 2021	
18.	2128	Jagadeeswaran B	Senior Driver	Engineering Unit	30 June 2021	
19.	8809	Prakash C	Security Inspector	Security Section	30 June 2021	
20.	8811	Manigandan T	Security Inspector	Security Section	30 June 2021	
21.	8812	Birbal Kumar Yadav	Security Inspector	Security Section	30 June 2021	

22.	8813	Bhagwan Jee Yadav	Security Inspector	Security Section	30 June 2021	
23.	8814	Rajaram T	Security Inspector	Security Section	30 June 2021	
24.	8850	Muthukumar R	Security Inspector	Security Section	30 June 2021	
25.	8857	Poornima	Security Inspector	Security Section	30 June 2021	
26.	8882	Hariprasath P	Security Inspector	Security Section	30 June 2021	
27.	1983	Ramesh L	Superintendent	Engineering Design	30 June 2021	
28.	1870	S M Fathima	Superintendent	Ocean Engineering	30 June 2021	
29.	8618	Shakila G	Senior Assistant	Chemistry	30 June 2021	
30.	1205	Thamil Selvi K	Junior Superintendent	Engineering Unit	30 June 2021	
31.	1305	Tamilarasi J	Junior Superintendent	Engineering Unit	30 June 2021	
32.	1306	Sundar C S	Junior Superintendent	Mathematics	30 June 2021	
33.	1311	Sreedevi B	Superintendent	Audit	30 June 2021	
34.	8639	Maheshwar Rao R	Senior Assistant	Academic	1 July 2021	
35.	8627	Venkanna B	Senior Assistant	Administration	1 July 2021	
36.	920	Venkatachalam A	Senior Assistant	Physics	1 July 2021	
37.	8630	Pajanivel B	Senior Assistant	Civil Engineering	1 July 2021	
38.	973	Senthilkumar A M	Senior Assistant	Academic	1 July 2021	
39.	1289	Hariharan K	Superintendent	Academic	1 July 2021	
40.	1305	Tamilarasi J	Superintendent	Engineering Unit	1 September 2021	
41.	8086	J Prakash	Junior Technical Superintendent	Electrical Engineering	21 December 2021	
42.	993	R Sivakumar	Junior Technical Superintendent	Physics	21 December 2021	
43.	8136	D Sasikumar	Junior Technical Superintendent	Humanities and Social Sciences	21 December 2021	
44.	828	N Muruganandham	Junior Library Superintendent	Central Library	21 December 2021	

*Promotion order received from Recruitment Section on 29 March 2021

Mission Mode (MM-1) (Special Drive for SC/ST/OBC-NCL/EWS)

The Ministry of Education in its letter D.O.No.33-2/2021-TS-III (Pt.) dated 24.08.2022 instructed all Central higher education institutions to fill SC/ST/OBC-NCL/EWS vacancies within one year starting from 5th September 2021 to 4th September 2022 on mission mode. Based on this, an Advertisement No.IITM/R/5/2021 dated 03.11.2021 (Special Drive for SC/ST/OBC-NCL/EWS on Mission Mode) was issued to invite applications from individuals who belong to SC/ST/OBC-NCL/EWS category with an established record of independent, high-quality research and commitment to teaching and research for faculty positions at the level of Assistant Professor (Grade-I/II).

The number of vacancies in each category was identified as SC-13, ST-6, OBC-NCL-25 and EWS-5. Women applicants from reserved categories were also encouraged to apply. Age relaxation was given for SC/ST/OBC-NCL and PwD candidates as per Government of India norms. For EWS candidates, age should be preferably below 35 years.

As part of the recruitment process, the consolidated list of subject experts to serve on the Selection Committees along with set of names of SC/ST and OBC experts to serve on the committees for all 16 departments were approved by the Board of Governors (BoG). The selection was done through shortlisting, seminar presentation and interview between 2nd week of March and 1st week of June 2022.

During this recruitment process, 29 Assistant Professors were selected (SC-10, ST-4, OBC-NCL-15). The offer letters were issued to these faculty members immediately. Out of the 29 candidates selected for the post of Assistant Professor Gr.I/II, 24 candidates have already joined the institute; the remaining five candidates will be joining by February 2023. The unfilled vacancies have been advertised again in Mission Mode-2.

Faculty/Employees appointed between 1 April 2021 and 31 March 2022

S. No.	ID No.	Name	Designation	Department/Section	Date of Joining
1	8977	Narendran Kumar	AP Gr. I	Ocean Engineering	19 April 2021
2	8978	Swapna Singha Rabha	AP Gr. I	Chemical Engineering	3 May 2021
3	8979	Aishwarya Thiruvengadam	AP Gr. II	Computer Science and Engineering	25 May 2021
4	8980	Devaprakash Muniraj	AP Gr. II	Aerospace Engineering	23 June 2021
5	8981	Arumugam Rajavelu	AP Gr. I	Biotechnology	1 July 2021
6	8983	Barun Sarkar	AP Gr. I	Mathematics	30 July 2021
7	8982	Vartika Srivastava	AP Gr. II	Management Studies	30 July 2021
8	8984	Prashant Rawat (on contract for 3 years)	AP Gr. I	Aerospace Engineering	4 August 2021
9	8985	Greeshma Thrivikraman	AP Gr. I	Biotechnology	1 September 2021
10	8986	Santhosh Sethuramanujam	AP Gr. I	Biotechnology	1 September 2021
11	8987	Chandra Shekar Lakshminarayanan	AP Gr. I	Computer Science and Engineering	1 September 2021
12	8988	Jayant Jha	AP Gr. I	Mathematics	2 September 2021
13	8989	Prasanta Kumar Muduli	AP Gr. I	Physics	6 September 2021
14	8990	Rajesh Singh	AP Gr. I	Physics	1 October 2021
15	8992	Krishna Malakar	AP Gr. II	Humanities and Social Sciences	1 November 2021

16	8991	Surjit Kumar	AP Gr. I	Mathematics	2 November 2021
17	8993	Manish Anand	AP Gr. II	Mechanical Engineering	15 November 2021
18	8994	Bijo Sebastian	AP Gr. II	Engineering Design	17 November 2021
19	8995	Sudharsanan Srinivasan	AP Gr. I	Electrical Engineering	24 January 2022

Internal faculty/employees appointed in higher grades during 2021-22

S.No.	ID No.	Name	Designation	Department/Section	DOJ (First Appointment)	DOJ in Present Post
1	8552	Varadhan S K M	Associate Professor	Applied Mechanics	1 August 2012	19 March 2021
2	8701	Satyanarayanan Seshadri	Associate Professor	Applied Mechanics	29 December 2015	19 March 2021
3	8334	Rajamanickam Murugan	Associate Professor	Biotechnology	27 August 2008	19 March 2021
4	8566	Soumendra Nath Kuiry	Associate Professor	Civil Engineering	18 October 2012	19 March 2021
5	8661	Atul Narayan S P	Associate Professor	Civil Engineering	18 July 2014	19 March 2021
6	8684	Sumesh P Thampi	Associate Professor	Chemical Engineering	21 September 2015	19 March 2021
7	8674	Chester Dominic Rebeiro	Associate Professor	Computer Science and Engineering	5 January 2015	19 March 2021
8	8802	Mitesh M Khapra	Associate Professor	Computer Science and Engineering	19 September 2016	19 March 2021
9	8577	Kamlesh Hatua	Associate Professor	Electrical Engineering	31 December 2012	19 March 2021
10	8589	Debdutta Ray	Associate Professor	Electrical Engineering	3 July 2013	19 March 2021
11	8798	Uday Kiran Khankhoje	Associate Professor	Electrical Engineering	1 September 2016	19 March 2021
12	8496	Santhosh R	Associate Professor	Humanities and Social Sciences	9 August 2011	19 March 2021
13	8503	Sabuj Kumar Mandal	Associate Professor	Humanities and Social Sciences	1 November 2011	19 March 2021
14	8568	Mathangi Krishnamoorthy	Associate Professor	Humanities and Social Sciences	25 October 2012	19 March 2021
15	8602	Joe Thomas Karackattu	Associate Professor	Humanities and Social Sciences	23 September 2013	19 March 2021
16	8557	Shyama Prasad Das	Associate Professor	Mechanical Engineering	18 September 2012	19 March 2021
17	8579	S Soundarapandian*	Associate Professor	Mechanical Engineering	2 January 2013	19 March 2021

18	8560	Manoj Pandey	Associate Professor	Mechanical Engineering	1 October 2012	19 March 2021
19	8600	Srikrishna Sahu	Associate Professor	Mechanical Engineering	17 September 2013	19 March 2021
20	8624	Varunkumar S	Associate Professor	Mechanical Engineering	11 December 2013	19 March 2021
21	8833	Hariharan K	Associate Professor	Mechanical Engineering	5 December 2016	19 March 2021
22	8520	Manas Mukherjee	Associate Professor	Metallurgical and Materials Engineering	19 March 2012	19 March 2021
23	8575	Anand Krishna Kanjarla	Associate Professor	Metallurgical and Materials Engineering	26 December 2012	19 March 2021
24	8494	Vijayalakshmi V	Associate Professor	Management Studies	3 August 2011	19 March 2021
25	8603	Varisha Rehman	Associate Professor	Management Studies	23 September 2013	19 March 2021
26	8657	Jayeeta Bhattacharya	Associate Professor	Physics	25 July 2014	19 March 2021
27	8660	Prabha Mandayam	Associate Professor	Physics	1 August 2014	19 March 2021
28	8194	Nagendra Gopal K V	Professor	Aerospace Engineering	10 February 2005	20 July 2021
29	8580	Rajesh G	Professor	Aerospace Engineering	1 February 2013	20 July 2021
30	8484	Pijush Ghosh	Professor	Applied Mechanics	25 May 2011	20 July 2021
31	8446	Abhijit Chaudhuri	Professor	Applied Mechanics	25 July 2011	20 July 2021
32	8179	Manoj N	Professor	Biotechnology	1 July 2004	20 July 2021
33	8347	Dali Naidu Arnepalli	Professor	Civil Engineering	17 December 2008	20 July 2021
34	8502	Sachin S. Gunthe	Professor	Civil Engineering	10 October 2011	20 July 2021
35	8478	Subhadeep Banerjee	Professor	Civil Engineering	25 March 2011	20 July 2021
36	8369	Renganathan T	Professor	Chemical Engineering	20 January 2010	20 July 2021
37	8476	Basavaraja Madivala Gurapa	Professor	Chemical Engineering	14 February 2011	20 July 2021
38	8836	Rajnish Kumar	Professor	Chemical Engineering	13 December 2016	20 July 2021
39	8342	Sutanu Chakraborti	Professor	Computer Science and Engineering	17 November 2008	20 July 2021
40	8465	Jayalal Sarma M N	Professor	Computer Science and Engineering	18 October 2010	20 July 2021

41	8804	Masilamani Jeganmohan	Professor	Chemistry	29 September 2016	20 July 2021
42	8477	Kothandaraman R	Professor	Chemistry	4 March 2011	20 July 2021
43	8511	Pazhamalai Anbarasan	Professor	Chemistry	14 December 2011	20 July 2021
44	8422	Kavitha Arunachalam	Professor	Engineering Design	14 June 2010	20 July 2021
45	8426	Lakshminarasamma	Professor	Electrical Engineering	1 June 2010	20 July 2021
46	8155	Nitin Chandrachoodan	Professor	Electrical Engineering	28 January 2004	20 July 2021
47	8939	Anbarasu Manivannan	Professor	Electrical Engineering	4 December 2018	20 July 2021
48	8565	Sheetal Kalyani	Professor	Electrical Engineering	17 October 2012	20 July 2021
49	8429	Mohanasankar Sivaprakasam	Professor	Electrical Engineering	1 June 2010	20 July 2021
50	8338	Kalpana Mahalingam	Professor	Mathematics	24 September 2008	20 July 2021
51	8461	Shruti Dubey	Professor	Mathematics	6 September 2010	20 July 2021
52	8346	Amitava Ghosh	Professor	Mechanical Engineering	11 December 2008	20 July 2021
53	8440	Arvind Pattamatta	Professor	Mechanical Engineering	7 July 2010	20 July 2021
54	8509	Ashis Kumar Sen	Professor	Mechanical Engineering	12 December 2011	20 July 2021
55	8655	Sathyan Subbiah	Professor	Mechanical Engineering	19 May 2014	20 July 2021
56	8832	Balaji Srinivasan	Professor	Mechanical Engineering	1 December 2016	20 July 2021
57	8309	Kottada Ravi Sankar	Professor	Metallurgical and Materials Engineering	12 October 2007	20 July 2021
58	8470	Srinivasa Rao Bakshi	Professor	Metallurgical and Materials Engineering	16 December 2010	20 July 2021
59	8471	Amit R K	Professor	Management Studies	27 December 2010	20 July 2021
60	8339	Prahallad Padhan	Professor	Physics	30 September 2008	20 July 2021
61	8421	Krishnamurthy C V	Professor	Physics	10 June 2010	20 July 2021
62	8433	Sudakar Chandran	Professor	Physics	21 June 2010	20 July 2021
63	8437	Aravind G	Professor	Physics	2 July 2010	20 July 2021
64	8466	Somnath Chanda Roy	Professor	Physics	1 November 2010	20 July 2021
65	8488	Birabar Ranjit Kumar Nanda	Professor	Physics	25 July 2011	20 July 2021

Financial upgrade under Modified Assured Career Progression Scheme

- Number of Group A Officers granted financial upgrade under MACPS: 10

Faculty/Employees who resigned/relieved

S. No.	ID No.	Name	Designation	Department	Date of Relief
1	8911	Nimmakayala Uma Maheswara Reddy	Junior Technician	Physics	12 June 2020
2	8781	Gunda Koushik	Junior Technician	Engineering Unit	11 September 2020
3	8878	V K Raj Kumar	Junior Technical Superintendent	Chemical Engineering	29 October 2020 (w.e.f. 31 December 2019)

Faculty/Employees who opted for voluntarily retirement

S. No.	ID No.	Name	Designation	Department/Section	Date of Relief
1	208	Shobana S	Technical Superintendent	Electrical Engineering	31 July 2021
2	607	K Ravi	Driver Gr. I	Transport Cell	31 January 2022

Faculty/Employees who superannuated between 1 April 2021 to 31 March 2022

S. No	ID No.	Name	Designation	Department/Section	Date of Retirement
1	2553	Dr Krishna Kumar R	Professor	Engineering Design	31 May 2021
2	8174	Dr Rama Shanker Verma	Professor	Biotechnology	30 June 2021
3	1617	Dr Jagadeesh Kumar V	Professor	Electrical Engineering	31 July 2021
4	2572	Dr Sundararajan T	Professor	Mechanical Engineering	31 July 2021
5	8165	Dr A.Veeraraghavan	Professor	Civil Engineering	31 August 2021
6	5012	Dr T.S. Sampath Kumar	Professor	Metallurgical and Materials Engineering	31 August 2021
7	2797	Dr Srinivasan K	Professor	Civil Engineering	30 September 2021
8	281	Dr Suresh V	Senior Techno Economic Officer	ICSR	30 September 2021
9	2500	Dr Mangala Sunder K	Professor	Chemistry	31 October 2021
10	8254	Dr Krishnankutty P	Professor	Ocean Engineering	30 November 2021
11	1531	Ramasami P	Junior Superintendent	Mechanical Engineering	30 April 2021
12	1714	Palayam C	Office Assistant	Gymkhana	30 April 2021
13	1175	Sridhar J	Junior Superintendent	Chemical Engineering	31 May 2021
14	1226	Savithri Ramadoss	Superintendent	Aerospace Engineering	31 May 2021
15	1704	Sekar T	Office Assistant	Gymkhana	30 June 2021
16	8	Lawrence Gray Kumar V	Physical Training Instructor Gr. I	Gymkhana	31 July 2021
17	1118	Balasekaran R	Senior Pharmacist	Hospital	31 July 2021
18	68	Subramani T	Senior Assistant	CEC	31 August 2021
19	246	Kamalrajan G	Chief Driver	Transport Cell	31 August 2021

20	1983	Ramesh L	Senior Assistant	Engineering Design	31 August 2021
21	2872	Elangosanthuram R	Junior Technical Superintendent	Computer Science & Engineering	31 August 2021
22	8187	Rajendran C	Senior Assistant	Computer Centre	30 September 2021
23	558	Mekala Y	Junior Superintendent	Civil Engineering	31 October 2021
24	1047	Swamy Subramaniam	Senior Security Inspector	Security Section	31 October 2021
25	249	Kumar D	Driver Gr. I	Security Section	31 January 2022
26	1999	Asokan P	Senior Assistant	Ocean Engineering	31 January 2022
27	310	Veerabathiran S	Senior Technician	Metallurgical & Materials Engineering	31 January 2022
28	1108	Raju P	Senior Security Inspector	Security Section	28 February 2022

Faculty/Employees who were on extraordinary leave/deputation/lien

S. No.	Emp. Id.	Name	Designation	Department	Duration	Visits' Name/Type of Leave
1.	8884	Dr Harish Guruprasad Ramaswamy	AP Gr. I	Computer Science and Engineering	1 July-31 December 2021	Inter IIT Faculty Exchange Programme - IIT Bombay
2.	3120	Dr Siva Ram Murthy C	Professor	Computer Science and Engineering	24 December 2021-23 December 2023	Inter IIT Faculty Exchange Programme - IIT Hyderabad
3.	8345	Dr Manoj Gopalakrishnan	Professor	Physics	15 December 2021-31 May 2022	Inter IIT Faculty Exchange Programme - IIT Palakkad
4	351	Dr S R Chakravarthy	Professor	Aerospace Engineering	1 September 2021-31 August 2022	To take up the position of full-time Chief Technical Officer for a co-founded start-up at IITM Research Park
5	2786	Dr S Mohan	Professor	Civil Engineering	22 December 2021-28 February 2024	Vice Chancellor, Puducherry Technological University
6	8940	Dr K C Sivaramakrishnan	AP Gr.I	Computer Science and Engineering	1 August 2021-31 May 2022	Principal Software Engineer at M/s Segfault Systems Private Limited
7	5037	Dr S Sundar	Professor	Mathematics	14 March 2022-13 March 2027	Director, National Institute of Technology, Mizoram
8	8434	K. Om Prakash	Technical Superintendent	Civil Engineering	18 October 2021-17 April 2022	EOL on personal reasons
9	8651	Bhagavan Gayathri	Junior Superintendent	Academic Section	1 February 2022-31 January 2023	EOL on personal reasons

Faculty/Employees who passed away while in service

S.No.	Id. No	Name	Designation	Department	Date
1	2539	Dr B.V.S.S.S. Prasad	Professor	Mechanical Engineering	13 April 2021
2	8579	Dr Soundarapandian S	Professor	Mechanical Engineering	22 June 2021
3	691	Mr Paranjothi K	Technical Officer	Sophisticated Analytical Instrument Facility	8 May 2021

Faculty members on sabbatical leave

S. No.	Name	Designation	Department	Duration	Details
1.	Dr Vinita Vasudevan	Professor	Electrical Engineering	1 August 2021-31 July 2022	Book writing on probabilistic methods for electronic design automation
2.	Dr Niket S Kaisare	Professor	Chemical Engineering	25 September 2021-10 July 2022	Visiting Fellow at University of Minnesota for collaboration with Prof. Aditya Bhan's research group under Fulbright-Nehru Academic and Professional Excellence Fellowship
3.	Dr Sabuj Kumar Mandal	ASP	Humanities and Social Science	24 September 2021-23 September 2022	Fulbright-Nehru Academic and Professional Excellence Fellowship and book writing
4.	Dr Nagarajan R	Professor	Chemical Engineering	1 January-31 July 2022	Invited as Robert T Henson Distinguished Visiting Scholar at Purdue University, West Lafayette, Indiana, USA
5.	Dr C Balaji	Professor	Mechanical Engineering	1 January 2022-30 June 2022	Visiting Professor at Divecha Centre for Climate Change, Indian Institute of Science, Bangalore
6.	Dr R Vinu	Associate Professor	Chemical Engineering	1 January-30 June 2022	Co-founder/CEO-CTO at X2 Fuels & Energy Private Limited, Research Park IITM, Chennai
7.	Dr S Arul Jayachandran	Professor	Civil Engineering	1 December 2021-25 May 2022	Book writing at USA
8	Dr Manoj Pandey	Associate Professor	Mechanical Engineering	1 January-31 December 2022	Visiting scholar in Mechanical Engineering at Purdue University, West Lafayette, United States
9	Dr Qadeer Ahmad Khan	AP Gr. I	Electrical Engineering	8 November 2021-17 May 2022	Book writing (Uttar Pradesh) and incubating a startup (M/s Truesense Technologies Private Limited) at IITM Research Park, Chennai
10	Dr Manikandan Narayanan	ASP	Computer Science and Engineering	12 January 2022-11 May 2022	To accept the position of Visiting Research Scientist at ICMR - National Institute for Research in Tuberculosis (NIRT), Chennai
11	S Ponnusamy	Professor	Mathematics	1 March 2022-28 February 2023	i) Position of Director at Centre for Functions Theory Problem at Institute of Mathematics and Information Tech at Russia ii) Collaborative research at Human First Normal University, China

2.3. Staff Welfare

Human Resource Development

As part of human resource development (HRD) activities, the institute plans and implements programmes for providing opportunities to technical and administrative employees to update and upgrade their knowledge and skills so that they may perform their duties effectively. The programmes are aimed at enhancing the pride and satisfaction they feel in their

work, which in turn positively impacts their personal lives as well. These activities also form a part of the training requirements under the ISO dispensation.

The HRD activities were initiated in the institute in 1997 under the charge of a professor. In the period of reporting, three internal training programmes and one external training programme organised by other institutions or organisations were attended by our employees.

Training calendar for 2021-22

S.No.	Training Programme	No. of Employees Benefited
Outstation Training		
1	HR Statutory Compliance conducted by MSME Campus, Chennai	2
2	Online Training Program on Geometrical Dimensioning and Tolerance	2
3	The Basics of Strain Gauge Installation and Strain Gauge Measurement Technology	2
In-house Training		
1	Ministry of Education (MoE) - Finance & Accounts - An Overview	60
2	Office Procedure and Establishment Matters	57
3	General Financial Rules	60
4	Work-Life Balance	46
5	Gender Sensitization and Prevention of Sexual Harassment	55
6	Noting and Drafting	70

Ongoing activities of Official Language, Hindi Cell

The Hindi Cell at IIT Madras is functioning under the overall administrative control of the Registrar.

a) Hindi training

In accordance with the directives of the Department of Official Language of the Ministry of Home Affairs (MHA), Government of India (GoI), Hindi Language training classes were conducted regularly for both technical and administrative employees by Hindi Teaching Scheme. Despite the adverse situations due to COVID-19 pandemic in 2021-22, 12, 26 and 11 employees successfully completed the Prabodh, Praveen and Pragma courses, respectively, through online mode. Cash awards were given to 39 employees on passing the Hindi exams with creditable marks, and one-time increment was given to 17 employees for passing Pragma examination.

b) Hindi workshops and seminars

In 2021-22, four Hindi workshops were conducted online and offline, training given to 111 employees in Basic Hindi, structure of simple sentences and conversational Hindi. The employees were also apprised of the Official Language Policy, Technical

Terminology and Annual Programme of MHA by the Hindi Officers of various central government offices and PSU organisations. Many activity tests and interactive sessions were conducted.

c) OLIC Meeting

The Official Language Implementation Committee (OLIC) meetings of IITM were convened regularly during the year under review in which achieving the targets prescribed for various items in the annual programme of MHA were discussed in detail. Follow-up actions were taken on the decisions made.

d) Translation work

Translation of advertisements related to students' admission, teaching and non-teaching positions, RTI letters, accounts report, and other reports sent to the ministry, invitations pertaining to Convocation and Institute Day, press releases, institute's main website, administrative website and confidential work assigned by the authorities were carried out during the year under review.

e) Preparation of Help Literatures

Help Literatures are being prepared on routine and essential basis for effective and progressive use of Hindi.

During the year, Help Literature consisting of technical and administrative terms used in sections, centres and departments were prepared and distributed for use in files and in view of Hindi competitions.

f) Celebration of Hindi Day

The Hindi Day was celebrated on 7 October 2020 through online mode and was presided over by the Registrar and Chairman, OLIC. The Registrar announced the prize winners of competitions such as Extempore, Simple Translation, Quiz on Dr APJ Abdul Kalam, Word Power, Identify the Picture, Say It In Hindi and Hindi Music (Solo), which were conducted during the Hindi Fortnight. As part of cultural programme, Hindi songs were rendered by IITM students and spot activity was organised for the audience.

g) Grant of annual incentive for doing official work in Hindi

Twelve employees were awarded cash incentive under the 10,000 Words Incentive Scheme during the year.

h) Other activities for effective implementation of Official Language

Following activities were conducted to maintain congenial atmosphere for Hindi and to create interest in Hindi among the staff:

- “Learn a Word in Hindi” is updated every day in three

languages, viz., Tamil, Hindi and English, on the board kept in the Administration building.

- World Hindi Day was celebrated on 10 January 2022. A workshop was conducted for the employees on the topic, Conversational Hindi - tips and suggestions by Dr. Ishwar Karun Jha, Retired Senior Divisional Manager, New India Assurance.

- A coordination meeting was convened on 11 March 2022 with the superintendents and Hindi coordinators of Academic Section, Office of Registrar and Director’s Secretariat to increase the use of Hindi in official work.

i) TOLIC Activities

IIT Madras actively participates in Town Official Language Implementation Committee (TOLIC) activities such as meetings, webinars and competitions. The staff participated in various competitions such as Conversation, Extempore, Debate, Book Review, Noting and Drafting, Elocution and Word Power conducted by TOLIC during the year. Shri Shivasharanappa, Junior Technician, Engineering Unit and Ms B. Janani, Junior Assistant, Stores & Purchase won second prize in the Conversation competition.

Children Education Assistance

The institute reimbursed a sum of ₹1,59,30,000 to 588 faculty and staff members towards Children Education Allowance as per Government of India norms during April 2021 to March 2022.

Insurance

Insurance schemes from 1 February 2021 to 31 January 2022

Group Mediclaim Insurance Scheme

Category/Numbers of Persons Covered	Employees/ Dependents	Pensioner/ Spouse	Family Pensioner
Basic Coverage only opted	882	717	502
Basic + Additional coverage opted	332	378	59
Total number of dependents covered	3,166	954	00
Total number of persons under coverage	4,380	2,049	561
Total premium paid	₹7,98,84,937		
Total number of claims made	595		
Total claimed amount	₹7,08,89,415		

Group Term Insurance Scheme

Category	Life Insurance - Number of Persons Covered
Basic Coverage opted	1149
Basic + Additional coverage opted	126
Total Premium paid	₹1,13,16,214
Total number of claims made	Three
Total claimed amount	₹1,20,00,000

Group Fire and Burglary Insurance Scheme

Category	Life Insurance - Number of persons covered
Total Premium paid	₹42,93,772
Total number of claims made	Nil
Total claimed amount	Nil

List of faculty members and officers in the academic and general administration

I. Academic Admin	
Director	Prof. Bhaskar Ramamurthi Prof. V Kamakoti (from 17 January 2022)
Deans	
Academic Courses	Prof. Prathap Haridoss
Academic Research	Prof. Shanthi Pavan
Administration	Prof. Koshy Varghese
Industrial Consultancy and Sponsored Research	Prof. Ravindra Gettu
Industrial Consultancy and Sponsored Research (Associate Dean)	Prof. Manu Santhanam
Students	Prof. Nilesh J. Vasa
Planning	Prof. Ligy Philip
International and Alumni Relation (Alumni and Corporate Relations)	Prof. Mahesh Panchagnula
International and Alumni Relation (Global Engagement)	Prof. Raghunathan Rengasamy
II. Heads of Department	
Aerospace Engineering	Prof. H.S.N. Murthy
Applied Mechanics	Prof. M.S. Sivakumar
Biotechnology	Prof. Guhan Jayaraman
Chemical Engineering	Prof. R. Ravikrishna
Chemistry	Prof. Sanjay Kumar
Civil Engineering	Prof. R.G. Robinson
Computer Science and Engineering	Prof. C. Chandra Sekhar
Electrical Engineering	Prof. David R. Koilpillai
Engineering Design	Prof. T. Asokan
Humanities and Social Sciences	Prof. Jyotirmaya Tripathy
Management Studies	Prof. G. Arun Kumar
Mathematics	Prof. V. Vetrivel
Mechanical Engineering	Prof. A. Seshadri Sekhar
Metallurgical and Materials Engineering	Prof. N.V. Ravi Kumar
Ocean Engineering	Prof. K. Murali
Physics	Prof. Arul Lakshminarayan

III. Head of Research Centre

Sophisticated Analytical and Instrumentation Facility	Dr S.S. Bhattacharyya
---	-----------------------

IV. Head of Special Facilities for Interaction with Other Institutions

Centre for Industrial Consultancy and Sponsored Research	Dr Ravindra Gettu
Chairman, Centre for Continuing Education	Prof. Devendra Jalihal
Central Electronics Centre	Prof. Bobby George
Chairman, CC	Prof. P. Sriram
Chairman	
GATE	Prof Suresh Rayala
JEE	Prof A V Jayanthan
Central Workshop	Prof. Shankar Krishnapillai

V. Central Admin

Registrar	Dr Jane Prasad
Joint Registrar	
Internal Audit	Smt. G. Chitrapavai
Deputy Registrars	
Administration	Shri A Babu
Finance and Accounts	Shri P. V. Karunakaran
Office of Dean (Students)/T&P	Shri Y.E.L. Sudhakar Rao Pujari
Academic Research	Smt K. Vijayalakshmi
Academic Courses	Shri P. Sarvaharna
IC&SR i/c	Shri B. Vijay Shankar
Assistant Registrars	
Stores & Purchase	Smt. Booma Sowrirajan
Administration - I & II	Smt P.K. Shebasabari
Administration - III	Dr P. Arul
Communications and PR & Hindi Cell	Smt. Rashmi Uday Kumar
Finance and Accounts - Pay Bills	Shri Raman Kumar
Finance and Accounts - Bills Unit	Shri B. Vijay Shankar
Recruitment, RTI & Legal Cell	Shri R. Muralidharan
Academic Courses	Smt. Jayasri Sridhar
Chief Security Officer	Shri N. Elumalai
Central Library	
Librarian	Dr Mahendra N. Jadhav
Deputy Librarian	Dr M. Anandamurugan
Assistant Librarian	Dr K. Saravanan

VI. Head of Central Services, Facilities and Section	
Chief Medical Officer	Dr Rebecca Punithavalli
Chairman Council of Wardens	Prof. T. Thyagaraj
Vice Chairman Council of Wardens	Prof. J.M. Mallikarjuna
Chairman CMFGS	Dr Palaniappan Ramu
Advisor - Mitr	Prof. Nilesh J. Vasa
Co-Advisor-MITr	Dr Ramesh Gardas
Advisor - Saathi	Dr Sunetra Sarkar
Advisor-Cultural	Dr Arshinder Kaur
Advisor-Co-curricular	Dr V.V.S.D.R. Kumar Annabattula
Advisor-Sports	Prof.Arul Prakash
Co-Advisor-Sports	Prof Anuradha Bannerjee
Advisor-Training and Placement	Prof. C.S. Shankar Ram
Advisor-Internship	Dr Sathyan Subbiah
Advisor (Inclusive Education)	Dr Saji K. Mathew
Advisor (EML & T5e)	Dr. Basavaraja M. Gurappa
Advisor-E-Cell	Dr.Ashwin Mahalingam
Advisor (IAR Affairs)	Dr Sachin S. Gunthe
Advisor (Career Development Cell)	Dr. Arun Menon
Advisor (NSS, Civil, Society Services)	Dr Sivakumar K.C.
Centre for Innovation Faculty Head	Prof. Prabhu Rajagopal
Centre for Innovation Deputy Faculty Head	Dr Satyanarayanan Seshadri
Chair, Mess Monitory Committee	Dr. Mallikarjuna J.M.
Advisor SECC/SLC	Dr Anup Kumar Bhandari
Chief Election Officer	Dr V. Sriram
Deputy Election Officer	Dr Anbarasu Manivannan
Co-Advisor (S-Reach)	Dr Pijush Ghosh
NCC - Coordinator	Dr. Ethayaraja Mani
President (Film Club)	Dr Madhu Mutyam
Chairperson, Hostel Disciplinary Committee	Prof. Ramasubba Reddy

VII. Engineering Unit	
Chairman, Engineering Unit	Prof. S A Sannasiraj
Co-Chairman Engineering Unit	Prof. Benny Raphael
Superintending Engineer	K. Dharmaraj
Executive Engineers	K. Viswanath, M. Ramachandran, Vineetha NR, Rizwan Ali K, Murali Prakash K
Senior Horticulture Officer	V. Seenivasan
Assistant Executive Engineers	K. Ravichandran, Ajai Krishnan, K. Narayana Perumal, D. Rajavel, V. Manickavasagam, S Padmanabhan

Housing facilities

The campus of IIT Madras has 545 faculty quarters, 434 staff quarters and 286 students' quarters for accommodation. The campus also has 137 servant quarters.



Academic Programmes and Award of Degrees

In 2021-22, Indian Institute of Technology Madras offered the following programmes: Ph.D., M.S. (By Research), Interdisciplinary M.S./Ph.D., Joint Degree/Single Degree Ph.D., M.Tech, M.Sc., B.Tech, Dual Degree (B.Tech and M.Tech), Dual Degree (B.S. and M.S.) in Biological Sciences and Physics, MBA, EMBA, Five-year Integrated M.A. programme, Inter-Disciplinary Dual Degree programmes and a preparatory course for SC/ST/PwD students.

3.1. Admissions 2021-22

In the academic year 2021-22, candidates were admitted to the following programmes:

Programme	Admission Procedure
B.Tech, Dual Degree	JEE (Advanced)
M.Tech	GATE, Sponsored and User-Oriented Programmes
Ph.D. and M.S.	Test/interview/GATE/Sponsored
M.Sc.	JAM
M.B.A.	CAT and interview
M.A. Integrated Programme	HSEE

The number of students and scholars admitted to various programmes in July 2021 and January 2022 are given in the following tables. Reservation is followed as per the Government of India order for the academic year 2021-22 in all programmes (15 per cent for SC, 7.5 per cent for ST, 27 per cent for OBC, 10 per cent for EWS and PwD, as applicable).

Table 1. Fresh Admission

Details of OBC/SC/ST and women students under fresh admission (programme and category wise)

Department	B.Tech	DD	M.Tech	Web-based M.Tech	M.Sc	MBA	EMBA	MA	M.S	Ph.D.	PG Diploma MEM	PG Diploma BE	Total
AE	63	10	15	20					17	21			146
AM			22						29	30			81
BT		80	21						7	49			157
CH	115		40						18	32			205
CY					64					52			116

CE	129		100						15	43		15	302
CS	86		74	22					18	19			219
ED		74							16	19			109
EE	154		70	89					83	51			447
HS										36			36
MA			24		42					11			77
MS						68	54	57	13	22	40		254
ME	218		91	26					54	43			432
MM	70		28						12	28			138
OE	78		44						14	21			157
PH	43	12	6		47					23			131
Total	956	176	535	157	153	68	54	57	296	500	40	15	3007

S. No	Programme	GE	EWS	OBC	SC	ST	Total	Female	Male
1.	B.Tech	377	96	270	142	71	956	195	761
2.	Dual Degree	70	20	48	26	12	176	41	135
3.	M.Tech	192	62	163	77	41	535	85	450
4.	Online M.Tech	113	-	41	3	-	157	28	129
5.	M.Sc.	56	18	47	20	12	153	44	109
6.	M.B.A.	30	7	19	12	-	68	20	48
7.	EMBA (2022 Batch)	40	-	8	6	-	54	20	34
8.	M.A	18	6	20	9	4	57	38	19
9.	M.S	163	23	81	24	4	296	55	241
10.	Ph.D.	258	34	139	52	17	500	170	330
Total		1317	266	836	371	161	2952	696	2256

Total number of students admitted during the year included the following:

Foreign Nationals	37	Defence Officers (M.Tech)	24
EWS	266	User-Oriented Programme (M.Tech)	30
		Web-based M.Tech	157
OBC	836	Sponsored M.Tech	7
Scheduled Castes	371	Quality Improvement Programme (Q.I.P.)	Ph.D. 13
Scheduled Tribes	161	Project	M.S. 62 Ph.D. 22
Physically Handicapped	38	External Registration	M.S. 11
Women Students	696		Ph.D. 32

3.2. Students/Scholars Enrolment

The total numbers of students on roll in various programmes of the institute in the academic year 2021-22 are given in the following table.

Table 2. Students on roll

Department	B.Tech	DD	M.Tech	Web-based M.Tech	M.Sc	MBA	EMBA	MA	M.S.	Ph.D.	PG Diploma MEM	PG Diploma BE	Total
AE	205	91	25	20					63	183			587
AM			33						80	227			340
BT	3	355	44						16	222			640
CH	381	75	76						41	170			743
CY					121				-	280			401
CE	423	102	187						53	343		15	1123
CS	332	35	143	81					79	98			768
ED		338							48	102			488
EE	510	179	138	339					247	344			1757
HS								256	-	164			420
MA			42		78				-	117			237
MS						136	148		35	151	40		510
ME	652	275	179	84					178	358			1726
MM	200	60	51						45	185			541
OE	230	63	83						51	160			587
PH	136	77	19		85				-	233			550
Total	3072	1650	1020	524	284	136	148	256	936	3337	40	15	11418

AE: Aerospace Engineering; AM: Applied Mechanics, BT: Biotechnology; CH: Chemical Engineering; CY: Chemistry; CE: Civil Engineering; CSE: Computer Science and Engineering; EE: Electrical Engineering; ED: Engineering Design; HS: Humanities and Social Sciences; MS: Management Studies; MA: Mathematics; ME: Mechanical Engineering; MM: Metallurgical and Materials Engineering; OE: Ocean Engineering; PH: Physics

The above total includes the following:

Foreign Nationals	41	QIP	Ph.D.	60
Economically Weaker Sections (EWS)	558	Sponsored	M.Tech	14
OBC	3157	Project	M.S. Ph.D.	187 116
Scheduled Castes	1353	External Registration	M.S. Ph.D.	40 231
Scheduled Tribes	541	Registration Kept Alive	M.S. Ph.D.	16 191
Physically Handicapped	146	Part-Time Programme	M.S. Ph.D.	18 80
Women Students	2613	60		
Defence Officers (M.Tech)	43	524		

Details of OBC/SC/ST and women students on roll (programme and category wise)

S. No.	Programme	GE	EWS	OBC	SC	ST	Total	PH (Included in total)	Female	Male
1.	B.Tech	1227	226	858	504	257	3072	69	583	2489
2.	Dual Degree	823	50	436	243	99	1650	21	291	1359
3.	M.Tech	369	121	308	148	74	1020	23	157	863

4.	Online M.Tech	395	-	122	7	-	524	-	69	455
5.	M.Sc.	122	18	85	35	24	284	6	67	217
6.	M.B.A.	62	10	36	25	3	136	-	54	82
7.	EMBA	107	-	23	18	-	148	1	33	115
8.	M.A.	103	10	81	43	19	256	7	157	99
9.	M.S	540	53	267	69	6	936	3	156	780
10.	Ph.D.	2024	69	932	258	53	3337	13	1042	2295
Total		5777	558	3157	1353	541	11390	146	2613	8754

The branch/discipline-wise and year-wise details of students enrolled in B.Tech, Dual Degree and M.Tech programmes are given below.

Table 3. B.Tech students on roll

S. No.	Branch	2021	2020	2019	2018	2017 and Earlier Batch	Total
1.	Aerospace Engineering	63	60	37	36	9	205
2.	Biotechnology					3	3
3.	Chemical Engineering	115	117	79	59	11	381
4.	Civil Engineering	129	124	98	52	20	423
5.	Computer Science and Engineering	86	87	79	68	12	332
6.	Electrical Engineering	154	155	125	62	14	510
7.	Mechanical Engineering	218	207	142	74	11	652
8.	Metallurgical and Materials Engineering	70	66	32	25	7	200
9.	Naval Architecture	78	72	47	26	7	230
10.	Engineering Physics	43	40	24	23	6	136
Total		956	928	663	425	100	3072

Table 4. Dual Degree (B.Tech and M.Tech) students on roll

S. No.	Branch	2021	2020	2019	2018	2017	2016 and Earlier Batch	Total
1.	Aerospace Engineering	10	10	20	21	24	6	91
2.	Biotechnology: Biological Engineering Biological Sciences (B.S. and M.S.)	43 37	39 34	33 28	33 26	30 31	615	184 171
3.	Chemical Engineering			17	26	30	2	75
4.	Civil Engineering			13	37	41	11	102
5.	Computer Science and Engineering			2	5	19	9	35
6.	Electrical Engineering			17	69	78	14	178
	Electrical Engineering (B.Tech) and Applied Mechanics (M.Tech)						1	1
7.	Engineering Design	74	72	62	57	56	17	338

8.	Mechanical Engineering			49	95	103	28	275
9.	Metallurgical and Materials Engineering			19	21	17	3	60
10.	Naval Architecture and Ocean Engineering			13	23	20	6	62
	Naval Architecture (B.Tech) and Applied Mechanics (M.Tech)						1	1
11.	Physics (B.S. and M.S.)	12	13	12	10	9	4	60
12.	Engineering Physics (IDDD)			7	7	3		17
Total		176	168	292	430	461	123	1650

Table 5. M.Sc. students on roll

S. No.	Branch	2021	2020	Extended	Total
1.	Chemistry	64	56	1	121
2.	Mathematics	42	31	5	78
3.	Physics	47	35	3	85
Total		153	122	9	284

Table 6. M.Tech. students on roll

S. No.	Department\Discipline\Batch	2021	2020	Extended Students	Total
1.	Aerospace Engineering	15	10		25
2.	Applied Mechanics	12	4	1	17
	Biomedical Engineering	10	4	2	16
	Computational and Experimental Mechanics				
3.	Biotechnology	9	10	2	21
	Clinical Engineering	12	11		23
	Bioprocess Engineering				
4.	Chemical Engineering	33	30	2	65
	CA - Catalysis Technology	7	4		11
5.	Civil Engineering				
	CE 1 - Building Technology and Construction Management	11	8	3	22
	CE 2 - Environmental Engineering	10	3		13
	CE 3 - Geotechnical Engineering	14	9		23
	CE 4 - Hydraulic and Water Resource Engineering	4	5	1	10
	CE 5 - Structural Engineering	18	17	2	37
	CE 6 - Transportation Engineering	13	7	2	22
	CE 7 - Construction Technology and Management	30	30		60
6.	Computer Science & Engineering	74	60	9	143

7.	Electrical Engineering				
	EE 1 - Communication and Signal Processing	26	20	3	49
	EE 2 - Power Systems and Power Electronics	11	12		23
	EE 3 - Microelectronics and VLSI Design	9	10	2	21
	EE-4 - Control and Instrumentation	11	5		16
	EE-5 - Microelectronics and Photonics			2	2
	EE 6 - Integrated Circuits and Systems	7	7	3	17
	EE 13 - RF and Photonics	6	4		10
8.	Industrial Maths and Scientific Computing	24	17	1	42
9.	Mechanical Engineering				
	ME 1 - Thermal Engineering	45	35	8	88
	ME 2 - Mechanical Design	26	19	5	50
	ME 3 - Manufacturing Engineering	20	18	3	41
10.	Metallurgical and Materials Engineering	28	20	3	51
11.	Ocean Engineering			4	4
	- Ocean Technology	8	9		17
	- Petroleum Engineering	13	15		28
	Ocean Structure	23	11		34
12.	Physics:				
	- Functional Materials and Nanotechnology	6	9	3	18
	Solid State Technology			1	1
Total		535	423	62	1020
Web-Based M.Tech					
1.	M.Tech Aerospace Engineering	20			20
2.	CS 102 - M.Tech Information Security (CSE)	22	23	36	81
3.	EE 101 - M.Tech Communication and Signal Processing	34	17	101	152
4.	EE 102 - M.Tech Integrated Circuits and Systems	38	32	65	135
5.	EE 105 - M.Tech Multimedia Signal Processing	7	7	8	22
6.	EE 106 - M.Tech Microelectronics	4	20		24
7.	EE 107 - M.Tech Quantum Science and Technology	6			6
8.	ME 102 - Mechanical Design (Web based)	19	21		40
9.	ME 103 - M.Tech Automotive Technology	7		37	44
Total		157	120	247	524

Table 7. M.B.A. students on roll

S. No.	Branch	2021	2020	Total
1.	Management Studies	68	68	136

Table 8. M.A. students on roll

S. No.	Branch	2021	2020	2019	2018	2017	Total
1.	Humanities and Social Sciences	57	51	43	44	61	256

Table 9. E.M.B.A. students on roll

S. No.	Branch	2021	2020	2019	Total
1.	Management Studies	54	48	46	148

Table 10. PG Diploma in Management for Executives in Manufacturing (PGDMMEM) students on roll

S. No.	Branch	2021	Total
1.	Management Studies	40	40

Table 11. M.S. scholars on roll

S. No.	Branch	Year I	Year II	Year III	Year IV	Year V and Others	Total
1.	Aerospace Engineering	17	19	18	7	2	63
2.	Applied Mechanics	29	21	21	5	4	80
3.	Biotechnology	7	1	6	2	-	16
4.	Chemical Engineering	18	9	6	5	3	41
5.	Civil Engineering	15	17	15	4	2	53
6.	Computer Science and Engineering	18	27	19	12	3	79
7.	Electrical Engineering	83	76	55	22	11	247
8.	Engineering Design	16	14	9	5	4	48
9.	Management Studies	13	4	12	3	3	35
10.	Mechanical Engineering	54	36	44	28	16	178
11.	Metallurgical and Materials Engineering	12	12	9	7	5	45
12.	Ocean Engineering	4	12	17	6	2	51
Total		296	248	231	106	55	936

Table 12. Ph.D. scholars on roll

S. No.	Branch	Year I	Year II	Year III	Year IV	Year V and Others	Total
1.	Aerospace Engineering	21	30	20	25	87	183
2.	Applied Mechanics	30	19	39	35	104	227
3.	Biotechnology	49	20	33	23	97	222
4.	Chemical Engineering	32	25	26	20	67	170
5.	Chemistry	52	44	37	53	94	280
6.	Civil Engineering	43	75	56	33	136	343
7.	Computer Science and Engineering	19	19	8	17	35	98
8.	Electrical Engineering	51	54	45	44	150	344
9.	Engineering Design	19	17	16	16	34	102
10.	Humanities and Social Sciences	36	17	27	27	57	164
11.	Management Studies	22	14	30	19	66	151

12.	Mathematics	11	12	18	17	59	117
13.	Mechanical Engineering	43	35	57	50	173	358
14.	Metallurgical and Materials Engineering	28	22	17	39	79	185
15.	Ocean Engineering	21	14	19	34	72	160
16.	Physics	23	46	47	40	77	233
Total		500	463	495	492	1387	3337

3.3. Courses offered

In the academic year 2021-22, 2,185 courses were offered of which 1,090 courses were offered during July-November 2021 and 1,095 courses were offered during January-May 2022. The department-wise details of the courses offered are given below.

Table 13. Number of courses offered

S.No.	Department	No. of Courses Offered in July-November 2021	No. of Courses Offered in January-May 2022
		Core and Elective	Core and Elective
1	Aerospace Engineering	49	61
2	Applied Mechanics	50	45
3	Biotechnology	62	53
4	Civil Engineering	122	93
5	Chemical Engineering	58	49
6	Computer Science and Engineering	42	55
7	Chemistry	48	101
8	Engineering Design	31	33
9	Electrical Engineering	105	104
10	Humanities and Social Sciences	88	96
11	Mathematics	57	51
12	Mechanical Engineering	101	101
13	Metallurgical and Materials Engineering	54	48
14	Management Studies	67	48
15	Ocean Engineering	69	61
16	Physics	87	96
Total		1090	1095

3.4 Convocation

The 58th Convocation was held on 20 November 2021 virtually due to the COVID-19 pandemic. Badminton world champion, Ms P.V. Sindhu graced the occasion as Chief Guest; 1,962 candidates were awarded various degrees in absentia. The department-wise details of degrees awarded are given below.

Table 14. Degrees awarded

Department-wise number of degrees given at the 58th Convocation Academic Year 2020-21
Board of Governors (BoG) meeting dates (4 December 2020, 19 March 2021 and 20 July 2021)

S. No	Department	Joint Degree		Dual Degree		Ph.D	M.S	M.Tech	Web-Based M. Tech	M.Sc	Joint Degree MBA	MBA	EMBA	MA	Dual Degree		Dual Degree		BTech (Honours)	B.Tech	Total
		M.S/M.Tech	Ph.D.	M.S/M.Tech	Ph.D.										B.Tech/BS (Hons)	M.Tech/MS/IDDD	B.Tech/BS	M.Tech/MS/IDDD			
1	AE			2	2		5	13								19	19	2	27	89	
2	AM			2	2	2	7	13												26	
3	BT		1#	4	4	11	1	19						2	2	48	48			140	
4	CH			4	4	3	2	25						3	3	21	21	2	61	149	
5	CY			2	2	15				59										78	
6	CE			1	1	12	3	69						1	1	31	31	3	46	199	
7	CS			1	1	4	16	49	23					2	2	13	13	1	46	171	
8	EE			8	8	11	12	60	21					11	11	55	55	5	53	310	
9	ED			1	1	2	1							2	2	55	55			119	
1	HS					9								43						52	
11	MS		1@	1	1	2	4				1+	60	42							112	
12	MA			1	1	5		15		41										63	
13	ME	1	3\$	9	9	10	21	51	28					4	4	56	56	8	58	318	
14	MM			3	3	5	3	17						2	2	12	12	1	28	88	
15	OE			3	3	3		22								15	15		23	84	
16	PH			2	2	13		4		38						8	8	2	23	100	
Total		1	5	44	44	107	75	357	72	138	1	60	42	43	27	333	333	24	365	2098	

Curtin University, Australia, @Deakin University, Australia (Total: 1,693 Students, 2,098 Degrees)

\$ University of Technology, Australia, + University of Passau, Germany

Table 15

S. No	Department	Joint Degree		Dual Degree		Ph.D	M.S	M.Tech	M.Sc	MA	Dual Degree			B.Tech	B.S.	Total
		M.S./ M.Tech	Ph.D.	M.S./ M.Tech/ M.Sc	Ph.D						B.Tech/ BS(Hons)	M.Tech/ MS/ IDDD	B.Tech/ BS			
1	AE		1*	2	2	3	4							1		13
2	AM			5	5	5	4	2								21
3	BT					11	1					2	2			16
4	CH			6	6	3	2	1								18
5	CY					11										11
6	CE			5	5	9	4	4				3	3	1		34
7	CS			2	2	4	15									23
8	EE			5	5	13	15	1				2	2	1		44
9	ED					4	1					2	2			9
10	HS					5			1							6
11	MS					4	2									6
12	MA			1	1	5		1								8
13	ME			7	7	17	13			1	1	7	7	2		62
14	MM			2	2	5	7	1						2		19
15	OE			4	4	6	5					2	2	2		25
16	PH					10						1	1		1	13
Total		0	1	39	39	115	73	9	1	1	1	19	19	9	1	328

Total: 269 Students, 328 Degrees

*Swinburne University of Technology

With this convocation, the total number of degrees awarded so far by the institute is 58,602, including September 2021 graduates, the details of which are given below.

S.No.	Programme	Awarded up to Convocation 2020	Convocation 2021	Total
1	Joint Dual Degree Ph.D.	14	2	16
2	Joint Single Degree Ph.D.	4	5	9
3	Dual Degree M.S. Ph.D.	185 185	68 68	253 253
4	Dual Degree M.Tech Ph.D.	24 24	10 10	34 34
5	Dual Degree M.Sc Ph.D.	4 4	5 5	9 9
6	Ph.D.	5363	222	5585
7	M.S.	3835	148	3983
8	M.Tech	15696	366	16062
9	Web-Based M.Tech	14	72	86
10	M.Sc.	3817	139	3956
11	Joint Degree M.B.A (University of Passau, Germany)	3	1	4
12	M.B.A.	1054	60	1114
13	E.M.B.A.	37	42	79
14	MA	343	44	387
15	Dual Degree (Incl. Honours) B.Tech M.Tech	3272 3272	351 351	3300 3300
16	Dual Degree (Incl. Honours) B.S. M.S.	742 742	29 29	1093 1093
17	B.Tech	16842	374	17217
18	B.Tech (Honours)	193	24	217
19	B.S.	1	1	2
20	PGDMEM	140	-	140
21	B.Sc. (Tech)	20	-	20
22	DIIT	245	-	245
23	PGDMRT	62	-	62
24	PGDVLM	39	-	39
Total		56,176	2,426 Degrees (1,962 Students)	58,602

3.5 Award of prizes to students

3.5.1 Convocation Prizes

The following are the details of Convocation Prizes awarded for the year 2021

S.No.	Prize	Roll No	Awardee
1.	President of India Prize	EE17B032	Sumanth R Hegde
2.	Bharat Ratna M Visvesvaraya Memorial Prize	EE17B032	Sumanth R Hegde
3.	Shri V. Srinivasan Memorial Prize	CS16B107	E Santhosh Kumar
4.	Dr Shankar Dayal Sharma Prize	ME17B080	Guhan Narayanan
5.	Governor's Prize	ME16B148	Mayur Vikas Joshi

B. Tech

S No.	Prize	Roll No	Awardee
6.	HAL Prize, AE	AE17B045	Vanya B K
7.	Reliance Heat Transfer Private Limited Prize, CH	CH17B071	Sona Sheril Antony
8.	Larsen & Toubro ECC Endowment Prize, CE	CE17B011	Neduri Leela Venkata Sri Harsha
9.	B Ravichandran Memorial Prize, CS	CS17B028	V Sriram
10.	Siemens Prize, EE	EE17B032	Sumanth R Hegde
11.	Valadi Krishna Sarma Balaji and Savithri Balaji Award, EE	EE17B036	Vemuri Pavan
12.	Sivasailam Merit Prize, ME	ME17B080	Guhan Narayanan*
		ME17B002	Ashwath Mukesh Bhat*
13.	Vaidy Krishnan Memorial Prize (Shri K V Krishnan, Chennai), ME	ME17B073	Varun P Sanklecha
14.	Banco Foundation Prize, ME	ME17B081	Venu Narendra Nathan
15.	Vijay Jagannathan Award, MM	MM17B008	Abhimanyu Swaroop
16.	B. Krishnamurthy Award, MM	MM17B008	Abhimanyu Swaroop
17.	Dr Dhandapani Memorial Prize, MM	MM17B032	Taher Murtaza Poonawala
18.	Class NK-100 Prize, OE	NA17B030	Zinage Shrenik Vijaykumar
19.	American Bureau of Shipping Prize, OE	NA17B036	Edakkad Zubin Wilson
20.	Hema Balasubramanian Excellence Award, PH	EP17B011	Swetha Srinivasan
21.	American Express Award, PH	EP17B011	Swetha Srinivasan
22.	Shri Jandhyala Lakshmi Kantam and Shrimati Sitamahalakshmi Prize, PH	EP17B028	Saurabh Vaishampayan

Dual Degree

S. No.	Prize	Roll No	Awardee
23.	Dr V Mohan Raman Prize, AE	AE16B114	Shruti Tandon
24.	Biocon Prize, BE	BE16B036	L Srinath Muralidharan
25.	Institute Merit Prize, BE	BE16B036	L Srinath Muralidharan
26.	The Divashri Award, BS	BS16B005	Mohammed Faidh A
27.	Dr N R Dave Prize, CE	CE16B117	Anmol Agarwal
28.	Institute Merit Prize, CH	CH16B004	Barath Venkateswaran
29.	B Ravichandran Memorial Prize, CH	CH16B058	S Renganathan

30.	Prof. C A Sastry Endowment Prize, CH	CH16B058	S Renganathan
31.	Lakshmi Ravi Prize, CS	CS16B101	Ayalur Vedpuriswar Lakshmy*
		CS16B115	Gadikar Pranav Umesh*
32.	Motorola Prize, CS	CS16B107	E Santhosh Kumar
33.	Alumni Association Prize, CS	CS16B107	E Santhosh Kumar
34.	Prema and Nagaraja Setty Prize, ED	ED16B002	Akash Mitra
35.	Dr K. Gopinath and Padmini Gopinath Prize, ED	ED16B057	V C Raghuram
36.	Philips India Prize, EE	EE16B143	Ashutosh Nikam
37.	Prof G V N Rayudu (IIT Madras) Prize, ME	ME16B148	Mayur Vikas Joshi
38.	American Express Top Achievement Award, ME	ME16B148	Mayur Vikas Joshi
39.	Dr Susan Calvin Prize, ME	ME16B164	Shashank R
40.	Institute Merit Prize, ME	ME16B170	Vinayak M Sodar
41.	S Anantharamakrishnan Memorial Prize, MM	MM16B008	Rohith Srinivaas M
42.	Goodearth Shipbuilding Private Limited Prize, OE	NA16B026	Mehendale Deovrat Deepak
43.	Prof J Sobhanadri Prize, PH	PH16B007	Rohan Rajgopalan Iyer

M.A.

S. No.	Prize	Roll No	Awardee
44.	Dr Dilip Veeraraghavan Memorial Award, HS	HS16H052	T Pauline Mathew
45.	Prof A V Krishna Rao Memorial Award, HS	HS16H092	Vinjamuri Sruthi Ranjani
46.	Institute Merit Prize, HS	HS16H092	Vinjamuri Sruthi Ranjani
47.	Shri M. N. Ramachandran and Smt. Gowri Appadorai Ramachandran Prize, HS	HS16H092	Vinjamuri Sruthi Ranjani

M.Tech

S. No.	Prize	Roll No	Awardee
48.	Air India Prize, AE	AE19M015	Kishore M
49.	Prof B V A Rao Endowment Prize, AM	AM19M022	Selvaraj S
50.	Sushruta Award, AM	AM19M022	Selvaraj S
51.	Institute Merit Prize (For M.Tech Bioprocessing), BT	BT19M012	Sanjaay B
52.	Institute Merit Prize(Biotechnology Department)	BT19M012	Sanjaay B
53.	Dr S S Srikanta Prize, BT	BT19M018	Muskan Khetan
54.	Shri S V Balakrishnan Prize, CH	CA19M002	Harish Kumar K S
55.	Mico-Bosch Prize, CH	CA19M002	Harish Kumar K S
56.	Rajnikant Gandhi Memorial Award, CE	CE19M026	Yatham Jagruthi
57.	Valli Anantharamakrishnan Merit Prize, CE	CE19M040	Pradyumna Deepak Kulkarni
58.	K Devarajan Memorial Prize, CE	CE19M052	Catherine Sanchana I
59.	L & T Endowment Prize, CE	CE19M119	Pawas Trivedi
60.	Institute Merit Prize, CE	CE19M119	Pawas Trivedi
61.	Dr K Subba Raju Memorial Prize, CH	CH19M004	Amar Krishna Gopinath

62.	Prof H N Mahabala Endowment Prize, CS	CS19M015	Athul M A
63.	CMC Prize, CS	CS19M044	Nitin John Titus
64.	Bhagyalakshmi And Krishna Ayengar Award, EE	EE19M003	Abhishek Sharma*
65.	Siemens Prize, EE	EE19M006	Boby Mathachen Mylady
66.	Prof Helmut Neunzert Endowment Prize, MA	MA19M020	Sowmia M
67.	Prof Ramamohana Rao Memorial Prize, ME	ME19M002	Arkaprabho Pal
68.	Prof B Sengupto Prize, ME	ME19M085	Abhishek Maurya
69.	Dr S Vaidyanathan Memorial Prize, ME	ME19M085	Abhishek Maurya
70.	S Anantharamakrishnan Merit Prize, ME	ME19M086	Adhish R*
		ME19M102	M V Abhiram*
71.	Giri Brothers Prize, ME	ME19M101	M Shankar Babu
72.	Buti Foundation Gold Medal Award, MM	MM19M021	Pavithra N
73.	Sudharshan Bhatt Memorial Prize, MM	MM19M021	Pavithra N
74.	American Express Award, MM	MM19M021	Pavithra N
75.	American Bureau of Shipping Prize, OE	OE19M001	Rhys D Fernandes*
		OE19M003	Sreejesh N*
76.	Institute Merit Prize, OE	OE19M001	Rhys D Fernandes*
77.	Prof K A V Pandalai Prize, OE	OE19M021	Roshan Singh
		OE19M003	Sreejesh N*
78.	Shri RRP Sinha and Vimla Dewi Prize, OE	PE19M009	Utkarsh Lall
79.	Shri Krishnamurthy Sundarambal Prize, PH	PH19M005	Mayank Sharma

M.Sc.

S. No.	Prize	Roll No	Awardee
80.	Ratna Rao Memorial Prize, CY	CY19C026	Mehak Oberoi
81.	Dr S R Ramadas 60th Birthday Commemoration Award, CY	CY19C032	Thakkar Nihar Hitesh
82.	Mira Paul Memorial Prize, MA	MA19C020	Mohit Ram Sharma
83.	Prof Chilukury Rama Sastry Memorial Prize, PH	PH19C001	Abhik Bhattacharjee
84.	Shri Jandhyala Lakshmi Kantam and Shrimati Sitamahalakshmi Prize, PH	PH19C019	Kiran Kumar Panigrahi

M.B.A./E.M.B.A.

S. No.	Prize	Roll No	Awardee
85.	K V Arunkumar Memorial Prize, MS	MS19A001	Aadhi Shivani S
86.	Coka Parthasarathy Prize, MS	MS19A030	Mohd Arish Lodi
87.	Institute Merit Prize, MS	MS19W039	B Subramanian

M.S./Ph.D.

S. No.	Prize	Roll No	Awardee
88.	Prof S Radhakrishnan Award, AM	AM15D026	Anand R
89.	Prof. V Ramamurti Award, AM	AM16D406	Aghna Mukherjee
90.	Prof S Radhakrishnan Award, AM	AM17S032	Arnab Kumar Mallik
91.	Batch of 1979 Award, BT	BT14D402	Soundhara Rajan G *
		BT15D045	Kulandai Samy A *
92.	Shree Gaayathree Devi Award, CE	CE15D056	Lekshmi Mohan V

93.	Bhagyalakshmi and Krishna Ayengar Award, CE	CE16D031	Nippatlapalli Narasamma*
94.	GE Ecomagination Excellence Award, CE	CH15D201	Suseendiran S R*
		CY15D106	Abdulsattar Mohammad*
95.	Smt. D L Saraswati Memorial Prize, CH	CH18S005	Kiran Prabhu
96.	IBM Best Thesis Award	CS14D407	Ujjal Kr Dutta
97.	Biswajit Sain Endowment Prize, CS	CS15S027	Prateep Bhattacharjee*
		CS17S016	Bhavsar Nirav Narharibhai*
98.	Prof. G. Sundararajan Endowment Prize, CY	CY14D203	Santu Sadhukhan*
		CY15D011	Sundaravelu N*
99.	Prof. Langmuir Prize, CY	CY15D099	Sruthi Guru*
		CY15D106	Abdul Sattar Mohammad*
100.	Prof. Werner Prize, CY	CY16D007	Rajeev Chand Nishad
101.	Prof C N Pillai Prize, CY	CY16D095	Jambu S
102.	Shri R N Rajendran Memorial Prize, MS	MS15D024	Swarnalakshmi Ravi
103.	Dr M Mukunda Rao Endowment Prize, EE	EE14D021	Haripriya V K*
		EE14D402	Lakshmi Narayanan V*
104.	T. S. Vedagiri Memorial Award, EE	EE18S022	Inaganti Naga Sai Manoj
105.	Smt. Lakshmikutty Amma and Shri A Krishnankutty Nair Prize, MA	MA16D023	Shivani Goel
106.	Prof R Krishnamurthy Endowment Award, ME	ME13D214	Suman Deb
107.	Sudharshan Bhat Memorial Prize, MM	MM15D410	Garlapati Mohan Muralikrishna*
		MM16D300	Nitheesh M. Nair*
108.	Prof. Vallam Sundar Prize, OE	OE13D203	Saravanan G*
		OE15D036	Manmathakrishnan P*
109.	Prof A L Lashkar Prize, PH	PH13D045	Shashi Bhusan Mishra
110.	Mrs Abayambal and Mr Natarajan Award, PH	PH14D301	Mangisetti Sandhyarani*
		PH15D041	Subhajit Pal*

* Joint winners

3.5.2 Institute Day Prizes

The list of students who were awarded the prizes for Institute Day 2020 and 2021 based on academic performance are given below.

Institute Day 2020

S. No.	Roll No	Student	Prize	Programme
B.Tech				
1	AE16B039	Rudra Sethu Viji	Swati/Jayalakshmi Memorial Award	B. Tech
2	CE17B011	Neduri Leela Venkata Sri Harsha	Computer Age Management Services Private Limited Prize	B. Tech
3	CH16B015	Nikhil Jain	Dr R.K. Vishwanath Memorial Prize	B. Tech
4	CH17B071	Sona Sheril Antony	Dr Anita Mehta Damani Prize	B. Tech
5	CS16B021	Raghul R	I. Computer Age Management Services Private Limited Prize II. Dr Dilip Veeraraghavan Memorial Award	B. Tech
6	CS18B066	Sarthak Kapoor	Shri S Subramanian Prize	B. Tech

7	EE16B033	Rajat Vadiraj Dwaraknath	I. Shri Ramasarma V Kolluri Memorial Prize II. K Srinivasan and Indira Srinivasan Prize	B. Tech
8	EP16B013	Chari Rajas Premanand	Mr K Krishnamurthy Iyer Prize	B. Tech
9	EP17B011	Swetha Srinivasan	Ms Latha and Sampath Srinath Prize	B. Tech
10	ME16B011	Dinesh Bompada	I. Dr S Chandrasekharan Memorial Prize II. Dr Dinesh Balagangadhar Prize	B. Tech
11	ME16B047	Surya R	Dr Vivekanand Kochikar Award	B. Tech
12	ME17B081	Venu Narendra Nathan	Shri Raghavendra Memorial Prize	B. Tech
13	MM16B014	Anirrudh Ramesh	Ratna Award	B. Tech
14	MM16B017	Arvind Pujari	Shri K M Ramamurthi Prize	B. Tech
15	NA16B034	Relekar Hrishikesh Ajit	Prof K Gopinath and Padmini Gopinath Prize	B. Tech

Dual Degree

16	AE15B036	S K Venkatesh	Shri Kakkara Balachandran Menon Prize	DD
17	AE16B114	Shruti Tandon	Prof E G Tulapurkara Prize	DD
18	AE17B031	Kalyan Ramakrishnan	Prof T K Varadan Prize	DD
19	BE15B022	Rohini J. S.	Shri Madan Gopal Damani Prize	DD
20	BE16B036	L Srinath Muralidharan	Dr Anita Mehta Damani Prize	DD
21	BE17B036	Sankalpa Venkatraghavan	Dr Anita Mehta Damani Prize	DD
22	BS15B010	Deepak Malik	Institute Merit Prize	DD
23	BS16B005	Mohammed Faidh A	Akash Dube Prize	DD
24	BS17B002	Sathvik A.	Mrs Jayalakshmi Sambasivam Prize	DD
25	CE15B101	Kannan Neha Rajan	Shri Venkataraman Ravi Prize	DD
26	CE16B136	Yukti	M S K Chaitanya Varma Memorial Prize	DD
27	CH15B093	S. Sajith Ahamed	Dr Anita Mehta Damani Prize	DD
28	CS15B048	Kavya G	I. Computer Age Management Services Private Limited Prize II. Swati/Jayalakshmi Memorial Award	DD
29	CS17B047	Gautam C	Shri V Ramachandran Prize	DD
30	CS18B103	Shreesh G Bhat	Shri K Krishnamurthy Prize	DD
31	ED15B010	Deepak Prakash K	Sarada Bhaskarareddy Award	DD
32	ED16B031	Sashank Tirumala	Dr Srikanth Sundararajan Prize	DD
33	ED17B002	Aditya Raj Kuncolienkar	Ms Latha and Sampath Srinath Prize	DD
34	EE15B035	Kevin Abraham Cherian	Ms Pattammal Viswanathan Prize	DD
35	EE15B073	Alfred Festus Davidson	Institute Merit Prize	DD
36	EE17B156	Dhruvjyoti Bagadthey	Shri V Rajagopalan Memorial Prize	DD
37	EP15B015	M Denesh Kumar	Ms Pattammal Viswanathan Prize	DD
38	ME15B090	Balaji S	I. Shri Sagar Pushpala Prize II. Prof V Radhakrishnan Endowment Award	DD

39	ME15B157	Manjarekar Pranjali M	Shri Rajesh Achanta Prize	DD
40	ME15B158	Sreenidh S P	Prof K Gopinath and Padmini Gopinath Prize	DD
41	ME15B166	Kaushik Bhat	American Express Award	DD
42	ME15B167	Aman Jalan	American Express Award	DD
43	ME17B157	Obulapuram Sai Pavan Kumar	Mrs Jayashree Ananth Prize	DD
44	MM15B022	Mythreyi Ramesh	Shri G S Bhuvaneshwar Prize	DD
45	MM15B040	Hari Ramachandran	Shri Ramanan Ramamurthy Prize	DD
46	MM15B041	Ananyashree Sanjay Jain	Prof V Sundaresan Prize	DD
47	MM17B105	A Ramprasad	Shri Satish Pai Prize	DD
48	NA15B036	Harry Edwin	Shri Poovai Tr Srinivasan and S Alamelu Award	DD
49	NA17B004	Mansi Khandelwal	Ms Latha and Sampath Srinath Prize	DD
50	PH15B008	Saran Vijayan	Mr S. Venkitaramanan, I.A.S Retd Prize	DD
51	PH16B002	Gautham A P	Shri Jandhyala Lakshmi Kantam and Shrimati Sitamahalakshmi Prize	DD
52	PH16B007	Rohan Rajgopalan Iyer	Electronics For You Prize	DD
53	PH17B011	Chaithanya Krishna Moorthy	N. Arunachalam Memorial Prize	DD

M. Tech

54	AE18M023	Panduri Bhavya Naidu	Prof. S. Santhakumar Prize	M. Tech
55	AM18M023	Sonu Singh	Shrimathi Parvatham Ramalingam Prize	M. Tech
56	BT18M001	Adithi K	Institute Merit Prize	M. Tech
57	BT18M020	Palika Charitha	P K Narayana Iyer Prize	M. Tech
58	CA18M005	Anoop P Pushkar	Dr V Mahadeva Iyer Award	M. Tech
59	CE18M039	Mohamed Althaaf Hussain M	S Sambasivan Award	M. Tech
60	CE18M117	Shivakumar B	Prof. Gerhard Rouve Memorial Prize	M. Tech
61	CE18M119	Silpa P J	Smt. Jayalakshmi Narasimhan Memorial Prize	M. Tech
62	CH18M004	Bhuvsmitha Bhargava	M/s Chevron Products Company Prize	M. Tech
63	CH18M007	Faseeh KK	M/s Chevron Products Company Prize	M. Tech
64	CS18M015	Bateesh Dhingra	Prakash Arora Prize	M. Tech
65	EE18M058	Priyatham Kattakinda	Prof M K Achuthan Prize	M. Tech
66	MA18M014	Nitish Dobhal	Dr N Seshagiri Prize	M. Tech
67	MA18M019	Rishabh Gupta	L V K V Sarma Prize	M. Tech
68	ME18M071	Sarthak Rastogi	Shri Ramanan Ramamurthy Prize	M. Tech
69	ME18M076	Sunil Kumar Kumawat	Prof. N Venkatarayulu Memorial Prize	M. Tech
70	MM18M023	Supriya Anand	Dr M N Dhandapani Prize	M. Tech
71	OE18M003	Amit Kumar Rathi	Prof Vallam Venkataswamy Prize	M. Tech
72	OE18M006	Amit Kumar Mall	Subrath Kumar Mallik Prize	M. Tech
73	PE18M002	Chekka Sri Durga Vidya Meghana	I. Prof. M S Ananth Prize II. Swati/Jayalakshmi Memorial Award	M. Tech

74	PH18M009	Swarnendu Banerjee	Mrs Lakshmi Ravikumar Memorial Prize	M. Tech
M.Sc.				
75	CY18C003	Achal Kumar	R. Padmanabhan Memorial Prize	M. Sc.
76	CY18C017	Deeksha	I. Mrs Kalaimani Natarajan Prize II. Swati/Jayalakshmi Memorial Award	M. Sc.
77	MA18C037	Sourav Sarkar	I. Geetha Raghupathy Prize II. L V K V Sarma Prize	M. Sc.
78	PH18C003	Anant Rastogi	Chilukuri Ramasastry Memorial Prize	M. Sc.
79	PH18C043	Varsha	V. Kalyanasundaram Memorial Prize	M. Sc.
M.A.				
80	HS15H006	Ashraya Maria	Dr V Ravikumar Memorial Prize	MA
81	HS15H007	Aswathy Venugopal	I. Gonsalvez Foundation Prize II. Swati/Jayalakshmi Memorial Award	MA
82	HS16H052	Pauline Mathew T	Institute Merit Prize	MA
83	HS16H092	Sruthi Ranjani Vinjamuri	Dr V Ravikumar Memorial Prize	MA
84	HS17H007	Varsha Gopal	Institute Merit Prize	MA
85	HS18H043	Vardhini	Institute Merit Prize	MA
M.B.A.				
86	MS18A005	Chetan Agrawal	I. Prof T N Govindarajan Prize II. Dr V Kumar Prize III. T S Rajagopalan Memorial Prize	MBA
87	MS18A045	Smriti Vohra	Swati/Jayalakshmi Memorial Award	MBA
Ph.D.				
88	CY18D005	Chandra Shekhar Tiwari	VRS Rao Prize	Ph.D.

Institute Day 2021

S. No.	Roll No.	Prize Winner	Prize Name	Programme
B.Tech				
1	AE18B041	Shubham Ravindra Mahajan	Prof T K Varadan Prize	B.Tech
2	CE17B011	Neduri Leela Venkata Sri Harsha	M S K Chaitanya Varma Memorial Prize	B.Tech
3	CH17B003	Asha Ramanujam	Dr R K Viswanath Memorial Prize	B.Tech
4	CH18B020	S Vishal	Dr Anita Mehta Damani Prize	B.Tech
5	CS18B050	Aniswar Srivatsa Krishnan	Shri V Ramachandran Prize	B.Tech
6	CS19B079	K R Hariharan	Shri S Subramanian Prize	B.Tech
7	CS19B081	Ravisri Kumara Valluri	Shri S Subramanian Prize	B.Tech
8	EE17B032	Sumanth R Hegde	Shri Ramasarma V Kolluri Memorial Prize	B.Tech
9	EE17B071	Emil Biju	Dr Dilip Veeraraghavan Memorial Award	B.Tech
10	EE18B073	Anirudh S	Shri V Rajagopalan Memorial Prize	B.Tech
11	EE19B023	Goru Gagan Deep	Shri K Krishnamurthi Prize	B.Tech

12	EE19B053	Sai Gautham Ravipati	Shri K Krishnamurthi Prize	B.Tech
13	EP17B011	Swetha Srinivasan	1. Mr K Krishnamurthy Iyer Prize 2. Swati/Jayalakshmi Memorial Award	B.Tech
14	EP18B028	Rohan Narayan Rajmohan	Ms Latha and Sampath Srinath Prize (Engineering Physics)	B.Tech
15	ME17B080	Guhan Narayanan	Shri K M Rammurthi Prize	B.Tech
16	ME17B081	Venu Narendra Nathan	1. Dr S Chandrasekharan Memorial Prize 2. Dr Dinesh Balagangadhar Prize	B.Tech
17	ME18B016	Mohit Kumar	1. Mrs Jayasree Ananth Prize 2. Shri Raghavendra Memorial Prize	B.Tech
18	MM17B032	Taher Poonawala	Ratna Award	B.Tech
19	MM18B017	Bipul Gupta	Shri Satish Pai Prize	B.Tech

Dual Degree

20	AE16B102	Achu Shankar	Shri Kakkara Balachandran Menon Prize	Dual Degree
21	AE17B110	Bagali Avinash Gururaj	Prof E.G. Tulapurkara Prize	Dual Degree
22	BE16B036	L Srinath Muralidharan	Shri Madan Gopal Damani Prize	Dual Degree
23	BE17B036	Sankalpa Venkatraghavan	Anita Mehta Damani Institute Day Prize	Dual Degree
24	BE18B008	Neha Swaminathan	Dr Anita Mehta Damani Prize	Dual Degree
25	BS16B007	Shubham Barua	Institute Merit Prize	Dual Degree
26	BS17B002	Sathvik A	Akash Dube Prize	Dual Degree
27	BS18B004	P Gayathri	Mrs Jayalakshmi Sambasivam Prize	Dual Degree
28	CE16B136	Yukti	Shri Venkataraman Ravi Prize	Dual Degree
29	CE18B135	Yakkala Eswita	Computer Age Management Services Private Limited Prize	Dual Degree
30	CH16B001	Ananth Shankar Narayanan	Dr Anita Mehta Damani Prize	Dual Degree
31	CH16B004	Barath Venkateswaran	Shri G S Bhuvaneshwar Prize	Dual Degree
32	CS16B101	Ayalur Vedpuriswar Lakshmy	Swati/Jayalakshmi Memorial Award	Dual Degree
33	CS16B112	R Sai Harshini	1. Computer Age Management Services Private Limited Prize 2. Swati/Jayalakshmi Memorial Award	Dual Degree
34	CS17B047	C Gautam	1. Computer Age Management Services Private Limited Prize 2. K Srinivasan and Indira Srinivasan Prize	Dual Degree
35	ED16B023	Iniyar R	Sarada Bhaskar Reddy Award	Dual Degree
36	ED18B019	Neel Balar	Ms Latha and Sampath Srinath Prize	Dual Degree
37	EE16B109	Govind S Sankar	Institute Merit Prize	Dual Degree
38	EP16B020	Midhuna Duraisamy Suganthi	Institute Merit Prize	Dual Degree
39	ME16B117	Mohil Vinaykumar Chaudhari	Prof K Gopinath and Padmini Gopinath Prize	Dual Degree
40	ME16B148	Mayur Vikas Joshi	American Express Award	Dual Degree

41	ME16B149	Meenakshi Sundareswar K	Shri Sagar Pushpala Prize	Dual Degree
42	ME16B164	Shashank Ramesh	Ms Pattamal Viswanathan Prize	Dual Degree
43	ME16B165	Shubham Jain	Shri Rajesh Achanta Prize	Dual Degree
44	ME16B168	Pushkar Avinash Taralekar	Prof V Radhakrishnan Endowment Award	Dual Degree
45	ME16B170	Vinayak M. Sodar	Shri Raghu Ramamoorthy Prize	Dual Degree
46	ME17B054	Kaushik Surendran Chettiar	Dr Vivekanand Kochikar Award	Dual Degree
47	ME18B171	Shivangi Singh	MV Undergraduate Prize	Dual Degree
48	MM16B030	Madhurima Mahajan	Prof V Sundaresan Prize	Dual Degree
49	NA16B118	Siddharth J P	Shri Poovai TR Srinivasan and S Alamelu Award	Dual Degree
50	NA17B116	Rishabh Shah	Prof K Gopinath and Padmini Gopinath Prize 2020	Dual Degree
51	NA18B107	H Abirami	Ms Latha and Sampath Srinath Prize	Dual Degree
52	PH16B007	Rohan Rajgopalan Iyer	Mr S Venkatraman IAS Retd Prize	Dual Degree
53	PH17B004	Sayak Guha Roy	Electronics For You Prize	Dual Degree
54	PH17B008	Pranav Satheesh	Shri Jandhyalaya Lakshmi Kantham and Smt. Sitamahalakshmi Prize	Dual Degree
55	PH18B008	Gaurav Milind Vaidya	N. Arunachalam Memorial Prize	Dual Degree

M.Sc.

56	CY19C018	Kalraj Singh	R Padmanbahan Memorial Prize	M.Sc.
57	CY19C026	Mehak Oberoi	Swati/Jayalakshmi Memorial Award	M.Sc.
58	CY19C032	Nihar Thakkar	Mrs Kalaimani Natarajan Prize	M.Sc.
59	MA19C020	Mohit Ram Sharma	1. Geetha Raghupathy Prize 2. LVKV Sarma Prize	M.Sc.
60	PH19C014	Hari Sadhan Ghosh	Chilukuri Ramasastry Memorial Prize	M.Sc.

M. Tech

61	AE19M015	Kishore M	Prof. S. Santhakumar Prize	M.Tech
62	AM19M022	Selvaraj S	Shrimathi Parvatham Ramalingam Prize	M.Tech
63	BT19M004	Dhruv Kumar Chaurasiya	Institute Merit Prize	M.Tech
64	BT19M018	Muskan Khetan	P K Narayana Iyer Prize	M.Tech
65	CA19M002	Harish Kumar K S	Dr Mahadev Iyer Prize	M.Tech
66	CE19M040	Pradyumna Deepak Kulkarni	Smt. Jayalakshmi and Shri Narsimhan Prize	M.Tech
67	CE19M050	Adwait Dilip Bharade	Prof Gerhard Rouve Memorial Prize	M.Tech
68	CE19M129	Vineela Thellakula	S Sambasivan Award	M.Tech
69	CH19M017	Katturi Sai Raghava	M/s Chevron Products Company Prize	M.Tech
70	CS19M044	Nitin John Titus	Prakash Arora Prize	M.Tech
71	EE19M059	Muhammed Ahsan KV	Prof. MK Achuthan Prize	M.Tech
72	MA19M020	M Sowmia	1. Dr N Seshagiri Prize 2. LVKV Sarma Prize	M.Tech

73	ME19M008	Pandula Sri Sai Sambhavi Sahithya	Prof N Venkatarayulu Memorial Prize	M.Tech
74	ME19M085	Abhishek Maurya	Shri Ramanan Ramamurthy Prize	M.Tech
75	MM19M021	Pavithra N	1. Dr M N Dhandapani Prize 2. Swati/Jayalakshmi Memorial Award	M.Tech
76	OE19M001	Rhys Fernandes	Prof Vallam Venkataswami Prize	M.Tech
77	OE19M003	Sreejesh N	Prof Vallam Venkataswami Prize	M.Tech
78	OE19M026	Shubham Ratnakar Shelke	Subrath Kumar Malik Prize	M.Tech
79	PE19M009	Utkarsh Lall	Prof. M. S. Ananth Prize	M.Tech
80	PH19M005	Mayank Sharma	Mrs Lakshmi Ravikumar Memorial Prize	M.Tech

M.A.

81	HS16H044	Meenakshi V	Dr V Ravikumar Memorial Prize	MA
82	HS16H092	Sruthi Ranjani Vinjamuri	1. Gonsalvez Foundation Prize 2. Swati/Jayalakshmi Memorial Award	MA
83	HS17H012	Manasi Apte	Dr V Ravikumar Memorial Prize	MA
84	HS18H016	Cherene Aniyan Puthethu	Institute Merit Prize	MA
85	HS19H025	Neha Susan Cherian	Institute Merit Prize	MA

M.B.A.

86	MS19A030	Mohd Arish Lodi	1. Prof. T. N. Govindarajan Memorial Prize 2. T. S. Rajagopalan Memorial Prize	MBA
87	MS19A042	Pratik Arora	Dr V Kumar Prize	MBA
88	MS19A068	Dhikshitha P	1. Prof. T. N. Govindarajan Memorial Prize 2. Swati/Jayalakshmi Memorial Award	MBA

Ph.D.

89	CY19D005	Aneka K	VRS Rao Prize	Ph.D.
----	----------	---------	---------------	-------

4

Departments

4.1. Department of Aerospace Engineering

4.1.1. Introduction

The Department of Aerospace Engineering was established in 1969. It has been offering B.Tech., M.Tech., M.S. and Ph.D. programmes. The areas of teaching and research of the department are aerodynamics and flight mechanics, propulsion and combustion, and aerospace structures.

4.1.2. Academic Programmes

B.Tech./Dual Degree (B.Tech. + M.Tech.)/M.Tech./M.S. and Ph.D.

Students on roll as of September 2021 + M.S. and Ph.D. admission in January 2022

Programme	I Year	II Year	III Year	IV Year	V Year and Others	Total
B.Tech.	63	60	37	36	4+3	203
Dual Degree	10	10	20	21	24+4	89
M.Tech.	15	10				25
M.S.	18	18	16	4	1	57
Ph.D.	22	28	20	24	23+64	181
Total	128	126	93	85	124	555

Number of Post-Doctoral Fellows: 06

Students/Scholars who attended conferences/seminars/symposia/workshops abroad or in India

S.No.	Scholar	Roll No.	Conference/Seminar/Symposium/Workshop	Date and Venue	Financial Assistance from
Abroad					
1.	Harini Subramanian	AE17D700	25th International Congress of Theoretical and Applied Mechanics (virtual)	22-27 August 2021, virtual	IITM (for registration)

2.	V.S.R. Krishna Chinthala	AE16D001	ASCE Engineering Mechanics Institute International Conference (virtual)	22-24 March 2021, virtual	IITM (for registration)
3.	A. Bharadwaj S, S. P. Baskaran, S. Ghosh, V. Narayanaswamy	AE16D409	Numerical Investigation of Passive Flow Control Using Permeable and Wavy Walls in Oblique Shock Wave Boundary Layer Interaction, AIAA SciTech	11-15 and 19-20 January 2021, virtual	IITM (for registration)
4.	Kasturi Rangan MNLV and Santanu Ghosh	AE18D402	2D Immersed Boundary Solver for Compressible Laminar Flows, AIAA SCITECH	2-6 August 2021, virtual	IITM (for registration)
5.	Vijay Anand and Santanu Ghosh	AE19D010	ReNo Sensitivity of NACA 64A612 Airfoil, 66th ISTAM Congress	3-5 December 2021, virtual	IITM (for registration)
6.	Vishal Srivastav	AE18S026	13th ASPACC, 2021 (hybrid conference, participated online)	5-9 December 2021, ADNEC, Abu Dhabi	IITM (for registration)
7.	Krishna Prasad G	AE18S044	13th ASPACC, 2021 (hybrid conference, participated online)	5-9 December 2021, ADNEC, Abu Dhabi	IITM (for registration)
8.	Abhishek Kushwaha	AE18D407	ASME Turbo Expo Conference	7-11 June 2021, online	Office of Naval Research Global

India

1.	Avnish Mahendra Pandey	AE15D007	International Conference on Theoretical Applied Computational and Experimental Mechanics	20-22 December 2021, IIT Kharagpur (online)	IITM (for registration) Online event
----	------------------------------	----------	--	---	--

Students/Scholars who won outside prizes and awards

S. No.	Student/Scholar	Roll No.	Prize	Awarded by
1.	Ganesh Nampelly	AE19M017	INAE Innovative Student Projects Award for his project on "Eddy Resolving Simulations of Cavity Flows"	INAE
2.	Shruti Tandon	AE16B114	Innovative Students Project Award	INAE
3.	Shruti Tandon	AE16B114	Prof. S. L. Soni Award	ISEES
4.	Dr Samadhan A Pawar, Post- Doctoral Researcher	PDF	INAE Young Engineer Award (2021)	INAE

Students/Scholars who won Institute Convocation/Institute Day Prize

S.No.	Student/Scholar	Roll No.	Prize	Awarded by
1.	Sourabh Bhardwaj	AE18S014	Institute Research Award (MS)	IIT Madras
2.	Shruti Tandon	AE16B114	Prof. V. Mohan Raman Prize	Convocation

4.1.3. Faculty and Their Activities

Faculty and their Specialisation

Name and Qualifications	Major Areas of Specialisation
Professors	
Dr Ramakrishna, M., Ph.D. (University of Texas at Arlington)	Fluid mechanics, numerical methods, computer solutions
Dr Sriram, P., Ph.D. (Institute Chair Professor) (Georgia Institute of Technology)	Structural mechanics, fatigue and fracture, parallel computing
Dr Bhaskar, K., Ph.D. (IIT Madras)	Structural mechanics, plates and shells, composite structures
Dr Sujith, R.I., Ph.D. (Institute Chair Professor) (Georgia Institute of Technology)	Thermoacoustic instability, optical flow diagnostics
Dr Chakravarthy, S.R., Ph.D. (Georgia Institute of Technology)	Propulsion, combustion and fluid mechanics
Dr Velmurugan, R., Ph.D. (IIT Delhi)	Composite structures analysis and design, impact mechanics, 3D composites
Dr Luoyi Tao, Ph.D. (University of Pittsburgh)	Continuum mechanics and its applications (fluids, solids, multiphase flows, etc.)
Dr Murthy, H. S. N., Ph.D. (Purdue University) (Head)	Fatigue and fracture, non-destructive evaluation, tribology, advanced materials, elasticity
Dr Amit Kumar, Ph.D. (Case Western Reserve University)	Combustion, propulsion, fire research, CFD
Dr Ramakrishna, P. A., Ph.D. (Indian Institute of Science)	Combustion, propulsion
Dr Nandan Kumar Sinha, Ph.D. (IIT Bombay)	Dynamics and control of aerospace vehicles, aerial vehicle autonomy
Dr Sunetra Sarkar, Ph.D. (Indian Institute of Science)	Insect aerodynamics, fluid structure interaction, uncertainty quantification
Dr Sameen, A., Ph.D. (Indian Institute of Science)	Stability, transition and turbulence, computational fluid dynamics
Dr Muruganandam, T. M., Ph.D. (Georgia Institute of Technology)	Combustion, blowout dynamics, optical diagnostics, spectroscopic methods, vortex breakdown, dynamics of mode shifting, high speed flows, unsteady gas dynamics
Dr Sivasambu Mahesh, Ph.D. (Cornell University)	Structure-property modeling of aerospace materials
Dr Rajesh, G. Ph.D. (Andong National University, S. Korea)	Shockwave dynamics, ballistics, experimental gas dynamics
Dr K.V. Nagendra Gopal, Ph.D. (Indian Institute of Science)	Computational mechanics and multi-scale modeling, fracture mechanics, structural dynamics and aero elasticity
Associate Professors	
Dr Manikandan Mathur, Ph.D. (MIT, USA)	Instabilities and mixing, stratified and rotating flows, low-speed aerodynamics
Dr Santanu Ghosh, Ph.D. (North Carolina University)	Computational fluid dynamics, turbulent flows, shock/boundary-layer interaction, immersed-boundary methods

Dr Shantanu Shashikant Mulay, Ph.D. (Nanyang Technological University)	Continuum mechanics, large deformation of materials, fracture mechanics and plasticity
Assistant Professors	
Dr Ranjith Mohan, Ph.D. (Florida Atlantic University)	Helicopters, rotorcraft MAVs
Dr Shankar Ghosh, Ph.D. (University of Minnesota)	Hypersonic flow simulation, non-equilibrium effects, computational fluid dynamics, turbulent flows
Dr Shyam M. Keralavarma, Ph.D. (Texas A&M University)	Plasticity, ductile fracture, computational materials modeling, multiscale modeling
Dr Joel George, Ph.D. (IISc.)	Navigation, guidance and control of aerospace vehicles, multi-agent systems theory as applied to multiple unmanned aerial vehicle missions
Dr M. Senthil Murugan, Ph.D. (IISc.)	Aeromechanics, dynamics and aeroelasticity, stochastic systems
Dr Satadal Ghosh, Ph.D. (IISc.)	Guidance and control, motion planning
Dr Sriram Rengarajan, Ph.D. (IISc)	Experimental fluid dynamics, high speed flows, shockwave boundary layer interactions
Dr Vadlamani Nagabhushana Rao, Ph.D., University of Cambridge (Robinson College)	Computational fluid dynamics, transition to turbulence, turbo machinery, high order methods, high performance computing
Dr Bharath M. Govindarajan, Ph.D. (University of Maryland, College Park, USA)	Computational aerodynamics of flow past bodies, mathematical and numerical modelling, algorithms and their applications, overall design of aerospace vehicles
Dr Devaprakash Muniraj, Ph.D., (Aerospace Engineering, Virginia Tech, USA)	Dynamics and control of unmanned aircraft systems (UAS), security-aware design of UAS, verification of UAS
Dr Prashant Rawat, Ph.D. Mechanical Engineering, Indian Institute of Technology (Indian School of Mines) Dhanbad	Manufacturing and experimental analysis, polymer composites, biomimetics

Short-term courses/workshops/seminars/symposia/conferences organised by the faculty members

S.No.	Coordinator(s)	Title	Institution	Period
Seminar				
1.	Dr Santanu Ghosh	Hybrid Large Eddy Simulation/ Reynolds-Averaged Navier- Stokes Turbulence Modelling	SPARC (online) Lecture Series	30 March-7 April 2021
Workshop				
1.	Dr Nagabhushana Rao Vadlamani	Design and Analysis of Turbomachines (DST funded)		10 December 2021
Short-term course				
1.	Dr Nagabhushana Rao Vadlamani, Dr G Rajesh, Dr A Sameen	Theory and Analysis of Compressible Turbulence (AICTE approved)		22-27 March 2021

Short-term courses/workshops/seminars/symposia/conferences/trainings attended by the faculty members in academic institutions and public sector undertakings

S.No.	Faculty Member	Title	Institute	Period
Symposia				
1.	Dr Nagabhushana Rao Vadlamani	13th International ERCOFTAC ETMM symposium	Online	15-17 September 2021
2.	Dr T M Muruganandam	Diagnostics for Gas Turbine Engine Combustors	Talk as a part of an Indo-Taiwanese collaboration initiative	23 April 2021
3.	Dr T M Muruganandam	Advanced Gas Turbine Concepts for Futuristic Air Transport	Talk as part of Indo-Japanese collaborative STSI programme	25 June 2021
4.	Dr T M Muruganandam	Shock Induced Flow Separation Control in Supersonic Ducts	SPARC programme on Shock Wave Boundary Layer Interactions and Control	30 July 2021
Conferences				
1.	Dr Nagabhushana Rao Vadlamani	AIAA SciTech 2021	Online	11-22 January 2021
2.	Dr Nagabhushana Rao Vadlamani	GT India Conference 2021	Online	2-3 December 2021
3.	Dr T M Muruganandam	International colloquium on Shock Waves (online)	University of Queensland, Australia, and International Shock Waves Symposium	7-11 December 2021
Training				
1.	Dr T M Muruganandam	Training in Combustion Modeling	Whirlpool India Private Limited	7-22 January 2022

Special lectures delivered by the faculty in other institutions

S. No.	Faculty Member	Topic of Lecture	Institution	Date
1.	Dr T M Muruganandam	Concept of high-speed ground transport—hyperloop: future of passenger and freight transport	SRM University, Vijayawada, Andhra Pradesh	30 October 2021

Honours and awards obtained by faculty

S.No.	Faculty Member	Award	Awarded by	Awarded for	Date of Award
Honours					
1.	Prof. R. I. Sujith	Fellow of the Combustion Institute	The Combustion Institute	Accomplishments in research	2022
2.	Prof. R. I. Sujith	Distinguished Fellowship of the International Institute of Acoustics and Vibration (first Indian to receive this honour)	IIAV	Accomplishments in research	2021

Awards

1.	Induja P (Interdisciplinary Ph.D. Student)	Best Paper Award	ASME	Paper: Predicting the amplitude of thermoacoustic instability using universal scaling behavior	2021
2.	Induja P (Interdisciplinary Ph.D. Student)	The Cozzarelli Prize Final list	PNAS	Paper: Deep learning for early warning signals of tipping points	2021

Fellowships of academic and professional societies

S. No.	Faculty Member	Year of Admission
INAE		
1.	Dr R. I. Sujith	Elected in 2008
IASc (Indian Academy of Sciences)		
1.	Prof. R. I. Sujith	Elected in 2017

Journal editorial boards

S.No.	Faculty Member	Position	Journal Name
1.	Prof. R.I. Sujith	Editorial Advisory Board	<i>Chaos</i>

4.1.4. Design and Development Activities**New facilities added or major equipment procured**

S.No.	Equipment	Value (₹ In lakh)
1	Streamline Pro Constant Temperature Anemometer System	about 35
2.	Lab Scale Autoclave	84

Patents awarded

S.No.	Faculty Member	Topic of Patent
1.	Unni, V. R, Sujith, R. I., Krishnan, A., Marwan, N., Kurths, J.	System and methods for optimizing passive control of oscillatory instabilities in turbulent flows, priority date: February 27, 2018, US Patent number: US 10,895,382 B2 (Priority granted in 2021)

4.1.5. Research and Consultancy**Sponsored research projects (ongoing and new)**

S. No.	Title	Period	Funding Agency	Amount (₹ in lakh)	Coordinators
1.	Thermo-mechanical response of polymer matrix composites under high heating rates	December 2021-January 2024	Indian Space Research Organisation (ISRO)	23	Dr Shantanu Shashikant Mulay (PI)

2.	Crack growth studies in multi-angular composite specimens under fatigue loading	March 2021-March 2024	ARDB	140	Dr Shantanu Shashikant Mulay (Co-PI)
3.	Investigations on the effect of back pressure fluctuations on shock boundary layer interactions in isolator	23 July 2021-22 July 2023	ISRO	25.93	Dr R. Sriram
4.	Experimental investigations on unsteady separated flow at high speeds	4 March 2021-3 March 2024	IIT Madras, NFSG	30	Dr R. Sriram
5.	Experimental study of flame spread under convection in micro-gravity	July 2021-January 2023	ISRO	26.5	Prof. Muruganandam T M
6.	Experimental study of combustion in space environment	May 2019-October 2021	ISRO	28.6	Prof. Muruganandam T M
7.	Comprehensive experimental and simulation study on wildfire of BRICS countries: fire occurrence, spread and suppression	August 2020-August 2023	Department of Science & Technology	46.6	Prof. Raghavan V
8.	Theoretical prediction of minimum low-oxygen flammability limit of polymers in microgravity	February 2020-February 2023	Science and Engineering Research Board	6.6	Prof. Amit Kumar
9.	Network structure of transitions in thermo fluid systems in nature and engineering	26 January 2022-25 January 2024	Office of Naval Research Global	146	Prof. R. I. Sujith
10.	Aerosol-cloud-precipitation interaction: a missing link between cloud droplet to rain droplet formation (SP21221197AEI SRO002696)	23 July 2021-22 July 2024	ISRO	40	Prof. R. I. Sujith, Prof. Sachin S Gunthe, Prof. Srikrishna Sahu
11.	Rate dependent transition to thermoacoustic instability (SP21220059AES ERB002696)	10 March 2021-9 March 2024	Science and Engineering Research Board	67	Prof. R.I. Sujith
12.	Critical transitions in complex systems (SB20210845AEM)	4 February 2021-31 December 2026	Ministry of Human Resource and Development	169	Prof. R.I. Sujith
13.	J C Bose Fellowship (ASE1819160SER RISU)	11 March 2019-10 March 2024	Science and Engineering Research Board	95	Prof. R.I. Sujith
14.	Design and development of a morphing wing with hingeless control surface	May 2017-June 2022	DRDO	514.54	Dr K. V. Nagendra Gopal (PI), Dr R. Velmurugan, Dr Ranjith Mohan
15.	Microgrid technologies	February 2021-December 2026	MHRD	320	Dr Krishna Vasudevan (Electrical Engineering, PI)

Research-based industrial consultancy projects (ongoing and new)

S. No.	Faculty Member	Title	Industry	Amount (₹ in lakh)
1.	Prof. Murthy HSN, Dr Shantanu S. Mulay, Dr Shyam Keralavarma	Accelerated ageing studies on composite solid propellants	DRDL	83.01
2.	PI: Prof. PA Ramakrishna; Co-PIs: Prof. HSN Murthy, Prof. R Sriram	Design of the 80 mm rocket	Bharath Electronics Limited	314
3.	Dr Shyam Keralavarma	Experimental and numerical study of loading path effects on ductile fracture in nuclear steels	IGCAR, Kalpakkam	39.5

Faculty members' participation with other institution under MoU

S.No.	Faculty Member	Participation Details	University
1.	Prof. Amit Kumar	Coordinator from IITM	Hokkaido University

4.1.6. Other Activities of the Department Faculty visit

S.No.	Faculty Member	Purpose of Visit	Date and Venue
1.	Dr T Jayachandran	Visiting Faculty	Aerospace Department, IITM
2.	Dr Dipankar Das	Visiting Faculty	1 February 2023
3.	Lt. Gen. P. Ravi Shankar	Professor of Practice	28 February 2023
4.	Dr Pradeep. B. Navle	Professor of Practice	28 February 2023
5.	Dr Lazar T. Chitilappilly	Professor of Practice	28 February 2023
6.	Dr Rear Admiral A George	Professor of Practice	14 December 2021-30 September 2022
7.	Dr Philippe Odier	Visiting Faculty Under SPARC	Aerospace Department, IITM
8.	Dr Guoxing LU	Visiting Faculty Under SPARC	Aerospace Department, IITM
9.	Dr Dong Ruan	Visiting Faculty Under SPARC	Aerospace Department, IITM
10.	Dr Thierry Dauxois	Visiting Faculty Under SPARC	Aerospace Department, IITM

Students' Visit

S.No.	Students	Purpose of Visit	Date and Venue
1	137 TN Model School students	Campus visit	19 March 2022
2.	20 School children (and IIT JEE aspirants) from government schools in Tirunelveli	Campus visit	9 March 2022

4.1 Department of Applied Mechanics

4.2.1. Introduction

The Department of Applied Mechanics has been in existence since 1962 and became a full-fledged interdisciplinary graduate research department over the years. The department focuses on academic activities in three broad areas: biomedical engineering, fluid mechanics and solid mechanics. The department also offers minor streams for undergraduate students.

4.2.2. Academic Programmes

Ph.D., Direct Ph.D., M.S. (by research), M.Tech. (Computational and Experimental Mechanics), M.Tech. (Biomedical Engineering), M.Tech. (Clinical Engineering) and Inter-Disciplinary Dual Degrees in Biomedical Engineering and Computational Engineering

New discipline/branch introduced

The responsibility of running M.Tech. (Clinical Engineering) was transferred to the Applied Mechanics department from the BioTech department in 2021.

New courses introduced

S. No.	Course No.	Title
1	AM6535	Medical Imaging Aided Computational Bio-Fluid Dynamics
2	ID5090	Data Science of Complex Systems

New lab established

A High Rate Impact measurement (HRIM) facility was established. The facility can measure high strain rate deformations of materials for the purpose of modeling materials undergoing impact loading.

Students on roll as of September 2021 + M.S. and Ph.D. admission in January 2022

Programme	Year I	Year II	Year III	Year IV	Year V and Others	Total
M.Tech.	31	18	3	-	-	52
M.S.	29	22	23	9	1	84
Ph.D.	32	18	40	48	103	241
Total	92	58	66	57	104	467

Endowment prize instituted

- (1) Best Ph.D. thesis in Biomed Research
- (2) Best M.S. thesis in Biomed Research

Student/Scholar who attended conferences/seminars/symposia/workshops abroad/India

S.No.	Student/Scholar	Roll No.	Conference/Seminar/Symposium/Workshop	Date and Venue	Financial Assistance from
Abroad					
1	Harikrishna M	AM19S040	43rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society	1-5 November 2021, virtual	Institute
2	Amrutha V	AM18D002	5th Annual Scientific Conference on Machine Intelligence in Medical Imaging (C-MIMI)	19-20 September 2021, virtual	Institute

3	Sreelakshmi S	AM19D200	5th Annual Scientific Conference on Machine Intelligence in Medical Imaging (C-MIMI)	19-20 September 2021, virtual	Institute
4	Amrutha V	AM18D002	55th DGBMT Annual Conference on Biomedical Engineering	5-7 October 2021, virtual	Institute
5	Yedukondala Rao V	AM18D030	55th DGBMT Annual Conference on Biomedical Engineering	5-7 October 2021, virtual	Institute
6	Himanshu K	AM18D027	55th DGBMT Annual Conference on Biomedical Engineering	5-7 October 2021, virtual	Institute
7	Sreelakshmi S	AM19D200	55th DGBMT Annual Conference on Biomedical Engineering	5-7 October 2021, virtual	Institute
8	Vinothini S	AM18D005	55th DGBMT Annual Conference on Biomedical Engineering	5-7 October 2021, virtual	Institute
9	Vardhini P	AM17D013	55th DGBMT Annual Conference on Biomedical Engineering	5-7 October 2021, virtual	Institute
10	Ravi D	AM15D002	55th DGBMT Annual Conference on Biomedical Engineering	5-7 October 2021, virtual	Institute
11	Himanshu K	AM18D027	31st Medical Informatics Europe Conference on Public Health and Informatics	29-31 May 2021, virtual	Institute
12	Yedukondala Rao	AM18D030	31st Medical Informatics Europe Conference on Public Health and Informatics	29-31 May 2021, virtual	Institute
13	Satyavratan G	AM16D037	31st Medical Informatics Europe Conference on Public Health and Informatics	29-31 May 2021, virtual	Institute
14	Sreelakshmi S	AM19D200	31st Medical Informatics Europe Conference on Public Health and Informatics	29-31 May 2021, virtual	Institute
15	Sukanta Tulo	AM18D300	31st Medical Informatics Europe Conference on Public Health and Informatics	29-31 May 2021, virtual	Institute
16	Vinothini S	AM18D005	31st Medical Informatics Europe Conference on Public Health and Informatics	29-31 May 2021, virtual	Institute
17	Navaneethakrishna M	AM16D001	31st Medical Informatics Europe Conference on Public Health and Informatics	29-31 May 2021, virtual	Institute
18	Shib Sundar Banerjee	AM16D206	58th Rocky Mountain Bioengineering Symposium	8-10 April 2021, virtual	Institute
19	Sreelakshmi S	AM19D200	58th Annual Rocky Mountain Bioengineering Symposium	8-10 April 2021, virtual	Institute
20	Harikrishna M	AM19S040	58th Annual Rocky Mountain Bioengineering Symposium	8-10 April 2021, virtual	Institute
21	Divya Bharathi K	AM17D040	58th Annual Rocky Mountain Bioengineering Symposium	8-10 April 2021, virtual	Institute
22	Vardhini P	AM17D013	58th Annual Rocky Mountain Bioengineering Symposium	8-10 April 2021, virtual	Institute
23	Himanshu K	AM18D027	58th Annual Rocky Mountain Bioengineering Symposium	8-10 April 2021, virtual	Institute

24	Yedukondala Rao	AM18D030	58th Annual Rocky Mountain Bioengineering Symposium	8-10 April 2021, virtual	Institute
25	Sukantha K Tulo	AM18D300	58th Annual Rocky Mountain Bioengineering Symposium	8-10 April 2021, virtual	Institute
26	Thomas Jacob	AM18D600	Neuromatch Academy-Computational Neuroscience 2021	5-23 July 2021, virtual	Institute
India					
27	Uditya Saha	AM21D404	Workshop on Recent Advances in Photonics (WRAP)	4-6 March 2022, IIT Bombay	Project
28	Swetha Menon	AM17D028	Workshop on Recent Advances in Photonics (WRAP)	4-6 March 2022, IIT Bombay	Project
29	Kuzhandai Shamlee J	BT17D301	Workshop on Recent Advances in Photonics (WRAP)	4-6 March 2022, IIT Bombay	Project
30	Divagar M	BT17D302	Workshop on Recent Advances in Photonics (WRAP)	4-6 March 2022, IIT Bombay	Project
31	Kuzhandai Shamlee J	BT17D301	International Symposium on Instrumentation ISI 3	7-9 October 2021, IISc Bangalore, virtual	Institute
32	Swetha Menon	AM17D028	International Conference on Advanced Material for Better Tomorrow (AMBT)	13-17 July 2021, BHU, Varanasi, virtual mode	Institute
33	Noushad Bin Jamal	AM17D003	International Mechanical Engineering Congress & Exposition	1-5 November 2021, virtual mode	Institute
34	Noushad Bin Jamal	AM17D003	22nd National Mechanics Congress, Organiser: Cukurova University	6 September 2021, Turkey	Institute
35	Noushad Bin Jamal	AM17D003	International Conference on Innovations in Mechanical Engineering 2021, Republic of Belarus	16 September 2021, Belarus	Institute
36	Brahmadathan V B	AM19D024	Virtual Seminar on Applied Mechanics (VSAM) 2021	9 January 2021, virtual	Institute
37	Ashish Pandey	AM17D031	VSAM 2021	9 January 2021, virtual	Institute
38	KSK Sudhamsu	AM15D200	VSAM 2021	9 January 2021, virtual	Institute
39	Ambrish Biredar	AM18S029	VSAM 2021	9 January 2021, virtual	Institute
40	Yogesh Dasari	AM18S034	VSAM 2021	9 January 2021, virtual	Institute
41	Ambrish Biredar	AM18S029	VSAM 2021	28-29 May 2021, virtual	Institute
42	Agesh Markose	AM14D009	VSAM 2021	30-31 July 2021, virtual	Institute

43	Kalyan Subrahmanyam Basa	ED17S300	VSAM 2021	30-31 July 2021	Institute
44	KSK Sudhamsu	AM15D200	VSAM 2021	30-31 July 2021	Institute
45	KSK Sudhamsu	AM15D200	Recent Advances in Modeling of Inelastic Response and Integrity Assessment of Metals (Workshop)	10-20 January 2022	Institute
46	Noushad Bin Jamal	AM17D003	Recent Advances in Modeling of Inelastic Response and Integrity Assessment of Metals (Workshop)	10-20 January 2022	Institute
47	Ashish Pandey	AM17D031	Recent Advances in Modeling of Inelastic Response and Integrity Assessment of Metals (Workshop)	10-20 January 2022	Institute
48	Brahmadathan V B	AM19D024	Recent Advances in Modeling of Inelastic Response and Integrity Assessment of Metals (Workshop)	10-20 January 2022	Institute
49	Saurabh Mangal	AM21S090	Recent Advances in Modeling of Inelastic Response and Integrity Assessment of Metals (Workshop)	10-20 January 2022	Institute
50	Pundan Kumar Singh	AM21D043	Recent Advances in Modeling of Inelastic Response and Integrity Assessment of Metals (Workshop)	10-20 January 2022	Institute
51	Rishabh	AM21S009	Recent Advances in Modeling of Inelastic Response and Integrity Assessment of Metals (Workshop)	10-20 January 2022	Institute

Students/scholars who won outside prizes and awards

S.No.	Student/Scholar	Roll No.	Prize	Prize Awarded by
1	Pooja Vardhini Natesan	AM19D750	PMRF	Government of India
2	Pragyandipta Mishra	AM19D751	PMRF	
3	Debjit Kundu	AM20D700	PMRF	
4	Monisha Yuvaraj	AM20D750	PMRF	
5	Debadutta Subudhi	AM17D206	Best Conference Paper Award	IEEE Eurasia Conference on Biomedical Engineering, Healthcare & Sustainability
6	Divagar M	BT17D302	Gandhian Young Technology Innovation (GYTI -SRISTI) award	BIRAC
7	Sandeep Koundinya	AM18D033	CII-PMRF	
8	Swetha S Menon	AM17D028	SITARE GYTI Appreciation Award, 2021	
9	Ratan Kumar Chaudhary	AM19D013	SITARE GYTI Appreciation Award, 2021	

Students/Scholars who won Institute Convocation/Institute Day Prize

S.No.	Student/Scholar	Roll No.	Prizes	Donor
1	Selvaraj S	AM19M022	Prof B V A Rao Endowment Prize	Institute
2	Selvaraj S	AM19M022	Sushruta Award	Institute
3	Aghna Mukherjee	AM16D406	Prof. V Ramamurti Award	Institute
4	Arnab Kumar Mallik	AM17S032	Prof S Radhakrishnan Award	Institute
5	Anand R	AM15D026	Prof S Radhakrishnan Award	Institute
6	Amritesh Kumar	AM17D203	Keshav Rangnath Award	Institute
7	Rahul Kumar	AM15D404	Keshav Rangnath Award	Institute
8	Saravanakumar D	AM15D014	Keshav Rangnath Award	Institute

4.2.3. Faculty and Their Activities

Faculty

Name and Qualifications	Major Areas of Specialisation
Professors	
M. S. Sivakumar, Ph.D. (Head)	Smart materials and structures, inelasticity/plasticity, fatigue of materials
S. Ramakrishnan, Ph.D.	Biomedical instrumentation, machine learning and informatics, medical device regulations and standards
Anuradha Banerjee, Ph.D.	Fracture and fatigue analysis in metals, composites, bio-materials, brittle materials
A. Arockia Rajan, Ph.D.	Smart materials, composites, material modelling, computational mechanics and experimental mechanics
K Arul Prakash, Ph.D.	CFD and heat transfer, LES and related techniques, thermal hydraulics, cooling technologies, biofluid dynamics
Arun Kumar Thittai, Ph.D.	Ultrasound imaging, HIFU application in therapy, acoustic radiation force application in mechanics, photoacoustics
A P Baburaj, Ph.D.	Coherent structures in turbulent convection, interfacial phenomena and transport across membranes
C. Lakshmana Rao, Ph.D.	Impact mechanics, fracture mechanics, modelling of smart materials, numerical approach
Mahesh V Panchagnula, Ph.D.	Spray combustion and atomization, surface tension phenomena, multiphase flows, active particles and systems
M. Manivannan, Ph.D.	Haptics, medical simulation, biomechanics, virtual reality, computational geometry and physiology
B.S.V. Prasad Patnaik, Ph.D.	Computational fluid dynamics, CFD tools for FSI, micro, bio-fluid flow systems
M. Ramasubba Reddy, Ph.D.	Bio-signal processing, bio-instrumentation
K. Ramesh, Ph.D.	Digital photomechanics, fracture mechanics, computer applications in experimental mechanics
Sarith P. Sathian, Ph.D.	Rarefied gas flows and nanofluidics
Sayan Gupta, Ph.D.	Vibrations, nonlinear dynamics, probabilistic mechanics, structural reliability

N. Sujatha, Ph.D.	Biomedical imaging, speckle metrology, non-invasive tissue characterisation
S. Vengadesan, Ph.D.	CFD and turbulence modelling - basics, advanced topics and applications to engineering problems, FSI, biofluid flows
Abhijit Chaudhuri, Ph.D.	Modelling hydrothermal systems, water waves, mass transfer in heterogeneous systems
Pijush Ghosh, Ph.D.	Nanomechanics, biomaterials, mechanics of thin films, molecular dynamics simulation

Associate Professors

Babji Srinivasan, Ph.D.	Cognitive systems engineering, neuroergonomics, human cyber physical systems, physiological cyber physical systems
V V Raghavendra Sai, Ph.D.	Biosensor for healthcare, fibre optic sensor and instrumentation, nanotechnology
Rinku Mukherjee, Ph.D.	Applied aerodynamics—flow modelling, unsteady wake phenomenon, dynamic stall and formation flight, CFD
Satyanarayanan Seshadri, Ph.D.	Aerosol mechanics, air quality - sensors, control equipment, renewable thermal energy - WHR/solar
Shaikh Faruque Ali, Ph.D.	Vibration and its controls, smart structures and energy harvesting
Vagesh D Narasimhamurthy, Ph.D.	CFD, DNS, turbulence, transition, bluff body flows, premixed combustion, multiphase flows
S K M Varadhan, Ph.D.	Neural control of human movement, neuro mechanics and biomechanics

Assistant Professors

Anubhab Roy, Ph.D.	Hydrodynamic stability, microhydrodynamics, geophysical flows, living fluids
Ganesh Tamadapu, Ph.D.	Mechanics of elastomers, encapsulated microbubbles, tensegrity structures
Ilaksh Adlakha, Ph.D.	Mechanical behavior of advanced materials, development of structure-property relationships, computational material science, data science for mechanics of materials
Saumendra Kumar Bajpai, Ph.D.	Cell mechanics, tissue mechanics, biophysics of tumours, vascular mechanics

Adjunct Faculty

Dr André Bénard	Sustainable manufacturing and materials processing, multiphase flow and heat transfer
Dr Aranyak Chakravarty	Nuclear reactor safety, heat transfer multiphase flow, computational fluid dynamics, pulmonary fluid mechanics
Dr Arun R Srinivasa	Plasticity of metals and polymers, thermomechanics of dissipative processes, dislocation dynamics, Cosserat continua, design and dynamics of compliant mechanisms, computational modeling of defects, fracture and fatigue processes
Dr B. Jayanand Sudhir	Brain bypass surgery, computational fluid dynamics, Moyamoya disease, arteriovenous malformations, aneurysm surgery, skull base surgery, pediatric neuro-oncology
Dr Billy Todd	Statistical mechanics of non-equilibrium systems, non-equilibrium molecular dynamics and computational nanofluidics
Dr Cemal Basaran	Unified mechanic theory and atomistic simulation

Dr Danesh K Tafti	Computational fluid dynamics dynamic geometries, high performance parallel computing, fluid-structure interaction, dense particulate flows and impact modeling, discrete element method
Dr Trygve Skjold	Computational fluid dynamics (CFD) tool FLACSTM/Advanced modelling of complex physical phenomena in the commercial software product FLACSTM
Dr Steven M LaValle	Robotics, sensing, motion planning, cyber-physical systems, control theory, computational geometry, artificial intelligence, computational biology, computer vision, computer graphics, virtual reality, filtering, sensor fusion, planning algorithms
Dr Pothukuchi Harish	Thermal hydraulics of nuclear systems, multiphase flows, fluid structure interaction
Visiting Faculty	
Dr S Pandian	Experimental aerodynamics
Dr Balasubramaniam Natarajan	Cyber physical systems

Short-term courses/workshops organised by faculty members

S.No.	Coordinator(s)	Title	Period
Seminars			
1	Dr C Lakshmana Rao	Virtual Seminar on Applied Mechanics (VSAM)	January 2021
2	Dr C Lakshmana Rao	Virtual Seminar on Applied Mechanics (VSAM)	May 2021
3	Dr C Lakshmana Rao	Virtual Seminar on Applied Mechanics (VSAM)	July 2021
Short-term course			
1	Dr C Lakshmana Rao	AICTE-approved short-term course: Recent Advances in Modeling of Inelastic Response and Integrity Assessment of Metals	10-20 January 2022

Short-term courses/workshops/seminars/symposia/conferences/training attended by the faculty members in academic institutions and public sector undertakings

S.No.	Faculty Member	Title	Institution	Period
Workshops				
1	Dr Babji Srinivasan	Organizing Committee Data Analytics, Risk and Technologies (DART) Lab	IIT Madras	3-4 September 2020
2	Dr M Manivannan	Summer Bootcamp in Augmented Reality called "ATL Tinkerpreneur" Bootcamp Session - AR/ VR	NITI-Aayog ATAL Tinkering Labs	10 June 2022
3	Dr M Manivannan	NeuroHack21	India (IITM, CMC Vellore), Australia, UK, New Zealand	28 June-16 July 2021
Short-term course				
1	Dr Babji Srinivasan	Business Analytic Models	National Railway Technological Institute (NRTI), Vadodara	November 2020-January 2021

Special lectures delivered by the faculty in other institutions

S.No.	Faculty Member	Topic of Lecture	Institution	Date
1	Dr C Lakshmana Rao	Predicting Fatigue Life Without Curve Fitting: Unified Mechanics Theory	Invited lecture on 1st Metals Webinar Metal Fatigue	19 January 2022
2	Dr C Lakshmana Rao	Fracture Mechanism of Concrete Structures	ATAL AICTE Faculty Development Program FDP (online), Organised by the Civil Engineering Department, University College of Engineering, Osmania University	6-10 December 2021
3	Dr S Ramakrishnan	Innovating Medical Equipment: Role of Lab Testing & Involving Clinicians	Postgraduate Institute of Medical Education & Research, Chandigarh	19 February 2022
4	Dr S Ramakrishnan	Medical Device Regulations & Standards	IRIS Webinar Series on Medical Device Technology	25 August 2021
5	Dr S Ramakrishnan	Instrumentation, signals and Images for the Evaluation of Physiological Systems	AICTE-National Level Five-day Faculty Development Programme, NIT Trichy	16 June 2021
6	Dr S Ramakrishnan	Recent trends in Biomedical Instrumentation and Assistive Technology	SPARC Three-day workshop, NIT Trichy	28 May 2021
7	Dr S Ramakrishnan	Hypertension: An overview	IRIS webinar on "Blood Pressure Measurement: Regulations and Protocols"	12 October 2021
8	Dr Babji Srinivasan	Attended and delivered a talk	7th IEEE World Forum on the Internet of Things, New Orleans, USA	14 June-31 July 2021
9	Dr Babji Srinivasan	Attended and delivered a talk	Renewable Energy Grid Integration—Challenges and Operational Strategies, NIT Trichy	18-22 January 2021
10	Dr Babji Srinivasan	Attended and delivered a talk	ATAL Faculty Development Program focusing on advanced control systems, NIT Kozhikode	1-5 February 2021
11	Dr Babji Srinivasan	Attended and delivered a talk	IEEE International Conference on Computing, Power & Communication Technologies (GUCON), New Delhi	2-4 October 2020
12	Dr Babji Srinivasan	Attended and delivered a talk	FDP program on Modern Control Techniques for Power & Energy systems, NIT Kozhikode	7-12 September 2020
13	Dr Babji Srinivasan	Attended and delivered a talk	FDP program on Modern Control Techniques for Power and Energy systems, NIT Kozhikode	7-12 September 2020

Honours obtained by faculty

S.No.	Faculty Member	Award	Awarded by	Awarded for	Date of Award
1	Dr M Manivannan	Coordination Member	TIH iHub Drishti, IIT Jodhpur	Leader in VR, AR, Haptics	2020-2021
2	Dr M Manivannan	Committee Member	SERB	Leader in VR, AR, Haptics	

Journal Editorial Boards

S.No.	Faculty Member	Position	Journal Name
1	Dr Sayan Gupta	Associate Editor	<i>Sadhana</i>
2	Dr M Manivannan	Associate Editor	<i>Springer Nature Journal of Medicine, Biological Engineering, Computers (MBEC)</i>
3	Dr M Manivannan	Associate Editor	<i>Frontiers in Virtual Reality</i>
4	Dr M Manivannan	Associate Editor	<i>Frontiers in Robotics and AI</i>
5	Dr A Arockiarajan	Editor	<i>ISSS Journal of Micro and Smart Systems</i>

4.2.4. Design and Development Activities

Brief and specific details of process/instruments/equipment/software designed and developed

- Automated fiber bending machine - for the fabrication of U-bent fiber optic sensor probes for biosensing devices
- Point-of-care (PoC) diagnostic device - A new device with high photosensitivity was designed to meet the requirement of biomolecule detection for tuberculosis diagnosis from urine or pollutant detection such as heavy metal ions in water.
- Array fiberoptic Absorbance Biosensor (ArFAB) - for multiplexed detection of analytes including pathogenic bacteria in water and food or panel of biomarkers for diagnosis of diseases such as ovarian cancer
- Efficient sensing scheme for small molecule detection - to enable detection of small molecules down to very low concentrations, which otherwise involves sophisticated techniques such as mass spectroscopy
- Attomolar analyte sensing technologies - these label-free and labelled plasmonic fiber optic sensing strategies were realised for clinical diagnostics, environmental monitoring and pharmaceutical industry related applications

New facilities added or major equipment procured

S.No.	Equipment	Value (₹ in lakh)
1.	14+1 node HPC cluster	160.0
2.	Acoustic Emission Sensors	20
3.	Split Hopkinson Pressure Bar test facility (HRIM Lab)	70.0

Patents filed

S.No.	Faculty Member	Topic of Patent
1	Dr Raghavendra Sai V V	Metal organic framework coated U-bent optical fibers as hexavalent chromium sensor
2	Dr Raghavendra Sai V V	Non-invasive real time assessment of hepatic macrovesicular steatosis in liver donors
3	Dr Arockiarajan A	Magneto-electric based magnetic sensor and method thereof
4	Dr Raghavendra Sai V V	A fiber optic biosensor for ultra-low trace detection of Ochratoxin-A in food sample
5	Dr Arul Prakash K, Dr Vengadesan S	A novel gyroid tube design concept for fluid-to-fluid heat exchange applications

6	Dr Babji Srinivasan	Multi-user eye tracking apparatus for unconstrained environments
7	Dr Raghavendra Sai V V	Fiber optic measurement device
8	Dr Raghavendra Sai V V	Systems and methods for detection of severe acute respiratory syndrome coronavirus 2
9	Dr Satyanarayanan Seshadri	Controlling admission volume of inlet gas for fixed RPM operation of rotary or reciprocating expander
10	Dr Satyanarayanan Seshadri	Controlling admission volume of inlet gas for fixed RPM operation of rotary or reciprocating expander
11	Dr Satyanarayanan Seshadri	Controlling admission volume of inlet gas for fixed RPM operation of rotary or reciprocating expander
13	Dr Raghavendra Sai V V	A method and an apparatus to fabricate fiber optic sensor probes
14	Dr Satyanarayanan Seshadri	A material processing system and method thereof

Patents awarded

S.No.	Faculty Member	Topic of Patent
1	Dr Arun K Thittai	Pulse echo ultrasound imaging method and device based on the use of elliptical back projection beamforming and diverging beam transmit
2.	Dr Arockiarajan A, Dr Shaikh Faruque Ali	Hybrid wing device and method of actuation thereof
3	Dr Satyanarayanan Seshadri	Online device or instrument and methodology to measure fly ash particulate optically in industrial stack emissions independent of moisture
4	Dr Arockiarajan A	Distributed disc structured magnetoelectric composite device

4.2.5. Research and Consultancy Sponsored Research Projects (Ongoing and New)

S.No.	Title	Period	Funding Agency	Amount (₹ in lakh)	Coordinators
1	Complex Systems and Dynamics Group	2021-2026	Ministry of Education	255	Sayan Gupta
2	Virtual Reality & Haptics	February 2021-December 2026	Ministry of Education	139	M Manivannan, Kaushik Mitra (EE), Mansi Sarma (EE), Srinivas Chakravarthi (BT), R K Amit (MS), Lata Dyaram (MS)
3	VAJRA Visiting Faculty - Dr Srinivasan A Mandayam	March 2018-March 2021	Department of Science & Technology	34	M Manivannan
4	Immersive Virtual Reality Based Nursing Skills Training Simulation	May 2018-May 2022	Uchhatar Avishkar Yojana - IIT Madras	100	M Manivannan
5	Mechanics of Coated Microbubbles for Targeted Drug Delivery	12 May 2016-11 May 2022	Department of Science & Technology	35.00	Ganesh Tamadapu
6	Airblast injector Development for Next Gen Engine	30 May 2017-31 July 2022	Defence Research and Development Organisation	243.17	Mahesh Panchagnula, Srikrishna Sahu (ME), Vagesh D Narasimhamurthy, Satyanarayanan Seshadri

7	Role of Hand Dominance and Movement Observation in Intramanual Transfer of Motor Learning	7 August 2018-6 August 2022	Department of Science & Technology	44.36	Varadhan S K M
8	Evaluation of Steam Oxidation Behavior of Materials under Ultra Super Critical Steam Conditions Using a Purpose-Built Test Rig	11 October 2018-25 September 2022	Advanced Research Centre for Powder Metallurgy & Materials, International	81.93	Satyanarayanan Seshadri, Kamaraj M (MM) and Subramanya Sarma V
9	Combined Experimental and Modelling Study of Stress Corrosion Cracking in Ferritic Steels	15 March 2019-14 August 2022	Science and Engineering Research Board	49.45	Ilaksh Adlakha
10	Development of Novel Low-Cost Heat Spreader for High-Power Monolithic Microwave Integrated Circuit (MMIC) Amplifiers	15 January 2019-14 January 2023	Impacting Research Innovation and Technology - IMPRINT	106.65	Baburaj A P, Murty B S (MM), K Arul Prakash
11	Development of Wankel Expander/Compressor Based Heat Pump System for High Temperature Applications	7 May 2018-6 May 2022	Uchhatar Avishkar Yojana - IIT Madras	158.12	Satyanarayanan Seshadri, Krishna Vasudevan
12	Immersive Virtual Reality Based Nursing Skills Training SimulationP	7 May 2022-6 May 2022	Uchhatar Avishkar Yojana - IIT Madras	100.00	Manivannan M
13	Development of Novel SMA Bearing Supports and Retrofit for Enhanced Performance and Durability of Rotating Machinery	6 October 2018-5 October 2022	Uchhatar Avishkar Yojana - IIT Madras	79.40	Sivakumar M S, Srikanth Vedantam (ED), A Arockiarajan
14	Development of Non-Invasive and Affordable Liver-Stiffness Imaging Device & Clinical Evaluation of its Utility for Metabolic Disorders	23 August 2019-22 August 2022	Department of Science & Technology	59.22	Arun Kumar Thittai
15	1 Lab - 1 School: Taking STEM to Rural Schools in India	27 June 2019-26 June 2022	Department of Science & Technology	32.31	Pijush Ghosh
16	Non-invasive Transdermal Collagen and Perfusion Sensor for Cosmetic and Diagnostic Applications	3 September 2019-2 September 2022	Department of Science & Technology	43.44	Sujatha N, M Ramasubba Reddy
17	Investigation of Nanoscale Heat Transport at Solid-liquid Interfaces for Engineering Tailored Nanostructures in Thermal Interface Systems	15 May 2020-14 May 2023	Ministry of Education	48.44	Sarith P Sathian
18	Compressed Sensing - Based Affordable Ultrasound Scanner Platform	30 March 2019-29 July 2022	Science and Engineering Research Board	30.29	Arun Kumar Thittai

19	Transition to Turbulence in Rough Couette Flows	27 March 2019-26 September 2022	Science and Engineering Research Board	26.77	Vagesh D Narasimhamurthy
20	Developing Interface Between Clay and Concrete Applying Polymers	6 March 2020-5 June 2023	Science and Engineering Research Board	46.00	Pijush Ghosh
21	Development of Assessment Protocols for Aspiring Athletes Using Surface Electromyography Signals	11 February 2020-10 February 2023	Science and Engineering Research Board	20.28	Ramakrishnan S
22	Aerosol Transport in the Deep Lung to Enable Personalized Pulmonary Drug Delivery (P2D2)	30 April 2019-30 September 2022	Scheme for Promotion of Academic and Research Collaboration	97.24	Satyanarayanan Seshadri, Mahesh Panchagnula
23	Estimation of Thermal Load Due to Mixing in 10T Vertical Mixer	1 May 2019-31 July 2022	Indian Space Research Organisation	28.40	Arul Prakash K
24	Nirmaan - Enabling Entrepreneurship	1 September 2019-31 August 2023	Alumni Association	300.25	Satyanarayanan Seshadri, Boby George (EE), Mahesh Panchagnula, Ashwin Mahalingam (CE)
25	Fatigue Life Characterization of Hybrid Composites Under Various Processing Conditions	1 October 2020-30 September 2023	Council of Scientific and Industrial Research	19.50	Arockiarajan A
26	Field Deployment and Scale-up of Volumetrically Controlled Wankel Steam Expander for Use with Low-Pressure Solar and Process Steam	1 February 2021-31 January 2024	Department of Science & Technology	203.97	Satyanarayanan Seshadri and Krishna Vasudevan (EE)
27	Development of Smart Nano-kit for Rapid, Automated and Ultra-sensitive Detection of Pesticide Traces in Agricultural Samples	1 February 2021-31 Jan 2023	Department of Science & Technology	11.10	Sujatha N
28	A Rapid Point-of-Care Fiber-Optic Biosensor (P-FAB) Device for Early Detection of COVID-19 Using Saliva	20 October 2020-19 June 2022	Indo-US Science & Technology Forum	12.50	Raghavendra Sai V V
29	Fundamental Limitations for Unordered Signal Sensing in the Presence of Noise	21 February 2020-20 February 2023	Science and Engineering Research Board	6.40	Babji Srinivasan
30	Studies on a Model Alveolar Duct with Expanding/ Contracting Walls	7 January 2021-6 January 2023	Science and Engineering Research Board	22.37	Mahesh Panchagnula

31	Improving In-vivo Reliability of Reabsorbable Magnesium Implant Materials Using Biopolymer and Graphene Oxide Nanosheets	28 February 2020-27 February 2023	Science and Engineering Research Board	10.05	Sujatha N
32	A Novel CFD-DEM Approach to Model Particle Scale Heat Transfer	18 February 2021-17 February 2023	Science and Engineering Research Board	15.35	Vengadesan S, B V S S S Prasad
33	Demonstration of Multi-WAP Results Leading to Novel, Validated Multiplexed, Label-Free Fiberoptic Biosensor Array System for Waterborne Pathogen Detection (DEMO-Multi-WAP) - Phase 2	3 August 2020-2 August 2022	Indo-German Science & Technology Centre	107.65	Raghavendra Sai V V, Sivarama Krishnan (PH), Sivasrinivasu Devadula (ME)
34	Development of HPC Tools for CFD-based Patient specific Management of Cerebral Aneurysms	23 March 2021-22 March 2023	National Supercomputing Mission	17.87	Prasad Patnaik B S V
35	Teach in 10: Discovering Talents in Rural School Students	25 February 2021-24 February 2024	Department of Science & Technology	46.55	Pijush Ghosh
36	Development and Applications of (i) Spatially Resolved NMR and (ii) Overhauser DNP and Low-Field Relaxometry	25 November 2021-24 November 2024	Indian National Science Academy	13.80	Arun Kumar Thittai
37	Development of a Diagnostic Device for Affordable and Early Detection of Pre-Eclampsia	15 November 2021-14 November 2022	Indian Council of Medical Research	21.23	Raghavendra Sai V V
38	Fatigue Studies on Influence of Hybridization and Patch Lay-up Configuration of Post-Impact Response on Repaired Composites for Defence Applications	17 January 2022-16 January 2025	Armament Research Board	58.95	A Arockiarajan and Shaikh Faruque Ali
39	Studying the Role of Pulmonary Endothelial Micro-Vesicles in Ventilator-Induced Lung Injury Under Antihypertension Therapy	31 December 2021-30 December 2024	Science and Engineering Research Board	60.98	Saumendra Kumar Bajpai
40	Investigation of Dust-Free Regions Near Interfaces in Turbulent Convection	27 December 2021-26 December 2024	Science and Engineering Research Board	45.48	Baburaj A P and Anubhab Roy
41	CFD Analysis and Prediction of Nuclear Reactor Safety Under the Impact of Flow-Induced Vibration in Rod Bundles	1 February 2022-31 January 2024	Science and Engineering Research Board	22.37	Prasad Patnaik B S V

42	Prediction of Interfacial Thermal Resistance at Solid-Liquid Interfaces Using Molecular Dynamics Simulations and Machine Learning	28 January 2022-27 January 2025	Science and Engineering Research Board	28.59	Sarith P Sathian and Pallab Sinha Mahapatra
43	Explosive Resonant Interactions with Singular Eigenfunctions?	21 February 2022-20 February 2025	Science and Engineering Research Board	6.60	Anubhab Roy
44	Development of an Improved Multivariate Machine Learning Solution with Additional Features for Non-Invasive Anemia Detection	13 December 2021-12 December 2024	Science and Engineering Research Board	10.05	Raghavendra Sai V V
45	Computational Fluid Dynamics Based Tools to the Aid of Clinical Decision Making in the Management of Intracranial Aneurysms	22 October 2021-22 October 2024	Science and Engineering Research Board	34.65	Prasad Patnaik B S V
46	A Non-Linear Constitutive Model Based Finite Element Method for Magneto-Electro-Elastic-Thermal (MEET) Based Functional Composites	21 February 2022-20 February 2025	Science and Engineering Research Board	6.60	Arockiarajan A
47	AMPP Academic Scholarship Program	1 March 2022-29 February 2024	NACE Foundation	1.50	Ilaksh Adlakha
48	Cognitive, Workload Assessment of Teams Operating in Human-In-The-Loop Cyber Physical Systems Using Physiological and Behavioral Measures	April 2021-April 2024	New Faculty Scheme	25	Babji Srinivasan
49	Cognitive Systems Engineering Approaches to Understand Operator Behavior in High-Risk Industries	August 2020-August 2022	New Faculty Initiation Grant	5	Babji Srinivasan
50	Fundamental limitations for unordered signal sensing in the presence of noise	February 2020-February 2023	Science and Engineering Research Board	6.4	Babji Srinivasan
51	Evaluating and Enhancing the Defence Overall Reliability of a Submarine Sonar System	August 2021-August 2023	Research and Development	132.5	Babji Srinivasan

Industrial Consultancy Projects (Ongoing and New)

S.No.	Faculty Member	Title	Industry	Amount (₹ in lakh)
Ongoing				
1	Pijush Ghosh	Dip Coater (Multi-Vessel), 1. UTM (Low Load) 2. Contact Angle Testing	Common Code	5.90
2	Pijush Ghosh	Dip Coater (Multi-Vessel), 1. UTM testing 2. Contact Angle Testing	Common Code	5.00

3	Arockiarajan A, Sayan Gupta, Shaikh Faruque Ali	Numerical Studies on Automotive Steering System	RANE NSK Steering Systems Private Limited	51.17
4	Arul Prakash K	Energy Efficient Tyre Curing Process	Apollo Tyres Limited	42.42
5	Pijush Ghosh	1 Lab - 1 School	Verizon Data Services India Private Limited	82.53
6	Pijush Ghosh	Nano Indentation Testing Facility	Common Code	5.00
7	Pijush Ghosh	Nano Indentation Testing Facility	Common Code	5.00
8	Raghavendra Sai V V	Fiber Optic Sensor Fabrication Facility	Common Code	11.80
9	Raghavendra Sai V V, Subrahmanyam A (PH)	Fiber Optic Sensor Fabrication Facility	Common Code	41.80
10	Manivannan M	Novel Technology for Training in Reduction of Infant Mortality Rate in Rural India	India Ideas Com Limited	350.00
11	Satyanarayanan Seshadri	Desktop Water Jet System for Offshore Applications	Engineers India Limited	22.00
12	Varadhan S K M	Validation of Sensors to Identify and Measure Knee Varus Thrust, an Indicator of Osteoarthritis Development and Progression	University of Sydney	2.45
13	Arockiarajan A	Mechanical testing of samples	Common Code	5.00
14	Arockiarajan A	Mechanical testing of samples	Common Code	5.00
15	Lakshmana Rao C, Kanjarla Anand Krishna (MM)	Life Prediction of Aeroengine Alloys Under Creep and Fatigue Loading Conditions Using Damage Mechanics Approach	Defence Metallurgical Research Laboratory	59.08
16	Arul Prakash K	Intranet-Enabled Software for the Assessment of Coronary Heart Disease	Swansea University	3.12
17	Lakshmana Rao C	Monitoring and Improving Health of Rural SC Communities Using IT tools	Tide Water Oil Company (India) Limited	38.51
18	Arul Prakash K	Skill development training programme	IITM Pravartak Technologies Foundation	2.83
19	Satyanarayanan Seshadri	IITM Research Park Consultancy on renewable energy	IIT Madras Research Park	7.08
20	Manivannan M	Skill training in virtual reality	Tides Foundation	37.06
21	Manivannan M	Mapping of Varmam Points on 3D Virtual Body and Development of Virtual Body Simulator	Central Council For Research in siddha	14.16
22	Babji Srinivasan	Training in Advanced Analytics	Gnamam Institute for Training in Advanced Analytics Private Limited	23.60
23	Sayan Gupta	Reduced order modelling	Caterpillar India Engineering Solutions Private Limited	7.08

24	Arockiarajan A	Experimental study of self-loosening of bolted joints	Caterpillar India Engineering Solutions Private Limited	7.22
25	Arockiarajan A and Shaikh Faruque Ali	Design and wetting of water storage tanks	Novarius Global (India) Private Limited	2.95
26	Satyanarayanan Seshadri	Environment and sustainable development	Kotak Mahindra Bank Limited	2000.00
New				
27	Abhijit Chaudhuri, Abdus Samad (OE)	Design of Easily Deployable Wave Powered RO Desalination System	University of Hawaii, USA	17.49
28	Satyanarayanan Seshadri	Raftar Sponsorship	Indian Oil Corporation Limited	10.00
29	Manivannan M	Skill training in virtual reality	Tides Foundation	37.06
30	Manivannan M	Mapping of Varmam Points on D Virtual Body and Development of Virtual Body Simulator	Central Council for Research in Siddha	14.16
31	Babji Srinivasan	Training in Advanced Analytics	Gnanam Institute for Training In Advanced Analytics Private Limited	23.60

RBIC Projects (Ongoing and New)

S.No.	Faculty Member	Title	Industry	Amount (₹ in lakh)
1	V V Raghavendra Sai	Plasmonic Fiberoptic Competitive Immunosensor for Tetrahydrocannabinol - A Proof of Concept Study	Ricovr Healthcare Inc.	20.50
2	Arockiarajan, Sayan Gupta and Faruque Ali	Numerical Studies on Automotive Steering System	Rane NSK	30

Retainer Consultancy (Ongoing and New)

S.No.	Faculty Member	Title	Industry	Amount (₹ in lakh)
1	Sayan Gupta	Reduced order modeling	Caterpillar	6

Exchange programme with other universities under MoU

S.No.	Student	Purpose	University
1	Himanshu Kumar	DAAD Exchange Programme	RWTH Aachen University, Germany

New MoUs undertaken with

- Cancer Institute (WIA), Chennai, to pursue research on onco-diagnostics and therapeutics
- Dr Rela Institute, Chennai, to pursue research and development in the diagnosis of liver steatosis during liver transplant.
- ICMR-Vector Control Research Centre (VCRC) to initiate research and development in diagnosis of vector-borne diseases.

Faculty members' participation with other institution under MoU

S.No.	Faculty Member	Participation details	University/Institution
1	Dr V V Raghavendra Sai	Secured funding from SERB for onco-diagnostics and therapeutics	WIA, Chennai
2	Dr V V Raghavendra Sai	Development of a diagnostic device for liver steatosis	Dr Rela Institute, Chennai
3	Dr N. Sujatha	DST Project	SRMC, Chennai

4.3 Department of Biotechnology

4.3.1. Introduction

The Department of Biotechnology at IIT Madras was founded in 2004 with a vision to be recognised as a department of international repute with a strong interdisciplinary research and teaching base in biological sciences and engineering involving an active collaboration with industries and health care institutions. The department is housed in the Bhupat and Jyoti Mehta School of Biosciences.

The first batch of B.Tech and dual degree students in Biotechnology graduated in July 2006 and 2007, respectively. The thrust areas of research are bioprocess engineering, computational biology, chemical biology and medical biotechnology related to cancer and cardiovascular aspects. Faculty members of the department hold several patents and are involved in active industrial consultancy. Several collaborative and technology transfer projects

are currently running with many industries and the department has collaborative research projects with hospitals. We have set up a Centre of Excellence in Bioprocess Engineering to develop knowledge and expertise in this domain and Department of Science & Technology (DST) funded National Facility to Identify Potential Drug Targets through Cellular Dynamics and FIST facility for infrastructure facilities. DBT funded for a programme support on Cancer Biology earlier and now DST is supporting a National Cancer Tissue Biobank. A Bioinformatics Centre has also been set up with funding from the Department of Biotechnology (DBT), Government of India. IITM Bio-incubator initiated by our department (funded by DBT's Biotechnology Industry Research Assistance Council) offers lab and office space, including equipment, technical support and centralised utilities for process and product development.

4.3.2 Academic Programmes

The department currently offers programmes Dual Degree B. Tech and M. Tech in Biological Engineering (5 years), Dual Degree B.S. and M.S. in Biological Sciences (5 years), M.S. (by research) and Ph.D. In addition, it runs M.Tech (Clinical Engineering) and Ph.D. (major: Biomedical Devices and Technology) programmes jointly with Sree Chitra Tirunal Institute of Medical Sciences and Technology, Trivandrum and Christian Medical College, Vellore.

New courses introduced

S. No.	Course No.	Title
1	BT5490	Epigenetics

New laboratory established

Epigenetics and Plasmodium Biology laboratory

Students on roll as of September 2021 + M.S. and Ph.D. admission in January 2022

Programme	I Year	II Year	III Year	IV Year	V Year and Others	Total
Dual Degree	-	80	-	73	192	345
M.Tech.	-	11	-	21	2	34
M.S.	-	7	-	1	9	17
Ph.D.	12	34	5	15	115	181
Total	12	132	5	110	318	577

Students/Scholars who attended conferences/seminars/symposia abroad/India

S. No.	Student/Scholar	Roll No.	Conference/Seminar/Symposia/Workshop	Date and Venue	Financial Assistance from
Abroad					
1	Sarayu M	BT16D001	International Conference on Plant Systems Biology and Biotechnology (ICPSBB)	14-17 June 2021, Bulgaria	IITM
India					
1	Sarayu M	BT16D001	International Conference on Bioengineering Solutions for Healthcare, Food, Energy and Environment (BSHFEE)	9-10 April 2021, IIT Jodhpur	IITM

4.3.3. Faculty and Their Activities

Faculty

Name and Qualifications	Major Areas of Specialisation
Professors	
Dr Guhan Jayaraman (Head)	Metabolic engineering, synthetic biology, downstream processing
Dr G.K. Suraishkumar	Understanding and manipulation of biological systems, reactive species and their applications - cancer therapy, nanotoxicology, bio-energy
Dr S. Mahalingam	Molecular virology and cell biology
Dr Rama Shanker Verma	Stem cell biology and tissue regeneration, cancer therapeutics
Dr V. Srinivasa Chakravarthy	Computational neuroscience
Dr N. Satyanarayana Gummadi	Bioprocess engineering
Dr K. Subramaniam	Developmental biology
Dr Amal Kanti Bera	Ion channels and signaling
Dr Sanjib Senapati	Computational biophysics
Dr Nitish R. Mahapatra	Cardiovascular genetics, molecular medicine
Dr A. Gopala Krishna	Signal transduction and protein biochemistry
Dr M. Michael Gromiha	Bioinformatics, computational biology, biophysics
Dr K. Chandraraj	Biomass conversion, bio-remediation, functional foods
Dr Rayala Suresh Kumar	Cancer biology
Dr V. Kesavan	Chemical biology
Dr R. Baskar	Developmental genetics
Dr Madhulika Dixit	Vascular biology
Associate Professors	
Dr N. Manoj	Structural biology
Dr Himanshu Sinha	Systems genetics, clinical data analysis
Dr Karthik Raman	Computational systems biology
Dr Vignesh Muthuvijayan	Biomaterials and tissue engineering
Dr Smita Srivastava	Plant biotechnology and bioprocess engineering

Dr Athi Narayanan	Experimental/computational protein folding
Assistant Professors	
Dr R. Murugan	Theoretical biology and biophysics
Dr Hamsapriya Mohanasundaram	Protein solution thermodynamics
Dr Vani Janakiraman	Infection biology/infectious diseases
Dr Nirav Pravinbhai Bhatt	Modeling, control, and optimisation of biochemical reaction systems, systems biology, integrated bio-process manufacturing
Dr Shantanu Pradhan	Biomaterials, tissue engineering, cancer and vascular diseases
Dr Ninitha A J	Cardiovascular biology, treatment strategies for hypertension and heart failure, metabolic syndrome, obesity, diabetes and diabetic retinopathy
Dr Nathiya Muthalagu	Cancer biology, mouse models of cancer
Dr Santhosh Sethuramanujam	Visual information encoded by neuronal circuits, neuronal communication, information processing in dendrites
Dr Greeshma Thrivikraman	Engineered tissue and organ equivalents, stem cell based regenerative medicine, microenvironment manipulation for morphogenesis and disease modeling
Dr Arumugam Rajavelu	epigenetics, plasmodium, host-pathogen interactions
Visiting Faculty	
Dr M.S. Narayanan	Cancer biology, signal transduction, apoptosis
Emeritus Scientist/ Emeritus Professor	
Dr D. Karunakaran	Cancer biology, signal transduction, apoptosis

Short-term courses/workshops/seminars/symposia/conferences organised by faculty members

S. No.	Coordinator(s)	Title	Period
Symposia			
1	Dr Karthik Raman, Dr Gandham Phanikumar (MME) and Dr Sivaram Ambikasaran (MA)	HPC Symposium on AI and Biology	4-7 January 2022
2	Dr Himanshu Sinha, Dr Manikandan Narayanan (CSE) and Dr Karthik Raman	3rd IBSE International Symposium: Clinical Genomics to Systems Medicine: Computational Approaches for Transforming Healthcare	1-4 February 2022
Workshop			
1	Dr Karthik Raman	IITM-EMBL-EBI Winter School 2021	6-9 December 2021

Short-term courses/workshops/seminars/symposia/conferences/training attended by faculty members in academic institutions and public sector undertakings

S. No.	Faculty Member	Title	Institution	Period
Conferences				
1	Dr Karthik Raman	Health Informatics Summit 2021	Indraprastha Institute of Information Technology Delhi (IIIT-D)	16-19 October 2021
2	Dr Karthik Raman	90th Annual Meeting of the Society of Biological Chemists (SBC), India	SBC, India	16-19 December 2021

Special lectures delivered by the faculty in other institutions

S. No.	Faculty Member	Topic of Lecture	Institution	Date
1	Dr M. Michael Gromiha	Systematic approaches for developing computational tools in bioinformatics	NIT, Warangal	13 May 2021
2	Dr M. Michael Gromiha	Computer-aided drug design: molecular docking	SVCE, Chennai	19 May 2021
3	Dr M. Michael Gromiha	Protein sequence analysis, protein stability, protein interactions	Anna University, Trichy	1-4 June 2021
4	Dr Karthik Raman	Introduction to constraint-based modelling of metabolic networks, at AICTE ATAL Online FDP on Computational Synthetic and Systems Biology	IIT Guwahati	28 July 2021
5	Dr M. Michael Gromiha	Systematic approaches for developing computational tools in bioinformatics	IIT Dhanbad	26 July 2021
6	Dr Karthik Raman	Introduction and application of synthetic biology in everyday life	iGEM	18 August 2021
7	Dr M. Michael Gromiha	Integrating computational approaches and experimental data to understand the binding affinity of protein-protein complexes	IIIT Delhi	17 October 2021
8	Dr Karthik Raman	Tutorial on "Metabolic Modelling of Microbial Interactions in Microbiomes"	ISCB Academy	22 October 2021
9	Dr G. K. Suraishkumar	Improving cell-level productivity of microalgae in photobioreactors with reactive species	NIT Warangal	27 October 2021
10	Dr G. K. Suraishkumar	Integrity	Customs Officers, Chennai	1 November 2021
11	Dr M. Michael Gromiha	Bioinformatics: Concepts and Applications	Tokyo Institute of Technology, Japan	7 December 2021
12	Dr M. Michael Gromiha	Computational approaches for predicting disease causing mutations in proteins	Nirmala College for Women, Coimbatore	25 February 2022
13	Dr M. Michael Gromiha	Next Generation Sequence Analysis	Vels University, Chennai	9 March 2022
14	Dr M. Michael Gromiha	Concepts and Applications of Bioinformatics	Vel-Tech High Tech Engineering College, Chennai	15 March 2022
15	Dr M. Michael Gromiha	Computational approaches for predicting disease causing mutations in proteins	Vellore Institute of Technology	31 March 2022

Visits abroad by faculty

S. No.	Faculty Member	Country Visited	Date	Purpose of visit	Funding from
1	Dr Arumugam Rajavelu	Singapore	22-26 February 2022	To present our research work in SingMalNet conference	CPDA and Project
2	Dr Karthik Raman	Bangladesh	14-18 March 2022	Meetings with universities and government officials	Office of Global Engagement

Awards obtained by faculty

S. No.	Faculty Member	Award	Awarded by	Awarded for	Date of Award
1	Dr G.K. Suraishkumar	Expert, National Monitoring Committee on Virtual Labs	IIT Delhi		
2	Dr G. K. Suraishkumar	Expert, Board of Studies, Biotechnology	PSG College of Technology, Coimbatore		
3	Dr M. Michael Gromiha	ASC-Masila Vijaya Award	Chennai Academy of Sciences	Excellence in Scientific Research and Publications	24 March 2022
4	Dr Karthik Raman	Institute Research and Development Award	IIT Madras	Excellence in Research and Development	17 May 2021

Journal editorial boards

S.No.	Faculty Member	Position	Journal Name
1	Dr Nathiya Muthalagu	Associate Editor	<i>Cancer Medicine</i>
2	Dr M. Michael Gromiha	Associate Editor	<i>BMC Bioinformatics</i>
3	Dr M. Michael Gromiha	Associate Editor	<i>Frontiers in Bioinformatics</i>
4	Dr M. Michael Gromiha	Associate Editor	<i>Bioinformatics Advances</i>
5	Dr M. Michael Gromiha	Associate Editor	<i>Biomed Informatics</i>
6	Dr M. Michael Gromiha	Associate Editor	<i>Biologia</i>
7	Dr M. Michael Gromiha	Section Editor	<i>Current Protein and Peptide Science</i>
8	Dr M. Michael Gromiha	Editorial Board Member	<i>Scientific Reports</i>
9	Dr M. Michael Gromiha	Editorial Board Member	<i>Biology Direct</i>
10	Dr M. Michael Gromiha	Editorial Board Member	<i>Genes</i>
11	Dr M. Michael Gromiha	Editorial Board Member	<i>Journal of Bioinformatics and Computational Biology</i>
12	Dr M. Michael Gromiha	Editorial Board Member	<i>Current Computer Aided Drug Design</i>
13	Dr Smita Srivastava	Editor	<i>Frontiers in Plant Science</i>
14	Dr Karthik Raman	Editorial Board Member	<i>Scientific Reports</i>
15	Dr Karthik Raman	Editorial Board Member	<i>Microbial Biotechnology</i>
16	Dr Karthik Raman	Editorial Advisory Board Member	<i>ACS Synthetic Biology</i>

4.3.4. Design and Development Activities

New facilities added or major equipment procured

S. No.	Equipment	Value (₹ In lakh)
1	-80 degree deep freezer	7.5

Patents filed

S.No.	Faculty Member	Topic of Patent
1	Dr Rama S Verma	A chemically defined method to derive functional hepatocytes
2	Dr Srinivasa Chakravarthy V	Detection system for Mudrabharati - a novel unified fingerspelling system for Indic scripts
3	Dr Srinivasa Chakravarthy V	Investigating the efficacy of exploration as a stroke paradigm in a bilateral network
4	Dr Mukesh Doble	Polyelectrolyte nano-emulsion system to reduce and recycle grey water effluents
5	Dr Rama S Verma	Incorporated antioxidant embelin in decellularized amniotic membrane for diabetic wound healing
6	Dr Srinivasa Chakravarthy V	Soft attention based saliency map generation for object detection
7	Dr Smita Srivastava	A process for production of active biomass of <i>Viola odorata</i> in bioreactors for medicinal applications like anti-cancer, anti-microbial, anti-malarial, anti-inflammatory and antioxidant
8	Dr Mukesh Doble	A novel approach for fabrication of pure/macroporous apatitic bone cement under mild conditions for non-load bearing orthopaedic applications

Patents awarded

S. No.	Faculty Member	Topic of Patent
1	Dr Srinivasa Chakravarthy V	A system and method for recognition of handwritten Telugu characters
2	Dr Chandra T S	Electrospun nanofibrous membrane for sensing food spoilage
3	Dr Smita Srivastava	An optimized bioprocess for enhancing camptothecin yield from endophytes
4	Dr Chandra T S	A handheld portable device for coating electrospun polymer nanofibers on non-conductive surfaces
5	Dr Mukesh Doble	A process for reducing cloud point in hydrocarbon fuels using nanostructured mannosylerythritol lipids and method of producing the same
6	Dr Vignesh Muthuvijayan	Non-leaching bacterial and platelet anti-adhesive bioactive surface
7	Dr Mukesh Doble	Composition comprising mannosylerythritol lipids and method of use for coating on surfaces
8	Dr Mukesh Doble	Novel magnesium nanocomposite based ready to use injectable bone cement for bone regeneration/controlled drug delivery/scaffold for tissue regeneration
9	Dr Guhan Jayaraman	Method for direct quantification of nucleic acids in real time qPCR
10	Dr Mukesh Doble	Conjugated beta-glucan nanoparticles for targeted delivery applications
11	Dr Srinivasa Chakravarthy V	Bharati-a universal script for Indian languages with applications in online handwritten character recognition

4.3.5. Research and Consultancy Sponsored research projects (ongoing and new)

S. No.	Title	Period	Funding Agency	Amount (₹ In lakh)	Coordinators
1	Exploring the role of LRRC8B Protein in Cellular Calcium Signaling	2018-2022	Department of Science & Technology	30.20	Dr Amal Kanti Bera
2	Regulation of Mitochondrial Transcription Factors and Mitochondrial Biogenesis in Essential Hypertension	2018-2022	Department of Science & Technology	31.30	Dr Nitish R Mahapatra
3	Validation of the Effects of Functional Genetic Variations in Chormogranin a Locus	2018-2022	Department of Biotechnology	69.60	Dr Nitish R Mahapatra
4	Exploring CRISPR-Cas9 Technology to Reprogram Cellular Metabolic Pathways in Disease Models	2018-2022	Department of Biotechnology	78.92	Dr Suresh Kumar Rayala
5	Re-purposing of Anti-hypertensive Drugs (Beta Blockers) and NSAIDS in Oral Squamous Cell Carcinoma: Newer Applications to be Explored in Preclinical Studies	2018-2022	Science and Engineering Research Board	10.05	Dr Suresh Kumar Rayala
6	A Comprehensive Framework for Treatment of Stroke of Upper Extremity by Combining Computational Modeling, Movement Behavior and Gaming	2018-2022	Uchhatar Avishkar Yojana - IIT Madras	312.00	Dr Srinivasa Chakravarthy V
7	Inspire Faculty Award to Dr Ninitha Margret Julfiya A J	2018-2023	Department of Science & Technology	71.00	Dr Ninitha A J
8	Molecular and Genetic Bases of Cardiovascular Diseases: Key Roles for Chromogranin A	2019-2022	Scheme for Promotion of Academic and Research	65.27	Dr Nitish R Mahapatra
9	Development and Characterization of Second Generation Chimeric Antigen Receptor T-Cell Tagged with Riboflavin Photo-Activation to Specifically Target Adherent Cancers, Using Patient Derived HSCs Maintained Under Microgravity	2019-2022	Defence Research and Development Organisation	25.20	Dr Rama Shanker Verma
10	Enabling the Targeted Delivery of Novel P21 Activated Kinase 1 (Pak1) Inhibitors to Aggressive Glioblastoma Cells by Conjugating to Tumor Specific Peptides Selected form Phage Peptide Library	2019-2022	Department of Science & Technology	82.22	Dr Suresh Kumar Rayala
11	To Study the Mir-34 Mediated Signalling Pathways Involved in Radio-Modulation of Cervical Cancer Cells	2019-2022	Indian Council of Medical Research	24.04	Dr Karunagaran D
12	Targeting Toll-like Receptor-4 Signaling by Disulfiram in Colon Cancer Stem Cells	2019-2022	Indian Council of Medical Research	21.00	Dr Karunagaran D

13	Lectin-based Targeting of a Nanostructured Nordihydroguaiaretic Acid Analog to Asialoglycoprotein Receptor in Hepatocytes for Therapeutic Delivery in Liver Cancer	2019-2022	Indian Council of Medical Research	19.22	Dr Suresh Kumar Rayala
14	Targeting Histone H2AX Phosphorylation (H2AX) with Peptides to Circumvent Repair After Radiation Induced DNA Damage in Breast Cancer Cells	2019-2022	Board of Research in Nuclear Sciences	37.36	Dr Suresh Kumar Rayala
15	Altering Meiotic Recombination Rates with Phytohormones: A Study in Arabidopsis	2019-2022	Department of Biotechnology	89.13	Dr Baskar R
16	Bioprocess Strategies to Enhance Xylitol Production from Lignocellulosic Biomass	2019-2022	Science and Engineering Research Board	34.80	Dr Sathyanarayana N Gummadi
17	Elucidation of Mechanism of Drug Resistance Associated with Breast Cancer and Ovarian Cancer Through Network Biology Approach	2019-2022	Science and Engineering Research Board	10.05	Dr Michael Gromiha M
18	Functions of N-6 Adenine Methylation (m6A) in mRNA Plasticity of Plasmodium Falciparum at Various Developmental Stages in RBC: Exploring Novel Drug Targets	2019-2022	Department of Biotechnology	31.39	Dr Arumugam Rajavelu
20	Identification and Characterization of Non-enzymatic RAS Effector, RASSF7 as a Potential Transcription Factor	2019-2023	Department of Biotechnology	86.67	Dr Mahalingam S
21	The Genomic and Evolutionary Landscape of Azole Resistance in Budding Yeast	2019-2023	Indo French Centre for the Promotion of Advanced Research	69.57	Dr Himanshu Sinha
22	Regulatory Influence of Renin-Angiotensin-Aldosterone System on Renal Expression of Renalase	2020-2022	Department of Biotechnology	17.42	Dr Nitish R Mahapatra
23	In Vivo Osteogenic and Angiogenic Repair Mechanisms Influenced by Mesenchymal Stem Cells Using Cell Sheet Based Tissue Engineering	2020-2022	Science and Engineering Research Board	26.46	Dr Suresh Kumar Rayala
24	Unraveling the Design Principles and the Roles of Negative Auto Regulatory and Dual Feedback Motifs in the Transcription Factor Networks	2020-2022	Science and Engineering Research Board	8.15	Dr Rajamanickam Murugan
25	Preterm Birth Risk in Pregnant Women and Prediction Using Machine Learning Models	2020-2022	Biotechnology Industry Research Assistance Council	21.70	Dr Himanshu Sinha
26	Effect of Insulin Resistance on Angiogenic Ability of Circulating Leukocytes	2020-2023	Science and Engineering Research Board	62.84	Dr Madhulika Dixit

27	Dissecting the Evolutionary Tug-of-War: Sequence Patterns and Interaction Networks Governing the Folding-function Continuum	2020-2023	Science and Engineering Research Board	70.07	Dr Athi Narayanan N
28	Solution to the Fully Competitive Michaelis-Menten Enzyme Kinetic Rate Equations	2020-2023	Science and Engineering Research Board	6.60	Dr Rajamanickam Murugan
29	Beyond Sequence Approximations in Ising-Like Models of Protein Folding: The Block-Matrix Method	2020-2023	Science and Engineering Research Board	6.60	Dr Athi Narayanan N
30	Transcriptional and Post-transcriptional Regulation of Mitochondrial Antioxidant, Peroxiredoxin-3 in Diabetic Cardiomyopathy	2020-2023	Department of Health Research (ICMR)	46.15	Dr Nitish R Mahapatra
31	A Study on Pollen Competition in Arabidopsis Hybrids	2020-2023	Department of Science & Technology	46.43	Dr Baskar R
32	Lipid Transfer Mechanism of Cholesteryl Ester Transfer Protein: Role of Triglycerides	2020-2023	Department of Biotechnology	24.94	Dr Sanjib Senapati
33	GenomeIndia: Cataloguing the Genetic Variation in Indians	2020-2023	Department of Biotechnology	140.00	Dr Himanshu Sinha
34	Shear Stress Effects on Metastasizing Cancer Cells - Toward Better Cancer Therapies	2020-2023	Science and Engineering Research Board	52.48	Dr Suraishkumar G K
35	Mapping of NCOR1 and DLK1 Interaction in the Endometrial Cancer: A Regulation via Notch Signalling	2020-2023	Science and Engineering Research Board	10.05	Dr Suresh Kumar Rayala
36	Structure-Function Relationship of Phosphate Solubilizing Glucose Dehydrogenase from Novel Pseudomonas SP	2020-2023	Science and Engineering Research Board	10.05	Dr Gopala Krishna A
37	Metabolic Engineering Approaches for Hyaluronic Acid Production in Lactococcus Lactis	2020-2023	Science and Engineering Research Board	10.05	Dr Guhan Jayaraman
38	Understanding the Functional Dynamics and Drug Efflux Mechanism of ABC Transporters	2020-2023	Science and Engineering Research Board	10.05	Dr Athi Narayanan N
39	Integrated Approach for Understanding the Binding Affinity of Protein-Nucleic Acid Complexes: Development of Database, Tools and Applications to Diseases	2020-2023	Science and Engineering Research Board	38.47	Dr Michael Gromiha M

40	Structure Based Drug Design and Mechanistic Studies for COVID-19	2020-2023	Science and Engineering Research Board	10.05	Dr Michael Gromiha M
41	Exploring the Potential Role of Poly (ADP-Ribose) Polymerase (PARP) 6 in the Development of Hypertension Induced Cardiomyopathy	2020-2023	Science and Engineering Research Board	50.07	Dr Ninitha A J
42	Can Extended H-bonding Network Due to Protic Ionic Liquids Facilitate the Growth and Stability of Discrete Water Domains in Hydrophobic Environment?	2020-2023	Science and Engineering Research Board	42.83	Dr Sanjib Senapati
43	Identification of Therapeutic Targets for Glioblastoma by Single-Cell RNA-Seq Analysis	2020-2023	Department of Health Research (ICMR)	42.53	Dr Michael Gromiha M
44	Three-Dimensional Tissue-Engineered Platform for Investigation of Obesity-Induced Inflammation, Insulin Resistance and Breast Cancer	2020-2025	Department of Biotechnology	42.50	Dr Shantanu Pradhan
45	INCENTIVE: Indo-European Consortium for Next Generation Influenza Vaccine Innovation	2020-2025	Department of Biotechnology	265.24	Dr Himanshu Sinha
46	Nanoengineered Self-Healing Bioink for Diabetic Wound Repair	2021-2022	Council of Scientific and Industrial Research	10.47	Dr Vignesh Muthu Vijayan
47	Elucidating the Regulation of Heat Shock Proteins in Hypertension	2021-2022	Indian Council of Medical Research	7.19	Dr Nitish R Mahapatra
48	Development of PAK1 Inhibitors as Therapeutics During Treatment of Triple Negative Breast Cancer	2021-2022	Indian Council of Medical Research	7.19	Dr Suresh Kumar Rayala
50	Tissue-Engineered Model of Endothelial Plasticity and Breast Cancer Progression	2021-2023	Science and Engineering Research Board	25.30	Dr Shantanu Pradhan
51	Identification of Genes that Promote Proliferation of Germline Stem Cells in Caenorhabditis Elegans	2021-2023	Department of Biotechnology	45.68	Dr Subramaniam K
53	Development of Improved Process for Production of 3-Hydroxypropionic Acid from Crude Glycerol and Lignocellulosic Biomass Derived Glucose	2021-2024	Department of Biotechnology	33.93	Dr Guhan Jayaraman
54	Understanding Microbial Interactions in Microbiomes Through Metabolic Modelling	2021-2024	Science and Engineering Research Board	6.60	Karthik Raman
55	Sequential Motor Skills: A Dual System View	2021-2024	Indo-French Centre for the Promotion of Advanced Research	32.90	Dr Srinivasa Chakravarthy V

56	Studies on a Novel Nanotechnology Based Stem Cell Therapy for the Treatment of Alzheimer's Disease	2021-2024	Department of Health Research (ICMR)	41.37	Dr Rama Shanker Verma
57	An Integrative Approach for Understanding the Structure, Function and Dynamics of HIV Protease: Applications to Design Novel Inhibitors	2021-2024	Department of Science & Technology	34.55	Dr Michael Gromiha M
58	Role of Wild Type and Disease-relevant Mutant LRRC8B Proteins in ER Stress Related Signaling	2021-2024	Department of Biotechnology	77.91	Dr Amal Kanti
59	Efficacy of HSP90 Mitochondrial Targeting of Withanolide A & Withaferin A in Hepatocellular Carcinoma	2021-2024	Science and Engineering Research Board	10.05	Dr Michael Gromiha M
60	Carbon Based Materials with High Antibacterial Activity for Face Mask Application to Combat COVID-19	2021-2024	Science and Engineering Research Board	10.05	Dr Sathyanarayana N Gummadi
61	Understanding the Interplay between P21 Activated Kinase 1 and Pancreatic Stellate Cells of Tumor Microenvironment in Deregulating Cellular Energetics in Cancer Cells	2021-2024	Science and Engineering Research Board	64.38	Dr Suresh Kumar Rayala
62	Elucidating the Functions of CHROMO Domains - H3K9me3 Interactions in Plasmodium Parasites with Special Focus on Virulence Genes	2021-2024	Science and Engineering Research Board	58.43	Dr Arumugam Rajavelu
63	An Integrative Approach for Understanding the Structure, Function and Dynamics of HIV Protease: Applications to Design Novel Inhibitors	2021-2024	Department of Science & Technology	34.55	Dr Michael Gromiha M
68	Carbon Based Materials with High Antibacterial Activity for Face Mask Application to Combat Covid-19	2021-2024	Science and Engineering Research Board	10.05	Dr Sathyanarayana N Gummadi
69	Decoding the Genetic Program that Regulates Stress-Induced Quiescence in C. Elegans Germline Stem Cells	2021-2026	Wellcome Trust	169.90	Dr Subramaniam K
70	Setting Up of a High End Imaging Facility (FIST Program 2019)	2021-2026	Department of Science & Technology	203.00	Dr Guhan Jayaraman
71	Understanding the Mechanism of MYC Induced Pancreatic Neuroendocrine Tumours and its Clinical Implications	2021-2026	Department of Biotechnology	42.50	Dr Nathiya Muthalagu
72	Integrated Miniaturized Microfluidic Biosensors for Molecular Diagnostics of Zoonotic Infections at the Point-of-Care Using Padlock Probes and Rolling Circle Amplification (ZooPoC-ID)	2021-2026	Department of Biotechnology	113.60	Dr Narayanan Srinivasan

75	Setting up of a High End Imaging Facility (FIST Program 2019)	2021-2026	Department of Science & Technology	203.00	Dr Guhan Jayaraman
76	Exploring the Role of Leucine-rich repeat-containing 8B (LRRC8B) Protein in Cognition	2022-2022	Indian Council of Medical Research	41.82	Dr Amal Kanti
77	Exploring the Role of Leucine-rich repeat-containing 8B (LRRC8B) Protein in Cognition	2022-2022	Indian Council of Medical Research	41.82	Dr Amal Kanti
78	Study the Aberrant Functions of Altered Metabolic Pathway Enzymes in Artemisinin Drug Resistant Plasmodium Falciparum	2022-2023	Indian Council of Medical Research	12.35	Dr Arumugam Rajavelu
79	Establishment of Institutional Resource Centre for Manpower training in "Regulatory Guidelines for Medical Devices and Research Ethics	2022-2023	Indian Council of Medical Research	36.99	Dr Madhulika Dixit
80	A Method to Improve Modelling of Protein-Protein Complexes Using AlphaFold2 and Filtered Coevolutionary Signals	2022-2024	Department of Biotechnology	14.99	Dr Michael Gromiha M
81	Development of Hydrogels Based on Zwitterionic Polymers with Antibiofouling Properties to Mitigate Foreign Body Response on Implant Surface	2022-2024	Department of Biotechnology	14.99	Dr Vignesh Muthu Vijayan
82	Development of Biomimetic Composite Scaffolds Using Natural Biopolymers, Bioactive Molecules to Promote Vascularization and Diabetic Wound Healing	2022-2024	Science and Engineering Research Board	22.37	Dr Vignesh Muthu Vijayan
84	A Method to improve Modelling of Protein-protein Complexes using AlphaFold2 and Filtered Coevolutionary Signals	2022-2024	Department of Biotechnology	14.99	Dr Michael Gromiha M
85	Development of hydrogels based on zwitterionic polymers with antibiofouling properties to mitigate foreign body response on implant surface	2022-2024	Department of Biotechnology	14.99	Dr Vignesh Muthu Vijayan
86	Mechanisms and Functions of Methyl-binding Proteins in Virulence Genes Expression of the Human Malaria Parasite	2022-2025	Department of Biotechnology	76.71	Dr Arumugam Rajavelu
87	ID-PPP-OTN: Infrastructure and Development of Technologies for Pre-clinical evaluation, Product establishment and Platform integration for Onco-theranostic applications	2022-2025	Science And Engineering Research Board	207.07	Dr Guhan Jayaraman

Industrial consultancy projects (ongoing and new)

S. No.	Faculty Member	Title	Industry	Amount (₹ In lakh)
1	Dr Smita Srivastava	EDII-Innovation voucher programme	Entrepreneurship Development and Innovation Institute	2.00
2	Dr Smita Srivastava	Green manufacturing of value-added food and pharma products from sugar industry wastes	Kothari Sugars and Chemicals Limited	47.58
5	Dr Suresh Kumar Rayala	Comparative analysis of Bacillus clausii liquid suspension products : Quantitative and qualitative approach	Allianz Biosciences Private Limited	7.38

RBIC Projects (ongoing and new)

S. No.	Faculty Member	Title	Industry	Amount (₹ In lakh)
1	Dr Suraishkumar G K	Generation of energy from photosynthesis through the use of quinones	Vaayuneer Sciences Private Limited	20.00
2	Dr Srinivasa Chakravarthy V	Development of an optical character recognition system for poor-quality document images of news articles and advertisement pages in global English newspapers	Mobius Knowledge Services Private Limited	5.03
3	Dr Srinivasa Chakravarthy V	Knowledge Graph Fusion - fusing information from several sources into a knowledge graph	Conxai Technologies GmbH	19.08
4	Dr Chandra TS	RBIC project proposal on "Purification and packing of Beta glucan"	Theevanam Additives and Nutraceuticals Private Limited	2.00

Retainer consultancy projects (ongoing and new)

S.No.	Faculty Member	Title	Industry	Amount (₹ In lakh)
1	Dr Srinivasa Chakravarthy V	Developing Temporal Convolution Neural Networks Comprising Nonlinear Oscillators for Non-Destructiv	Robert Bosch Engg & Business Solutions	7.00
2	Dr Sathyanarayana N Gummadi	Prepare a Starch Based Bio Plastic to Address Solid Waste Accumulation Caused by Single Use Plastic-Food Wrapper	Wood India Engineering and Projects Private Limited	40.00
3	Dr Vignesh Muthu Vijayan	Shraman Foundation	Shraman Foundation	476.25
4	Dr Vignesh Muthu Vijayan	Cholamandalam Scholarship for BSc students	Cholamandalam Investment and Finance Company Limited	10.00

5	Dr Vignesh Muthu Vijayan	Walmart fee waiver for students	WM Global Technology Services India Private Limited	110.00
6	Dr Smita Srivastava	Anti-cancer Drug Camptothecin via Novel Microbial Fermentation Route	L&T Technology Services Limited	50.00
7	Dr Srinivasa Chakravarthy V	LKQ India-funded Science Popularization and Career Guidance for School Children	LKQ India Private Limited	5.04
8	Dr Smita Srivastava	Plant Cell and Tissue Culture Facility for Natural Product Research in Cancer and Cardiovascular Disease Management	Hyclone Life Sciences Solutions India Private Limited	37.00
9	Dr Smita Srivastava	Research on marine resources for sustainable bioeconomy	Hyclone Life Sciences Solutions India Private Limited	46.00

Faculty members' participation with other institution under MoU

S.No.	Faculty Member	Participation Details	University/Institution
1.	Dr Guhan Jayaram	Faculty champion for the renewal MoU	Riga Institute of Technology, Latvia.

Renewal MoU

2.	Dr Guhan Jayaram	Academic Supervisor	JDP student agreement with RWTH Aachen (Ms. S. Vaishnavi)
3.	Dr Guhan Jayaram	Academic Supervisor	JDP student agreement with RWTH Aachen (Ms. Suchismita Maiti)

4.4 Department of Chemical Engineering

4.4.1 Introduction

The Department of Chemical Engineering was established in 1959. It has a rich pool of permanent faculty members, who are not only dedicated teachers, but also researchers carrying out cutting-edge research in frontier areas of chemical engineering

and inter- or multi-disciplinary subjects. The focus of the research is on reaction and transport processes, energy, materials and environment. The faculty members work towards analysing these systems at multiple scales by understanding their behaviour from the molecular to macroscopic levels as well as using a system-based approach.

4.4.2 Academic Programmes

New laboratories established

S.No.	Name of the Laboratory
1.	Nanomedicine and Drug Design Laboratory
2.	Cancer Research Laboratory

Students on roll as of September 2021 + M.S. and Ph.D. admission in January 2022

Programme	I Year	II Year	III Year	IV Year	V Year and Others	Total
B.Tech.	115	117	78	59	05	374
Dual Degree	00	00	18	26	31	75
M.Tech.	39	33	02	00	00	74
M.S.	18	09	05	05	00	37
Ph.D.	31	25	26	19	36	137
Total	203	184	129	109	72	697

Students/Scholars who attended conferences, seminars or symposia abroad or in India

S.No.	Student/Scholar	Roll No.	Conference/Seminar/Symposia/Workshop and Venue	Date	Financial Assistance from
International/National - Virtual/In-person					
1.	Makwana Pratapbhai Jagubhai	CH21D025	Distinguished Lecture on Energy Efficiency, CII-Sohrabji Godrej Green Business Centre, Hyderabad	5 April 2021	No
2.	Pooja Sahu	CH17D005	95th Colloid and Surface Science Symposium: an oral presentation titled, Self-assembly of symmetric polystyrene-block-poly(methacrylic acid) diblock copolymer in salt-free aqueous solution by explicit atomistic md simulations	14-16 June 2021	Yes
3.	Raviteja Kurapati	CH15D403	95th ACS Colloid and Surface Science Symposium: presentation of a poster titled, Molecular simulation of poly(methacrylic acid) and poly(acrylic acid) adsorbed at oil-water interface: effect of tacticity and interface concentration of polymer	14-16 June 2021	Yes

4.	Dr Anusha Thampi V V (IPDF)	CH20R006	Webinar on Applications of Electrochemistry: CV and applications, graphene nanoribbons synthesis, battery and polymer composite chip as electrode platform; organised by Sinsil International Private Limited	25 June 2021	No
5.	Dr Anusha Thampi V V (IPDF)	CH20R006	Webinar on Advanced Materials in Medicine: Biomaterials Translation Workshop 2021, organised by the Manchester Biomaterials Network (ManBioMat) and ACS	30 June 2021	No
6.	Makwana Pratapbhai Jagubhai	CH21D025	Virtual conference on Digital Future of SMEs	12 August 2021	No
7.	Raviteja Kurapati	CH15D403	American Chemical Society (ACS) Fall 2021: oral talk titled, Effect of stereochemistry and ionization on structure and solvation properties of polycarboxylic acids at oil-water interface	22-26 August 2021	Yes
8.	Bhadra Hrishikesh	CH16D403	35th European Colloids and Interface Society (ECIS) 2021 conference, Athens; presentation of poster titled, Collective dynamics of active rotating colloids	5-10 September 2021	Yes
9.	Hemant Kumar	CH17D004	ECIS 2021 conference, Athens	5-10 September 2021	Yes
10.	Rimita Bose	CH17D203	Virtual EuroMoF 2021 conference, poster presentation: Crystal size effect on CO ₂ -induced structural transition of flexible ZIF-7 framework	13-15 September 2021	Yes
11.	Makwana Pratapbhai Jagubhai	CH21D025	International Symposium on Data Analytics, Risk & Technology, organised by DART Lab in collaboration with RBCDSAI, IIT Madras	23-25 September 2021	No
12.	Sriram K	CH17D012	Soft Matter Young Investigators' Meet 2021: Kinetics of aggregation of amyloid β under different shearing conditions: experimental and modelling analyses	14-16 October 2021	No
13.	Saif Ul Mehdi	CH16D200	Federation of Environmental Issues and its Remediation Conference, Chandigarh (online)	18-22 October 2021	Yes
14.	Mala Maruthi	CH15D414	nanoGe Fall Meeting (online conference), Spain	18-22 October 2021	Yes
15.	Subhan Kumar Pal	CH19D015	International Symposium on Environmental Microplastics, Singapore (online)	10-12 November 2021	Yes

16.	Kavya Mrudula T.	CH18D408	AIChE Annual Meeting 2021: Molecular dynamics study for the enhancement of carbon dioxide exchange in methane hydrates, was accepted for oral presentation on 8 November 2021	15-19 November 2021	Yes
17.	Raviteja Kurapati	CH15D403	AIChE Annual Meeting 2021; oral talk titled, Structure of poy(methacrylic acid) and poly(acrylic acid) adsorbed at oil-water interface: a molecular dynamics simulation study	15-19 November 2021	Yes
18.	Anoop P Pushkar	CH18D200	AIChE Annual Meeting 2021; oral presentation: A computational study of role of surface hydroxylation in enhancing propene selectivity during propane oxidative dehydrogenation over Ni doped CeO ₂ nanorods	15-19 November 2021	Yes
19.	Pushkala V	CH18D701	AIChE Annual Meeting 2021; oral presentation: Revisiting the role of solvent for catalytic conversion of methane to methanol using H ₂ O ₂ as an oxidant	15-19 November 2021	No
20.	Ajin R	CH19D005	AIChE 2021: Insights into the in-situ bronsted acid generation and their strength in WO _x /Pt nanocatalyst for selective glycerol hydrodeoxygenation	7-19 November 2021	Yes
21.	M. Prajitha	CH17D018	International conference APS DFD 74th Annual Meet at Arizona, USA, virtually	21-23 November 2021	Yes
22.	Vallabh S. Prabhudesai	CH19D004	XV International Symposium on Environment, Catalysis and Process Engineering (ECGP), Morocco	23-25 November 2021	Yes
23.	Subhan Kumar Pal	CH19D015	International Symposium on Feedstock Recycling of Polymeric Materials	29-30 November 2021	Yes
24.	Nikhilkumar Panchal	CH20S008	International Symposium on Feedstock Recycling of Polymeric Materials	29-30 November 2021	Yes
25.	Makwana Pratapbhai Jagubhai	CH21D025	Knock hammer out of steam, condensate and reboiler system	1 December 2021	No
26.	Vudisi Pavan Kumar	CH18D402	International Conference on Applied Energy 2021 (ICAE 2021); paper presented: Constant power characterization of a 5 kW vanadium redox flow battery stack	29 November-2 December 2021	Yes
27.	Vallabh S. Prabhudesai	CH19D004	International Conference on Biotechnology for Resource Efficiency, Energy, Environment, Chemicals and Health (BRE3CH-2021), Dehradun, India	1-4 December 2021	Yes
28.	S Harisankar	CH20D750	BRE3CH-2021, Dehradun, India	1-4 December 2021	No

29.	Bhavikkumar Mahant	CH19D752	13th International Conference on Applied Energy 2021, virtual conference, Bangkok, Thailand	29 November-5 December 2021	No
30.	Rimita Bose	CH17D203	International Symposium on Chemical Reaction Engineering (ISCRE 26)	5-8 December 2021	Yes
31.	V. Manokaran	CH16D001	ISCRE 26; poster presentation: Soft modelling and incremental identification approaches for the analysis of spectral data	5-8 December 2021	Yes
32.	Pushkala V	CH18D701	ISCRE 26; poster presentation: Solvent effects on methane conversion to methanol on single site Rh/ZrO ₂ and H ₂ O ₂ as oxidant	5-8 December 2021	Yes
33.	C.D. Balaji	CH18D016	Poster presentation: Methanol synthesis from CO ₂ on ZrO _x promoted Cu/ZnO _x /Al ₂ O ₃ catalyst: mechanistic insights and kinetic modelling	5-8 December 2021	Yes
34.	Anoop P Pushkar	CH18D200	ISCRE 26 and 9th Asia-Pacific Chemical Reaction Engineering Symposium (APCRE 9) conducted by IIT Delhi; poster presentation	5-8 December 2021	Yes
35.	Sankar H	CH20D200	Complex Fluids 2021 (CompFlu 2021), IIT Gandhinagar	13-15 December 2021	No
36.	Sriram K	CH17D012	CompFlu 2021: Kinetics of aggregation of amyloid β under different shearing conditions: experimental and modelling analyses	13-15 December 2021	No
37.	M. Prajitha	CH17D018	CompFlu 2021: presented an oral talk on the topic, Collective surfing of a pair of self-propelled swimmers at the fluid-fluid interface in the presence of self-induced Marangoni flow	13-15 December 2021	Yes
38.	Sachin Gautham MB	CH19D020	CompFlu 2021: Polymer sequence engineering via evolutionary computing	13-15 December 2021	No
39.	Makwana Pratapbhai Jagubhai	CH21D025	The IIT Madras Energy Summit	14-16 December 2021	No
40.	Rajesh Choudhary	CH18D411	26th National and 4th International ISHMT-ASTFE Heat and Mass Transfer Conference, organised by Indian Institute of Technology Madras, online mode presentation	17-20 December 2021	Yes
41.	Makwana Pratapbhai Jagubhai	CH21D025	Siemens - Next-Generation Design for Industrial Manufacturing	20 December 2021	No
42.	Vemula Amala Krishna	CH19S008	CHEMCON 2021; Liesegang Phenomena: pattern formation engineered by reaction and diffusion	27-30 December 2021	No

43.	Karthikeyan C	CH21D033	CHEMCON 2021: Sustainable utilisation of resources for chemical and mineral sectors - study of hazards and accident prevention in process industries	27-30 December 2021	No
44.	Karthikeyan C	CH21D033	CHEMCON 2021: Sustainable utilisation of resources for chemical and mineral sectors-studies on foam mat drying of fruits	27-30 December 2021	No
45.	Bhavikkumar Mahant	CH19D752	74th Annual Session of Indian Institute of Chemical Engineers, CHEMCON 2021, Bhubaneswar, India	27-30 December 2021	No
46.	Karthikeyan C	CH21D033	CHEMCON 2021: Sustainable utilisation of resources for chemical and mineral sectors-recycling of solid wastes in India and strategies to eliminate such solid wastes	27-30 December 2021	No
47.	Hima Nandini Khandavalli	CH19D401	NANOicon 2022	11-15 January 2022	No
48.	Satya Priyadarshi	CH17D011	Research and Industrial Conclave 2022, organised by Indian Institute of Technology Guwahati, Assam, India (virtual)	20-23 January 2022	Yes
49.	M. Midhun Kumar	CH17D001	Research and Industrial Conclave 2022, organised by Indian Institute of Technology Guwahati, Assam, India (virtual)	20-23 January 2022	Yes
50.	M. Prajitha	CH17D018	International conference, ANZIAM 2022 virtually and delivered an oral presentation on the topic: Two hydrodynamically coupled non-identical microswimmers	6-11 February 2022	No
51.	Vallabh S. Prabhudesai	CH19D004	VI International Conference on Catalysis and Chemical Engineering (CCE-2022), San Francisco, CA, USA	22-26 February 2022	Yes
52.	Makwana Pratapbhai Jagubhai	CH21D025	Safety Science, Research and New Directions, CoE-SEA, Safety Management (SEMA)	11 March 2022	No
53.	Rajesh Choudhary	CH18D411	Indo-Canadian Symposium on Water: Purification, Optimization, and Management, jointly organised by Indian Institute of Technology Tirupati and Dalhousie University (online mode presentation)	17-18 March 2022	No
54.	Dr Anusha Thampi V V (IPDF)	CH20R006	Careers in Scientific Publishing for PhDs and Postdocs, organised by Northwestern University Postdoctoral Association	24 March 2022	No
55.	Bhavikkumar Mahant	CH19D752	American Chemical Society (ACS) Spring Meeting 2022, San Diego, CA, United States of America (hybrid conference)	20-24 March 2022	No

56.	Dr Anusha Thampi V V (IPDF)	CH20R006	All about intellectual property rights: understanding how innovative ideas can be protected, organised by GUSEC, Gujarat	30 March 2022	No
57.	Sriram K	CH17D012	Students' Indian Peptide Symposium 2022: Kinetics of aggregation of amyloid β under different shearing conditions: experimental and modelling analyses	31 March-1 April 2022	No
58.	Desai Hari Hitesh	CH18D005	Recent Trends in Clean Technologies for Sustainable Environment (CTSE 2021) (online mode)		Yes
59.	Desai Hari Hitesh	CH18D006	International Conference on Recent Advances in Modeling and Simulations Techniques in Engineering and Science (RAMSTES 2021) (online mode)		yes
60.	Sriram K	CH17D012	Chemplus 2021, IIT Madras, Kinetics of aggregation of amyloid β under different shearing conditions: experimental and modelling analyses		No
61.	Mohd. Faiz Khan	CH17D404	International Conference on Metabolomic and Metabolomic Analysis		Yes

Students/scholars who won outside prizes and awards

S. No.	Student/Scholar	Roll No.	Prize Details	Awarded by
1.	Dr A. Tamilselvan, IPDF; Mentor: Dr Aravind Kumar Chandiran		Online poster competition conducted by DST-SERB and ACS for Postdoctoral Fellows during March 2021 and received a Merit Certificate	DST-SERB and ACS, March 2021
2.	Rimita Bose, PhD; Guide: Prof. Niket S. Kaisare, Prof. P. Selvam, CY	CH17D203	Best Presenter Award	4th EuroMOF (European Conference on Metal Organic Frameworks and Porous Polymers), 13-15 September 2021 (virtual)
3.	Sriram K.; Guide: Dr Ethayaraja Mani	CH17D012	Best Mini Talk: Soft Matter Young Investigators' Meet 2021: Kinetics of aggregation of amyloid β under different shearing conditions: Experimental and modelling analyses; 14-16 October 2021	Soft Matter Young Investigators' Meet 2021
4.	Desai Hari Hitesh; Guide: Dr A. Kannan	CH18D005	Best Paper Award	Recent Trends in Clean Technologies for Sustainable Environment CTSE 2021 (online mode)

5.	Vallabh S. Prabhudesai; Guide: Dr R. Vinu	CH19D004	Best Oral Presentation Award for presenting his paper: Catalytic upgradation of pyrolysis bio-oil and hydrothermal liquefaction bio-crude derived from rice straws via hydrodeoxygenation	International Conference on Biotechnology for Resource Efficiency, Energy, Environment, Chemicals and Health (BREEECH-2021), December 1-4, 2021
6.	Bhavikkumar B Mahant; co-authored with Dr Omkar S. Kushwaha and Prof. Rajnish Kumar	CH19D752	Best Oral Presentation Award for his paper, Simulated natural gas hydrate storage and modelling	CHEMCON-21, 26-30 December 2021, Bhubaneswar
7.	Jugal N. Anil; co-authored with Prof. Jitendra S. Sangwai	CH18B050	Best Oral Presentation Award for presenting his paper, Effect of equation of state (SRK, RK) activity coefficient model (Wilson, NRTL, mUNIFAC) and guest dependent reference hydrate vapour pressure on hydrate phase equilibrium prediction	Chemcon 2021, 27-30 December 2021
8.	Bharathi Raja R; Guide: Dr R. Vinu	CH16D301	Second prize in the open category in the HPCL New Generation Ideation 2021 contest titled, Turquoise hydrogen generation using warm plasma under swirl induced flow, and awarded a cash prize of ₹ 50,000	Hindustan Petroleum Green R&D Centre in Bengaluru, 29 March 2022
9.	Panchal Nikhilkumar Rajnikantbhai (Team Event); Guide: Dr R. Vinu	CH20S008	Second Prize in the New Generation Ideation Contest 2021 contest. Title: Blockchain-based decentralized digital platform for creating sustainable circular economy in plastic waste management sector; awarded a cash prize of ₹50,000	Hindustan Petroleum Green R&D Centre in Bengaluru, 29 March 2022
10.	Pushkala, Ph.D.; Guide: Dr Jithin John Varghese	CH18D701	Certificate of Merit for poster presentation on "Solvent effects on methane conversion to methanol on single site Rh/ZrO ₂ and H ₂ O ₂ as oxidant"	26th International Symposium on Chemical Reaction Engineering (ISCRE26)
11.	Shriram Elangovan Lead - Frame and Composites; Rahul, Vehicle Dynamics	CH18B107, CH19 B030	Students from Chemical Engineering were part of Team Raftar, which won the 2nd Place Overall in the Formula Student Electric Vehicle Concept Challenge (FSEV-2021)	Formula Bharat
12.	1) Shashank Swaminathan (CH19B027) 2) Sundar Raam S (CH19B029) 3) Sahil Shailesh Halarnkar (CH19B086) 4) Pranav G (CH19B021)		National Winner of the Innovation Cafe Hackathon 2021 for their proposal for the production of Sophorolipid BioSurfactants using feedstock available as waste/byproducts	Hindustan Unilever Limited

13.	Navneeth Srinivasan, Team Captain; Rahul V, Chassis Engineers; Shriram Elangovan, Frame and Composites Engineers	CH17B018, CH19B030, CH18B107	Raftar Formula Racing Team of IIT Madras on securing Overall First in the Combustion Vehicle Category at the Formula Bharat 2021 virtual competition	Formula Bharat 2021
14.	Abhinav Ramesh, Anchit Handa, Saket Tungare	CH20B002, CH20B011; CH20B092	Team NOR-P comprising B.Tech Chemical Engineering students on emerging as National Runner-Up under the E-School Track of the Hero Campus Challenge Season 7, a national-level case study competition, for their solution Apna Hero that aimed at bridging the gap between the rider and vehicle through personalising features on the lines of comfort and safety	Hero Campus Challenge Season 7

Students/Scholars who won Institute Convocation/Institute Day Prize

S.No.	Student/Scholar	Roll No.	Prizes	Donor
Convocation				
1.	Sona Sheril Antony	CH17B071	B.Tech student with the best academic record in Chemical Engineering	Reliance Heat Transfer Private Limited Prize
2.	S. Renganathan	CH16B058	Dual Degree (B.Tech and M.Tech) student with the best academic record in Chemical Engineering	B. Ravichandran Memorial Prize
3.	Amar Krishna Gopinath	CH19M004	M.Tech student with the best academic record in Chemical Engineering	Dr K. Subba Raju Memorial Prize
Department Degree Distribution Programme				
1.	S. Renganathan	CH16B058	B.Tech/Dual Degree student with the best overall performance in curricular and co-curricular activities in Chemical Engineering	Prof. C. A. Sastry Endowment Prize
2.	Kiran Prabhu; Guide: Dr Aravind Kumar Chandiran	CH18S005	M.S. Scholar with the best project in the area of Environmental Engineering/ Reaction Engineering	Smt. D L Saraswati Memorial Prize
3.	Barath Venkateswaran	CH16B004	Student with best academic record in Inter Disciplinary Dual Degree Programme in Computational Engineering	Institute Merit Prize
4.	Harish Kumar K.S.	CA19M002	M.Tech student with the best academic record in Catalysis Technology	Shri S. V. Balakrishnan Prize
5.	Harish Kumar K.S.	CA19M002	M.Tech student who had done the best project in Environmental Pollution Control & Energy Conservation/ Environmental Pollution Control & Techniques	Mico-Bosch Prize

Institute Research Award				
1.	K.V. Sravana Chaithanya; Guide: Dr Sumesh P. Thampi	CH17D200	In recognition of their quality and quantity of research work	Institute Research Award (July- November 2020- 2021)
2.	Namrata Gaikward; Guide: Dr Rajnish Kumar, Dr Jitendra Sangwai	CH16D017	In recognition of quality and quantity of research work	Institute Research Award (July- November 2020- 2021)
3.	Rumiya Pervin; Guide: Dr Basavaraja M. Gurappa and Dr Pijush Ghosh (AM)	CH14D010	In recognition of quality and quantity of research work	Institute Research Award (July- November 2021- 2022)
4.	Kanchan Aggarwal; Guide: Dr Arun K. Tangirala	CH15D204	In recognition of quality and quantity of research work	Institute Research Award (July- November 2021- 2022)

4.4.3. Faculty and Their Activities Faculty

Name and Qualifications	Major Areas of Specialisation
Professors	
Dr Abhijit P. Deshpande	Rheology of complex fluids, polymers and polymeric composites, processing flow visualization
Dr Arun K. Tangirala	Process systems engineering, control, identification and monitoring, applied signal processing
Dr Basavaraja M. Gurappa	Directed assembly of colloids, microstructure and rheology of colloids, surfactants, polymer and their mixtures, interfacial rheology, ionic liquids, particulate gels
Dr Jitendra Sangwai	Enhanced oil recovery, flow assurance, nanotech applications for O&G, gas hydrates in bulk and porous media, rheology of complex fluids, drilling fluids, polymer science, PVT studies
Dr Kannan A.	Mathematical modeling, simulation and optimisation of chemical processes
Dr Nagarajan R.	Ultrasonic and megasonic fields, cleanroom and contamination control, nano-particle synthesis and nano-composite formulation
Dr Niket S. Kaisare	Catalytic combustion, micro-reactors, advanced process control, energy and fuel processing
Dr Preeti Aghalayam	Underground coal gasification, reduction of automotive NO _x , reduction of large reaction mechanisms, reactor modeling
Dr Pushpavanam S.	Modeling and simulation, non-linear dynamics, flow visualization
Dr Raghunathan Rengasamy	Process systems engineering, fuel cells, computational discrete microfluidics
Dr Raghuram Chetty	Electrocatalysis, fuel cells, wastewater treatment, CO ₂ reduction

Dr Rajagopalan Srinivasan	Safety, sustainability and resilience of complex systems, cognitive engineering, supply chain management and enterprise optimisation
Dr Rajnish Kumar	Gas hydrates (formation, inhibition and recovery), carbon dioxide capture, storage and utilisation methane and hydrogen storage hydrothermal liquefaction at sub-critical and supercritical conditions
Dr Ramanathan S.	Electrochemistry, chemical mechanical planarisation for semiconductor processing
Dr Ravi R.	Applied statistical mechanics, foundations of thermodynamics and mechanics, process dynamics and control
Dr Ravikrishna R. (Head)	Contaminant fate and transport, air pollution process and control
Dr Renganathan T.	Multiphase systems, gasification, capture of CO ₂
Dr Shankar Narasimhan	Process design, data mining, fault diagnosis
Dr Sreenivas Jayanti	Fuel cells, combustion, energy systems
Dr Sridharakumar Narasimhan	Process system engineering, optimization, process control, fault diagnosis
Dr Susy Varughese	Physics and mechanics of polymeric materials, polymeric nano composites
Dr Tanmay Basak	Microwave application, mathematical modeling and simulation
Dr Upendra Natarajan	Polymer science and engineering, molecular simulation, statistical thermodynamics of complex fluids, nanostructured hybrid composite materials
Associate Professors	
Dr Ethayaraja Mani	Molecular simulations, self-assembly, mathematical modeling
Dr Sumesh P Thampi	Hydrodynamics of complex fluids, interfacial flows, active matter
Dr Vinu R.	Thermo-catalytic conversion of biomass to useful intermediates, photocatalysis for environmental decontamination, microkinetic modeling of complex reactions
Assistant Professors	
Dr Aravind Kumar Chandiran	Solar cells, solar water splitting, carbon dioxide reduction, photoconductivity, oxide semiconductors and solar energy research
Dr Himanshu Goyal	Clean energy (biofuels and carbon dioxide capture), process intensification, multiphase reactors, multiscale modeling, computational fluid dynamics (CFD), uncertainty quantification (UQ), high performance computing (HPC)
Dr Jithin John Varghese	Atomistic and computational modelling of catalytic reactions: catalytic conversion of light alkanes, biomass derivatives and carbon dioxide to fuels and chemicals
Dr Ramnarayanan R.	Applying physical chemistry concepts to biology, light and state of matter interaction, solid state materials
Dr Swapna Singh Rabha	Multiphase flows, permeable media, advance imaging techniques, carbon capture and storage, process intensifications, computational fluid dynamics, reactive transport modelling
Dr Tarak Patra	High throughput materials design, soft and nano materials, molecular simulations and machine learning, HPC and AI

Short-term courses/workshops/seminars/symposia/conferences organised by the faculty members

S. No.	Coordinator(s)	Title	Period
Symposium			
1.	Dr R. Vinu	Analytical Pyrolysis Symposium (virtual event) in collaboration with Frontier Lab, Japan, and Indian Society of Analytical Scientists (ISAS), Delhi Chapter	27-28 January 2022
Workshop			
1.	Dr R. Vinu	Indo-German Center for Sustainability (IGCS) Winter School titled, Sustainable Waste Management for a Circular Economy, in collaboration with Prof. Martin Kranert, University of Stuttgart, Germany (virtual mode)	21 February-4 March 2022

Short-term courses/workshops/seminars/symposia/conferences/training attended by the faculty members in academic institutions and public sector undertakings

S. No.	Faculty Member	Title	Institution/Seminar	Period
Workshops				
1.	Dr R. Vinu	Plastic waste management, recycling and valorization	IGCS Summer School 2021 on Sustainable Water Management at the Saltwater-Freshwater Interface; panel discussion on plastics and microplastics	19 July 2021
2.	Dr R. Vinu	Plastic waste management for efficient municipal solid waste management	The IGCS-Motan Workshop, Challenges and strategies in the handling of plastics	8 December 2021
3.	Dr R. Vinu	E-waste: Current state and future outlook in India	Indo-German Science and Technology Center (IGSTC) promotional Workshop on 2+2 Call 2022 on Waste to Wealth and Sustainable Packaging	27 January 2022
4.	Dr R. Vinu	Catalytic hydrogenolysis of lignin to derive valuable phenols for a sustainable bio-economy	International Workshop (SDG7: Affordable and Clean Energy) on Nanostructured Functional Materials for Sustainable Energy Applications (NFMSEA-22) organised by Hindustan Institute of Technology and Science, Chennai	11 March 2022
Seminars				
1.	Dr R. Vinu	Changing landscape of skills requirement for engineering graduates in process industries	Panel discussion on Skills Development in Refining Industry and Renewable Energy Industry, organised by Chennai Petroleum Corporation Limited as a part of Celebrating 75 years of India's Independence (Azadi Ka Amrit Mahotsav), Crowne Plaza, Chennai	9 April 2021

2.	Dr R. Vinu	Biofuel production via co-pyrolysis of biomass and waste plastics	2021 Taiwan-Indo Combustion & Energy Forum, organised by National Formosa University, Taiwan	23 April 2021
3.	Dr R. Vinu	SDG 6 and Microplastics Research	SDG Lecture Series: Interdisciplinary Approaches on Clean Water and Sanitation, RWTH Aachen University, Germany	18 June 2021
4.	Dr R. Vinu	Plastic solid waste management and pyrolysis for sustainable fuel production	Plastic Waste Management Initiatives Promoting Circular Economy in Africa, Europe and Asia, Jadavpur University	24 August 2021
5.	Dr R. Vinu	Hydrothermal liquefaction of diverse feedstocks for sustainable solid waste management and energy production in the Indian context	Webinar on Recycling - Solid Waste Management, Andhra University College of Engineering	16 September 2021
6.	Dr R. Vinu	Efficient plastic waste management from a circular economy viewpoint	Training of Trainers on Circular Economy, Implementation of Circular Economy @ Educational Institution, organised by ICE&SDGs	22 October 2021
7.	Dr Rajnish Kumar	CO ₂ capture and sequestration via hydrates	Invited seminar at IITB	30 March 2022

Symposia

1.	Dr R. Vinu	Novel strategies for lignocellulosic biomass deconstruction and lignin valorization	Symposium on Challenges in the Production of 2G Bioethanol, IIT Tirupati	9 August 2021
2.	Dr R. Vinu	Hydrothermal liquefaction of diverse feedstocks for sustainable solid waste management and energy production in the Indian context	5th National Symposium, Shaping the Energy Future: Challenges and Opportunities (SEFCO), CSIR-Indian Institute of Petroleum, Dehradun	27 August 2021
3.	Dr R. Vinu	Analytical pyrolysis technology-state of art and developments	Analytical Pyrolysis Symposium	27 January 2022

Conferences

1.	Dr R. Vinu	Hydrothermal co-liquefaction of cellulose with polypropylene, and municipal solid waste for the production of high-quality bio-crude	International Conference on Biotechnology for Sustainable Agriculture, Environment & Health (BSAEH-2021)	5 April 2021
2.	Prof. Rajagopalan Srinivasan	Lecture delivered: R. Srinivasan, Behavioural informatics: towards measuring, modelling, monitoring and shaping people's behaviour in the wild	Ford TECHNOVATE	22 April 2021
3.	Prof. R. Nagarajan	Talk delivered: Particulate, chemical and microbial contamination control for cleanrooms: a comparative assessment	ESTECH 2021, Annual Technical Meeting of the IEST	3 May 2021

4.	Prof. Rajagopalan Srinivasan	Evaluating Control Room Operator Training Outcomes Through Eye Gaze Augmented Multi-Scale Data, In Computer Aided Chemical Engineering	31st European Symposium on Computer Aided Process Engineering	6-9 June 2021
5.	Prof. Rajagopalan Srinivasan	LNG Supply Chain Disruptions: Towards Studying the Impact and Resilience to Disruptions through Agent-Based Dynamic Simulation, In Computer Aided Chemical Engineering	31st European Symposium on Computer Aided Process Engineering	6-9 June 2021
6.	Dr R. Vinu	Microwave-assisted torrefaction of rice straw pellets for bioenergy	71st Canadian Chemical Engineering Conference CCEC-2021, Process Intensification - Biomass Conversion for Chemicals and Energy	26 October 2021
7.	Dr R. Vinu	Selective production of guaiacol and alkyl guaiacols from lignin via catalytic transfer hydrogenolysis using Ru-Cu/TiO ₂	XVth International Symposium on Environment, Catalysis and Process Engineering (ECGP Morocco)	23 November 2021

Short-Term Courses

1.	Dr R. Vinu	Hydrothermal liquefaction as a possible solution to convert unsegregated MSW to fuels and energy in the Indian context	Faculty Development Program on Waste-to-Bioenergy: A Sustainable Solution, NIT Andhra Pradesh	14 September 2021
2.	Dr R. Vinu	Valorization of lignin to chemicals using thermochemical and catalytic platforms	Faculty Development Program on Materials & Techniques for the Treatment of Wastes, A.C. College of Technology, Anna University	6 October 2021
3.	Dr R. Vinu	Adoption of pyro techniques to characterize the aging of insulating materials	Short-term course: Condition Monitoring of Power Apparatus Adopting Multisensor Fusion Technique, organised by Electrical Engineering Department, IIT Madras	2 March 2022
4.	Dr Rajnish Kumar	CO ₂ capture and sequestration via hydrates	2021, Keynote Speaker, ISCRE 26/APCRE 9, New Delhi, 5-8 December 2021	6 December 2022

Important meetings/activities attended by the faculty in other institutions

S.No.	Faculty Member	Details	Institution	Date
1.	Prof. R. Nagarajan	Conducted meeting as Co-Chair (with Raj Subramanian, IITMRP), Online interaction between Chemical Engineering faculty and IITM Research Park clients (Axxelent, Pfizer)	IITM Research Park clients (Axxelent, Pfizer)	15 April 2021
2.	Prof. R. Nagarajan	Panellist on "Research and Innovation: Bridging the gap between industry and academia", Industry Conclave 2021 organised by Corporate Relations Cell, IITM	Corporate Relations Cell, IITM	17 April 2021

3.	Prof. R. Nagarajan	Attended board meeting	IITM Alumni Charitable Trust	11 May 2021
4.	Prof. R. Nagarajan	Conducted meeting as Co-Chair (with Prof. Satya Chakravarthy), Precision Agriculture R&D Workshop involving Coromandel Fertilizers and IITM faculty via WebEx	Coromandel Fertilizers	19 May 2021
5.	Prof. R. Nagarajan	Attended Board Meeting	Coromandel International Limited	25 May 2021
6.	Prof. R. Nagarajan	Attended Board Meeting	Coromandel International Limited	26 July 2021
7.	Prof. A. Kannan	External thesis examiner for Ph.D. thesis: Numerical and experimental investigation of liquid subcooling by gas injection	IIT Kharagpur	November 2021
8.	Prof. A. Kannan	Attended Board of Studies	Hindustan Institute of Technology and Science (HITS)	6 November 2021
9.	Prof. A. Kannan	BoG Selection Committee	IIT BHU	January 2022
10.	Prof. A. Kannan	Board of Studies Member in Chemical Engineering Department	Rajalakshmi Engineering College, Thandalam	
11.	Prof. A. Kannan	Institute academic expert member for Chemical Engineering Board of Studies for the period of three years during 2021-24 for B.Tech Chemical Engineering and M.Tech Environmental Science & Technology Department of Chemical Engineering	Sri Sivasubramaniya Nadar College of Engineering Kalavakkam	
12.	Prof. Rajnish Kumar	Faculty Selection Committee	IIT Jammu	Multiple meetings in 2022

Visits abroad by faculty

S. No.	Faculty Member	Country Visited	Date	Purpose of Visit	Funding from
1.	Prof. R. Nagarajan	USA	9 June-27 July 2021	Visited the following universities: Northwestern, Penn State, Lehigh, Princeton, Yale, Wisconsin, Minnesota-Minneapolis; Iowa State, Michigan, Purdue	Projects/ Others
2.	Prof. Preeti Aghalayam	Boston, USA	1-20 November 2021	AICHE Annual Conference 2021; Teaching process calculations to undergraduate chemical engineers: an engaged and energized online class	
3.	Prof. Raghunathan Rengasamy	Boston, USA	5-21 November 2021	AICHE conference and visits for global engagement as a part of Dean's job	

4.	Prof. Preeti Aghalayam	Colombo, Sri Lanka	25-28 March 2022	Study in India Expo and university discussions	
5.	Prof. Raghunathan Rengasamy	Colombo, Sri Lanka	25-28 March 2022	On visit to Sri Lanka universities towards internationalisation	
6.	Prof. Upendra Natarajan	USA	17 March-8 April 2022	To attend American Chemical Society (ACS) Spring International Meeting, San Diego, California, USA	
7.	Prof. Niket S Kaisare	USA	25 September 2021-10 July 2022	To accept the position of Visiting Fellow at University of Minnesota, USA for collaboration with Prof. Aditya Bhan's Research group under Fulbright-Nehru Academic and Professional Excellence Fellowship	
8.	Prof. R. Nagarajan	USA	1 January-31 July 2022	Appointed as Robert T. Henson Distinguished Visiting Scholar in the Davidson School of Chemical Engineering, Purdue University	

Visits within India by faculty

S. No.	Faculty Member	Place	Date	Purpose of Visit	Funding from
1.	Prof. Rajagopalan Srinivasan	Kochi	29-30 November 2021	Project kick-off meeting at DRDO NPOL labs at Kochi	
2.	Prof. Rajagopalan Srinivasan	Vadodara	19-21 December 2021	Teach in Process Safety Workshop (for a CCE registered event)	
3.	Prof. Rajagopalan Srinivasan	Kochi	24-25 February 2022	Conduct CCE Workshop "Natural gas: An India Panorama" at Petronet LNG	
4.	Prof. Rajnish Kumar	Mumbai	29-31 March 2022	Invited seminar in the department of Chemical Engineering	IITB

Awards obtained by faculty

S. No.	Faculty Member	Award	Awarded by	Awarded for	Date of Award
Awards					
1.	Dr Aravind Kumar Chandiran	NASI-Young Scientist Platinum Jubilee Award (2021)	The National Academy of Sciences, India (NASI)	In the field of Electronics and Computer Science & Engineering	
2.	Dr Aravind Kumar Chandiran	INSA Medal for Young Scientists Award 2021	Indian National Science Academy, New Delhi	Young Scientists Award	
3.	Dr Sumesh P Thampi	IRDA Awards 2020-21: Early Career level Awards	IIT Madras	Early Career Research & Development Award	17 May 2021

4.	Prof. Jitendra Sangwai	IRDA Awards 2020-21: Mid-Career Awards	IIT Madras	Mid-Career Research & Development Award	17 May 2021
5.	Prof. Rajagopalan Srinivasan	Outstanding Review Editors Award 2021	Frontiers in Chemical Engineering Editors Awards	Outstanding Review Editors Award 2021	
6.	Prof. T. Renganathan	Professor Dr Y. B. G. Varma Award for the Teaching Excellence in Chemical Engineering	IIT Madras	Teaching Excellence in Chemical Engineering for the year 2021	

Journal editorial boards

S. No.	Faculty Member	Position	Journal Name
1	Prof. Rajagopalan Srinivasan	Co-Editor	<i>Special Issue on "Data Analytics in Process Safety" of the Process Safety & Environmental Protection journal</i>
2	Prof. Arun K. Tangirala	Associate Editor	<i>Control Engineering Practice</i>
3	Prof. Rajnish Kumar	Editorial Advisory Board	<i>ACS Engineering Au</i>
4	Prof. Rajnish Kumar	Member	<i>Scientific Reports, for Nature Publishing Group</i>
5.	Prof. Niket S. Kaisare	Associate Editor	<i>Korean Journal of Chemical Engineering (since August 2021)</i>
6.	Prof. Niket S. Kaisare	Associate Editor	<i>International Journal of Control Automation and Systems (entire year)</i>
7.	Prof. Niket S. Kaisare	Editorial Advisory Board	<i>Reaction Chemistry & Engineering (entire year)</i>

4.4.4. Design and Development Activities

New facilities added or major equipment procured

S. No.	Equipment	Value (₹ in lakh)
1.	Guru Arjun Surface Grinding Machine	223125
2.	Vertical Ram Turret Milling Machine	690900

Patents filed

S. No.	Faculty Member	Topic of Patent
1.	Dr Abhijit P Deshpande, Dr Susy Varughese	Bio-polymer based adhesive for electrical insulating components
2.	Dr Vinu R	Rotary kiln incinerator for generating energy from municipal solid waste (MSW)
3.	Dr Basavaraja Madivala Gurappa	Method for preparation of porous mullite ceramic from Pickering Emulsion
4.	Dr Sreenivas Jayanti	A novel gyroid tube design concept for fluid-to-fluid heat exchange applications
5.	Dr Raghunathan Rengaswamy	IoT Vehicle mirror for mobile sensing applications
6.	Dr Rajagopalan Srinivasan	Multi-user eye tracking apparatus for unconstrained environments

Patents awarded

S. No.	Faculty Member	Topic of Patent
1.	Dr Sreenivas Jayanti	Flow regulator for multi-feed fluid manifolds
2.	Dr Pushpavanam S	Method and means for controlling flowrate of molten fluid
3.	Dr Raghuram Chetty	An effective strategy to remove chromium from wastewater
4.	Dr Basavaraja Madivala Gurappa	Method for preparation of porous mullite ceramic from Pickering Emulsion

4.4.5. Research and Consultancy Sponsored research projects (ongoing and new)

S. No.	Faculty Member	Title	Industry	Period	Total Value (₹ in lakh)
1.	Dr Aravind Kumar Chandiran (PI); Dr Kamalesh Hatua, EE (Co-PI)	Development of a prototype metal air battery driven electrical drive for a city bus duty (Industry Project)	Ashok Leyland Limited	28 March-16 December 2022	25.00
2.	Dr Pushpavanam S.	Electrochemical paper-based microfluidic sensor for multiplex biomarker analysis to distinguish bacterial and viral infection in point-of-care settings	Indian Council of Medical Research	1 March 2022-28 February 2023	7.19
3.	Dr Abhijit Deshpande P	The development of suitable EJM for fine/superfine Madurkathi mat handicraft and Korai superfine handicraft towards productivity and design range enhancement	Office of the Principal Scientific Adviser	11 February 2022-31 July 2022	5.00
4.	Dr Aravind Kumar Chandiran	Non-toxic perovskites based photorechargeable redox flow battery	Science and Engineering Research Board	9 February 2022-8 February 2024	22.37
5.	Dr Himanshu Goyal	Data-assisted strategies to integrate detailed chemical mechanisms with reacting multiphase flow simulations	Science and Engineering Research Board	28 January 2022-27 January 2024	27.31
6.	Dr Arun K. Tangirala	Physics-based AI-ML models for predicting crop yield at different space-time scales	Indian Space Research Organisation	6 January 2022-5 July 2024	27.35
7.	Dr Pushpavanam S.	Low-cost, rapid detection for antibiotic susceptibility of bacteria using lab-on-a-chip designs that exploit chemotactic responses	Wellcome Trust	1 January 2022-31 December 2026	148.43

8.	Dr Rajagopalan Srinivasan	Endowing explanation abilities to artificial intelligence (AI) methodologies for process monitoring and fault diagnosis	Science and Engineering Research Board	28 December 2021-27 December 2024	33.55
9.	Dr Vinu R.	Catalytic hydrodeoxygenation of pyrolytic oil produced from copyrolysis of agricultural residue and plastic waste	Department of Science & Technology	7 September 2021-6 September 2024	32.33
10.	Dr Rajagopalan Srinivasan (PI); Dr Babji Srinivasan, AM (Co-PI)	Evaluating and enhancing the overall reliability of a submarine sonar system using RBD, FMECA and eye-tracking	Defence Research and Development Organisation	24 August 2021-23 August 2023	132.48
11.	Dr Vinu R. (PI); Dr Chakravarthy S.R., AE (Co-PI)	Process demonstration of continuous hydrothermal liquefaction for conversion of agri and municipal solid wastes to high-value bio-crude and bio-char	Department of Science & Technology	29 June 2021-28 June 2024	150.43
12.	Dr Preeti Aghalayam	Development of a techno-economic model for the in situ (underground) gasification of Indian lignites	Science and Engineering Research Board	28 June 2021-27 June 2024	53.46
13.	Dr Sreenivas Jayanti	Modelling of flow, electrochemical and thermal phenomena in high-temperature PEM fuel cells	Defence Research and Development Organisation	22 June 2021-21 June 2023	26.85
14.	Dr Abhijit P Deshpande (PI); Dr Susy Varughese (Co-PI)	Drop spreading and imbibition of structured fluids: development of a diagnostic and screening tool	Science and Engineering Research Board	5 April 2021-4 April 2024	93.04
15.	Dr Jithin John Varghese (PI); Co-PIs: Dr Niket Kaisare, Dr P. Selvam, CY	Bridging the gap between surface science studies and catalytic reaction engineering for oxidative dehydrogenation of light alkanes	Science and Engineering Research Board	5 April 2021-4 April 2024	77.94
16.	Dr Aravind Kumar Chandiran	White light emission from single semiconductor material based on trivalent mixed halide double perovskites	Science and Engineering Research Board	30 March 2021-29 March 2023	30.20
17.	Dr Raghuram Chetty	Council of Scientific and Industrial Research	Titania-based hybrid supports for the ultra-low loading of platinum electrocatalyst for PEMFC stacks	15 March 2021-14 March 2024	26.24

18.	Dr Tarak Kumar Patra	Molecular design of polymeric ionic liquid for energy storage materials	National Supercomputing Mission	12 March 2021-11 March 2023	35.22
19.	Dr Himanshu Goyal	Application of high-performance computing and machine learning to design multiphase reactors for clean energy applications	National Supercomputing Mission	12 March 2021-11 March 2023	25.94
20.	Dr Ethayaraja Mani (PI), Dr Basavaraja M Gurappa (Co-PI)	Engineering of interfaces to destabilize Pickering Emulsions	Science and Engineering Research Board	8 March 2021-7 March 2024	67.26
21.	Dr Ethayaraja Mani (PI); Dr Raghavendra Sai V. V., AM (Co-PI)	High-throughput synthesis of non-spherical plasmonic nanoparticles for applications in sensing	Department of Science & Technology	5 February 2021-4 February 2024	41.74
22.	Dr Raghunathan Rengasamy (PI); Co-PIs: Dr Sridharakumar Narasimhan, Dr Shankar Narasimhan	Power draw allocation from a network of fuel-cell stack	Defence Research and Development Organisation	3 February 2021-2 August 2022	26.40
23.	Dr Susy Varughese (PI), Dr Abhijit P. Deshpande (Co-PI)	Understanding the microstructure and rheology of root derived mucilage and its interactions with soil in the context of plant physiology	Science and Engineering Research Board	30 December 2020-29 December 2023	72.09
24.	Dr Basavaraja Madivala Gurappa (PI), Dr Sumesh P. Thampi (Co-PI)	Investigation of the role of evaporation driven flows in the self-assembly of nanoparticles	Science and Engineering Research Board	25 December 2020-24 December 2023	43.47
25.	Dr Tarak Kumar Patra	Molecular design of highly permeable polymer grafted nanoparticle membranes	Science and Engineering Research Board	22 December 2020-21 December 2022	29.23
26.	Dr Ramanathan S.	Synthesis of a novel, highly hydrophobic and antimicrobial organic inhibitors for corrosion protection applications of mild steel in acidic medium	Science and Engineering Research Board	21 December 2020-20 December 2023	10.05
27.	Dr Basavaraja Madivala Gurappa	Dynamics of patterns in Belousov-Zhabotinsky reaction tailored by graphene-based nanocomposites	Science and Engineering Research Board	15 December 2020-14 December 2023	10.05
28.	Dr Pushpavanam S (PI), Dr Nirav P Bhatt, BT (Co-PI)	Setting up a zero-discharge pilot plant to process 100 kg of PCB to recover lead, tin and copper	Department of Science & Technology	28 September 2020-27 September 2023	308.70
29.	Dr Rajagopalan Srinivasan (PI), Dr Niket Kaisare (Co-PI)	Cost-effective eye tracking approaches to analyse human-machine interface in nuclear power plants	Board of Research in Nuclear Sciences	10 July 2020-9 July 2022	30.37

30.	Dr Niket Kaisare (PI); Co-PI: Dr K. Anand, ME; Dr Basavaraja M. Gurappa, CH	Fundamental studies on water-in-diesel emulsions as alternative fuels	Science and Engineering Research Board	11 February 2020-10 February 2023	67.14
31.	Dr Nagarajan R.	Decellularized extracellular matrix for treating cardiac injury	Department of Biotechnology	2 January 2020-31 December 2022	17.42
32.	Dr A. Kannan (PI)	Synthesis of enhanced metal organic frameworks for total or selective reduction of metal ions from aqueous streams exploratory research project		January 2020-August 2021	8.5
33.	Dr Jithin John Varghese (PI)	Aqueous-phase mild oxidation of methane to methanol on atomically dispersed catalysts: mechanistic insights and solvent effects from first principles	Science and Engineering Research Board	26 December 2019-25 March 2022	32.89
34.	Dr Aravind Kumar Chandiran (PI), Dr Kamalesh Hatua, EE (Co-PI)	Development of a prototype metal air battery driven electrical drive for a city bus duty	Impacting Research Innovation and Technology - IMPRINT	17 December 2019-16 December 2022	149.16
35.	Dr Raghunathan Rengasamy	Extreme learning machine based pitch angle prediction for uniform power generation and load mitigation using HIL simulator of digital hydraulic pitch system in wind turbine	Science and Engineering Research Board	25 October 2019-24 October 2022	10.05
36.	Dr Aravind Kumar Chandiran (PI); Co-PI: Dr Raghuram Chetty, CH; Dr Somnath Chanda Roy, PH; Dr Tiju Thomas, MME	Earth abundant and scalable two-dimensional catalysts for selective photo-electrochemical solar conversion of carbon dioxide to methane/methanol	Department of Science and Technology	17 September 2019-16 September 2022	99.46
37.	Dr Aravind Kumar Chandiran (PI); Co-PI: Dr Raghunathan Rengasamy, CH; Dr Swagatika Sahoo, CH	Genetic engineering of microbes and regulation of charge transfer dynamics for high-performance biophotovoltaics	Department of Biotechnology	21 June 2019-20 June 2023	183.37
38.	Dr Sridharakumar Narasimhan	A framework for quantifying the resilience of complex networks: applications to water distribution networks and power grids	Scheme for Promotion of Academic and Research Collaboration	30 April 2019-30 September 2022	74.98
39.	Dr.Rajagopalan Srinivasan (PI); Co-PI: Dr Rajnish Kumar, CH; Dr Jitendra Sangwai, CH	Natural gas value chain management	Scheme for Promotion of Academic and Research collaboration	28 March 2019-30 September 2022	94.68

40.	Dr Rajagopalan Srinivasan	Advanced optimization strategies for efficient water and energy utilization in batch processes: case studies in pharmaceutical and textile industries	Scheme for Promotion of Academic and Research collaboration	22 March 2019-30 September 2022	42.65
41.	Dr Rajnish Kumar (PI); Dr S. Mohan (Co-PI)	Next-generation multifunctional aerogels for treating soluble microplastics, pesticides and drugs in water, and recovery	Scheme for Promotion of Academic and Research	15 March 2019-30 September 2022	78.48
42.	Dr Ravi Krishna R.	Chemical composition of atmospheric fine particles (PM2.5) over a South Indian City, Nellore	Science and Engineering Research Board (TARE)	19 November 2018-18 May 2022	10.05
43.	Dr Arun K. Tangirala	Detection and diagnosis of model-plant-mismatch in model predictive control schemes	Science and Engineering Research Board	15 November 2018-14 May 2022	10.05
44.	Dr Sridharakumar Narasimhan, CH; Co-PIs: Dr Shankar Narasimhan, CH; Dr B.S. Murty, CE; Dr Ravindra Getty, CE	Water distribution and sewer networks	Department of Science & Technology	23 October 2018-22 October 2023	33.08
45.	Dr Aravind Kumar Chandiran	Studies on the development of devices using MXenes/2D materials for energy harvesting applications	Board of Research in Nuclear Sciences	28 May 2018-27 May 2022	34.98
46.	Dr Raghunathan Rengasamy; Dr Basavaraja M. Gurappa, CH (Co-PI)	Enabling technologies for enhancing access of medicines in India through point-of-demand production of oral dosage forms	Uchhatar Avishkar Yojana - IIT Madras	7 May 2018-6 May 2022	200.00
47.	Dr Sridharakumar Narasimhan (PI); Co-PIs: Dr Shankar Narasimhan, CH; Dr B.S. Murty, CE	New strategies for optimal operation of water supply schemes by use of scheduling and decentralized infrastructure	Department of Science & Technology	15 March 2018-19 June 2022	134.87
48.	Dr.Sridharakumar Narasimhan (PI); Co-PIs: Dr K.K. Balasubramaniam, CY; Dr Shankar Narasimhan, CH; Dr Nirav P. Bhatt, BT	Continuous manufacturing of dl-2-amino-l-butanol	Uchhatar Avishkar Yojana - IIT Madras	27 October 2016-30 June 2022	138.00
49.	Dr Ravi Krishna R, CH (PI); Co-PIs: Dr Sachin S Gunthe, CE; Dr Shiva Nagendra S.M., CE	National Carbonaceous Aerosols Programme (NCAP) Working Group-III project	Ministry of Environment and Forests	30 March 2016-30 March 2023	399.47

Industrial consultancy projects (ongoing and new)

S. No.	Faculty Member	Industry	Title	Duration	Total Value (₹ in lakh)
1.	Dr Sreenivas Jayanti (PI)	Engineers India Limited	Expert consultancy services for development of 3D CFD gasifier	10 February 2020-31 December 2022	33.04

Research-based industrial consultancy projects (ongoing and new)

S.No.	Faculty Member	Industry	Title	Duration	Total Value (₹ in lakh)
1.	Dr Raghunathan Rengasamy	Gnamam Institute for Training in Advanced Analytics Private Limited	Digital twin for industrial furnace	7 March-7 December 2022	11.80
2.	Dr Vinu R (PI), Dr Chakravarthy S. R., AE (Co-PI)	Valmet Technologies Private Limited	Process demonstration of continuous hydrothermal liquefaction (HTL) for conversion of agri and municipal solid wastes to high-value bio-crude and bio-char	12 January 2022-11 January 2025	20.96
3.	Dr Himanshu Goyal (PI), Dr Swapna Singh Rabha (Co-PI)	Unilever Industries Private Limited	Engineering design of large silo using CFD	22 November 2021-30 November 2022	6.50
4.	Dr Vinu R	Manali Petrochemicals Limited	Conversion of dichloropropane into propylene glycol via propylene glycol diacetate route: optimization of reaction conditions and catalysis	1 November 2021-31 October 2022	24.07
5.	Dr Pushpavanam S (PI), Dr T. Renganathan (Co-PI)	Coromandel International Limited	Development of paper based microfluidic sensor for detection of Azadaractin compounds in Neem seed	25 October 2021-24 October 2022	15.86
6.	Dr Susy Varughese	Floorscapes Carpets Private Limited	Sustainable approaches to recycling post-consumer nylon based carpets	1 October 2021-30 September 2022	5.20
7.	Dr Susy Varughese	Cori Engineers Private Limited	Recycling polyolefin based packaging materials to obtain value added products	1 September 2021-31 August 2022	5.95
8.	Dr Renganathan T (PI), Dr S. Pushpavanam (Co-PI)	Hindustan Petroleum Corporation Limited	Hydrodynamic and liquid phase mixing studies in a slurry bubble column	9 April 2021-8 April 2023	97.35

9.	Dr Preeti Aghalayam (PI), Dr Jithin John Varghese (Co-PI)	Daimler India Commercial Vehicles Private Limited	A novel method for on-board NOx utilisation via deep oxidation: Phase 1	29 March 2021-31 October 2022	25.96
10.	Dr Sreenivas Jayanti	Hindustan Petroleum Corporation Limited	Technology development and demonstration of vanadium redox flow battery for solar PV applications	1 February 2021-30 June 2022	35.40
11.	Dr Aravind Kumar Chandiran	Mahindra Electric Mobility Limited	Post-mortem analysis of batteries	15 January 2021-30 April 2022	8.79
12.	Dr Rajnish Kumar (PI), Dr Niket Kaisare (Co-PI)	GAIL India Limited	R&D Project on wastewater purifications and recycle by GAS hydrate process	11 January 2021-10 July 2022	53.81
13.	Dr Rajnish Kumar	Saint Gobain India Private Limited (Research & Development)	CO2 capture	27 October 2020-30 June 2022	11.80
14.	Dr Raghunathan Rengasamy	Saint Gobain India Private Limited (Research & Development)	Digital twin for induction furnace	15 August 2020-4 November 2022	41.42
15.	Dr Raghunathan Rengasamy	Dassault Aviation	New AI-based methods for bizjets prognostic/predictive maintenance	1 July 2020-30 June 2022	64.98
16.	Dr Ramanathan S (PI), Dr Srirama Srinivas, EE (Co-PI)	GAIL India Limited	Quantification of AC induced corrosion rate in buried pipelines - measurement and physical process model	9 March 2020-4 December 2022	111.74
17.	Dr Vinu R	Shell India Markets Private Limited	Kinetics of hydrolysis and hydrodeoxygenation of biomass, biomass model compounds, plastics and mixtures	1 March 2020-31 July 2022	34.55
18.	Dr Sridharakumar Narasimhan (PI), Dr Shankar Narasimhan (CO-PI)	Heterogenous Communication Technologies Private Limited	IoT enabled monitoring systems for rural drinking water supply systems	19 December 2019-18 December 2022	36.89
19.	Dr Vinu R; Co-PIs: Dr R. Nagarajan, Dr V. Raghavan (ME), Dr S. R. Chakravarthy (AE)	Sukhbir Agro Energy Limited	Technology development for biomass based thermal power plants	18 November 2019-17 November 2024	188.09

20.	Dr Vinu R	ExxonMobil Research and Engineering Company	A holistic approach for biomass conversion to sugars and chemicals via hydrogenolysis using H-donor solvents and heterogeneous catalysts	1 May 2019-31 October 2022	204.72
21.	Dr Pushpavanam S, Dr T. Renganathan (Co-PI)	Bharat Heavy Electricals Ltd	Establishment of a bench-scale demonstration plant to process typical e-waste and recover valuable metals through a green hydrometallurgical route	15 January 2019-31 December 2022	37.16
22.	Dr Rajnish Kumar, Co-PIs: Dr T. Pradeep (CY), Dr Jitendra Sangwai	Gas Authority of India Limited	Methane production from marine hydrate deposits: bench-scale studies for methane recovery by carbon dioxide replacement	1 January 2018-30 June 2022	185.26
23.	Dr Raghunathan Rengasamy (PI), Co-PI: Dr Shankar Narasimhan, Dr B. Ravindran (CSE)	GE India Technology Centre Private Limited	Data analytics for aluminum smelters	1 June 2016-1 July 2023	48.00

Retainer consultancy (ongoing and new)

S. No.	Faculty Member	Industry	Title	Duration	Total Value (₹ in lakh)
1.	Dr Sridharakumar Narasimhan	Gnanam Institute for Training in Advanced Analytics Private Limited	Retainer consultancy with GITAA	1 February 2022-31 March 2023	20.00
2.	Dr Rajnish Kumar	IIT Madras Research Park	10X Strategy and guidance on Towards 100% Renewable Energy (RE) initiative	16 November 2021-15 November 2022	7.08
3.	Dr Aravind Kumar Chandiran	IIT Madras Research Park	10X Strategy and guidance on Towards 100% RE	1 November 2021-31 October 2022	7.08
4.	Dr Sridharakumar Narasimhan	IITM Pravartak Technologies Foundation	Retainer consultant on cyber physical systems	1 July 2021-30 July 2024	1.18
5.	Dr Arun K. Tangirala	GITAA Private Limited	Consultant for education initiatives	1 April 2020-31 March 2023	20.00
6.	Dr Shankar Narasimhan S	GITAA Private Limited	Lectures in data analytics	1 November 2018-31 March 2023	22.16

Other projects (ongoing and new)

S. No.	Faculty Member	Industry	Title	Period	Total Value (₹ in lakh)
1.	Dr Nagarajan R (PI); Dr Suresh Kumar Rayala, BT (Co-PI)	Pratiksha Trust	Indian spice-derived cancer nanomedicine: an effective strategy in drug development	1 December 2021-30 November 2023	55.00
2.	Dr Raghunathan Rengasamy	National Stock Exchange of India Limited	Hyperlocal air pollution monitoring using mobile monitoring for Gurugram and Mumbai	1 July 2021-30 June 2024	370.76
3.	Dr Abhijit Deshpande P	Pan Alumni Leadership Series - IITM ACT	RuTAG-PALS Project	1 August 2020-31 July 2022	5.25
4.	Dr Raghunathan Rengasamy (PI); Dr B. Ravindran, CSE (Co-PI)	Robert Bosch Centre for Data Science and Artificial Intelligence	Multi-city hyperlocal environmental monitoring using distributed low-cost sensor network	24 February 2020-31 December 2022	25.00
5.	Dr Sridharakumar Narasimhan (PI); Co-PIs: Dr Shankar Narasimhan; Dr B. Ravindran, CSE	Robert Bosch Centre for Data Science and Artificial Intelligence	Data driven monitoring of water distribution networks	24 February 2020-31 December 2022	22.20
6.	Dr Nagarajan R	Fullerton India Credit Company Limited	Promotion of social entrepreneurship among schools, higher institutions and social enterprises	1 April 2019-15 August 2022	80.50
7.	Dr Abhijit Deshpande P (PI); Co-Investigators: Dr Susy Varughese, Dr Basavaraja M. Gurappa, Dr Ethayaraja Mani, Dr Sumesh P. Thampi	Common Code	Testing for equipment in Polymer Engineering and Colloid Science Group	27 October 2018-26 October 2023	15.90
8.	Dr Arun K Tangirala (PI); Dr Shankar Narasimhan (Co-PI)	Robert Bosch Engineering and Business Solutions	Comprehensive Errors-invariables-based model identification	25 October 2018-3 August 2023	17.20
9.	Dr Sridharakumar Narasimhan (PI); Dr Nirav Bhatt, BT 9 Co-PI)	Robert Bosch Engineering and Business Solutions	Online data analysis for rapid identification and monitoring of reaction systems based on multi-sensing	25 October 2018-3 August 2022	24.00
10.	Dr Raghunathan Rengasamy	Robert Bosch Engineering and Business Solutions	Fundamental methods to incorporate domain knowledge into selected machine learning techniques	8 May 2018-3 August 2023	10.00

4.4.6. Other Activities of the Department

Results obtained in research work (from M.S. and Ph.D thesis) of the scholar/faculty

S. No.	Roll No.	Student	Guide	Title
1	CH17S010	Neha Kulkarni	Dr Ethayaraja Mani	Stability of water-in-water Pickering Emulsions
2	CH18S002	P J Jayanthan	Dr Aravind Kumar Chandiran	Interface engineering of bismuth vanadate for photoelectrochemical water splitting
3	CH18S005	Kiran Prabhu	Dr Aravind Kumar Chandiran	Integrated solar energy conversion and storage in a photoelectrochemical device
4	CH16S303	Kushal Voona	Dr Niket S. Kaisare; Dr Sujith R.I.	Active feedback control and optimal actuator-sensor placement for thermoacoustic instability in Rijke Tube
5	CH14D005	Naveen V	Prof. Abhijit P. Deshpande and Dr S. Raja, CSIR-NAL, Bengaluru	Studies on the development of microcapsules based self-healing composites
6	CH14D210	Kavi Monica V	Dr R. Vinu; Prof. P. Selvam (CY)	Fast hydrolysis and catalytic hydrodeoxygenation of biomass and biomass model compounds to valuable petrochemicals
7	CH14D214	Kinhal Krishna Vadirajacharya	Prof. S. Pushpavanam; Prof. Nirav P Bhatt, BT	Insights into morphology-controlled synthesis and separation of metallic nanoparticles
8	CH14D215	Ankitha Theres George	Prof. S. Ramanathan; Prof. V.V. Raghavendra Sai	Detection of chikungunya using electrochemical, piezoelectric and fiber optic biosensors
9	CH14D402	Jacob John	Prof. Susy Varughese; Prof. Abhijit P. Deshpande	Role of calcium crosslinking on the mechanics and microstructure of pectin-based gels and blends
10	CH15D004	Rajesh Pachimatla	Prof. S. Ramanathan - Guide	Mechanistic analysis of electrochemical reactions using nonlinear electrochemical impedance spectroscopy
11	CH15D006	Bharathi Ganesan R.	Prof. A. Kannan	Investigation on ternary adsorption over modified activated carbons using design of experiments and modelling approaches
12	CH15D015	J. V. Jayarama Krishna	Dr R. Vinu	Experimental and kinetic modelling studies on pyrolysis of polymers and e-wastes for resource recovery
13	CH15D019	Ahana P.	Dr Sumesh P. Thampi	Hydrodynamics of channel confined micro-swimmers
14	CH15D201	Suseendiran S. R.	Prof. Raghunathan Rengasamy	Design and optimization of cylindrical proton exchange membrane fuel cells and stacks
15	CH15D400	Aswathy K. Raghu	Prof. Niket S. Kaisare	Sabatier reaction: concepts for microreactor design utilizing reaction exothermicity and multiscale kinetic modelling
16	CH15D401	Arvind R.	Prof. Niket S. Kaisare	Distributed and hierarchical control of multi-unit systems
17	CH15D410	Neha Y.	Prof. Niket S. Kaisare	Heat recirculating microreactors for enhanced combustion and their integration with thermoelectrics for power generation

18	CH15D413	Chandragiri Santhan	Dr Sumesh P. Thampi	Flows, flow transitions and topological defects in active nematics
19	CH16D006	Yogendra Kumar	Prof. Upendra Natarajan	Molecular simulation studies of the structural properties of complexes formed by non-ionic polar polymers and polyelectrolytes in aqueous solution
20	CH17D200	Kanala Venkata Sravana Chaithanya	Dr Sumesh P. Thampi	Hydrodynamics of compound particles

Student visit

S.No.	Student	Purpose of Visit	Period
1.	Preetika Rastogi, CH16D203	Research visit to Stanford University, California, USA under Fulbright-Nehru Doctoral Research Fellowship	15 November 2021-15 August 2022

Activities initiated

1.	Our industry relations and international collaborations are perhaps the strongest in recent times. Several faculty are involved in Government of India schemes such as UAY (Uchhatar Avishkaar Yojana), IMPRINT and SPARC, which promote industrial and international engagement. Our 2020-21 industry partners include BHEL Trichy, Mahindra Group, Daimler India Commercial Vehicles Private Limited, Hindustan Petroleum Corporation Limited, Ashok Leyland, Shell, GAIL, Dr Reddy's Laboratories, Cummins India and ExxonMobil. Our sponsoring agencies include MHRD, DST-SERB, National Supercomputing Mission R&D HPC, DRDO, CSIR, Ministry of Health & Family Welfare, and Ministry of Heavy Industries & Public Enterprises.	
2.	Department Degree Distribution Program - 58th Convocation 2021 (virtual); Chief Guest: Dr Vikram Rao, Executive Director, Research Triangle Energy Consortium Retired CTO and Senior Vice President, Haliburton Company	4 December 2021

(a) Faculty Matters

1.	Prof. Jitendra Sangwai joined Department of Chemical Engineering on transfer from Ocean Engineering w.e.f. 19 March 2021.
2.	Prof. Shankar Narasimhan was granted sabbatical leave from 1 April to 31 December 2021 for taking up the position of CEO at Gyan Data Private Limited, IITM Research Park.
3.	Dr Swapna Singha Rabha joined as an Assistant Professor in the Department of Chemical Engineering on 3 May 2021.
4.	Prof. Sreenivas Jayanti has been permitted to accept the position of Member on Technical Advisory Group for Centre for Automotive Energy Materials (CAEM) and Centre for Fuel Cell Technology (CFCT) for a period of three years from July 2021.
5.	Dr Basavaraja M. Gurappa was promoted as Professor w.e.f. 20 July 2021.
6.	Dr Rajnish Kumar was promoted as Professor w.e.f. 20 July 2021.
7.	Dr T. Renganathan was promoted as Professor w.e.f. 20 July 2021.
8.	Prof. Niket S. Kaisare has been granted sabbatical leave from 25 September 2021 to 10 July 2022 to accept the position of Visiting Fellow at University of Minnesota, USA, for collaboration with Prof. Aditya Bhan's research group under Fulbright-Nehru Academic and Professional Excellence Fellowship.

9.	Prof. R. Ravikrishna has taken the charge of Head of Chemical Engineering Department since 8 November 2021.
10.	Prof. R. Nagarajan has been granted sabbatical leave for a period from 1 January-31 July 2022 for taking up the position as Robert T. Henson Distinguished Visiting Scholar in the Davidson School of Chemical Engineering, Purdue University, USA.
11.	Dr R. Vinu has been granted sabbatical leave to take up the position of Co-Founder/CEO-CTO at X2 Fuels and Energy Private Limited for a period from 3 January-30 June 2022.
12.	Prof. Raghunathan Rengasamy, Department of Chemical Engineering, as Dean (Global Engagement) was given an extension of one year from 27 February 2022 to 26 February 2023.

(b) Faculty Achievements/News

13.	A book entitled <i>Introduction to Electrochemical Impedance Spectroscopy</i> authored by Dr Fathima Fasmin and Prof. Ramanathan Srinivasan was published by CRS Press, Taylor & Francis, in May 2021.
14.	A book entitled <i>Active Buckling Control of Structures</i> authored by Dr Mini Remanan, Prof. C. Lakshmana Rao and Prof. Arun K. Tangirala was published by Ane Books Private Limited.
15.	Prof. Preeti Aghalayam has been named as the IIT Madras representative to the Board of IN-SPACe, the newly formed nodal agency to promote and regulate private enterprises in the space sector.
16.	Prof. Aravind Kumar Chandiran and Prof. Rajnish Kumar have been named as the only researchers from India in "2021 Energy and Fuels Rising Stars" by <i>Energy & Fuels</i> , an American Chemical Society journal.
17.	Two research articles of Prof. Jitendra Sangwai have been featured among 'Top 25 Most Cited Articles in 2019' published in <i>Energy & Fuels</i> .
18.	A scanning electrochemical microscope and a high-vacuum mid- and far-IR Spectrometer with ATR set-up have been added as part of Prof. Aravind Kumar Chandiran's project on "Postmortem Analysis of Batteries", sponsored by Mahindra Group. Prof. Aravind Kumar Chandiran was also part of a team of IIT Madras researchers who designed white light emitters for high-efficiency LED applications and won a SERB-Technology Translation Award.
19.	Prof. Jitendra Sangwai and Prof. Rajnish Kumar, both working in gas hydrates, have developed a process for methane recovery from marine gas hydrates in collaboration with Gas Authority of India Limited and the Ministry of Petroleum and Natural Gas. They are now targeting a field trial of this process in Krishna-Godavari Basin.
20.	Prof. Raj Srinivasan and his team of researchers have recently procured a 120 Hz mobile Eye Tracker (model number: Aurora 120 Hz from Smart Eye SE) for conducting human factors studies for process safety applications, as well as usability studies for advanced process control applications. Prof. Raj Srinivasan has also led a team of researchers who have developed a method to determine whether a worker has the mental capacity to handle a crisis in a factory, or other high-stress jobs, by measuring their brainwaves using an electroencephalogram (EEG).
21.	Prof. T. Renganathan and Prof. S. Pushpavanam were part of an Indo-UK research team that developed a portable paper-based sensor to detect antibiotics and antimicrobials such as ciprofloxacin, amoxicillin and triclosan and heavy metals in water. The team came up with a novel method for the fabrication of paper-based devices using a commercial laser printer.
22.	Prof. Sreenivas Jayanti and his Ph.D. scholar, Dr G. Raveendra, have built a redox flow battery with a power rating of 2.5 kW and developed an operating protocol and design criteria for a 10-kW device. This is an attractive alternative to conventional Li-ion and lead-acid batteries for industrial use.
23.	Prof. Rajnish Kumar was part of a team of Indian researchers who found out that certain surfactant molecules can increase the efficiency of methane uptake significantly in the formation of methane hydrates.
24.	An artificial intelligence and data science-powered tool, Superstats, co-developed by IIT Madras and ESPNcricinfo, is enhancing the experience of IPL matches for its fans by providing a context to every event in a game, and providing insights into factors such as 'luck.' Prof. Raghu Rengasamy played a key role in this innovation.

25.	Prof. Preeti Aghalayam and Dr Kartic Vaidyanathan have refined “experiential learning’ by bringing play into the classroom and introducing online games to reinforce learning concepts.
26.	Prof. Preeti Aghalayam, listed among 75 Indian women in the book <i>She Is: 75 Women in STEM</i> , an initiative undertaken by the Office of the Principal Scientific Adviser to GoI and British High Commission to honour women in STEM.
27.	Dr Tarak Patra has been highlighted by <i>ACS Polymers Au</i> in their special issue on 2021 Rising Stars in Polymers in the editorial. The link of the article is https://pubs.acs.org/page/apaccd/vi/2021-rising-stars . The journal also features the work in the front cover page of the current issue, which can be seen in the link: https://pubs.acs.org/toc/apaccd/2/1
28.	Professor Dr Himanshu Goyal, Dr Niket S. Kaisare; Headline: Now, AI tools to study conversion of biomass; URL: https://ahmedabadmirror.com/iit-madras-team-uses-ai-to-study-production-of-fuel-from-biomass/81820686.html
29.	Prof. Raj Srinivasan, along with Prof. Jinsong Zhao (Tsinghua University, China), recently edited a Special Issue on “Data Analytics in Process Safety” for the journal <i>Process Safety & Environmental Protection</i> (IF: 6.158). The editorial is available at https://www.sciencedirect.com/science/article/pii/S0957582022000507 and the entire special issue (comprising 18 papers) can be viewed at https://www.sciencedirect.com/journal/process-safety-and-environmental-protection/special-issue/10QCVQMKQ1W
30.	Dr. Kannan Aravamudan authored a book on <i>Soft Computing Optimization Algorithms and Their Application in Parameter Estimation of a Rigorous Adsorption Kinetics Model</i> , in <i>Soft Computing Techniques in Solid Waste and Waste Water Engineering</i> , alongwith Rama Karri, R Gobinath, Mohammad Hadi Dehghani (eds.), Elsevier, Paperback ISBN: 9780128244630, 2021

(c) Staff Matters

31.	R. Palanivelu, Junior Technical Superintendent, obtained his B.E. (EEE) degree in July 2020 from Anna University, College of Engineering, Guindy, and patent approval along with Prof. S. Pushpavanam.
32.	J. Sridhar, Junior Superintendent, retired from the services on 31 May 2021.

(d) Student Achievements/Matters

33.	Chemplus 2022: In association with ChES and AIChE IITM, the Department of Chemical Engineering conducted the 15th annual technical edition of technical festival, Chemplus 2022, 11-13 March 2022. Being a separate event for undergrads (ChemClave) and postgrads (ChemSymp) earlier, Chemplus transformed into an event that incorporates both the fun part in engineering as well as the research element of a symposium. The prime events organised during Chemplus 2022 were Plenary Lecture series, ChemE Quiz, paper presentation, workshops, E-Games and ChemEMeme contests. For career enthusiasts, we had a brand-new event organised during this edition of Chemplus, ChemE Panel; a panel discussion on Careers in Chemical Engineering delegated for by our accomplished alumni and moderated by Dr Himanshu Goyal.
-----	--

Plenary Lectures Overview

1. Clean Water Nowhere: Dr Vijaysai P
2. Tackling CO2 Emissions from Industry: Dr Swapna Singha Rabha
3. A Chemical Engineer's Journey: Dr Ram Gandikota

Paper presentation topics

1. Energy & Environment
2. Material science, Polymers and Colloids
3. Process Intensification
4. Reaction Engineering
5. Healthcare Technology
6. Carbon Capture
7. Electrochemical Engineering

Workshops

1. Data Science and Machine Learning for Engineers
2. MATLAB
3. ANSYS
4. DWSIM

IIT Madras students who bagged prizes**Paper Presentation Event**

1. Pillalamarri Srikrishnarka: First, Material Science, Polymers and Colloids Theme
2. Shuvajit Ghosh: First, Electrochemical Engineering Theme
3. Manasa Manoj (CH19D204): First, Energy and Environment Theme
4. Balivada Kusum Kumar (CH20D007): Second, Reaction Engineering Theme
5. Jigar Shaileshkumar Halpati (CH17D202): Second, Energy and Environment Theme
6. Ajin R (CH19D005): Third, Reaction Engineering Theme
7. Allwyn S. Rajamani: Third, HealthCare Technology

ChemE Quiz

1. Akshat Pandey - Second Place
2. Dhaval Vijaybhai Patel (CH21M007) - Second Place

Crossword

1. Sahil Shailesh Halarnkar (CH19B086) - First Place
2. Ayush Bhavsar (CH20M011) - Second Place
3. Dhaval Vijay Patel (CH21M007) - Second Place

Current Institute Post Doctoral Fellow data list (March 2022)

S. No.	Roll No.	PDF	Mentor	Date of Joining
1	CH19IPF03	Dr Santhana Krishnan P	Dr Preeti Aghalayam	6 May 2019
2	CH19IPF07	Dr A. Tamilselvan	Dr A. K. Chandiran	15 July 2019
3	CH20IPF06	Dr Anusha Thampi V. V.	Dr S. Ramanathan	1 September 2020
4	CH20IPF02	Dr K. Alamelu	Dr Aravind Kumar Chandiran	23 November 2020
6	CH21R004	Dr Padma Ishwarya S.	Dr Basavaraja M Gurappa, Dr Shantanu Pradhan (BT)	1 March 2021
7	CH21R002	Dr Abiraman T.	Dr Sridharakumar Narasimhan, Dr P Selvam (CY)	8 February 2021
8	CH21R005	Dr Tamilmani S.	Dr Preeti Aghalayam, Dr Jithin John Varghese	22 March 2021
9	CH21R006	Dr Abinash Das	Dr Basavaraj M Gurappa - Mentor; Dr Aravinda Kumar Chandiran - Co-Mentor	1 May 2021
10	CH21R007	Dr Garima Mishra	Dr Sumesh P Thampi, Dr Basavaraja M Gurappa	3 May 2021
11	CH22R001	Dr Paridhi Goel	Dr Swapna Singha Rabha	17 February 2022
12	CH22R002	Dr Kusumita Datta	Dr S. Pushpavanam	21 February 2022
13	CH22R003	Dr Athira Johnson	Dr R. Nagarajan	1 April 2022

Current Project Post-Doctoral Fellow data list (March 2022)

S. No.	Name	Designation	Mentor	DOJ
1.	Dr Shukla Darpan Krishnakumar	Post-Doctoral Researcher	Dr Rajagopalan Srinivasan	3 January 2022
2.	Dr Dillip Kumar Mohapatra	Post-Doctoral Researcher	Dr Basavaraja Madivala Gurappa	21 January 2022
3.	Dr Aparajita Das	National Post-Doctoral Fellow	Dr Aravind Kumar Chandiran	9 February 2022
4.	Dr Ramachandran E	Post-Doctoral Researcher	Dr Sridharakumar Narasimhan	1 March 2022
5.	Dr Chandragiri Santhan	Post-Doctoral Researcher	Dr Sumesh P Thampi	1 March 2022
6.	Dr Uma K	Post-Doctoral Researcher	Dr Nagarajan R	1 March 2022
7.	Dr Pradeep Kumar Yadav	Post-Doctoral Researcher	Dr Pushpavanam S	21 March 2022
8.	Dr Balasubramanian P	Post-Doctoral Researcher	Dr Vinu R	11 April 2022
9.	Dr Omkar Singh Kushwaha	Post-Doctoral Researcher	Dr Rajnish Kumar	1 August 2020

4.5 Department of Chemistry

4.5.1. Introduction

The Department of Chemistry was a part of the Department of Chemical Engineering from 1959-1961 and became an independent department in 1961 with Prof. V. Srinivasan as the Head-in-Charge. Prof. M.V.C. Sastri assumed charge as the first Head of the Department in November 1961. He was instrumental in building the department as well as the Applied Chemistry Building (completed in 1973). Prof. Sastri was also responsible for the Special Instruments Laboratory (established in 1970; later known as RSIC and presently known as SAIF), and the MSRC (established in 1974 with Prof. Sastri as the

Head and Prof. V. Srinivasan as the Associate Head).

4.5.2. Academic Programmes

The department offers M.Sc. and Ph.D. programmes in chemistry. As on date, 1,020 students have graduated with the M.Sc. degree and 773 students with the Ph.D. degree. Various aspects of chemistry are also taught at the preparatory level (for weaker section students) and in the B.Tech. programme (core as well as minor stream courses in chemistry). The department is well equipped with modern instrumentation facilities and actively engaged in performing quality teaching and research in frontier areas.

Students on roll as of September 2021 + M.S. and Ph.D. admission in January 2022

Programme	I Year	II Year	III Year	IV Year	V Year and Others	Total
M.Sc.	62	54				116
Ph.D.	45	45	37	51	113	291

Students/Scholars who attended conferences/seminars/symposia in India

S.No.	Student/Scholar	Roll No.	Symposium	Date and Venue	Financial Assistance from
1	Manmath Panigrahy	CY17D053	Theoretical Chemistry Symposium	10-14 December 2021, IISER Kolkata	CSIR

Students/Scholars who won outside prizes and awards

S.No.	Student/Scholar	Roll No.	Prize	Prize Awarded By
1	Sumana Brahma	CY15D038	Best Oral Presentation and Young Scientist Award-2021	40th Annual National Conference, Indian Council of Chemists
2	Fredy Joy	CY18D037	Best Poster	Indian Society for Radiation and Photochemical Sciences (ISRAPS)
3	Arindom Roy	CY20D076	Best Poster	NISER Bhubaneswar
4	Deepan Chowdhury	CY17D030	Best Oral Presentation	XVII J-NOST 2022
5	Jambu S	CY16D095	Best Thesis Award	NOST-SAILIFE Best Thesis Award-2021

Students/Scholars who won Institute Convocation/Institute Day Prize

S.No.	Student/Scholar	Roll No.	Prizes
1	Naman Arora (M.Sc. student)	CY20C027	Mrs Kalaimani Natarajan Prize

4.5.3. Faculty and Their Activities

Faculty

Name and Qualifications	Major Areas of Specialisation
Professors	
Sankararaman S., Ph.D. (Victoria, Canada)	Synthetic and mechanistic organic chemistry
Dhamodharan R., Ph.D. (U. Mass, USA)	Chemistry of macromolecules
Mishra A. K., Ph.D. (IIT Kanpur)	Physical photochemistry, fluorescence spectroscopy
Pradeep T., Ph.D. (IISc, Bangalore)	Solid state chemistry, materials science
Sanganarayanan M.V., Ph.D. (IISc, Bangalore)	Electrochemistry
Selvam P., Ph.D. (IIT Madras)	Nanostructured materials and heterogeneous catalysis; solid state and surface chemistry
Archita Patnaik, Ph.D. (BHU)	Physical chemistry, colloid and interface science, nanoscience and nanotechnology
Baskaran S., Ph.D. (IIT Kanpur)	Organic synthesis and asymmetric synthesis
Indrapal Singh Aiden, Ph.D. (University of Pune)	Synthetic organic chemistry, synthetic carbohydrate chemistry and synthesis of biologically and medically important targets
Mangala Sunder K., Ph.D.(McGill, Canada) (Head)	Theoretical spectroscopy, magnetic resonance and molecular spectra; quantum chemistry and quantum information processing, online digital content development and online teaching; technology enhanced learning
Vidyasagar K., Ph.D. (IISc, Bangalore)	Solid state chemistry
Bhyrappa P., Ph.D. (IISc, Bangalore)	Bioinorganic, supramolecular and materials chemistry of porphyrinoids
Ranga Rao G., Ph.D. (IISc, Bangalore)	Materials chemistry, solid state electrochemistry, surface chemistry and heterogeneous catalysis
Sanjay Kumar, Ph.D. (IIT Kanpur)	Theoretical chemistry, quantum chemistry
Narasimha Murthy N., Ph.D. (IISc, Bangalore)	Bio-inorganic chemistry, inorganic chemistry, spectroscopy
Dillip Kumar Chand, Ph.D. (IIT Kanpur)	Supramolecular chemistry, inorganic chemistry
Sekar G., Ph.D. (IIT Kanpur)	Organic synthesis, asymmetric synthesis
Sundaragopal Ghosh, Ph.D. (IIT Bombay)	Organometallic and metalloborane chemistry
Rajakumar B., Ph.D. (IISc, Bangalore)	Atmospheric chemistry, gas-phase kinetic and high-resolution cavity ring down spectroscopy, computational chemistry
Muraleedharan K. M., Ph.D. (RRL, Trivandrum)	Bioorganic chemistry, medicinal chemistry
Prasad Edamana, Ph.D. (RRL, Trivandrum)	Divalent lanthanide and dendrimer chemistry
Arti Dua, Ph.D. (IISc, Bangalore)	Theoretical physical chemistry; stochastic reaction dynamics; statistical mechanics of complex fluids
Ramesh Gardas, Ph.D. (South Gujarat University)	Solution thermodynamics, ionic liquids
Kothandaraman R., Ph.D. (IISc, Bangalore)	Electrochemical systems and electrocatalysis
Associate Professors	
Debashis Chakraborty, Ph.D. (University of Gottingen, Germany)	Organometallics for polymer synthesis

Pazhamalai Anbarasan, Ph.D. (IISc. Bangalore)	Design and development of new synthetic methodologies based on carbenes trifluoromethylation and trifluoromethylthiolation synthesis of therapeutically important natural products
Jeganmohan M., Ph.D. (NTHU, Taiwan)	Metalcatalyzed organic reactions, total synthesis and asymmetric synthesis
Beeraiah Baire, Ph.D. (IISc. Bangalore)	Organic synthesis
Md Mahinddin Baidya, Ph.D. (LMU, Munich, Germany)	Designer catalysis for organic synthesis asymmetric synthesis, photoredox catalysis, C-H bond activation, synthesis of natural products
Venkatakrishnan P., Ph.D. (IIT Kanpur)	Organic functional materials

Assistant Professors

Kartik Chandra Mondal, Ph.D. (Karlsruhe Institute of Technology, Germany)	Inorganic chemistry
Arnab Rit, Ph.D. (University of Muenster, Germany)	Organometallic chemistry and catalysis, main-group chemistry
Hema Chandra Kotamarthi	Molecular biophysics/biophysical chemistry
Yamijala S.R.K. Chitanya Sharma	Application of nonadiabatic molecular dynamics (NAMD) methods, electronic structure (DFT) and ab initio molecular dynamics methods.
Sooraj K	Computational chemistry and material science
Palani Selvam T	Physical chemistry - electrochemistry high performance electrode materials for all solid-state battery applications

Short-term courses/workshops/seminars/symposia/conferences organised by the faculty members

S.No.	Coordinator(s)	Title	Period
Conferences			
1	Prof. K.M. Muraleedharan and Dr Hema Chandra Kotamarthi	MedChem-2021	1-3 December 2021
2	Prof. T. Pradeep	Virtual Indo-Japanese workshop	3-5 September 2021
3.	Prof. R. Kothandaraman, Prof. G. Ranga Rao, Prof. M. S. Ramachandra Rao, and Prof. Sathyan Subbiah	RAISE (International Conference on Recent Advances and Innovation in Solar Energy)	2-4 December 2021
4.	Prof. R. Kothandaraman (one of the organizing committee members) and Prof. M.S. Ramachandra Rao (Convenor)	Third Indian Materials Conclave and the 32nd Annual General Meeting of MRSI	20-23 December 2021
Workshops			
1	Prof. T. Pradeep	Monthly discussion meeting with IITM faculties and students to create theory-experiment interface	23 March-18 December 2021
2	Prof. T. Pradeep	IITM Research initiative spotlight-Molecular materials and functions-Advanced materials	3-5 September 2021
3	Prof. G. Sekar	SERB Project writing workshop	14 July 2022

Short-Term Courses

1	Prof. T. Pradeep	A book discussion on Method in the Madness with the author, Parameswaran Iyer	15 April 2021
2	Prof. T. Pradeep	Technical writing course	18 January-19 February 2021
3	Prof. T. Pradeep	Workshop on using Blender	5-8 August 2021
4	Prof. R. Kothandaraman	Trained Teachers of Government Model Schools - on request from the Tamilnadu government- Model Schools	8 December 2021-9 February 2022

Seminars

1	Prof. R. Kothandaraman and Dr P. Venkatakrishnan	Garnet-based solid electrolytes for advanced all solid-state Li battery - delivered by Prof. Venkataraman Thangadurai	24 June 2021
2	Prof. R. Kothandaraman and Dr P. Venkatakrishnan	An Organic Chemist's view on the Development of Perovskite Solar Cell-delivered by Prof. Tahsin J. Chow	29 July 2021
3	Prof. R. Kothandaraman and Dr P. Venkatakrishnan	Facilely synthesized spiro [Fluorene-9,9'-phenanthrene-10'-one]-based Hole-transporting Materials for Perovskite Solar Cells and Dye-sensitized solar cells-delivered by Prof. Yuan Jay Chang	11 August 2021
4	Prof. R. Kothandaraman and Dr P. Venkatakrishnan	Towards Cost Effective, Stable, and Greener Perovskite Solar Cells -delivered by Prof. Hongxia Wang	7 October 2021

Short-term courses/workshops/seminars/symposia/conferences/training attended by the faculty members in academic institutions and public sector undertakings

S.No.	Faculty Member	Title	Institution	Period
-------	----------------	-------	-------------	--------

Workshops

1	Dr Venkatakrishnan P	Science Academies' Virtual Lecture Workshop on Recent Advances in Chemical Sciences	PG & Research, Department of Chemistry, Kongunadu Arts and Science College (Autonomous), College of Excellence	28-29 September 2021
2	Prof. Archita Patnaik	Annual Meeting of the Alexander von Humboldt Foundation, Diversity of Ideas	AvH Foundation, Germany	23-24 June 2021
3	Prof. Archita Patnaik	Course Curriculum Workshop	IIT Jammu	10 December 2021
4	Prof. T. Pradeep	Nanoparticles are molecules	Indo-Japanese virtual workshop	3 September 2021

Seminars

1	Prof. Archita Patnaik	Chemistry Teachers in Higher Education	National Resource Centre for Education and Department of Higher and Professional Education (NIEPA), New Delhi	2021
---	-----------------------	--	---	------

2	Dr Arnab Rit	UGC-sponsored refresher course in chemistry at the Department of Organic Chemistry	University of Madras	27 January-9 February 2021
3	Prof. Jeganmohan M	Ruthenium-catalyzed C-H functionalization of organic molecules	Department of Chemistry, Central University of Jammu and IIT Jammu	19 March 2021

Conferences

1	Rapid crystallization of perovskite films employing a low entropy perovskite ink for solar cell applications by Ramya K. Battula, C. Sudakar, P. Bhyrappa, G. Veerappan and Easwaramoorthi R.	International Conference on Recent Advances and Innovations in Solar Energy - RAISE-2021	IIT Madras	2-4 December 2021
2	Prof. Archita Patnaik	Chaired a session during the Chemical Research Society of India (CRSI)	IISER Kolkata	26-29 September 2021
3	Prof. Archita Patnaik	Applied Chemistry: Exploring Futuristic Applications for Sustainable Development	Isabella Thoburn College, Lucknow	26-28 October 2021
4	Prof. Archita Patnaik	Plenary Lecture during 9th National Conference on Materials Science and Technology - 2021 (NCMST-2021)	Indian Institute of Space Science and Technology, Thiruvananthapuram, Kerala, India	29-31 December 2021
5	Prof. Archita Patnaik	Invited Lecture in NCMST-2021	Department of Chemistry, Indian Institute of Space Science and Technology (IIST)	29-31 December 2021
6	Dr Arnab Rit	International Conference on Main-group Molecules to Materials (MMM) -II	NISER Bhubaneswar	13-15 December 2021
7	Dr Arnab Rit	Recent Trends in Chemical Sciences - Young Scientist Conclave Section (RTCS-YSC 2021)	Hyderabad Central University	24 December 2021
8	Prof. P. Selvam	Plenary lecture: Indo-French Symposium on Functionalized Materials for Sustainable Catalytic and Related Applications (MATSUCAT-2021)	Strasbourg, France	26-28 October 2021
9	R. Bose, A. Mallika, P. Selvam, N.S. Kaisare	Crystal size effect on CO ₂ -induced structural transition of flexible ZIF-7 framework	4th European Conference on Metal Organic Frameworks and Porous Polymers, Kraków	12-15 September 2021

10	Prof. T. Pradeep	Atomically precise clusters of noble metals	International Conference on Advanced Materials and Mechanical Characterization	2 December 2021
11	Prof. T. Pradeep	Affordable clean water using advanced materials	National Conference on Recent Trends in Materials Science	29 December 2021
12	Arti Dua	Transients generate memory and break hyperbolicity in stochastic enzymatic networks	IISER Kolkata (online mode)	10 December 2021
1	Dr Venkatakrishnan P	Teachers' Training - A Tamil Nadu Government Initiative	Model Schools	8 December 2021-9 February 2022

Special lectures delivered by the faculty in other institutions

S. No.	Faculty Member	Topic of Lecture	Institution	Date
1	Dr Yamijala Chaitanya Sharma	Science, technology and innovation are the key drivers for self-reliant India	DRG Government Degree College, Tadepalligudem, Andhra Pradesh	27 February 2022
2	Dr Beeraiah Baire	Variable temperature NMR (dynamic NMR) applications	NIT Warangal, Telangana	22 February 2021
3	Dr Beeraiah Baire	Acid catalyzed cascade reactions for rapid generation of complexity	NIT Raipur, Chhattisgarh	21 December 2021
4	Prof. P. Selvam	Nano- and Nanoporous Materials via Self-assembly - Applications in Catalysis	University of Strasbourg, Strasbourg, France	29 October 2021
5	Prof. P. Selvam	Morphologically-controlled Nanomaterials and Periodic Nanoporous Structures for Sustainability	CSIC-Instituto de Catalis, Madrid, Spain	23 October 2021
6	Prof. P. Selvam	Nanostructured Materials via Self-assembly—Applications in Catalysis	University of Claude Bernard Lyon 1, Lyon, France	20 October 2021
7	Prof. P. Selvam	Green Chemistry and Catalysis	Ecole Normale Supérieure de Lyon, Lyon, France	19 October 2021
8	Prof. Ramesh L. Gardas	Environmentally benign solvents for dissolution, separation and extraction of biomacromolecules	Dr B. R. Ambedkar National Institute of Technology Jalandhar, Punjab	10 January 2021
9	Prof. Ramesh L. Gardas	Ionic liquids as environmentally benign solvents for sustainable developments	Dr Harisingh Gour Vishwavidyalaya, Sagar, Madhya Pradesh	21 January 2021
10	Prof. Ramesh L. Gardas	Do's and don'ts in scientific literature search and writing research papers	Knowledge Consortium of Gujarat (KCG), Department of Education, Government of Gujarat	30 January 2021

11	Prof. Ramesh L. Gardas	Environmental benign solvents for sustainable developments in chemical and technological applications	Ahmedabad University, Ahmedabad, Gujarat	3 February 2021
12	Prof. Ramesh L. Gardas	Ionic liquids for solar thermal applications	Government Engineering College Patan, Gujarat	11 February 2021
13	Prof. Ramesh L. Gardas	Thermal analysis of chemical substances	UGC-HRDC, University of Hyderabad, Telangana	16 February 2021
14	Prof. Ramesh L. Gardas	Environmental benign solvents for sustainable developments in science, technology and innovation, on National Science Day 2021 with the theme, Future of Science, Technology & Innovation - Impacts on Education, Skills and Work	Govt. V.Y.T. PG Autonomous College, Durg, Chhattisgarh	28 February 2021
15	Prof. Ramesh L. Gardas	A few tips to start the scientific research: Part-I. Literature search and Part-II. Writing research articles	UGC-HRDC, University of Jammu, Jammu	6 March 2021
16	Prof. Ramesh L. Gardas	Alternative solvents for sustainable developments	ACS India Virtual Lecture Series, organised by ACS India	19 March 2021
17	Prof. Ramesh L. Gardas	Characterization of chemical substances by thermal analysis	Veer Bahadur Singh Purvanchal University, Jaunpur, UP	26 June 2021
18	Prof. Ramesh L. Gardas	Novel green solvents: an alternative to conventional ones	Dow India Technology Centre (DITC)	16 July 2021
19	Prof. Ramesh L. Gardas	Ionic liquids as environmentally benign solvents for enhancing the sorption and extraction processes	IIT Roorkee	31 July 2021
20	Prof. Ramesh L. Gardas	Ionic liquids as environmentally benign solvents for enhancing the sorption and extraction processes	RSC - Local Section Deccan, BITS Pilani, K K Birla Goa Campus	4 September 2021
21	Prof. Ramesh L. Gardas	Career in chemistry	Vanita Vishram Women's University, Surat, Gujarat	9 October 2021
22	Prof. Ramesh L. Gardas	Ionic liquids as benign solvents for chemical and technological applications	Institute of Chemical Technology (ICT), Mumbai	27 October 2021
23	Prof. Ramesh L. Gardas	A few tips on academic writing skills	Cochin University of Science and Technology (CUSAT), Kochi, Kerala	6 November 2021
24	Prof. Ramesh L. Gardas	How to read and write research paper?	Sardar Vallabhbhai National Institute of Technology (SVNIT), Surat, Gujarat	13 November 2021
25	Prof. Ramesh L. Gardas	Funding agencies and writing project proposals for research grants	Vels Institute of Science, Technology and Advanced Studies (VISTAS), Chennai, Tamil Nadu	2 December 2021

26	Prof. Ramesh L. Gardas	Ionic liquids as benign solvent systems for sustainable chemical processes	Satavahana University, Karimnagar, Telangana	29 December 2021
27	Prof. T. Pradeep	Affordable clean water using advanced materials	SUNRISE Symposium, UK Research and Innovation, virtual conference	21 February 2021
28	Prof. T. Pradeep	Molecular chemistry of nanoparticles	Savitribhai Phule Pune University	25 February 2021
29	Prof. T. Pradeep	Nanotechnology for clean water	Centre for Water Resources Development and Management	1 March 2021
30	Prof. T. Pradeep	Advanced materials for clean water, Science Academies' Lecture Workshop	Kongu Engineering College	8 April 2021
31	Prof. T. Pradeep	Affordable clean water - evolving technology landscape	International Advanced Research Centre for Powder Metallurgy and New Materials, Balapur	9 April 2021
32	Prof. T. Pradeep	Affordable clean water using advanced materials	Rajiv Gandhi University of Knowledge Technologies	21 May 2021
33	Prof. T. Pradeep	Clean water using nanotechnology - current status	The National Academy of Sciences India, Allahabad	5 June 2021
34	Prof. T. Pradeep	Affordable clean water using advanced materials	Rajiv Gandhi University of Knowledge Technologies, Nuzvid	13 June 2021
35	Prof. T. Pradeep	Molecular chemistry of nanoparticles	B. Borooah College	17 June 2021
36	Prof. T. Pradeep	Transforming colleges through research	Stella Maris College	24 June 2021
37	Prof. T. Pradeep	Molecular clusters of noble metals	IIT BHU	15 July 2021
38	Prof. T. Pradeep	Nanotechnology for improving availability and quality of water	International Life Sciences Institute	26 July 2021
39	Prof. T. Pradeep	Nanotechnology for clean water	Charotar University	7 August 2021
40	Prof. T. Pradeep	Nanomaterials for clean water	Tolani College	25 August 2021
41	Prof. T. Pradeep	Advanced materials for clean water	Rajiv Gandhi Centre for Biotechnology	13 October 2021
42	Prof. T. Pradeep	Nanoparticles are molecules	Bhabha Atomic Research Centre	20 October 2021
43	Prof. T. Pradeep	Nanoparticles are molecules (offline)	IIT Delhi	26 October 2021
44	Prof. T. Pradeep	Microdroplet synthesis, emerging frontiers in chemical sciences	Farook College	29 October 2021
45	Prof. Kothandaraman R	Organic Redox Flow Battery Chemistries	Saranathan College of Engineering, Trichy	21 September 2021

46	Prof. Kothandaraman R	Aqueous organic redox flow chemistries	Nehru Institute of Engineering and Technology, Coimbatore	6 October 2021
47	Prof. Kothandaraman R	Organic Redox Flow Battery Chemistries	RAiSE - IITM	2-4 December 2021
48	Prof. Kothandaraman R	Integrated Approach to Science and Technology for Sustainable Future	CSIR-Central Electrochemical Research Institute, Karaikudi	22 March 2021
49	Prof. Kothandaraman R	Electrochemical Nitrogen Reduction with Nanostructured Catalysts	International Conference on Materials Genome (ACCMS-ICMG-II)	24-25 March 2022

Honours and awards obtained by faculty

S. No.	Faculty Member	Award	Awarded by	Awarded for	Date of Award
i. Honours					
1	Prof. Archita Patnaik	Chairperson: TARE Program (Teachers Associateship for Research Excellence)	DST/SERB	Three years (a scheme to support innovative research projects from interior universities and institutions)	July 2021
2	Prof. Archita Patnaik	Expert Committee Member: SUPRA (Scientific and Useful Profound Research Advancement) Program	DST/SERB	Three years (a scheme beyond normal core grants): designed for high-quality proposals and out-of-box solutions	1 November 2021
3	Prof. Archita Patnaik	Expert Committee Member: FIRE (Fund for Industrial Research Engagement)	DST/SERB	Three years (to review and recommend SERB - industry based proposals)	12 July 2021
4	Prof. Archita Patnaik	Expert Committee Member: SRS (SERB Research Scientists Scheme) Program	DST/SERB	Three years (to review the progress over five-year project completion and to recommend extension with new proposals for Inspire Faculty and Ramanujan Fellows)	17 December 2021
5	Prof. Archita Patnaik	Chairperson: Chemical Sciences: SIRE (SERB International Research Experience)	DST/SERB	One year (to build national capacity in frontier areas of science, by providing researchers' opportunity to visit eminent institutions worldwide)	11 March 2021

6	Prof. Jeganmohan M	The (Late) Shri G.D. Gokhale Lectureship Endowment	ICT		10-10-2021
7	Prof. Jeganmohan M	Fellow of the Academy of Sciences, Chennai	The Academy of Science, Chennai		1-10-2021
8	Prof. P. Selvam	Adjunct Faculty	IROAST, Kumamoto University, Japan		2021-2022
9	Prof. K M Muraleedharan	Fellow	Academy of Sciences, Chennai		21 September 2021
10	Prof. T. Pradeep	Nominated as the Chairman, Board of Governors of Institute of Nano Science and Technology, Mohali			
11	Prof. T. Pradeep	Nominated as the National Representative for the Analytical Chemistry Division of the International Union of Pure and Applied Chemistry (IUPAC)			
12	Prof. T. Pradeep	Invited to serve as the convenor of the Commission for Reforms in the Higher Education Sector constituted by the Government of Kerala			
13	Prof. T. Pradeep	Chosen for the 2021 Edition of the elite Asian Scientist 100 List			
14	Prof. Kothandaraman R	Vice President of Indian Society for Electroanalytical Chemistry (ISEAC)	BARC- Mumbai		Period 2021-2024
15	Prof. G. Sekar	Member of the Screening Committee of DST "SERB-SUPRA	SERB-DST		2022
16	Prof. G. Sekar	Convener, Chemical Research Society of India (CRSI), Chennai Regional Chapter	CRSI, India		2021-till date
17	Prof. G. Sekar	Co-opted Member, Programme Advisory Committee (PAC) of Organic Chemistry, DST-SERB	SERB-DST		2021-2024
18	Prof. G. Sekar	Vice president, RSC - South India Local Section	RSC		2022 onwards
19	Prof. G. Sekar	Member, Programme Advisory Committee (PAC), Special Call Proposals for Chemical Sciences, DST-SERB	SERB-DST		2022-2024

20	Prof. G. Sekar	Expert committee member for the Centre of Excellence on "Sustainable and Affordable Synthetic Strategies towards APIs, SERB, India	SERB-DST		2022 onwards
21	Prof. G. Sekar	Joint Secretary, Chemical Research Society of India (CRSI)	CRSI		2020-2023
22	Prof. G. Sekar	Selection committee member, DST-INSA Inspire faculty fellowship	DST-INSA		2022

ii. Awards

1	Prof. Jeganmohan M	Chemical Research Society of India (CRSI) Bronze Medal	CRSI		29 September 2021
2	Prof. P. Selvam	Member, Board of Management	Vels University, Chennai		2019-2022
3	Prof. P. Selvam	Vice-President	Catalysis Society of India		2018-2022
4	Prof. P. Selvam	Honorary Treasurer	Royal Society of Chemistry, India-South Section		2019-2022
5	Prof. P. Selvam	Best Poster Award	4th European Conference on Metal Organic Frameworks and Porous Polymers, Krakow, Poland		2021
6	Dr Mahiuddin Baidya	Merck Young Scientist Award (Runner-up)	Category: Chemical Sciences		2021
7	Prof. Dilip Kumar Chand	Bronze medal	Chemistry Research Society of India (CRSI)		26 March 2022
8	Prof. T. Pradeep	Silver medal	CRSI		
9	Prof. T. Pradeep	Vishwakarma Medal	Indian National Science Academy		
10	Prof. T. Pradeep	Distinguished Alumna Award	IISc, Bangalore		
11	Prof. T. Pradeep	Padmashri Award	Government of India	Pioneering contribution in nanotechnology-based water purification	
12	Prof. Kothandaraman R	Amara Raja Award-2021	M/s Amara Raja Batteries Limited from The Electrochemical Society of India		2021

13	Prof. Kothandaraman R	CRSI Bronze metal -2023	Chemical Research Society of India		2022
14	Prof. G. Sekar	Senior Scientist Award for the year 2021 (Dr M. Santappa Award in Chemical Sciences)	Academy of Sciences Chennai		2021
	Prof. G. Sekar	Best Researcher of the Year 2021 Award by Centre for Education Growth and Research, India	CEGR		2021

Fellowships of academies and professional societies

S.No.	Faculty Member	Year of Admission
1	Prof. Ramesh L. Gardas, Life Member, Indian Institute of Chemical Engineers (IICChE), Kolkata	2021

Journal editorial boards

S. No.	Faculty Member	Position	Journal Name
1	Dr Hema Chandra Kotamarthi	Review editor	<i>Frontiers in Molecular Biosciences</i>
2	Prof. Archita Patnaik	Editorial Board Member	<i>Journal of Chemical Science</i> (Indian Academy of Sciences + Springer publishing)
3	Prof. Archita Patnaik	Editorial Board Member	<i>Journal of Chemical Thermodynamics</i> (Elsevier)
4	Prof. P. Selvam	Editorial Board Member	<i>Materials Today Sustainability</i> (Elsevier Publishers) 2018
5	Prof. P. Selvam	Editorial Board Member	<i>Catalysis in Green Chemistry and Engineering</i> (Begell House Publishers, 2018 onwards)
6	Prof. P. Selvam	Review editor	<i>Frontiers in Chemical Engineering</i> (Springer, 2019 onwards)
7	Prof. Ramesh L. Gardas	Associate Editor	<i>Journal of Chemical & Engineering Data</i> , ACS
8	Prof. Ramesh L. Gardas	Editorial Board Member	<i>Heliyon</i> , Cell Press
9	Prof. Ramesh L. Gardas	Editorial Board Member	<i>Journal of Ionic Liquids</i> , Elsevier
10	Prof. Ramesh L. Gardas	Editorial Board Member	<i>Green Chemistry Letters and Reviews</i> , Taylor & Francis
11	T. Pradeep	Member	Asian Chemical Editorial Society (ACES)
12	Prof. Kothandaraman R	Guest editor for the special issue (2022) on "Energy Storage and Photovoltaics"	<i>J. Photochemistry and Photobiology</i>
13	Prof. Kothandaraman R	Guest editor for the focus issue "Energy Storage in China 2021"	<i>J. Electrochem. Soc.</i>
14	Prof. G. Sekar	Associate Editor, Frontiers in Chemistry (Catalytic Reactions and Chemistry)	<i>Frontiers in Chemistry</i>
15	Prof. G. Sekar	Editorial board member, e-journal of the ASC	Academy of Sciences, Chennai

4.5.4. Design and Development Activities

New facilities added or major equipment procured

S. No.	Faculty Member	Equipment	Value (₹ in lakh)
1	Dr Yamijala Chaitanya Sharma	Computer Workstation	4.9976
2	Dr Yamijala Chaitanya Sharma	Rail Mount Kit	0.059
3	Dr Yamijala Chaitanya Sharma	HP P24V 23.8" monitor (four in number)	0.51,979
4	Dr Yamijala Chaitanya Sharma	HP Z1 G6 Entry Tower workstation (four in number)	2.25826
5	Dr Venkatakrishnan P	Spectroelectrochemistry	19.3
6	Prof. Bhyrappa P	UV-Visible spectrophotometer (Prizm) (TestRight Nanosystems Private Limited, New Delhi)	3.75
7	Dr Hema Chandra Kotamarthi	Table-top centrifuge with high-volume (4 L) and high-speed rotors	7.9
8	Dr Hema Chandra Kotamarthi	Incubator Shaker	1.7
9	Prof. T. Pradeep	Q Exactive™ UHMR Hybrid Quadrupole Orbitrap™ Mass Spectrometer (Thermo Scientific)	
10	Prof. Kothandaraman R	Metrohm Autolab UV/VIS/NIR Spectro electrochemistry	19.5
11	Prof. Kothandaraman R	Battery Fabrication Machineries	37.5
12	Prof. Kothandaraman R	Two port Adjoined Glove Box	23.5
13	Prof. Kothandaraman R	Solar simulator	6.0
14	Prof. Kothandaraman R	IPCE	19.00
15	Prof. G. Sekar (IoE project-Asymmetric Synthesis Lab)	HPLC	32
	Prof. G. Sekar (IoE project-Asymmetric Synthesis Lab)	GC	18
16	Prof. G. Sekar (IoE project-Asymmetric Synthesis Lab)	Polarimeter	10

Patents filed

S. No.	Faculty Member	Topic of Patent
1	P. Selvam	Method using bulk and porous N-containing/N-doped carbon and carbon nitrides as heterogeneous catalysts for borrowing hydrogen and dehydrogenation reactions
2	P. Selvam	Method for synthesis of ordered mesoporous LiFePO ₄ /N-doped carbon (LIP/MNC-31) composite
3	P. Selvam	High-performance electrode active material and a method for preparation thereof

4	P. Selvam	Method for surfactant-assisted hydrothermal synthesis of nanosized LiFePO ₄ /carbon composite
5	P. Selvam	Process for preparing a defect induced coloured titania
6	P. Selvam	Application of metal-free ordered mesoporous nitrogenous carbons as electrocatalysts for oxygen reduction reaction and thereof
7	Prof. T. Pradeep	A luminescence-based method of detecting arsenic using atomically precise noble metal nanocluster and phosphine
8	Prof. T. Pradeep	An electrode system for detection of free chlorine with differential oxidant response
9	Prof. T. Pradeep	A compact, modular and scalable continuous-flow greywater sink for potable and non-potable uses
10	Prof. T. Pradeep	Synthesis of copper sulfide nanostructures in brass coated steel cords used in radial tires under ambient conditions
11	Prof. T. Pradeep	A point-of-care (POC) amperometric device for selective arsenic
12	Prof. T. Pradeep	Method for selective extraction of gold by niacin
13	Prof. Kothandaraman R	Spinel derived from spent battery for electrochemical fixation of nitrogen into ammonia, Indian Patent
14	Prof. G. Sekar	Environmentally benign reusable copper nanoparticles-catalyzed synthesis of thiochromanones in water
15	Prof. G. Sekar	Metal-free green synthesis of medicinally valuable multi-substituted 2-phenylimidazo-[1,2-a]pyridines using visible light as sustainable energy source
16	Prof. G. Sekar	Transition metal-free denitrative C-S cross-coupling of 2-nitrochalcones for the synthesis of thiochromanones
17	Prof. G. Sekar	Recoverable and reusable palladium nanoparticle catalyzed stereoselective one-pot synthesis of 3-arylidene-2-oxindoles

Patents awarded

S. No.	Faculty Member	Topic of Patent
1	P. Selvam	Ordered and hierarchically porous zeolite crystal and a method for preparation thereof
2	P. Selvam	Method for using bulk and porous N-containing/N-doped carbon and carbon nitrides as heterogeneous catalysts for borrowing hydrogen and dehydrogenation reactions
3	P. Selvam	Method for synthesizing hexagonal and cubic ordered mesoporous γ -alumina
4	P. Selvam	Process for the preparation of ordered mesoporous titania (TMP-123) with anatase and monoclinic phases: a new generation photocatalyst
5	P. Selvam	Process for synthesis of well-ordered mesoporous titania (TMF-108) with bronze and anatase phases
6	P. Selvam	Ordered and hierarchically porous zeolite crystal and a method for preparation thereof
7	P. Selvam	Selective bifunctional catalyst and a method of preparation thereof
8	P. Selvam	Method for synthesis of ordered mesoporous ceria-zirconia solid solution
9	P. Selvam	CTAB-templated synthesis of nanocrystalline ordered mesoporous titania (TMC-016)
10	P. Selvam	Method for synthesizing hexagonal and cubic ordered mesoporous γ -alumina
11	Prof. T. Pradeep	A method of ionization on a 2D-nanostructured surface

12	Prof. T. Pradeep	Ambient microdroplet annealing method for converting polydispersed nanoparticles to their monodispersed analogues
13	Prof. T. Pradeep	A green method for preparing robust and sustainable cellulose-polyaniline based nanocomposite for effective removal of fluoride from water and a purifier thereof
14	Prof. T. Pradeep	Patterned metallic nanobrushes for capture of atmospheric humidity
15	Prof. T. Pradeep	Method for selective extraction of gold by niacin
16	Prof. T. Pradeep	A portable water filtration device for removing impurities from water using contaminant-specific purification cartridges
17	Prof. T. Pradeep	A method to make unprotected naked clusters of metals of precise composition in air without mass selection
18	Prof. T. Pradeep	A process for low-temperature, low-pressure synthesis of gas hydrates
19	Prof. T. Pradeep	Aqueous composition for durable and extremely efficient water repelling superhydrophobic materials at ambient condition thereof
20	Prof. T. Pradeep	Method for creating nanopores in MoS ₂ nanosheets by chemical drilling for disinfection of water under visible light
21	Prof. T. Pradeep	Method of making nanoparticles of precise isotopic composition by rapid isotopic exchange
22	Prof. G. Sekar	A one-step synthesis of 2-substituted benzo[b]thiophenes
23	Prof. G. Sekar	Cu-catalyzed practical domino synthesis of thioaurone and thioindirubin from commercially available starting materials using odorless xanthate as a sulfur surrogate
24	Prof. G. Sekar	Transition-metal-free synthesis of (aryl)(heteroaryl)methanols via halogen bond-assisted C(sp ³)-H bond activation

4.5.5. Research and Consultancy

Sponsored research projects (ongoing and new)

S. No.	Title	Period	Funding Agency	Amount (₹ in lakh)	Coordinators
1	Exploring the formation and evolution of solid electrolyte interphase at calcium surfaces: effects on calcium ion migration	Two years	DST-SERB	32.11	Dr Yamijala Chaitanya Sharma
2	Industry-academia consortium on quantum computing	Five years	Centre for Quantum Information, Communication and Computing	750	Anil Prabhakar (PI), Dr Yamijala Chaitanya Sharma (Co-PI), and others
3	Atomistic modelling and materials design	Five years	Ministry of Human Resource and Development	138	Ranjit Nanda (PI), Dr Yamijala Chaitanya Sharma (Co-PI), and others
4	Supramolecular chirogenesis in the novel electron deficient bisporphyrins and their applications in absolute configuration determination of chiral organic compounds	August 2018-August 2021	CSIR	7.5	Prof. Bhyrappa P (PI)

5	Untangling the unfolding and translocation mechanisms of knotted proteins by ATP-dependent proteases using biophysical tools and single-molecule force spectroscopy	20 December 2021-19 December 2023	SERB	32.944	Dr Hema Chandra Kotamarthi
6	Anatomize degradation kinetics of different structural proteins by ATP-dependent proteasomal activator from Mycobacterium tuberculosis	1 March 2022-29 February 2024	DBT-RA	14.9872	Dr Hema Chandra Kotamarthi
7	Structure and interaction in membrane mimetic lipid mono/bilayers with DNA/DNA origami structures	January 2020-July 2022	DST-SERB	26.46	Prof. Archita Patnaik
8	Non-Precious transition metal complexes of NHC-based pincer ligands: synthesis and catalytic applications in diverse organic transformations	August 2021-August 2024	Council of Scientific and Industrial Research	13	Dr Arnab Rit (PI)
9	Well-defined heterometallic complexes-catalysts in tandem reactions	October 2016-October 2021	Department of Science & Technology	35	Dr Arnab Rit (PI)
10	Stereoelectronically tunable NHC ligand supported base metal complexes: catalytic applications in CO ₂ reduction and C-X bond formations/functionalizations	December 2020-December 2023	Science and Engineering Research Board	56.3	Dr Arnab Rit (PI)
11	Center of Chiral Technology	February 2021-December 2026	Ministry of Education	186	Dr G Sekar (PI), Dr Arnab Rit (Co-PI) and others
12	Ruthenium-catalyzed π -bond assisted C-H bond functionalization of hydrocarbons	Three years	SERB-EMR, DST, May 2019-April 2022	57.17	Prof. Jeganmohan M
13	Ruthenium(II)-catalyzed redox-free cyclization of substituted aromatics or alkenes with carbon-carbon π -components via C-H bond activation	Three years	CSIR, India	22.54	Prof. Jeganmohan M
14	Total synthesis of benzo[C] phenanthridinones and benzo[C] phenanthridine alkaloids via a metal catalyzed cyclization of aromatic esters or amides with azabenzonobornadienes through C-H bond activation	Three years	SERB-EMR under TARE scheme	10.05	Prof. Jeganmohan M
15	Support for Sustaining Research (SSR)	One year	IIT Madras	2	Prof. Jeganmohan M
16	IoE proposal for Centre for Chiral Technology (CCT)	Two years	IIT Madras	40	Prof. Jeganmohan M

17	Bridging the gap between surface science studies and catalytic reaction engineering for oxidative dehydrogenation of light alkanes	2021-2024	SERB	77.94	Prof. P. Selvam
18	Development of PEM fuel-cell stacks for utilization of hydrogen from renewable sources	2018-2022	DST	40.62	Prof. P. Selvam
19	National facility of cryo-electron microscopy: remotely operable, 24x7 for academia and industry	2021-2025	SERB	2860	Pradeep T. (PI)
20	Carborane-protected metal nanoclusters: a new family of materials with atomic precision	2020-2023	DST/Czech	37	Pradeep T. (PI)
21	Identification and investigation of efficacy of potential biochemical molecules for extraction of gold and other noble metals from tailings and waste sources	2019-2021	Ministry of Mines	34.64	Pradeep T. (PI)
22	Chemical transformations of clathrate hydrates under ultra-high vacuum	2019-2022	Department of Science and Technology, CRG grant	76.5	T. Pradeep (PI)
23	Understanding surface properties of atomically engineered cluster-assembled solids	2019-2022	SPARC project	66.3	T. Pradeep (PI)
24	SUTRAM for EASY water	2018-2023	DST	890	T. Pradeep (Co-PI)
25	Cluster composite nanofibre membranes for rapid, ultra-trace detection of waterborne contaminants	Completed (31 December 2020)	Indo-German Science and Technology	191.324	T. Pradeep (PI)
26	VAJRA project with Pulickel M. Ajayan, Rice University	Completed (28 March 2023)		9.75	T. Pradeep (PI)
27	Affordable clean water in arsenic-affected areas	2018-2020	Millennium Alliance	50	T. Pradeep (PI)
28	Dust-free glass	Completed (31 October 2019)	Saint-Gobain Research India Ltd	36	T. Pradeep (PI)
29	Fingerprinting authenticity of Ayurvedic preparations using Ambient Electrospray Deposition Raman Spectroscopy (AERS), a home-grown method for rapid analysis	2021-2024	DST	93	T. Pradeep (PI)
30	Sustainable ion exchange resin-based technology for rare earth extraction	2021-2023	Ministry of Mines	52	T. Pradeep (PI)
31	Atomically precise naked clusters assemblies from ligand-stabilized clusters new materials for catalysis	2021-2024	DST-DFG Grant	72	T. Pradeep (PI)

32	pCoE on Molecular Materials and Functions, with colleagues from IITM and other institutions	2021-2026	IIT Madras	580	T. Pradeep (PI)
33	DST-JSPS joint workshop on Cluster science by interdisciplinary approach: emerging materials and phenomena	2021-2022	DST-JSPS (Conference proposal)		T. Pradeep (PI)
34	Novel SET oxidative cyclization of ylide: synthesis of functionalized ring systems	2021-2024	SERB	59.99	S. Baskaran (PI)
35	Spent Battery Recycling into Electrocatalyst for Ammonia Production and Raw Materials for New Batteries	29 September 2021-28 September 2024	DST	77.93	Prof. Kothandaraman R
36	Advanced Centre for Energy Storage and Conversion (PCoE)	4 February 2021-3 February 2023	IITM- Ministry of Education	225	Prof. Kothandaraman R
37	Meso-microporous core-shell carbon-based materials and electroactive diluent for long cycle life and high energy density Li- S batteries	29 October 2020-28 October 2022	ISRO	22.99	Prof. Kothandaraman R
38	On the Reduction of iR-losses, Flow Optimization and Identifying Alternative Membranes to Nafion for 1kW -4kWh Vanadium Redox Flow Battery Suitable for Residential Use	30 December 2019-29 December 2022	STARS-Ministry of Education	99.89	Prof. Kothandaraman R
39	Energy Storage Platform on Supercapacitors	6 November 2019-5 November 2024	DST	95.62	Prof. Kothandaraman R
40	Development of High Performance and Low-Cost Boron-Doped Diamond Electrodes for Waste Water Treatment	9 December 2019-8 December 2022	Impacting Research Innovation and Technology - IMPRINT	142.78	Prof. Kothandaraman R (Co-PI) and Prof. M.S. Ramachandra Rao (PI)
41	Ionogel Electrolyte Membrane Fuel Cell (IEMFC) with Plasma Electrolytic Nitrided (PEN) Metallic Bipolar Plate and Effective Flow Field Design	2 September 2019-1 September 2022	DST	56.73	Prof. Kothandaraman R (Co-PI) and Prof. Lakshman Neelakantan (PI)
42	Borophene: A Novel Two-Dimensional Graphene-Like Material for Future Energy Storage Applications	1 March 2022-29 February 2024	DST-SERB/ NPDF	22.36	Prof. Kothandaraman R and Dr Anandhakumar Sukeri

Industrial consultancy projects (ongoing and new)

S. No.	Faculty Member	Title	Industry	Amount (₹ in lakh)
1	Anil Prabhakar (PI), Dr Yamijala Chaitanya Sharma (Co-PI), and others	Industry-Academia Consortium on Quantum Computing	Larsen & Toubro Infotech Limited	80.99
2	Dr Md. Mahiuddin Baidya	Exploration of semiconductor materials as new photocatalysts for organic synthesis		
3	Prof. A.K. Mishra	Biomimetic nanotheranostics: a novel weapon towards chronic myeloid leukemia management		10.05
4	Prof. Sekar G.	Green and recyclable covalent organic framework (COF) for photoorganocatalytic C-H activation: an investigation of novel drug leads	SERB	10.05
5	Prof. Kothandaraman R.	Converting spent zinc carbon and zinc based alkaline batteries into a source of nutrients in the manure	Tide Water Oil Company (India) Limited	18.44
6	T. Pradeep (PI)	Steel-Rubber adhesion improvement - Phase 2	MRF Limited	1.2 Cr

RBIC Projects (ongoing and new)

S. No.	Faculty Member	Title	Industry	Amount (₹ in lakh)
1.	Prof. Archita Patnaik	Interfacial engineering and molecular modeling of polymer-silica nanocomposites	MRF Limited, Chennai	33.81612
2.	S. Baskaran	Molecular Weight Reduction of Biopolymer	APEX Lab., Chennai	37.80
3.	S. Baskaran	NSAID API as New Drug	APEX Lab., Chennai	40.79
4	Prof. Kothandaraman R.	Design, Development and Demonstration of 10 kWh/1kW Rechargeable Energy Storage System in Combination with Solar PV Charging: Vanadium Redox Flow Batteries	ONGC Energy Centre Trust	388

4.5.6. Other Activities of the Department**Faculty visit**

S. No.	Faculty Member	Purpose of Visit	Date and Venue
1	Prof. Bhyrappa P	Faculty promotion from Associate Professor to Professor	30 October 2021, Kannur University, Kerala, online mode
2	Prof. Bhyrappa P	CSIR-NET Question Paper Setter	20-25 July 2021, online mode
3	Prof. Bhyrappa P	CSIR-NET Question Paper Vetter	28-30 December 2021, Online mode
4	Prof. Bhyrappa P	Question paper setter for VITEEE-2022, Vellore Institute of Technology, Vellore	1-15 December 2021, Offline mode
5	Prof. T. Pradeep	International hybrid meeting on physics and chemistry of advanced materials	25 October 2021
6	Prof. T. Pradeep	Rashtrapati Bhavan, New Delhi, to receive the Padma Shri Award	18 November 2021

4.6. Department of Civil Engineering

4.6.1. Introduction

The Department of Civil Engineering has been in existence since the inception of IIT Madras in 1959. Since then, it is contributing to the nation's infrastructure development and human resource generation. The departmental activities include teaching, research, consultancy and training. These activities are carried out under different disciplines, administratively organised into five divisions,

namely Building Technology and Construction Management (BTCM), Environmental and Water Resources Engineering (EWRE), Geotechnical Engineering (GT), Structural Engineering (ST) and Transportation Engineering (TR). There are 14 well-equipped laboratories attached to these divisions. The EWRE and ST laboratories have received substantial initial funding from the Federal Republic of Germany.

4.6.2. Academic Programmes

The Department has postgraduate programmes leading to Dual Degree, M.Tech., M.S. and Ph.D. degrees in various disciplines of civil engineering in addition to the undergraduate B.Tech. programme in civil engineering. Also, the department offers an user-oriented industry-sponsored post-graduate diploma in bridge engineering.

New courses introduced

S. No.	Course No.	Title
1	CE6215	Soil Plant Atmosphere Continuum
2	CE5225	Numerical Techniques in Civil Engineering

Students on roll as of September 2021 + M.S. and Ph.D. admission in January 2022

Programme	I Year (2021)	II Year (2020)	III Year (2019)	IV Year (2018)	V Year and others	Total
B.Tech.	128	124	98	52	20	422
Dual Degree	13 (2019)	37 (2018)	41 (2017)	6 (2016)	5 (more than five years)	102
PG Diploma	15 (2021)	NA	NA	NA	NA	15
M.Tech.	97 (2021)	79 (2020)	8 (More than 2 year)			184
M.B.A.	NA	NA	NA	NA	NA	NA
M.S.	14 (2021)	19 (2020)	13 (More than 2 year)			46
Ph.D.	70 (2021)	72 (2020)	41 (2019)	32 (2018)	93	308

Students/Scholars who won outside prizes and awards

S.No.	Student/Scholar	Roll No.	Prize	Prize Awarded by
1	N. Nithila Devi	CE16D037	HYDRO-2021	International conference organised by SVNIT, Pune
2	B Sridharan	CE14D023	HYDRO-2021	International conference organised by SVNIT, Pune
3	R. Reshma	CE19D758	HYDRO-2021,	International conference organised by SVNIT, Pune
4	Dr Deepak Kamde	Former doctoral scholar	Best PhD Thesis Award	Kerala Highway Research Institute
5	Karthikeyan Manickam	CE18D014	Best Poster Award	Young Student & Scientist Forum
6	Dyana Joseline	CE15D031	Best Poster Award	Young Student & Scientist Forum

Students/Scholars who won Institute Convocation/Institute Day Prize

S.No.	Name	Roll No.	Prize
1	Akshay Mangal Mahar	CE16D203	Institute Research Awards
2	Sruthi T. K.	CE15D037	Institute Research Awards

Alumni Day Award

1	Vikrant Panwar	CE21M001	Duvvuru Sarada Award
---	----------------	----------	----------------------

Convocation Day Prizes 2021

1	Neduri Leela Venkata Sri Harsha	CE17B011	Larsen & Toubro ECC Endowment Prize
2	Anmol Agarwal	CE16B117	Dr NR Dave Prize
3	Yatham Jagruthi	CE19M026	Rajanikant Gandhi Memorial Award
4	Pradyumna Deepak Kulkarni	CE19M040	Valli Anantharamakrishnan Merit Prize
5	Catherine Sanchana I	CE19M052	K Devrajan Memorial Award
6	Pawas Trivedi	CE19M119	L&T Endowment Prize
7	Pawas Trivedi	CE19M119	Institute Merit Prize
8	Lekshmi Mohan V	CE15D056	Shri Gaayathree Devi Award
9	Nippatlapalli Narasamma	CE16D031	Bhagyalakshmi and Krishna Ayyengar Award

4.6.3. Faculty and Their Activities

Name and Qualifications	Major Areas of Specialisation
Professors	
Dr Robinson R.G., Ph.D. (IISc., Bangalore), (Head)	Geotechnical engineering
Dr Alagusundaramoorthy P., Ph.D. (IIT Madras)	Composite technology
Dr Amlan Kumar Sengupta, Ph.D. (University of Missouri)	Structural engineering
Dr Appa Rao G., Ph.D. (IISc. Bangalore)	Structural engineering
Dr Arul Jayachandran, Ph.D. (IIT Madras)	Structural engineering
Dr Ashwin Mahalingam, Ph.D. (Stanford University)	Building technology and construction management

Dr Balaji Narasimhan, Ph.D. (Texas A&M University)	Water resources engineering
Dr Benny Raphael, Ph.D. (University of Strathclyde, UK)	Building technology and construction management
Dr Devdas Menon, Ph.D. (IIT Madras)	Structural engineering
Dr Dodagoudar G.R., Ph.D. (IIT Bombay)	Geotechnical engineering
Dr Indumathi M. Nambi, Ph.D. (Clarkson University)	Environmental engineering
Dr Karthik K. Srinivasan, Ph.D. (Texas, Austin)	Transportation engineering
Dr Koshy Varghese, Ph.D. (Texas, Austin)	Building technology and construction management
Dr Lelitha Devi, Ph.D. (Texas A&M)	Transportation engineering
Dr Ligy Philip, Ph.D. (IIT Kanpur)	Environmental engineering
Dr Manu Santhanam, Ph.D. (Purdue University)	Building technology and construction management
Dr Meher Prasad A., Ph.D. (RICE)	Structural engineering
Dr Mohan S., Ph.D. (IISc., Bangalore)	Water resources engineering
Dr Murali Krishnan J., Ph.D. (IIT Madras)	Transportation engineering
Dr Murty B.S., Ph.D. (Washington State University)	Water resources engineering
Dr Murty C.V.R, Ph.D. (California Institute of Technology)	Structural engineering
Dr Nageswara Rao B., Ph.D. (Iowa University)	Structural engineering
Dr Raghukanth S.T.G, Ph.D. (IISc Bangalore)	Structural engineering
Dr Rajagopal K., Ph.D. (Florida)	Geotechnical engineering
Dr Ramamurthy K., Ph.D. (IIT Madras)	Building technology and construction management
Dr Ravindra Gettu, Ph.D. (Northwestern)	Building technology and construction management
Dr Saravanan U., Ph.D. (Texas A&M)	Structural engineering
Dr Satish Kumar S.R., D. Engg. (Nagoya University)	Structural engineering
Dr Shiva Nagendra S.M., Ph.D. (IIT Delhi)	Environmental engineering
Dr Sivanandan R, Ph.D. (Virginia Tech.)	Transportation engineering
Dr Srinivasan K, Ph.D. (IIT Madras)	Water resources engineering
Dr Sudheer K.P., Ph.D. (IIT Delhi)	Water resources engineering
Dr Thyagaraj T, Ph.D. (IISc Bangalore)	Geotechnical engineering
Dr Veeraragavan A, Ph.D. (Bangalore University)	Transportation engineering
Dr Dali Naidu Arnepalli, Ph.D. (IIT Bombay)	Geotechnical engineering
Dr Sachin S. Gunthe, Ph.D. (IITM Pune)	Atmospheric chemistry and physics
Dr Subhadeep Banerjee, Ph.D. (NUS, Singapore)	Geotechnical engineering
Associate Professors	
Dr Arun Menon, Ph.D. (University of Pavia, Italy)	Structural engineering
Dr Atul Narayanan, Ph.D. (Texas A&M)	Transportation engineering
Dr Gitakrishnan Ramadurai, Ph.D. (Rensselaer Polytechnic institute)	Transportation engineering
Dr S Mathava Kumar, Ph.D. (IIT Madras)	Environmental engineering

Dr Radhakrishna G. Pillai, Ph.D. (Texas A&M University)	Building technology and construction management
Dr Rupen Goswami, Ph.D. (IIT Kanpur)	Structural engineering
Dr Sivakumar Palaniappan, Ph.D. (Arizona State University)	Building technology and construction management
Dr Soumendra Nath Kuiry, Ph.D. (IIT Kharagpur)	Hydraulics and water resources engineering
Dr Venu Chandra, Ph.D. (IIT Kanpur)	Hydraulics and water resources engineering
Dr Vidya Bhushan Maji, Ph.D. (IISc Bangalore)	Geotechnical engineering
Assistant Professors	
Dr P. Alagappan, Ph.D. (Texas A&M University, USA)	Structural engineering
Dr Bhargava Rama Chilikuri, Ph.D. (Georgia Institute of Technology, Atlanta, Georgia, USA)	Transportation engineering
Dr Chandrasekhar Annavarapu, Ph.D. (Duke University, USA)	Geotechnical engineering
Dr Chandan Sarangi, Ph.D. (IIT Kanpur)	Environmental engineering
Dr Lakshmi Priya, Ph.D. (Georgia Institute of Technology)	Structural engineering
Dr Nikhil Bughalia, Ph.D. (University of Tokyo, Japan)	Building technology and construction management
Dr Phanaisri Pradeep Pratapa, Ph.D. (Georgia Institute of Technology, Atlanta, USA)	Structural engineering
Dr Piyush Chaunsali, Ph.D. (University of Illinois at Urbana-Champaign, USA)	Building technology and construction management
Dr Ramesh Kannan K, Ph.D., IISc Bangalore	Geotechnical engineering
Dr Surender Singh, Ph.D., IIT Roorkee	Transport engineering
Dr Tarun Naskar, Ph.D., Indian Institute of Science, Bangalore	Geotechnical engineering
Dr Venkatraman Srinivasan, University of Illinois Urbana Champaign, USA	Environmental engineering
Adjunct Faculty	
Prof. Hemanta Hazarika	Geotechnical Engineering
Prof. Kalanithy Vairavamoorthy	Environmental & Water Resource Engineering
Prof. Krishna R Reddy	Environmental Engineering / Geotechnical Engineering
Prof. N Kumar Pitchumani	Geotechnical Engineering
Prof. Parama Roy	Building technology and construction management
Prof. Ashok Kalidas	Building technology and construction management
Guest Faculty	
Mr K. Ganesan	Building technology and construction management
Visiting Faculty	
Prof. Raul Luiz Zerbino	Building technology and construction management

Dr Daniel Jesus Rosado Alcarria	Environmental engineering
Professor of Practice	
Prof D Srinagesh	Structural Engineering
Prof N. Raghavan	Building technology and construction management
Mr. P G Venkatram	Structural Engineering

Short-term courses/workshops/seminars/symposia/conferences organised by the faculty members

S. No.	Coordinator(s)	Title	Institution	Period
Workshops				
1	Murali Krishna	Performance Grading and Polymer Modified Binder	Hindustan Colas Private Limited	16-17 July 2021
2	TLC2 team (Prof K Ramamurthy, Prof Manu Santhanam, Prof Ravindra Gettu, Prof Koshy Varghese, Prof Ashwin Mahalingam, Prof Benny Raphael, Dr Radhakrishna G Pillai, Dr Sivakumar Palaniappan, Dr Nikhil Bugalia, Dr Piyush Chaunsali, Dr Surender Singh)	Two-day international workshop on Advances in Technologies for Low-Carbon and Lean Construction	IIT Madras	10-11 December 2021
3	Ashwin Mahalingam	Training programme on public-private partnerships	IIT Madras	16-18 December 2021
4	Ravindra Gettu	One-day virtual workshop on fundamentals of fibre-reinforced concrete and textile-reinforced concrete (FRC and TRC): testing and design	Online	28 January 2022
5	Ravindra Gettu, Piyush Chaunsali, Surender Singh	India-UK workshop on concrete waste recycling	Online	18 February 2022
6	Ashwin Mahalingam, Koshy Varghese, Sivakumar Palaniappan, Nikhil Bugalia	Mentoring and Augmenting Planning Skills	Online	August 2021-January 2022
7	Dr Dali Naidu Arnepalli, Mr G. Balamurugan, Junior Technical Superintendent	User Training Program on MTS Compression Testing Machine	Offline	28-31 March 2022
8	Surender Singh	International Workshop on Pavement Engineering and Road Safety Theory to Practice (PEARS)	Online	31 August 2021
9	Dr Lelitha Devi and Dr Bhargava Rama Chilukuri	Advanced Techniques for Mobility and Congestion Analysis for Indian Cities	Online	March 2021

Conferences

1	Lelitha Devi	6th Conference of Transportation Research Group of India	NIT Trichy	14-17 December 2021
2	Lelitha Devi	8th International Conference on Transportation Systems Engineering and Management	Online	August 2021
3	Bhargava Rama Chilukuri	6th Conference of Transportation Research Group of India	NIT Trichy	14-17 December 2021
4	Phanisri Pradeep Pratapa	4th National Conference on Multidisciplinary Design, Analysis and Optimization (NCMDAO) conference	Online	7-9 October 2021

Seminar/Webinar

1	Manu Santhanam, Ravindra Gettu, Ashwin Mahalingam, Benny Raphael	IRIS webinar: Technologies for Low Carbon and Lean Construction	Online	13 July 2021
2	Piyush Chaunsali	Utilization of Off-Spec Fly Ash for Low-Carbon Concrete by Prof Farshad Rajabipour	Online	21 September 2021
3	Benny Raphael, Koshy Varghese	Closed Loop Life Cycling by Construction Automation and Robotics by Prof Thomas Bock	Online	8 October 2021
4	Surender Singh	National Webinar on Use of Innovative Materials for Concrete Applications	Online	29 May 2021

Short-Term Course

1	Piyush Chaunsali	SPARC - Short-term course on Environmental Sustainability Assessment by Prof. Elsa Olivetti	Online	17-20 January 2022
2	Benny Raphael	AICTE-QIP Short-term course on Machine Learning for Construction Automation	Online	19 February-26 March 2022
3	Lelitha Devi	Smart Infrastructure Mobility Using Connected Vehicles	Online	February 2021
4	Lelitha Devi	Big Data Applications in Transportation Engineering	Online	January 2021
5	Lelitha Devi	Data Analytics and Predictive Technology for Intelligent Transportation Systems, IIT BHU	Online	March 2021
6	Chandan Sarangi	AICTE-QIP Short-term course on Concepts in measurement, laboratory experiments and modelling of atmospheric pollutants	Online	7-12 March 2022

Symposium

1	Radhakrishna G Pillai, Surender Singh	Ph.D. Symposium on Construction Materials (Technologies for Low-Carbon and Lean Construction)	Online	24 September 2021
---	---------------------------------------	---	--------	-------------------

Short-term courses/workshops/seminars/symposia/conferences/training attended by the faculty members in academic institutions and public sector undertakings

S.No.	Coordinator(s)	Title	Institution	Period
Workshop				
1	Radhakrishna G Pillai	5th Workshop on Corrosion Control in Concrete Structures (C3S), NIGIS & ICI	Online	5 December 2021
2	Surender Singh	RILEM 2021 Strategy Workshop - Moderated the workshop	Online	6 April 2021
Conferences				
1	Piyush Chaunsali	International Conference: EM4SS'21 - Engineered Materials for Sustainable Structures	Online	26 April 2021
2	Ravindra Gettu, Piyush Chaunsali, Radhakrishna G Pillai	75th RILEM Week, International Conference on Advances in Sustainable Construction Materials and Structures	Merida, Mexico	29 August-3 September 2021
3	Benny Raphael, Ashwin Mahalingam	38th ISARC Conference	Online	2-4 November 2021
4	Koshy Varghese, Ashwin Mahalingam, Nikhil Bugalia	Indian Lean Construction Conference 2021	Ahmedabad, India	1-4 December 2021
5	Koshy Varghese	The 3rd Workshop on Energy, Infrastructure, and Environment Research (EIER) 2022 - Sustainability for resilience, and resilience for sustainability	Online	13 January 2022
Seminar				
1	Lelitha Devi	Webinar series on Transportation Engineering, College of Engineering, Trivandrum	Online	January 2021
2	Dr. Chandan Sarangi	Faculty talks under UGC Human Resource Development Centre, JNU, Delhi	Online	February 2022
Symposium				
1	Lelitha Devi	IIS UTokyo Symposium on ITS Research	Online	April 2021
2	Lelitha Devi	Prof. T. Anantharajan Memorial Endowment Lecture (Seventh Annual Series), Anna University	Online	February 2022
Short-Term Course				
1	Ashwin Mahalingam	Mentoring and Augmenting Planning Skills 8.1	Online	6 September 2021-28 February 2022

Special lectures delivered by the faculty in other institutions

S.No.	Faculty Member	Topic of Lecture	Institution	Date
1	Dr Reetik Kumar Sahu	Water resources management, optimization and machine learning	International Institute for Applied Systems Sciences (IIASA), Vienna, Austria	30 March 2022

Visits abroad by faculty

S.No.	Faculty Member	Purpose of Visit	Country Visited	Date	Funding
1	Dr Manu Santhanam	Private Visit to Houston, Texas	Texas, USA	25-26 March 2022, 1-3 April 2022	Project
2		Talk at American Concrete Institute (USA)	Florida, USA	27-28 March 2022	Project
3		Visit to Arizona State University	Phoenix, USA	29-31 March 2022	Project
4	Dr K Rajagopal	Private visit to Dubai	Dubai, UAE	16-24 March 2022	
5	Dr Arul Jayachandran	Sabbatical leave	USA	1 January 2021-25 May 2022	
6	Dr Ravindra Gettu	RILEM Spring Convention Paris 2022	France	11-17 March 2022	Project
7		Research collaboration at RWTH Aachen University under UGC-DAAD	Germany	18-22 March 2022	Project
8		SCL for Visit to Dubai Expo Technology Showcasing (PCF)	Dubai	23-24 March 2022	Project
9	Dr Sachin S Gunthe	Meeting with officials from High Commission of India in Dhaka	Bangladesh	14-18 March 2022	Without financial assistance
10	Dr Shiva Nagendra S M	CPDA & Project	Thailand	25-29 March 2022	Project
11	Dr Arun Menon	Peer-review meeting in University of Minho, Guimaraes	Portugal	2-10 April 2022	Project
12	Dr A S Chandrasekhar	Universitat Politecnica de Catalunya	Barcelona, Spain	25 February-3 June 2022 and 12 June-3 July 2022	CPDA
13	Dr Chandan Sarangi	Workshop and seminar Organization	Thailand	25-29 March	CPDA and Project

Honours and awards obtained by faculty

1. Prof. Ligy Philip, Department of Civil Engineering, and Prof. Nandita DasGupta, Department of Electrical Engineering, were listed among 75 Indian Women in the book, *She Is: 75 Women in STEM*, an initiative undertaken by the Office of the Principal Scientific Adviser to Government of India and British High Commission to honour women in STEM.
2. Dr Subhadeep Banerjee, Department of Civil Engineering, was invited to serve as an Editorial Board Member of *Indian Geotechnical Journal*, a Springer publication.
3. Prof. A. Boominathan, Department of Civil Engineering, was chosen for the A. S. Arya Disaster Prevention Award, a research award of IIT Roorkee.
4. Prof. S. Mohan, Department of Civil Engineering, was chosen as the first Vice-Chancellor of the Puducherry Technological University. Dr Dali Naidu Arnepalli, Department of Civil Engineering, was invited to serve as an Editorial Board Member of *Environmental Geotechnics* from ICE Publishing.

5. Prof. T. Thyagaraj, Department of Civil Engineering, and his former doctoral scholar Dr M. Julina won the IGS-YGE Best Paper Biennial Award 2021 for their paper entitled, Combined effects of wet-dry cycles and interacting fluid on desiccation cracks and hydraulic conductivity of compacted clay, published in Engineering Geology (2020) being adjudged as the Best Paper on Environmental Geotechnology.

Journal editorial boards

S.No.	Faculty Member	Position	Journal Name
1	Prof. Subhadeep Banerjee	Editorial Member	<i>Indian Geotechnical Journal</i>
2	Prof. Dali Naidu Arnepalli	Editorial Board Member	<i>Environmental Geotechnics from ICE Publishing</i>
3	Prof. B. Nageswara Rao	Editorial Board Member	<i>Structural Monitoring and Maintenance</i>

4.6.4. Design and Development Activities New facilities added or major equipment procured

Equipment list for the period of April 2021 to March 2022		
PO Date	Equipment	Amount (Rs)
01.01.2021	Concrete pan mixer	349860
15.02.2021	MGC Cards	962710
24.02.2021	Platinum stock products	248850
24.02.2021	ICP Triaxial shock accelerometer	248850
3.03.2021	ICP Triaxial shock accelerometer	248850
12.02.2021	Core cutting machine	185000
12.02.2021	Drying and heating oven	702240
19.04.2021	Book shelf - STRL No. 306	57059
23.04.2021	10 KVA UPS - Delta - 1 No.	186375
03.04.2021	Baker make dial gauge	28019
08.06.2021	5 KVA UPS - Numeric	115440
12.05.2021	Split A/c 2.0 ton	44890
07.07.2021	Digital pressure gauge	126000
26.07.2021	Anchorage system	48300
23.08.2021	1 KVA UPS Numeric	48615
07.09.2021	Dell workstation	132825
07.09.2021	Dell workstation	132825
13.09.2021	Notice board with glass door	75520
19.09.2021	Shutter and storage STRL 107	158080
19.09.2021	Storage box and shutter STRL 109	172900
26.09.2021	Steel computer running table - 9	199921
30.09.2021	Seal and back wire knitted revolving chair	191160
05.10.2021	ACER All-in-One - 4 No. GEM	207292
06.10.2021	Steel computer running table - 7	155495
21.10.2021	Steel computer running table - 5	117156
17.11.2021	Load cell	970859

15.11.2021	Video conferencing camera - GEM	221000
05.12.2021	Pressure transmitter	135660
07.12.2021	Samsung frame QLED TV	128000
15.12.2021	Essae electronic	30059
15.12.2021	Planetary mixer	50400
01.01.2022	Numeric 3 KVA UPS	40950
22.01.2022	HP All-In-One PC	79711
21.01.2022	Dell Precision workstation	171990
27.01.2022	Hitachi 2T A/c for BSB 115	50000
30.01.2022	Video conferencing camera	221000
15.02.2022	Polyurethane beam mould	20475
16.02.2022	Wooden conference table	36736
15.02.2022	Dell 27" Monitor - 2 Nos.	40320
16.02.2022	Thick toughened glass for table	37798
7.03.2022	Water potential with soil sampling	1051047
7.03.2022	HP LaserJet Pro MFP M 329dw	31386
8.03.2022	Dell All-In-One PC	86719
26.02.2022	Water dispenser - 3 Nos.	18919
21.03.2022	600 VA UPS - 4 Nos.	9600
21.03.2022	Weighing balance	24150
09.04.2021	HP Laserjet Printer Pro	22075
22.09.2021	Senior executive steel table	20000
09.11.2021	Medium back chair	5074
21.12.2021	Revolving chair	14337
21.12.2021	Computer table - 2 Nos.	18410
24.12.2021	Work table	9912
21.12.2021	Revolving chair - 4 Nos.	22656
01.02.2022	Revolving chair	11328
23.02.2022	Pressure transmitter	21210
21.03.2022	Notice board - 5 Nos.	57820
17.02.2022	Blue Star water dispenser	18400
17.03.2022	Visitors' chair	15340

Patents filed

S. No.	Faculty Member	Topic of Patent
1	Dr Lelitha Devi V, Dr Bhargava Rama Chilukuri	Use of wi-fi media access control scanner data for traffic state estimation near signalised intersections
2	Dr Shiva Nagendra S M	Sensurair network for ambient air quality monitoring
3	Dr Subhadeep Banerjee, Dr Raghavan N	Precast segmental construction for concrete foundations for transmission line towers and other structures
4	Dr Benny Raphael	3D Printed structural frames made of reinforced concrete
5	Dr Bhargava Rama Chilukuri	Departure time planner using V2V and V2I communication

Patents awarded

S. No.	Faculty Member	Topic of Patent
1	Dr Radhakrishna G Pillai	Assessment of galvanic anode performance for cathodic protection of reinforced concrete structures
2	Dr Shiva Nagendra S M	Five-stage air cleaner device made of novel self-cleaning photocatalytic filter
3	Dr Indumathi M Nambi	An effective strategy to remove chromium form wastewater
4	Dr Shiva Nagendra S M	Off-Resonant broadband absorption based photoacoustic sensor for multiple gas sensing

4.6.5. Research and Consultancy Sponsored research projects (ongoing and new)

S.No.	Principal Investigator	Project Co-Investigator(s)	Project Title	Agency Name	Total Value (₹ in lakh)
1	Arun Menon	Rao BVN-11, CAD; Meher Prasad A-002776, CE; Satyanarayana KN-002815, CE; Gandhi SR-003105, CE; Manu Santhanam-008100, CE; Dodagoudar GR-008105, CE; Murty BS-008163, CE; Nageswara Rao B-008169, CE; Vidya Bhushan Maji-008327, CE; Raghukanth STG-008344, CE	National Centre for Safety of Heritage Structures (NCSHS)	Ministry of Education	1211.50
2	Shiva Nagendra S M		CPCB Continuous Ambient Air Quality Monitoring Station at IIT Madras-Phase II	Central Pollution Control Board	10.34
3	Shiva Nagendra S M		Source apportionment of ambient particulate matter during winter season in Delhi City	Government of National Capital Territory of Delhi	51.89
4	Shiva Nagendra S M	Gitakrishnan Ramadurai-008432, CE	Clean Air for Delhi Through Interventions, Mitigations and Engagement (CADTIME)	Ministry of Earth Sciences, New Delhi	67.44
5	Soumendra Nath Kuiry	Murty BS-005017, CE	Experimental and numerical model study of urban flood	Department of Science & Technology	47.05

6	Amlan K Sengupta	Radhakrishna G Pillai-008459, CE	Structural behaviour of corroding prestressed concrete systems and extension of service life using cathodic protection	Department of Science & Technology	39.60
7	Sachin S Gunthe	Chakravarthy Balaji-005007, ME; Sannasiraj SA-008117, OE	Mass-based hygroscopicity of ambient aerosols under contrasting environment over eastern coast of India	Department of Science & Technology	93.58
8	Ligy Philip	Sannasiraj SA-008117, OE	Adaptation of waste management infrastructure in coastal areas to climate change	Department of Science & Technology	75.44
9	Sudheer K P	Sannasiraj SA-008117, OE; Indumathi Manivannan Nambi-008204, CE; Balaji Narasimhan-008310, CE; Venkatraman Srinivasan-008930, CE	Climate change impact on water resources in coastal areas	Department of Science & Technology	99.17
10	Soumendra Nath Kuiry	Murty BS-005017, CE; Sannasiraj SA-008117, OE; Murali K-008130, OE	Storm surge impact on estuaries	Department of Science & Technology	41.47
11	Sachin S Gunthe		Properties of atmospheric aerosols from contrasting environment in continental and marine boundary layer over tropical Indian region	Department of Science & Technology	16.08
12	Ligy Philip	Sarathi R-000032, EE; Shankar Narasimhan S-002635, CH; Murty BS-005017, CE; Balaji Srinivasan-008157, EE; Ravindra Gettu-008190, CE; Balaji Narasimhan-008310, CE; Sridharakumar Narasimhan-008328, CH; Bobby George-008425, EE	Centre for Sustainable Treatment, Reuse and Management for Efficient, Affordable and Synergistic Solutions for Water (Water-IC for SUTRAM of EASY water)	Department of Science & Technology	893.57

13	Ligy Philip	Sarathi R-000032, EE; Boby George-008425, EE	Wastewater treatment technologies and sensors	Department of Science & Technology	179.15
14	Ligy Philip	Pradeep T-002505, CY	Centre for Sustainable Treatment, Reuse and Management for Efficient, Affordable and Synergistic Solutions for Water (WATER-IC for SUTRAM of EASY WATER)	Department of Science & Technology	27.50
15	Balaji Narasimhan	Murty BS-005017, CE	Sustainable drainage systems and water management	Department of Science & Technology	38.81
16	Indumathi Manivannan Nambi	Guhan Jayaraman-008028, BT; Sathyanarayana N Gummadi-008099, BT; Mukesh Doble-008162, BT; Karthik Raman-008481, BT; Mathava Kumar S-008671, CE	Environmental antimicrobial resistance - creation of a region specific metagenomic database and strategies for halting the propagation of AMR	Indian Council of Medical Research	160.70
17	Venkatraman Srinivasan		Investigating the influence of crop canopy architecture on the dynamics of spatio-temporal light distribution and its effect on photosynthesis, transpiration and crop yield	Science and Engineering Research Board	40.78
18	Lelitha Devi	Bhargava Rama Chilukuri-008834, CE	Advanced techniques for mobility and congestion analysis for Indian cities	Scheme for Promotion of Academic and Research collaboration	36.48
19	Nageswara Rao B	Srinivas Reddy K-008116, ME	Development of inspection and structural health monitoring techniques for solar power plant systems	Scheme for Promotion of Academic and Research collaboration	53.84
20	Piyush Chaunsali	Ravindra Gettu-008190, CE	Sustainability of novel cementitious binders derived from industrial by- products	Scheme for Promotion of Academic and Research collaboration	35.49

21	Benny Raphael	Koshy Varghese-002795, CE; Manu Santhanam-008100, CE; Ravindra Gettu-008190, CE; Saravana Kumar G-008343, ED	3D Printing and construction automation for affordable housing	Impacting Research Innovation and Technology - IMPRINT	108.99
22	Manu Santhanam		Development of acoustic pulse based testing system for concrete	Uchhatar Avishkar Yojana - IIT Madras	67.60
23	Murty B S		Smart and reliable water and wastewater infrastructure systems for our future cities in India and Germany (SMART & WISE)	Indo-German Science & Technology Centre	87.80
24	Ramamurthy K	Robinson RG-008160, CE; Mathava Kumar S-008671, CE	Use of overburden clay as alternate for coarse aggregate	Ministry of Mines	70.00
25	Ligy Philip		Identifying best available technologies for decentralized wastewater treatment and resource recovery for India	Department of Science & Technology	164.53
26	Rupen Goswami		Draft of Indian standard code of practice for seismic design and detailing of steel structures	National Disaster Management Authority	6.54
27	Indumathi Manivannan Nambi		Marine litter and microplastic	Ministry of Earth Sciences, New Delhi	26.10
28	Lakshmi Priya P S		Moment-shear interaction of unstiffened steel I-sections subject to lateral torsional buckling	Science and Engineering Research Board	47.02
29	Alagappan Ponnalagu		A study of blast wave impact on helmet-head assembly to mitigate traumatic brain injury	Science and Engineering Research Board	29.44
30	Phanisri Pradeep Pratapa		Designing origami-based metamaterials with low frequency elastic bandgaps	Science and Engineering Research Board	32.54

31	Saravanan U		Numerical technique to solve boundary value problems in solid mechanics	Science and Engineering Research Board	15.75
32	Ravindra Gettu	Radhakrishna G Pillai-008459, CE	Study of the deterioration mechanisms in glass textile reinforced concrete and improvement of its durability	Science and Engineering Research Board	54.82
33	Indumathi Manivannan Nambi	Tiju Thomas-008673, MM	Circular economy in sanitation projects - NPK fertiliser, carbon recovery and water reuse	Scheme for Promotion of Academic and Research collaboration	83.05
34	Mathava Kumar S	Raghuram Chetty-008351, CH	Biomass to energy from low-strength municipal wastewater using a new microalgal-anaerobic-membrane-bioreactor(s)	Scheme for Promotion of Academic and Research collaboration	49.51
35	Radhakrishna G Pillai	Manu Santhanam-008100, CE	Enhancing the durability and sustainability of concrete structures in emerging economics	Scheme for Promotion of Academic and Research collaboration	71.28
36	Sudheer K P		Enhancing the water use efficiency in agriculture practices in Himalayan region	Scheme for Promotion of Academic and Research collaboration	43.84
37	Manu Santhanam	Ravindra Gettu-008190, CE	Towards durability specifications with recycled aggregate concrete	Scheme for Promotion of Academic and Research collaboration	67.79
38	Mohan S		Bioremediation of urban sites contaminated due to municipal wastewater disposal	Scheme for Promotion of Academic and Research collaboration	21.06
39	Karthik K Srinivasan	Lelitha Devi-008253, CE; Gitakrishnan Ramadurai-008432, CE	A connected intermediate public transport mobility-as-a-service (IPTMAAS) solution for the last mile connectivity and multi-model integration problems of public transit	Impacting Research Innovation and Technology - IMPRINT	108.33

40	Indumathi Manivannan Nambi	Tiju Thomas-008673, MM	Sanitation in the circular economy – an integrative-modular-onsite toilet treatment for NPK fertilizer, carbon and water	Impacting Research Innovation and Technology - IMPRINT	69.07
41	Ravindra Gettu	Ligy Philip-005036, CE	Modular lightweight wastewater treatment units made with TRC for rural and periurban dwellings (clean water)	Indo-German Science & Technology Centre	84.77
42	Lelitha Devi	Bhargava Rama Chilukuri-008834, CE	Development of a bus priority system at signalized intersections using V2I communication	Ministry of Electronics & Information Technology	61.68
43	Karthik K Srinivasan	Gitakrishnan Ramadurai-008432, CE; Sivanandan R-000167, CE	Data-driven models and decision support tools for improved transit reliability in Indian cities	Ministry of Electronics & Information Technology	86.79
44	Bhargava Rama Chilukuri	Lelitha Devi-008253, CE	Departure time planner using V2V and V2I communication	Ministry of Electronics & Information Technology	81.10
45	Sivanandan R	Karthik K Srinivasan-008134, CE	Promoting road safety through deployment of driver assistance and warning systems	Ministry of Electronics & Information Technology	58.06
46	Shiva Nagendra S M		GCRF Clean Environment and Planetary Health in Asia (CEPHA) Network	UK Research and Innovation	147.12
47	Sachin S Gunthe	Rama Shanker Verma-008174, BT	Relation between pathogenic bio-aerosol and biotic stress of crop - a case study for yellow rust fungus of wheat	Indian Space Research Organisation	45.00
48	Soumendra Nath Kuiry	Indumathi Manivannan Nambi-008204, CE; Balaji Narasimhan-008310, CE	AMRFlows: Antimicrobials and resistance from manufacturing flows to people: joined up experiments, mathematical modelling and risk analysis	Department of Biotechnology	104.20

49	Chandan Sarangi		Process level understanding of aerosol-fog-urbanization coupling over Indo-Gangetic Plain	Science and Engineering Research Board	32.92
50	Ramesh Kannan Kandasami		A critical understanding on the mechanics of gas hydrate sediments for sustainable long term energy extraction	Science and Engineering Research Board	33.00
51	Balaji Narasimhan		Integrating hydrology and agriculture with livelihood issues: development of climate change adaptation approaches for sustainable water management in humid tropical Kerala	Science and Engineering Research Board	5.50
52	Mathava Kumar S		Development of novel water and wastewater treatment technologies	Shastri Indo-Canadian Institute	10.00
53	Indumathi Manivannan Nambi		Effect-based monitoring demonstrates efficiency of electrically driven water treatment processes to remove salts and micropollutants from process water (EfectroH2O)	Indo-German Science & Technology Centre	140.01
54	Soumendra Nath Kuiry	Murty BS-005017, CE; Balaji Narasimhan-008310, CE	Urban modelling: development of multi-sectorial simulation lab and science-based decision support framework to address urban environment issues	Ministry of Electronics & Information Technology	40.00
55	Balaji Narasimhan		Development of web enabled hydrologic modelling in SWAT (WEHMS) under National Hydrology Project	National Remote Sensing Centre	64.68

56	Balaji Narasimhan		Assessment of hydrological impacts due to climate change and development of best irrigation and crop management strategies that increases the resilience: Cauvery and Tamiraparani River Basins- Phase II	Indian Council of Agricultural Research	14.65
57	Surender Singh		Elucidating the role of cement-asphalt-aggregate interaction on failure and durability of rigid pavements containing reclaimed asphalt pavement aggregates	Science and Engineering Research Board	18.53
58	Chandrasekhar Annavarapu Srinivas		A numerical framework to model subsurface fracture propagation	Science and Engineering Research Board	24.79
59	Manu Santhanam	Piyush Chaunsali-008926, CE	Use of low-grade limestone in binary and ternary cementitious binders for concrete	Science and Engineering Research Board	53.46
60	Alagappan Ponnalagu		A generalized rate type model for fatigue damage	Science and Engineering Research Board	6.60
61	Vidya Bhushan Maji		Fracturing process in rocks with preexisting flaws under uniaxial and biaxial compression	Science And Engineering Research Board	42.24
62	Subhadeep Banerjee	Veeraragavan A-008165, CE; Chandrasekhar Annavarapu Srinivas-008957, CE; Tarun Naskar-008934, CE; Dali Naidu Arnepalli-008347, CE; Vidya Bhushan Maji-008327, CE; Rajagopal K-002804, CE; Ramesh Kannan Kandasami-008953, CE	Field demonstration and standardization of coir geotextiles for erosion control and reinforcement applications	Coir Board	91.06
63	Dali Naidu Arnepalli	Ramesh Kannan Kandasami-008953, CE	Studies on durability and strength enhancement of coir fibre	Coir Board	60.06

64	Dali Naidu Arnepalli	Rajakumar B-008244, CY	Investigations on enhancing the fire retardation of coir products	Coir Board	35.97
65	Surender Singh	Ravindra Gettu-008190, CE; Ramesh Kannan Kandasami-008953, CE	Framework for optimizing and enhancing the performance of concrete pavements using natural coir fibres (CoirCon)	Coir Board	49.43
66	Arun Menon	Amlan K Sengupta-008101, CE	Development of teaching resource material for RC design for UG programme in engineering colleges	Indian Institute of Technology Bombay	7.50

Industrial consultancy projects (ongoing and new)

S.No	Principal Investigator	Project Co-Investigator (s)	Project Title	Agency Name	Total Value
1.	Benny Raphael	Sreenivasa Kumar P-002691, CS; Koshy Varghese-002795, CE	Consulting services for the study on "Development of Web Enabled Single Window System for Online Submission, Processing and Disposal of Planning Permission Applications, Building Permit Applications, Completion Certificate and Occupancy Certificate"	Chennai Metropolitan Development Authority	74.75
2.	Dodagoudar G R		Analysis and design of ash dykes for disposal of fly ash	Andhra Pradesh Power Development Company Limited	12.65
3.	Boominathan A	Subhadeep Banerjee-008478, CE	Development of methodology of seismic SSI analysis of combined pile-raft foundation system for nuclear building of GHAVP-1 & 2	Nuclear Power Corporation of India Limited	104.13

4.	Nageswara Rao B		Proof checking of civil and structural design-2X660 MW BIFPCL Maitree Khulna STTP-Bangladesh	Bharat Heavy Electricals Limited	61.07
5.	Nageswara Rao B		Verification and proof checking of civil and structural drawings for BIFPCL	Bharat Heavy Electricals Limited - Industrial Systems Group	82.80
6.	Nageswara Rao B		Proof checking the design of foundation and sub-structure of proposed construction of 17 bridges in connection with APR-KTE 3rd line project	Gannon Dunkerley and Co Limited	133.90
7.	Nageswara Rao B		Consultancy services for structural designs, framing technical specifications for various infrastructure as part of flood mitigation	Airports Authority of India	177.00
8.	Ashwin Mahalingam	Indumathi Manivannan Nambi-008204, CE; Balaji Narasimhan-008310, CE	Integrated Urban Governance in Metropolitan Chennai	Cholamandalam Investment And Finance Company Limited	69.13
9.	Saravanan U		Structural proof checking of MWSL RIB LOC liners for sewer rehabilitation in Mumbai	NK Infra JV	9.20
10.	Nageswara Rao B		Proof checking and vetting of design and drawings of proposed construction of proposed RITES office complex at Rajarhat Newtown, Kolkata	Wadia Techno Engineering Services Limited	13.70
11.	Mohan S		Impact study on soil, agriculture, water, air, human health and animal health	Tamil Nadu Waste Management Limited	7.67

12.	Rajagopal K	Dali Naidu Arnepalli-008347, CE	Consultancy services for construction of steep railway embankments in Jammu sector	Konkan Railway Corporation Limited	29.80
13.	Arul Jayachandran S		Structural Glass Research and Testing Facility - Phase 2	Glazing Society of India	121.20
14.	Veeraragavan A		Technical Advisor, Rasta Centre For Road Technology	Rasta Centre For Road Technology	20.06
15.	Bhargava Rama Chilukuri	Lelitha Devi-008253, CE	Data Analysis and State Estimation using WiFi-based Traffic Sensor Technology	Robert Bosch Engineering and Business Solutions Private Limited	13.42
16.	Nageswara Rao B		Third-party quality assurances in the construction of various building in development works in RGNIYD done by NPCC	Rajiv Gandhi National Institute of Youth Development	26.73
17.	Indumathi Manivannan Nambi	Balaji Narasimhan-008310, CE	Sustainable restoration of Sembakkam Lake	The Nature Conservancy	97.87
18.	Nageswara Rao B		Proof checking of the proposed construction of Government Medical College, Kottayam, Kerala	HLL Infra Tech Services Limited	16.08
19.	Ligy Philip		Consulting services agreement with M/s: Greenenvironment Innovation & Marketing India (P) Limited	Greenenvironment Innovation and Marketing India Private Limited	21.24
20.	Nageswara Rao B		Third-party quality assurance of construction of Additional Office Building in the existing GPOA and GPRA campus at Shastri Bhavan, Chennai	CPWD Madras Central Division I	18.18
21.	Rajagopal K		Geotechnical consultancy services for Western Dedicated Freight Corridor	Larsen and Toubro Limited	5.90

22.	Shiva Nagendra S M	Srirama Srinivas-008331, EE	Development of mobile EV based-real time air quality monitoring and modelling for NLCIL	NLC India Limited	378.43
23.	Nageswara Rao B		Fatigue test on dynamic prestress anchorage system for epoxy coated strands	Freyssinet Dynamic Consortium	53.10
24.	Benny Raphael	Rupen Goswami-008321, CE; Arun Menon-008405, CE; Radhakrishna G Pillai-008459, CE	Condition assessment of railway bridges	Southern Railways	69.33
25.	Raghukanth S T G		Probabilistic seismic hazard map of India	National Disaster Management Authority	12.30
26.	Alagusundaramoorthy P		Condition assessment and repair and rehabilitation of KSRTC Bus Terminal Complex at Kozhikode	Kerala Transport Development Finance Corporation Limited	43.13
27.	Saravanan U	Arul Jayachandran S-008436, CE	Continuous health monitoring of the Scherzer Span of the Pamban Bridge	Southern Railways	215.00
28.	Rajagopal K		Consultancy services for construction of geosynthetic reinforced soil walls for RoB approach roads	Krishi Infratech	17.70
29.	Nageswara Rao B		Proof checking and vetting of structural design calculations and drawings of sheds having PEB roofs, including foundation for IOCL LPG bottling plants at Korba, Sitarganj, Khurda and Kharagpur	Development Consultants Private Limited	12.98
30.	Dodagoudar G R		Seismic site characterization and development of site spectra for new CATF building site at ISITE Campus Mathahalli, for ISRO Bangalore	Amara Raja Infra Private Limited	13.40

31.	Venu Chandra		Augmentation and strengthening of Dhanbad Urban Water Supply Scheme Phase-II under Dhanbad Municipal Corporation, Jharkhand	L&T Construction, Water and Effluent Treatment IC	4.13
32.	Nageswara Rao B		Proof checking and vetting of structural design drawings and documents (including foundations) of proposed residential development at Koyambedu Chennai	Baashyaam Constructions Private Limited	79.65
33.	Ashwin Mahalingam		Urban and peri-urban agriculture as green infrastructure	University of East Anglia	31.19
34.	Venu Chandra		Vetting and approval of mechanical drawings and documents pertaining to Keonjhar RWSS-03, Odisha	L&T Construction Water and Effluent Treatment IC	9.20
35.	Robinson R G	Subhadeep Banerjee-008478, CE	Ground improvement work using vibro stone columns for mounts, fire water tanks and other buildings at Cochin LPG Import Terminal	Keller Ground Engineering India Private Limited	14.16
36.	Sachin S Gunthe		High Altitude Air Pollution Monitoring - Munnar, Kerala	Sharp Business Systems India Private Limited	12.00
37.	Vidya Bhushan Maji		Laboratory testing on rocks (common code project - Phase 2)	Common Code	5.13
38.	Vidya Bhushan Maji		Laboratory testing on rocks (common code project - Phase 2)	Common Code	5.00
39.	Mohan S	Robinson R G-008160, CE	Design and monitoring of Cell 8 at Tamil Nadu Waste Management Limited, Gummidipoondi	Tamil Nadu Waste Management Limited	8.85

40.	Mohan S		Environmental audit for hazardous waste landfill facility at Gummidipoondi	Tamil Nadu Waste Management Limited	7.08
41.	Venu Chandra		Proof checking of STP plant and sewerage network in Digha and Kankarbagh, Patna, Bihar	VA Tech Wabag Limited	7.67
42.	Mohan S	Robinson R G-008160, CE	Stability analysis and liner integrity in hazardous waste landfill facility	Ramky Enviro Engineers Limited	7.08
43.	Alagusundaramoorthy P	Sathish Kumar S R-005002, CE	Analysis and design and evaluation of elastomeric and metal bearings for infrastructure applications	Hevea Rubber Technologies Private Limited	11.33
44.	Manu Santhanam	Radhakrishna G Pillai-008459, CE	Low Carbon Cement - Phase III	Ecole Polytechnique Federale de Lausanne	69.94
45.	Apparao G		Studies on fatigue strength of HT Strands	S P Singla Constructions Private Limited	12.74
46.	Piyush Chaunsali		Performance evaluation of biomass ash-based binders for building applications	Saint-Gobain India Private Limited (Research & Development)	4.39
47.	Apparao G		Design of special concretes for precast construction Chennai Light House Project	B G Shirke Construction Technology Private Limited	4.84
48.	Venu Chandra		Vetting and approval of mechanical drawings and documents, surge analysis pertaining to Shivhar WSP, Uttar Pradesh	L&T Construction, Water and Effluent Treatment IC	4.13
49.	Arun Menon	Phanisri Pradeep Pratapa-008941, CE; Manu Santhanam-008100, CE	Construction technology Advisory Board	Sree Shyam Sayi Corporation Private Limited	5.66
50.	Nageswara Rao B		Consultancy services for proposed construction of multi-storey commercial space for UIIC building at White Road, Chennai	NBCC (India) Limited	14.16

51.	Venu Chandra		Vetting and approval of mechanical drawings and documents, surge analysis pertaining to Khatan WSS, Banda district, Uttar Pradesh	L&T Construction Water & Effluent Treatment IC	8.85
52.	Mohan S		Vetting of the 620 KLD greywater and 340 KLD sewage treatment plant	Casa Grande Grace Private Limited	1.18
53.	Rajagopal K	Amlan K Sengupta-008101, CE	Development of a geosynthetic facing connection system and evaluation through large-scale laboratory testing	Techfab (India) Industries Limited	10.62
54.	Venu Chandra		Vetting and approval of mechanical drawings and documents, surge analysis pertaining to Parasi and Belawadh WSP, Uttar Pradesh	L&T Construction Water and Effluent Treatment IC	4.13
55.	Venu Chandra		Construction of Pipe Water Supply Scheme in Silauta-Mustaki and Chandibangar group of villages, pertains to Chitrakoot, Uttar Pradesh	L&T Construction Water and Effluent Treatment IC	7.67
56.	Venu Chandra		Vetting and approval of hydraulic calculations, GA drawings and documents, pertaining to 150 MLD sea water RO desalination plant, Nemmeli, Chennai	Tecton Engineering and Construction (India) Private Limited	4.72
57.	Nageswara Rao B		Proof checking of structural design and drawings of proposed grade separator of Old Bus Stand in Salem City Municipal Corporation	Salem Smart City Limited	4.72

58.	Nageswara Rao B		Proof checking of design of sub-structure (typical pier and abutment) for Bridge Nos. 538/1, 538/2 and 538/3	Rail Vikas Nigam Limited	2.83
59.	Nageswara Rao B		Proof checking of two RoBs for proposed construction of six-lane Vijayawada Bypass from Chinnaautupalli (Design Ch 0.000) to Gollapudi (Design Ch 30.000) in Vijayawada to Gundugolanu section of NH-16, Andhra Pradesh	Megha Engineering and Infrastructures Limited	6.49
60.	Nageswara Rao B		Design qualification test for railway concrete sleeper-rail seat repeated load test (fatigue test for 2 million cycles)	Afcons Infrastructure Limited	3.54
61.	Meher Prasad A		Proof checking of structural design drawings for the construction of Teaching Hospital at Flacq, Mauritius	Larsen & Toubro Limited	22.26
62.	Chandan Sarangi		Influence of transboundary air pollutants into the atmosphere of Kathmandu, Nepal	Kathmandu Institute of Applied Sciences	2.20
63.	Benny Raphael	Koshy Varghese-002795, CE	Proof checking of enabling structures – Tallah ROB	Larsen and Toubro Limited	14.16
64.	Venu Chandra		Proof checking of hydrology calculations and reports in connection to eight-lane Delhi-Vadodara Expressway	DMIA NYATI LLP	4.13
65.	Shiva Nagendra S M		Real-time air quality monitoring and environmental management system for Jawaharlal Nehru Port	Jawaharlal Nehru Port Trust	383.07

66.	Rupen Goswami		Regional Cancer Centre, JIPMER, Puducherry	Central Public Works Department Division No II Pondicherry	16.52
67.	Nageswara Rao B		Consultancy services for structural analysis of four DD Towers in AIR/DDK at Shimoga, Raichur, Hubli-Dharwad and Vellore	Prasar Bharati Broadcasting Corporation of India	9.44
68.	Mohan S	Krishna Moorthy Sivalingam-008298, CS	Development of Hydraulic Design Software-Phase I	Larsen and Toubro Limited	13.57
69.	Nageswara Rao B		Determination of properties of aggregates and designing of concrete mix	Tata Projects Limited	4.34
70.	Balaji Narasimhan	Murty B S-005017, CE; Soumendra Nath Kuiry-008566, CE	Supervisor consultancy of the consultant cum system integrator for the consulting services for planning, setting up and operationalising a real-time flood forecasting and spatial decision support system for Chennai Basins	Tamil Nadu Urban Infrastructure Financial Services Limited	144.96
71.	Mohan S	Robinson R G-008160, CE	Design checking and construction monitoring of Cell 8 - Hazardous Waste Landfill Facility at Gummidipoondi	Tamil Nadu Waste Management Limited	8.85
72.	Mohan S		Estimation of subsidence due to mining in NLCIL Neyveli region using remote sensing SAR interferometry study	Neyveli Lignite Corporation India Limited	61.71
73.	Manu Santhanam	Piyush Chaunsali-008926, CE; Radhakrishna G Pillai-008459, CE; Ravindra Gettu-008190, CE	Concrete materials for use in Ayodhya Ram Mandir	Larsen and Toubro Limited	41.30
74.	Ligy Philip		Sustainability of India - EFT platform	Duke University	53.28

75.	Ravindra Gettu	Piyush Chaunsali-008926, CE	Development of binders for e-glass reinforcement	Lafarge Centre De Recherche	88.00
76.	Venu Chandra		Execution of rural piped water supply projects pertaining to Attabira, Bargarh, 1 Nos. G.P. of Barpali, Bijepur and Gaislet Block of Bargarh district, including five years' operation and maintenance	L&T Construction Water and Effluent Treatment IC	4.13
77.	Atul Narayan S P	Manu Santhanam-008100, CE; Murali Krishnan J-008175, CE; Subhadeep Banerjee-008478, CE	Indigenous development of Cement Asphalt Mortar (CAM) for High Speed Railway Track	High Speed Railways Innovation Center Trust	70.51
78.	Vidya Bhushan Maji	Boominathan A-002777, CE	Geotechnical investigation and recommendation on foundation design	HUDCO Limited	20.06
79.	Venu Chandra		Vetting and approval of hydraulic, mechanical drawings and documents, surge analysis pertaining to Bheden and Barpali Block WSS of Bargarh district, Odisha	KEC International Limited	7.67
80.	Alagusundaramoorthy P	Sathish Kumar S R-005002, CE	Technical guidance and expert opinion on manufacturing of neoprene bearing pads and POT cum PTFE bearings	Unitech Couplers India Private Limited	11.33
81.	Atul Narayan S P	Veeraragavan A-008165, CE	Mix design for overlays for the secondary runway at Chennai Airport	Tarmat Limited	3.54
82.	Nageswara Rao B		Review the structural design of building and provide stability certificate for Green Enclave near Porur	Emerald Haven Realty Developers (Paraniputhur) Private Limited	12.74
83.	Ligy Philip		CCRBF - Expansion of the Indo-German Competence Centre for Riverbank Filtration	University of Applied Sciences Dresden	7.07

84.	Shiva Nagendra S M		Real-time monitoring system of marine water and sewage treatment plant with environmental assessment of water quality for JNPT	Jawaharlal Nehru Port Trust	417.10
85.	Soumendra Nath Kuiry	Sannasiraj S A-008117, OE; Murty B S-005017, CE; Balaji Narasimhan-008310, CE; Sudheer K P-008121, CE	Hydrodynamic study for the scheme-Kuttanad package-Flood management programme-Development of the Thottappally leading channel	Irrigation Department, Government of Kerala	162.84
86.	Venu Chandra		Execution of rural piped water supply projects of Rajghat Dam Multi-Village Scheme pertaining to Ashoknagar and Guna districts, Madhya Pradesh	L&T Construction Water and Effluent Treatment IC	11.21
87.	Surender Singh	Ramesh Kannan Kandasami-008953, CE; Atul Narayan S P-008661, CE	Resurfacing of runway and taxi track at INS Rajali, Arakkonam	NCC Limited	7.08
88.	Venu Chandra		Construction of Gond Deosar Multi-Village Rural Water Supply Scheme for villages in Singrauli, Madhya Pradesh	L&T Construction Water and Effluent Treatment IC	5.90
89.	Venu Chandra		Vetting and approval of mechanical drawings and documents, surge analysis pertaining to Agar Malwa Multi-Village Scheme, Agar Malwa, Madhya Pradesh	L&T Construction Water and Effluent Treatment IC	5.90
90.	Nageswara Rao B		Proof checking and vetting the design/drawings of composite steel girders 30.5 m, 18.3 m and 12.2 m spans	Royal Infraconstru Limited	2.36

91.	Venu Chandra		Vetting and approval of mechanical drawings and documents pertaining to Madikheda Multi-Village Scheme, district Shivpuri, Madhya Pradesh	L&T Construction Water & Effluent Treatment IC	9.44
92.	Vidya Bhushan Maji	Boominathan A-002777, CE	Site Inspection and to provide suitable selection of foundation for the structure of proposed girls hostel at Karaikal Campus, Pondicherry University, Puducherry	Construction and Design Services, UP Jal Nigam	4.43
93.	Nageswara Rao B		Proof checking and vetting of structural design and drawings of proposed construction of RoB at kM 2/100-2/200 (NH kM 153+213)	Ashoka Buildcon Limited	2.95
94.	Piyush Chaunsali	Manu Santhanam-008100, CE	Beneficial utilisation of agricultural (stubble) waste in structural materials	Tide Water Oil Company (India) Limited	36.00
95.	Rajagopal K	Ramesh Kannan Kandasami-008953, CE; Chandrasekhar Annavarapu Srinivas-008957, CE; Subhadeep Banerjee-008478, CE	Consultancy services for restoration of tunnelling works in Kolkata East West Metro Line	Kolkata Metro Rail Corporation Limited	91.15
96.	Meher Prasad A		Vetting of structural design and drawings of the Metro Bhavan, Operations Control Center and Training Academy for Mumbai Metro Rail Project at Aarey Mumbai	NCC Limited	41.30
97.	Nageswara Rao B		Vetting of bridge inspection reports (147 nos.) prepared for M/s Himachal Pradesh PWD	SATRA Infrastructure Management Services Limited	8.85

98.	Nageswara Rao B		Proof checking and vetting of (i) Major Bridge at CH:56+730; (ii) Minor Bridge at CH:43+142; and (iii) Box MNBR (1x10.0x2.5) at CH:42+672	KNR Constructions Limited	4.72
99.	Nageswara Rao B		Proof checking and vetting of structural design and drawings of Navin's Starwood Towers-PH-3 (1B+stilt+21 storey) residential building at Vengaivasal, Chennai	Navin Housing and Properties Private Limited	21.86
100.	Nageswara Rao B		Proof checking and vetting the prepared structural design drawing and providing the study report to construct the RCC cast in situ structure above the precast structure of College Hostel Block G+4 for TRP Engineering College, Tiruchirappalli 621105	SRM Institute of Science & Technology	2.61
101.	Nageswara Rao B		Witnessing, certifying and furnishing the load test report by IIT Madras team as part of carrying out precommissioning test of two-lane Alappuzha bypass from KM 408+100 to 414+900 on NH-47, Kerala	RDS-CVCC (JV)	3.54
102.	Indumathi Manivannan Nambi		Vetting of design and drawing of ww network @Delhi Kirari	L&T Construction Water & Effluent Treatment IC	8.85
103.	Nageswara Rao B		Proof checking and vetting of structural design calculations and drawings of various building structures located at Kailasagiri Hill Park in Visakhapatnam	SAI Consulting Engineers Private Limited	3.54

104.	Indumathi Manivannan Nambi		CETeDDD (Centre for Environmental Technology Development, Demonstration & Dissemination)	Common Code	5.00
105.	Indumathi Manivannan Nambi		CETeDDD (Centre for Environmental Technology Development, Demonstration & Dissemination)	Common Code	5.00
106.	Benny Raphael	Koshy Varghese-002795, CE	Third-party review and approval of design for strand jack arrangement	L&T Construction Heavy Civil Infrastructure	23.60
107.	Gitakrishnan Ramadurai		Reducing accidents involving public transit buses in Chennai	Renault Nissan Technology & Business Centre India Private Limited	62.64
108.	Alagusundaramoorthy P		Review of the analysis and design of altered MLCP for TNTPO in Chennai	Tamil Nadu Trade Promotion Organisation	11.65
109.	Sathish Kumar S R		Proof checking design of PEB for M/s Brakes India Private Limited at Thervoikandigai	Seven Hills PEB Systems Private Limited	2.80
110.	Surender Singh	Ramesh Kannan Kandasami-008953, CE; Atul Narayan S P-008661, CE	Resurfacing of runway and taxi track at INS Rajali, Arakkonam	NCC Limited	7.08
111.	Murali Krishnan J		Mix design and structural design for six-laning of national highway using cold central plant recycling	VR Techniche Consultants Private Limited	9.44
112.	Mohan S		Design of storm water drainage system for DLF Garden City considering land use change and climate variation	DLF Limited	14.75
113.	Alagusundaramoorthy P		Review of the structural design and approval of drawings of residential, commercial and utility blocks at CPCL Manali	Centre for Urbanization Buildings and Environment	9.34

114.	Atul Narayan S P	Veeraragavan A-008165, CE	Studies on effectiveness of crack sealing treatment with GlasGrid on Devihalli Hassan Road executed by Saint Gobain ADFORS	Saint Gobain India Private Limited (Research & Development)	40.35
115.	Sathish Kumar S R		Checking structural design and drawings of shipyard facilities and allied services at SBC Visakhapatnam	Navayuga Engineering Company Limited	30.00
116.	Rajagopal K	Dali Naidu Arnepalli-008347, CE	Development of connection system for welded mesh facing panels	Techfab (India) Industries Limited	7.08
117.	Nageswara Rao B		Proof checking and vetting of structural design documents and drawings of major bridge at Ch:28+689 across Swarnamukhi River for proposed construction of six-laning of NH-71 from Renigunta (Design Km 0.000/ Existing Km 124.600 of NH-71) to Naidupeta (Desi	Megha Engineering and Infrastructures Limited 2302	5.00
118.	Rupen Goswami		OTM Accommodation and CGOM for Coast Guard at Puducherry	Central Public Works Department Division No II Pondicherry	22.42
119.	Rupen Goswami		Office Building for ITD at Tiruvannamalai	Central Public Works Department Division No II, Pondicherry	3.78
120.	Balaji Narasimhan	Soumendra Nath Kuiry-008566, CE	Study the performance monitoring of Integrated Storm Water Drains (ISWD) in added areas of Adyar and Cooum Basins of Greater Chennai Corporation (GCC) from PDGF under TNSUDP	Tamil Nadu Urban Infrastructure Financial Services Limited	112.43
121.	Indumathi Manivannan Nambi		Decentralized zero emission biomedical waste plastic pyrolysis	Sony Pictures Networks India Private Limited	56.00

122.	Mohan S		Technical evaluation of storm water discharge system	Sundaram Clayton Limited	2.95
123.	Benny Raphael		Infrastructure Systems Lab	SBI Foundation	92.50
124.	Nageswara Rao B		Preparation of structural drawing and designs for construction of Head Post Office building (G+5) at Poojapura site, Thiruvananthapuram	Postal Civil Division Manacaud	2.95
125.	Murali Krishnan J		Characterization of the laboratory rutting performance and interfacial bond strength of GlasGrid reinforced bituminous mixtures	Saint-Gobain Research India Limited	13.17
126.	Nageswara Rao B		Structural vetting of B+S+20 multi-storied IT incubation centre (Research Laboratory and Data Processing Centre), Bhubaneswar (approx. area: 4,00,000 sft.)	Kalinga Institute of Industrial Technology	14.16
127.	Nageswara Rao B		Consultant services for vetting and approval of structural design and drawings pertaining to Bheden and Barpali Block WSS of Bargarh district, Odisha	KEC International Limited	14.75
128.	Venu Chandra	Nageswara Rao B-008169, CE	Vetting and approval of STP design, hydraulic calculations and structural design and drawings pertaining to 800 KLD sewage treatment plant on MBBR technology	Rysa Infratech	2.95

129.	Alagusundaramoorthy P		Proof checking of structural design and models and vetting the corresponding drawing of substructures and superstructures of TNSCB buildings at Thappukundu, Pallipalayam and Sampalli schemes in Tamil Nadu	Lavinsree	11.96
130.	Venu Chandra		Vetting of designs and drawings for clear water pumping system and transmission main, Bidkin Industrial Area in Maharashtra	Larsen & Toubro Limited Construction	3.54
131.	Meher Prasad A		Construction of 100 intake New Medical College and Hospital campus at Jajpur and new hospital and staff quarters at Puri	Larsen & Tubro Limited	46.66
132.	Balaji Narasimhan	Soumendra Nath Kuiry-008566, CE	Flood remedial measures through construction of macro drain along the highways roads from Pallikaranai Marsh to B. Canal – proof checking	Highways Department	11.80
133.	Mohan S		Monitoring the water quality of rivers and evaluating Cumulative Environmental Pollution Index	Tamil Nadu Pollution Control Board	8.85
134.	Ashwin Mahalingam		Supporting the development of urban simulation models for Chennai	The Nature Conservancy	22.92
135.	Mohan S		Assessment of the hazardous waste generation and performance study of existing furnaces	Jain Metal Rolling Mills	4.13
136.	Nageswara Rao B		Proof checking of design and drawings of bridges in connection with Chhattisgarh Railway Project	Ircon International Limited	39.25

137.	Venu Chandra		Vetting and approval of hydraulic, mechanical drawings and documents, surge analysis pertaining to rural piped water supply projects of Rasulpur and Danagadi block, Bargarh, Odisha	KEC International Limited	11.21
138.	Nageswara Rao B		Consultancy services for vetting and approval of structural design and drawings pertaining to Rasulpur and Danagadi blocks, Jajpur, Odisha	KEC International Limited	17.70
139.	Radhakrishna G Pillai	Surender Singh-008952, CE; Piyush Chaunsali-008926, CE	High-performance concretes for nuclear power plants in coastal regions—corrosion and service life assessments	Indira Gandhi Centre for Atomic Research	35.40
140.	Subhadeep Banerjee	Ramesh Kannan Kandasami-008953, CE	Geotechnical aspects and dam design as part of development of detailed project report of Kalpasar Dam Project being undertaken by the National Centre for Coastal Research, Ministry of Earth Sciences	National Centre for Coastal Research	93.42
141.	Robinson R G	Subhadeep Banerjee-008478, CE	Proof checking the design and installation of vibro stone column for storage tanks at IOCL Refinery, Paradip, Odisha	Keller Ground Engineering India Private Limited	4.72
142.	Mohan S	Robinson R G-008160, CE	Design checking and monitoring of construction of Cell-9 of TNWML Gummidipoondi	Tamil Nadu Waste Management Limited	8.85
143.	Mohan S	Robinson R G-008160, CE	Environmental assessment and design of landfill for hazardous waste storage at Bargur site, Tamil Nadu	Tamil Nadu Waste Management Limited	10.03

144.	Mohan S		Ground water pollution assessment study for TSDF	Tamil Nadu Waste Management Limited	5.31
145.	Mohan S	Robinson R G-008160, CE	Feasibility study for the use of bentonite along with clay for landfill liner	Tamil Nadu Waste Management Limited	2.36
146.	Mohan S		Design of vertical retaining wall for the landfill for additional storage for Mumbai landfill site	Mumbai Waste Management Limited	4.13
147.	Mohan S		Risk analysis of lead contamination in and around battery industries	Andhra Pradesh Pollution Control Board	28.91
148.	Mohan S		Environmental audit for battery manufacturing industry	Andhra Pradesh Pollution Control Board	28.91
149.	Mohan S		Environmental audit of the captive Hazardous Waste Secured Landfill Facility (HW-SLF)	DCW Limited	7.67
150.	Benny Raphael		Safety audit of two railway bridges in Tiruchchirappalli Division of Southern Railway	Southern Railways	44.78
151.	Ravindra Gettu		Testing of fibre concrete for the tunnels in the Bhanupoli Bilaspur Beri Rail Link Project	Max Infra Limited	19.12
152.	Ligy Philip		Assessment of the efficacy of bioremediation status of contaminated site within the premises of M/S Thirumalai Chemicals Limited (TCL)	Thirumalai Chemicals Limited	9.18
153.	Meher Prasad A		Proof checking of structural design/ drawings for LIC Investment Building, Kolkata	Larsen & Toubro Limited	27.05
154.	Meher Prasad A		Proof checking of Prestige Zackria Metropolitan	Prestige Estates Project Limited	8.35

155.	Mohan S		Environmental audit for production process	Ultramarine & Pigments Limited	5.90
156.	Murty B S		Hydraulics of channel due to construction of CC Maintenance ramp for TPL-SUCG sites	Tata Projects Limited	2.83
157.	Indumathi Manivannan Nambi		Vetting of water treatment plant in Khorda district, Odisha	L&T Construction Water and Effluent Treatment IC	3.54
158.	Nageswara Rao B		Proof checking and vetting of structural design calculations and drawings of sheds having PEB roofs, including foundation, for IOCL LPG bottling plant project near Chittoor, Andhra Pradesh	Tractebel Engineering Private Limited	5.31
159.	Subhadeep Banerjee	Robinson R G-008160, CE	Design and installation of vibro stone columns at Krishnapatnam, AP	Keller Ground Engineering India Private Limited	8.85
160.	Manu Santhanam	Ashwin Mahalingam-008276, CE	TPQAS to Light House Projects - MOHUA	Building Materials & Technology Promotion Council	249.17
161.	Indumathi Manivannan Nambi		Vetting of water treatment plant in Kendrapara, Odisha	L&T Construction Water and Effluent Treatment IC	3.54
162.	Nageswara Rao B		Design qualification tests to withstand the axle load of 25 tonnes on PSC turnout sleepers for Dedicated Freight Corridor (DFCC) to drawing numbers: VAEVKN 04943 to VAEVKN 05018; VAEVKN 07378 to 07379 and VAEVKN 05134 to VAEVKN 05151 (RH&LH) and others	Vishal Nirmiti Private Limited	12.39

163.	Apparao G		Proof checking of structural system at Pulivendula Smart City	Andhra Pradesh Urban Infrastructure Asset Management Limited	12.39
164.	Thyagaraj T	Subhadeep Banerjee-008478, CE	Stability analysis of embankment and recommendations for ground improvement between Karavadi and Krishna Canal Junction Stations	M/s Rail Vikas Nigam Limited, Vijayawada	9.44
165.	Nageswara Rao B		Condition assessment and structural stability of Outpatient Block of M/s Andhra Hospital, Vijayawada	Andhra Hospitals Vijayawada Private Limited	5.90
166.	Ligy Philip		NGWA Acceleration Scholarship - Young Academics	Technical University of Denmark	0.87
167.	Nageswara Rao B		Structural stability of Mahindra World School at Mahindra World City	Mahindra World School Educational Trust	5.31
168.	Venu Chandra		Vetting and approval of mechanical drawings and documents pertaining to Khordha WSS, Odisha	L&T Construction Water and Effluent Treatment IC	7.08
169.	Venu Chandra		Vetting and approval of mechanical drawings and documents pertaining to Khendrapada II WSS, Odisha	Larsen and Toubro Limited Construction Water and Effluent Treatment IC	7.08
170.	Shiva Nagendra S M		Source apportionment and carrying capacity assessment for Chennai city under National Clean Air Mission	Corporation of Chennai	223.73

171.	Ravindra Gettu	Ravikumar N V-008275, MM; Piyush Chaunsali-008926, CE	Optimization of e-glass reinforcement for cementitious matrices	Saint-Gobain India Private Limited (Research and Development)	82.55
172.	Nageswara Rao B		Proof checking and vetting of structural design documents and drawings of proposed construction of viaduct from Ch: 174+600 to Ch: 174+860.105	EKK Infrastructure Limited	3.54
173.	Meher Prasad A		Construction of green field six-lane extradosed cable bridge over river Ganga near Kacchi dargah on NH-30 to near Bidupur in district Vaishali on NH-103, Patna, Bihar	Daewoo-L&T JV	11.80
174.	Devdas Menon		Proof checking of design and drawings of foundation substructure and superstructure for Mithapur leg of ROB in lieu of LC-79, Patna	Ircon International Limited	4.37
175.	Apparao G		Proof checking of structural design calculations and drawings major and minor bridges, and miscellaneous structures	Sree Ramadutha Engineering Consultants Private Limited	11.80
176.	Piyush Chaunsali	Manu Santhanam-008100, CE	Development of clay-based alternative cementitious mortars	Sain-Gobain India Private Limited (Research & Development)	16.14
177.	Meher Prasad A		SPR City-High Living	SPR Construction Private Limited	23.60
178.	Arul Jayachandran S		Professional advice towards steel warehousing solutions	Horizon -Warehouse Consulting	23.60
179.	Benny Raphael		3D Printing housing hack	Lafarge Centre de Recherche	0.79

180.	Nageswara Rao B		Proof checking and vetting of the structural design of the proposed construction of three towers of stilt+17 storey buildings with BUA of three (3) lakh sq.ft, located at ECR, Chennai	Olympia Merlin Developers Private Limited	10.62
181.	Shiva Nagendra S M		Source apportionment and carrying capacity assessment for Tiruchirappalli City under National Clean Air Programme	Tiruchirappalli City Corporation	88.45
182.	Alagusundaramoorthy P		Reanalysis of the structural adequacy of Block B in 864 (G+9) EWS multi-storeyed tenements at K.P. Park in Chennai Corporation under Pradhan Mantri Awas Yojana	PST Engineering Construction	3.84
183.	Robinson R G	Subhadeep Banerjee-008478, CE	Proof checking of design of vibro stone column for storage tanks at NRL, Assam	Keller Ground Engineering India Private Limited	8.85
184.	Ligy Philip		Design and development of odour control bio-trickling filter for sewage treatment plants	IEC Fabchem Limited	14.30
185.	Chandan Sarangi		Study the impact of light-absorbing particles on snow cover of Western Himalaya	Defence Research Geoinformatics Establishment	48.90
186.	Alagusundaramoorthy P		Third-party supervision for peripheral repairs and rehabilitation works of Indian Oil Bhavan in Chennai	Indian Oil Corporation Limited	38.94

187.	Meher Prasad A	Devdas Menon-005003, CE	Proof checking and certification of Inter Disciplinary Research (IDR) Building (TCS Smart X Hub) with development of onsite infrastructure works	Tata Consulting Engineers Limited	9.20
188.	Apparao G		Testing of 4T15, 12T15 and 19T15 PT systems	DSI-Bridgecon India Private Limited	16.82
189.	Nageswara Rao B		Condition assessment of the PSC U-girders of the proposed bridge No. (19X12.20m) on Gudur-Vijayawada Section Third Line Project	Rail Vikas Nigam Limited	4.13
190.	Meher Prasad A		Proof checking of construction of Kalyan Mall at Calicut for the client, Kalyan Silks, Thrissur	Teemage Builders Private Limited	10.09
191.	Alagusundaramoorthy P		Technical guidance and inspection of repair and rehabilitation of pile caps, pedestals, pier caps, girders, cross beams and pile foundation soil stabilization in Vettar Bridge at KM 186/621 - 187/091 of NH 45A in Nagapattinam district	HPR Construction	37.17
192.	Soumendra Nath Kuiry		Consultancy services for hydraulic design and general arrangement for a piped irrigation network project (Banda Irrigation Project)-Bina PMU, WRD, Sagar, MP	Tata Projects Limited	11.80

193.	Meher Prasad A		Proof checking and approval of design and drawings of minor bridges and allied structures for the project, Western Dedicated Freight Corridor Package - 3R (Iqbalgarh-Vadodara Section)	Larsen & Toubro Limited	4.72
194.	Murali Krishnan J		Rap mix design for project -SMTL	Salaipudhur-Madurai Tollway Limited	5.90
195.	Nageswara Rao B		Consultancy services for inspection to assess damages to existing major bridge across (i) Papagni River on NH-716 at km 153/200; and (ii) Penna River on NH-716 at km 541/600, and submission of report to that effect	Office of the Executive Engineer R and B National Highways Kadapa	5.90
196.	Sathish Kumar S R		Proof checking of R.C.C Building for M/s. NBCC at Kerala	NBCC India Limited	7.26
197.	Sathish Kumar S R		Proof checking of structural safety of existing buildings at Hyderabad International Airport	GMR Hyderabad International Airport Limited	3.40
198.	Alagusundaramoorthy P		Proof checking, vetting and approval of civil engineering design and drawings for Individual Rural Water Supply Scheme, pertaining to Jharsuguda district, Odisha	Larsen & Toubro Limited Construction	11.80
199.	Alagusundaramoorthy P		Proof checking, vetting an approval of civil engineering design and drawings for the rural piped water supply projects pertaining to Keonjhar III	Larsen & Toubro Limited Construction	12.69

200.	Alagusundaramoorthy P		Proof checking, vetting and approval of civil engineering design and drawings for the Jawai Dam Based Cluster IV Drinking Water Supply Project, Pali district, Rajasthan	Larsen & Toubro Construction Limited	6.20
201.	Alagusundaramoorthy P		Proof checking, vetting and approval of civil engineering design and drawings for WSP of Dungarpur, Rajasthan	Larsen & Toubro Construction Limited	6.24
202.	Alagusundaramoorthy P		Proof checking, vetting and approval of civil engineering design and drawings for WTP in Kushalgarh Block (Package 02)	Larsen & Toubro Construction Limited	3.25
203.	Alagusundaramoorthy P		Proof checking, vetting and approval of civil engineering design and drawings for WTP in Kushalgarh Block (Package 01)	Larsen & Toubro Construction Limited	3.98
204.	Alagusundaramoorthy P		Proof checking, vetting and approval of civil engineering design and drawings for WTP in Kushalgarh Block (Package 03), Banswara Rajasthan	Larsen & Toubro Construction Limited	2.21
205.	Soumendra Nath Kuiry		Vetting of surge analysis report of pumping and pipeline system—Tapi-Karjan Link Project	Larsen and Toubro Limited	3.25
206.	Soumendra Nath Kuiry		Vetting of design and drawings for Sone-Kanhar UGPL Scheme under Water Ways Division, Garhwa of Water Resources Department, Government of Jharkhand	Larsen and Toubro Limited	4.13

207.	Ravindra Gettu		LCCA/LCA for the comparison of different methods of recycling concrete	Global Cement and Concrete Association	17.00
208.	Nageswara Rao B		Proof checking and vetting of the structural design of the proposed construction of housing unit in Maldives	PTK Project Consultants LLP	9.00
209.	Alagusundaramoorthy P		Proof checking and approval of structural design and drawings of Ranchi Smart City	Larsen and Toubro Construction Limited	16.96
210.	Alagusundaramoorthy P		Proof checking and approval of structural and civil design and drawings for Coimbatore 30.53 MLD STP Project	Larsen and Toubro Limited Construction Water and Effluent Treatment IC	7.97
211.	Subhadeep Banerjee		Geotechnical advisor for CCU1 - Amazon's first Fulfilment Centre in Uluberia, Howrah	MNU Consultants Private Limited	5.90
212.	Shiva Nagendra S M		Source apportionment and carrying capacity assessment for Madurai city under National Clean Air Mission	Madurai City Municipal Corporation	88.45
213.	Dodagoudar G R		Finite element analysis and design of foundations: verification and validation studies	K Kumar Raja Projects Private Limited	11.80
214.	Venkatraman Srinivasan		Study to investigate possible soil, water and air pollution for new horizontal airflow charcoal processing unit	Sri Seyon Machinery	2.31
215.	Nageswara Rao B		Proof checking and vetting of structural design and drawings of proposed construction of all-weather covered shed at Vijayawada	Rail Vikas Nigam Limited, Vijayawada	5.90

216.	Ligy Philip	Pradeep T-002505, CY; Balaji Narasimhan-008310, CE; Sridharakumar Narasimhan-008328, CH; Murty B S-005017, CE; Muraleedharan V R-002758, HS; Indumathi Manivannan Nambi-008204, CE	Aqua MAP-Water Management and Policy Centre at IIT Madras	Donors	300.00
217.	Shiva Nagendra S M		Source apportionment study and emission inventory studies for the three non-attainment cities viz., Hubli-Dharwad, Davangere and Kalaburgi	Karnataka State Pollution Control Board	50.28
218.	Meher Prasad A		Proof checking of structural design, documents and drawings for LTI Mahape Commercial SEZ campus, Navi Mumbai	Larsen & Toubro Limited	29.49
219.	Balaji Narasimhan		Design and monitoring of water harvesting, recharge and discharge systems	Ooze Architects	14.28
220.	Nageswara Rao B		Proof checking and vetting of structural design and drawings of proposed construction of (i) Skill Training Academy; and (ii) City Centrum for Pulivendula Area Development Authority, Andhra Pradesh	Andhra Pradesh Urban Infrastructure Asset Management Limited	9.15
221.	Benny Raphael		Scheme for lifting road over bridge ROB 9A for electrification	Indian Railways	5.66

222.	Nageswara Rao B		Condition assessment of concrete in the reinforced concrete (RC) generator foundation of Unit 4 at Sabarigi Hydro Electric Project at Moozhiyar of M/s Kerala State Electricity Board Limited (KSEBL), Kerala	Kerala State Electricity Board Limited	4.25
223.	Nageswara Rao B		Condition assessment of concrete in the RC beams above the tail race channel and supporting the deck slab of the Sabarigi Hydro Electric Project at Moozhiyar of M/s Kerala State Electricity Board Limited (KSEBL), Kerala	Kerala State Electricity Board Limited	5.90
224.	Alagusundaramoorthy P		Structural stability certification for diesel generator building at Data Center (DC) Chennai	AdaniConneX Private Limited	9.70
225.	Shiva Nagendra S M		CYCLOFINE - A smart ambient air purification system	V-Guard Foundation	38.90
226.	Ashwin Mahalingam		Empowering marginalised youth to acquire new skills and knowledge for better livelihoods	Initiative für Neue Bildung e.V.	63.80
227.	Apparao G		Testing of PT ducts	Sangir Plastics Private Limited	5.43
228.	Raghukanth S T G		Seismic hazard analysis of Karaikal	L&T Infrastructure Engineering Limited	8.26
229.	Sathish Kumar S R		Proof checking design of PEB and R.C.C. buildings for M/s Indian Oil Corp. Limited	Ocean Lifespaces India Private Limited	40.96
230.	Mohan S		Landfill stability analysis for coastal waste management project	Ramky Enviro Engineers Limited	7.08

231.	Nageswara Rao B		Structural audit of blocks 8, 9 and 11 at Coast Guard Residential Area Ragamaliga at Mogappair, Chennai [Ref: WO No. 2322/WO/04/E2 dated 07/02/2022]	Garrison Engineer (I) (Cg) Chennai	17.70
232.	Apparao G		Testing of PT (12T15 and 19T15) system	DSI-Bridgecon India Private Limited	11.21
233.	Arul Jayachandran S		Proof checking the design and drawings of a large span steel prayer hall	New Life Assembly of God Community	14.16
234.	Meher Prasad A		Third-party proof check of structural design/drawings for the MLCP and Advocate Chambers for Allahabad High Court at Allahabad, Uttar Pradesh	L&T Construction Buildings & Factories	49.56
235.	Ravindra Gettu	Subhadeep Banerjee-008478, CE	Proof checking of TBM tunnel segment design under Package-4 of Rishikesh-Karnaprayag Rail line project	Rail Vikas Nigam Limited	14.16
236.	Atul Narayan S P		Laboratory characterization of the effect of a new additive on the nature and performance of bitumen	Arcishmaan Elements Private Limited	12.10
237.	Ligy Philip		Investigation of water treatment technology	Toray Industries, Inc	10.90
238.	Radhakrishna G Pillai		Corrosion and service life assessment of concrete structures with galvanized steel reinforcement	International Zinc Association	30.85
239.	Murali Krishnan J	V R Techniche Consultants Private Limited	Mix design and structural design for six-laning of National Highway using Cold Central Plant Recycling	9.44	

RBIC projects (ongoing and new)**New**

S No.	Principal Investigator	Agency Name	Title	Sanction Value (₹ in lakh)
1	Shiva Nagendra S M	University of Surrey	CArE-Homes: Clean Air Engineering for homes	0.52
2	Subhadeep Banerjee	Coir Board	Field demonstration and standardization of coir geotextiles for erosion control and reinforcement applications	91.06
3	Dali Naidu Arnepalli	Coir Board	Studies on durability and strength enhancement of coir fibre	60.06
4	Dali Naidu Arnepalli	Coir Board	Investigations on enhancing the fire retardation of coir products	35.97
5	Chandrasekhar Annavarapu Srinivas	Science and Engineering Research Board	A numerical framework to model subsurface fracture propagation	24.79
6	Manu Santhanam	Science and Engineering Research Board	Use of low-grade limestone in binary and ternary cementitious binders for concrete	53.46
7	Vidya Bhushan Maji	Science And Engineering Research Board	Fracturing process in rocks with preexisting flaws under uniaxial and biaxial compression	42.24
8	Alagappan Ponnalagu	Science and Engineering Research Board	A generalized rate type model for fatigue damage	6.60
9	Arun Menon	Indian Institute of Technology Bombay	Development of teaching resource material for RC design for UG programme in engineering colleges	7.50
10	Chandan Sarangi	Defence Research Geoinformatics Establishment	Study the impact of Light Absorbing Particles on Snow cover of Western Himalaya	48.9

Ongoing

S.No.	Principal Investigator	Agency Name	Title	Sanction Value (₹ in lakh)
1.	Arun Menon	Ministry of Education	National Centre for Safety of Heritage Structures (NCSHS)	1211.50
2.	Shiva Nagendra S M	Central Pollution Control Board	CPCB Continuous Ambient Air Quality Monitoring Station at IIT Madras- Phase II	10.34
3.	Shiva Nagendra S M	Ministry of Earth Sciences, New Delhi	Clean Air for Delhi Through Interventions, Mitigations and Engagement (CADTIME)	67.44
4.	Soumendra Nath Kuiry	Department of Science & Technology	Experimental and numerical model study of urban flood	47.05

5.	Sachin S Gunthe	Department of Science & Technology	Mass based hygroscopicity of ambient aerosols under contrasting environment over eastern coast of India	93.58
6.	Ligy Philip	Department of Science & Technology	Adaptation of waste management infrastructure in coastal areas to climate change	75.44
7.	Sudheer K P	Department of Science & Technology	Climate change impact on water resources in coastal areas	99.17
8.	Soumendra Nath Kuiry	Department of Science & Technology	Storm surge impact on estuaries	41.47
9.	Sachin S Gunthe	Department of Science & Technology	Properties of atmospheric aerosols from contrasting environment in continental and marine boundary layer over tropical Indian region	16.08
10.	Ligy Philip	Department of Science & Technology	Centre for Sustainable Treatment, Reuse and Management for Efficient, Affordable and Synergistic Solutions for Water (WATER-IC for SUTRAM of EASY WATER)	893.57
11.	Ligy Philip	Department of Science & Technology	Wastewater treatment technologies and sensors	179.15
12.	Ligy Philip	Department of Science & Technology	Centre for Sustainable Treatment, Reuse and Management for Efficient, Affordable and Synergistic Solutions for Water (WATER-IC for SUTRAM of EASY WATER)	27.50
13.	Balaji Narasimhan	Department of Science & Technology	Sustainable drainage systems and water management	38.81
14.	Indumathi Manivannan Nambi	Indian council for Medical Research	Environmental antimicrobial resistance - creation of a region specific metagenomic database and strategies for halting the propagation of AMR	160.70
15.	Lelitha Devi	Scheme for Promotion of Academic and Research	Advanced techniques for mobility and congestion analysis for Indian Cities	36.48
16.	Nageswara Rao B	Scheme for Promotion of Academic and Research	Development of inspection and structural health monitoring techniques for solar power plant systems	53.84
17.	Benny Raphael	Impacting Research Innovation and Technology - IMPRINT	3D Printing and construction automation for affordable housing	108.99

18.	Manu Santhanam	Uchhatar Avishkar Yojana - IIT Madras	Development of acoustic pulse based testing system for concrete	67.60
19.	Murty B S	Indo-German Science & Technology Centre	Smart and reliable water and wastewater infrastructure systems for our future cities in India and Germany (SMART & WISRE)	87.80
20.	Ramamurthy K	Ministry of Mines	Use of overburden clay as alternate for coarse aggregate	70.00
21.	Ligy Philip	Department of Science & Technology	Identifying best available technologies for decentralized wastewater treatment and resource recovery for India	164.53
22.	Lakshmi Priya P S	Science and Engineering Research Board	Moment-shear interaction of unstiffened steel I-sections subject to lateral torsional buckling	47.02
23.	Alagappan Ponnalagu	Science and Engineering Research Board	A study of blast wave impact on helmet-head assembly to mitigate traumatic brain injury	29.44
24.	Phanisri Pradeep Pratapa	Science and Engineering Research Board	Designing origami-based metamaterials with low frequency elastic bandgaps	32.54
25.	Saravanan U	Science and Engineering Research Board	Numerical technique to solve boundary value problems in solid mechanics	15.75
26.	Ravindra Gettu	Science and Engineering Research Board	Study of the deterioration mechanisms in glass textile reinforced concrete and improvement of its durability	54.82
27.	Indumathi Manivannan Nambi	Scheme for Promotion of Academic and Research collaboration	Circular economy in sanitation projects - NPK fertiliser, carbon recovery and water reuse	83.05
28.	Mathava Kumar S	Scheme for Promotion of Academic and Research collaboration	Biomass to energy from low strength municipal wastewater using a new microalgal-anaerobic-membrane-bioreactor(s)	49.51
29.	Radhakrishna G Pillai	Scheme for Promotion of Academic and Research collaboration	Enhancing the durability and sustainability of concrete structures in emerging economics	71.28
30.	Sudheer K P	Scheme for Promotion of Academic and Research collaboration	Enhancing the water use efficiency in agriculture practices in Himalayan region	43.84

31.	Manu Santhanam	Scheme for Promotion of Academic and Research collaboration	Towards durability specifications with recycled aggregate concrete	67.79
32.	Mohan S	Scheme for Promotion of Academic and Research collaboration	Bioremediation of urban sites contaminated due to municipal wastewater disposal	21.06
33.	Karthik K Srinivasan	Impacting Research Innovation and Technology - IMPRINT	A connected intermediate public transport mobility-as-a-service (IPTMAAS) solution for the last mile connectivity and multi-model integration problems of public transit	108.33
34.	Indumathi Manivannan Nambi	Impacting Research Innovation and Technology - IMPRINT	Sanitation in the circular economy - an integrative-modular-onsite toilet treatment for NPK fertilizer, carbon and water	69.07
35.	Ravindra Gettu	Indo German Science & Technology Centre	Modular lightweight wastewater treatment units made with TRC for rural and periurban dwellings (clean water)	84.77
36.	Karthik K Srinivasan	Ministry Of Electronics & Information Technology	Data-driven models and decision support tools for improved transit reliability in Indian cities	86.79
37.	Soumendra Nath Kuiry	Department of Biotechnology	AMRFlows: Antimicrobials and resistance from manufacturing flows to people: joined up experiments, mathematical modelling and risk analysis	104.20
38.	Chandan Sarangi	Science and Engineering Research Board	Process level understanding of aerosol-fog-urbanization coupling over IGP	32.92
39.	Ramesh Kannan Kandasami	Science and Engineering Research Board	A critical understanding on the mechanics of gas hydrate sediments for sustainable long term energy extraction	33.00
40.	Balaji Narasimhan	Science and Engineering Research Board	Integrating hydrology and agriculture with livelihood issues: development of climate change adaptation approaches for sustainable water management in humid tropical Kerala	5.50
41.	Surender Singh	R&D of Construction Debris	Westart Communications India Private Limited	11.80

Retainer consultancy (ongoing and new)**New**

S No.	Principal Investigator	Agency Name	Title	Sanction Value (₹ in lakh)
1.	Arul Jayachandran S	Kirby Building Systems and Structures India Private Limited	Proof checking the design of PEBs for M/s Broadway Constructions by Kirby Building Systems & Structures India Private Limited	11.80
2.	Meher Prasad A	Vintech Consultants	Proof checking of elevated -overhead water storage reservoir	8.26
3.	Meher Prasad A	L&T Construction Water & Effluent Treatment IC	Proof checking or vetting or approval of civil engineering design and drawings of precast ESRs for the design, build, operate and transfer of multi-village drinking water supply to villages or habitations in Kushtagi and Yelburga taluks of Koppal district of Karnataka	2.51
4.	Mohan S	Sundaram Clayton Limited	Technical evaluation of storm water discharge system	2.95
5.	Soumendra Nath Kuiry	L&T Construction Heavy Civil Infrastructure IC	Proof checking and approval of hydraulic and hydrological design report for the project construction of four-lane bridge including approaches over river Brahmaputra	17.70
6.	Benny Raphael	SBI Foundation	Infrastructure Systems Lab	92.50
7.	Nageswara Rao B	Postal Civil Division Manacaud	Preparation of structural drawing and designs for construction of Head Post Office Building (G+5) at Poojapura site, Thiruvanthapuram	2.95
8.	Murali Krishnan J	Saint-Gobain Research India Limited	Characterization of the laboratory rutting performance and interfacial bond strength of GlasGrid reinforced bituminous mixtures	13.17
9.	Sathish Kumar S R	Tamil Nadu Housing Board	Proof checking of RC building designs for Tamil Nadu Housing Board at Virudhunagar and Theni	7.17
10.	Meher Prasad A	Lansum Properties LLP	Proof checking of Lansum El Dorado residential project	29.50
11.	Nageswara Rao B	Kalinga Institute of Industrial Technology	Structural vetting of B+S+20 multi-toried IT incubation centre (research laboratory and data processing centre), Bhubaneswar (approx. area 4,00,000 sft.)	14.16
12.	Nageswara Rao B	KEC International Limited	Consultant services for vetting and approval of structural design and drawings pertaining to Bheden and Barpali Block WSS of Bargarh district, Odisha	14.75

13.	Venu Chandra	Rysa Infratech	Vetting and approval of STP design, hydraulic calculations and structural design and drawings pertaining to 800 KLD sewage treatment plant on MBBR technology	2.95
14.	Alagusundaramoorthy P	Lavinsree	Proof checking of structural design and models and vetting the corresponding drawing of substructures and superstructures of TNSCB buildings at Thappukundu, Pallipalayam and Sampalli schemes in Tamil Nadu	11.96
15.	Venu Chandra	Larsen & Toubro Limited Construction	Vetting of designs and drawings for clear water pumping system and transmission main, Bidkin Industrial Area, Maharashtra	3.54
16.	Sathish Kumar S R	Tsugami Precision Engineering India Private Limited	Proof checking of RC building and silo for M/s. Tsugami Precision Engineering Private Limited	3.80
17.	Meher Prasad A	L&T Construction Water and Effluent Treatment IC	Proposal for proof checking/vetting/ approval of civil engineering design and drawings of Precast ESR's for the execution of rural piped water supply projects pertaining to mining-affected villages of Keonjhar district, Odisha	2.51
18.	Ravindra Gettu	Afcons Infrastructure Limited	Testing of fibre concrete for the USBRL project of Northern Railways in Jammu and Kashmir	12.57
19.	Meher Prasad A	Larsen & Tubro Limited	Construction of 100 intake new medical college and hospital campus at Jajpur and new hospital and staff quarters in Puri	46.66
20.	Meher Prasad A	Larsen & Tubro Limited	Proof check of structural design/ drawings for the Redevelopment of Patna Medical College and Hospital (PMCH) at Patna, Bihar	6.79
21.	Alagusundaramoorthy P	Highways Department	Construction of new storm water drains and culverts to prevent flooding in urban and metropolitan areas in Chennai and Tiruvallur districts	2.48
22.	Meher Prasad A	M/s Starworth Infrastructure & Construction Limited	Proof checking of structural design and drawings of TAJ Hotel Project-BIAL	8.21
23.	Mohan S	Tamil Nadu Pollution Control Board	Monitoring the water quality of rivers and evaluating Cumulative Environmental Pollution Index	8.85
24.	Arul Jayachandran S	VME Precast Private Limited	Proof checking the design of precast structures for M/s Baettr by M/s VME Precast Private Limited, Chennai	5.90

25.	Ashwin Mahalingam	The Nature Conservancy	Supporting the development of urban simulation models for Chennai	22.92
26.	Mohan S	Jain Metal Rolling Mills	Assessment of the hazardous waste generation and performance study of existing furnaces	4.13
27.	Soumendra Nath Kuiry	Centre for Urbanization Buildings and Environment	Design vetting: Permanent flood protective measures in meandering portion of Velar River	2.71
28.	Sathish Kumar S R	Zamil Steel Buildings India Private Limited	Proof checking of structural design of PEB for Shree Cements, Power One Projects	8.41
29.	Nageswara Rao B	Ircon International Limited	Proof checking of design and drawings of bridges in connection with Chhattisgarh Railway Project, Chhattisgarh	39.25
30.	Ligy Philip	Southern District Textile Processing Cluster Private Limited	Vetting of DPR for M/s: Southern District Textile Processing Cluster Private Limited	3.54
31.	Venu Chandra	KEC International Limited	Vetting and approval of hydraulic, mechanical drawings and documents, surge analysis pertaining to rural piped water supply projects of Rasulpur and Danagadi block of Bargarh district, Odisha	11.21
32.	Sathish Kumar S R	Tamil Nadu Housing Board Trichy	Proof checking design of RC build for M/s. Tamil Nadu Housing Board at Trichy	12.13
33.	Radhakrishna G Pillai	Indira Gandhi Centre for Atomic Research	High performance concretes for nuclear power plants in coastal regions - corrosion and service life assessments	35.40
34.	Sathish Kumar S R	Kavin Engineering and Services Private Limited	Proof checking the design of plant and non-plant bulds. for M/s IOCL in Maharashtra	8.62
35.	Sathish Kumar S R	T T K Construction	Proof checking design of ROB for M/s. TTK Construction	2.36
36.	Subhadeep Banerjee	National Centre For Coastal Research	Geotechnical aspects and dam design as part of development of detailed project report of Kalpasar Dam Project being undertaken by the National Centre for Coastal Research, Ministry of Earth Sciences	93.42
37.	Robinson R G	Keller Ground Engineering India Private Limited	Proof checking the design and installation of vibro stone column for storage tanks at IOCL Refinery, Paradip, Odisha	4.72
38.	Mohan S	Tamil Nadu Waste Management Limited	Design checking and monitoring of construction of Cell-9 of TNWML Gummidipoondi	8.85

39.	Mohan S	Mumbai Waste Management Limited	Design of vertical retaining wall for the landfill for additional storage for Mumbai landfill site	4.13
40.	Benny Raphael	L&T Construction Heavy Civil Infrastructure	Third-party review and approval of design for strand jack arrangement	23.60
41.	Sathish Kumar S R	Intertouch Metal Buildings Private Limited	Proof checking of PEB Design for M/s Paharpur 3P Unit-2 at Sricity	2.64
42.	Mohan S	Andhra Pradesh Pollution Control Board	Risk analysis of lead contamination in and around battery industries	28.91
43.	Arul Jayachandran S	L&T Construction Buildings & Factories	Proof check of structural design/ drawings for the modular hospital design (Modpro-100) as a factory-based product	4.72
44.	Mohan S	DCW LIMITED	Environmental audit of the captive hazardous waste secured landfill facility (HW-SLF)	7.67
45.	Subhadeep Banerjee	L&T Construction	Geotechnical consultancy for proposed construction of Investment Building at E.M. Bypass, Kolkata	2.95
46.	Sathish Kumar S R	Lloyd Insulations India Limited	Checking of PEB for M/s Schwing Stetter (India) Private Limited	2.36
47.	Nageswara Rao B	KEC International Limited	Consultancy services for vetting and approval of structural design and drawings pertaining to Rasulpur and Danagadi blocks, Jajpur district, Odisha	17.70
48.	Mohan S	Tamil Nadu Waste Management Limited	Environmental assessment and design of landfill for hazardous waste storage at Bargur site, Tamil Nadu	10.03
49.	Benny Raphael	Southern Railways	Safety audit of 2 Nos. of railway bridges in Tiruchchirappalli Division of Southern Railway	44.78
50.	Mathava Kumar S	Elysium Properties India Private Limited	Evaluation of the performance of sewage treatment plant (STP) at Elysium Flushing Meadows, Vellanaipatty Village, Annur Taluk, Coimbatore	3.50
51.	Ravindra Gettu	Max Infra Limited	Testing of fibre concrete for the tunnels in the Bhanupoli Bilaspur Beri Rail Link Project	19.12
52.	Ligy Philip	Thirumalai Chemicals Limited	Carrying out the adequacy test needs to assess and certify the capacity of the upgraded ETP at Thirumalai Chemicals Limited, Ranipet to achieve ZLD	8.85
53.	Ligy Philip	Thirumalai Chemicals Limited	Detailed project report (DPR) for the remediation of contaminated site within the premises of M/S Thirumalai Chemicals Limited (TCL), Ranipet	11.06

54.	Meher Prasad A	Larsen & Toubro Limited	Proof checking of structural design/ drawings for LIC Investment Building, Kolkata	27.05
55.	Meher Prasad A	Prestige Estates Project Limited	Proof checking of Prestige Zackria Metropolitan	8.35
56.	Mohan S	Ultramarine & Pigments Limited	Environmental audit for production process	5.90
57.	Meher Prasad A	Alturas Infra Private Limited	Proof checking for design and construction of UG and PG hostel (G+3 floors) and dining hall building of 500 capacity for boys and girls for Central University of Karnataka	5.67
58.	Meher Prasad A	URC Construction Private Limited	Proof checking of construction of Netaji Bus Terminus at Cuttack	6.40
59.	Murty B S	Tata Projects Limited	Hydraulics of channel due to construction of CC maintenance ramp for TPL-SUCG sites	2.83
60.	Indumathi Manivannan Nambi	L&T Construction Water and Effluent Treatment IC	Vetting of water treatment plant in Khorda district, Odisha	3.54
61.	Nageswara Rao B	Tractebel Engineering Private Limited	Proof checking and vetting of structural design calculations and drawings of sheds having PEB roofs, including foundation, for IOCL LPG Bottling Plant Project near Chittoor, Andhra Pradesh	5.31
62.	Arul Jayachandran S	Roads and Bridges Development Corporation of Kerala Limited	Proof checking the designs ten RoBs for M/s RBDCK, Cochin, Kerala	29.50
63.	Arul Jayachandran S	Bharat Petroleum Corporation Limited	Structural design and drawing of Jetty pipeline loop 1, 2, 3 and 4 and foundation design and drawing of jetty pipeline pedestal	4.72
64.	Subhadeep Banerjee	Keller Ground Engineering India Private Limited	Consultancy services of proof checking the geotechnical design report generated by us for the design and installation of vibro stone columns for Olympia Crest (IT/ITES facility) building to mitigate liquefaction at Perungudi, Chennai	2.36
65.	Gitakrishnan Ramadurai	Spotimize Energy	Implementation plan for 50 HFC buses in Kerala, India	4.29
66.	Subhadeep Banerjee	Keller Ground Engineering India Private Limited	Design and installation of vibro stone columns at Krishnapatnam, AP	8.85
67.	Manu Santhanam	Building Materials & Technology Promotion Council	TPQAS to light house projects - MOHUA	249.17
68.	Indumathi Manivannan Nambi	L&T Construction Water and Effluent Treatment IC	Vetting of water treatment plant in Kendrapara, Odisha	3.54

69.	Nageswara Rao B	Vishal Nirmiti Private Limited	Design qualification tests to withstand the axle load of 25 tonnes on PSC turnout sleepers for Dedicated Freight Corridor Corporation of India (DFCC) to Drawing Numbers: VAEVKN 04943 to VAEVKN 05018; VAEVKN 07378 To 07379 and VAEVKN 05134 To VAEVKN 05151 (RH&LH) and others	12.39
70.	Meher Prasad A	SS Infrastructure Development Consultants Limited	Consultancy services for proof checking and vetting for IREL, Mumbai	3.65
71.	Meher Prasad A	M/s Kitco Limited	Ratification of findings of feasibility report, proof checking of detailed design and ratification of the design and detailed project report prepared by KITCO Limited for the infrastructure augmentation works at Hindustan Shipyard Limited, Visakhapatnam	5.90
72.	Meher Prasad A	M/s SS Infrastructure Development Consultants Limited	Pedestrian walkway and bus terminal, Medhipatnam, Hyderabad	3.25
73.	Apparao G	Andhra Pradesh Urban Infrastructure Asset Management Limited	Proof checking of structural system at Pulivendula Smart City	12.39
74.	Thyagaraj T	M/s Rail Vikas Nigam Limited, Vijayawada	Stability analysis of embankment and recommendations for ground improvement between Karavadi and Krishna Canal Junction Stations	9.44
75.	Ligy Philip	Chemplast Sanmar Limited	MEE Condensate COD reduction study	2.36
76.	Sathish Kumar S R	Tata Projects Limited	Proof checking of hospital building at Keonjhar for Tata Projects Limited	10.00
77.	Nageswara Rao B	Andhra Hospitals Vijayawada Private Limited	Condition assessment and structural stability of Outpatient Block of M/s Andhra Hospital, Vijayawada	5.90
78.	Thyagaraj T	Rail Vikas Nigam Limited, Vijayawada	Evaluation of swell potentials and recommendations for ground improvement for railway embankment on expansive soils between Vijayawada and Bapatla stations	2.36
79.	Ligy Philip	Technical University of Denmark	NGWA Acceleration Scholarship - Young Academics	0.87
80.	Sathish Kumar S R	Tamil Nadu Housing Board, Erode	Proof checking of RCC building for M/s Tamil Nadu Housing Board at Erode	2.70
81.	Nageswara Rao B	Mahindra World school educational Trust	Structural stability of Mahindra World School at Mahindra World City	5.31

82.	Venu Chandra	L&T Construction Water and Effluent Treatment IC	Vetting and approval of mechanical drawings and documents pertaining to Khordha WSS, Odisha	7.08
83.	Venu Chandra	L&T Construction Water and Effluent Treatment IC	Vetting and approval of mechanical drawings and documents pertaining to Khendrapada II WSS, Odisha	7.08
84.	Balaji Narasimhan	Tamil Nadu Urban Infrastructure Financial Services Limited	Study the performance monitoring of Integrated Storm Water Drains (ISWD) in added areas of Adyar and Coom Basins of Greater Chennai Corporation (GCC) from PDGF under TNSUDP	112.43
85.	Arul Jayachandran S	Skipper Limited	Proof checking seven 132 kV and 220 kV DC steel monopoles by M/s Skipper Limited	4.37
86.	Mohan S	Andhra Pradesh Pollution Control Board	To evaluate the level of lead contamination of water bodies and soil around the battery industry	14.16
87.	Mohan S	Andhra Pradesh Pollution Control Board	Environmental audit for battery manufacturing industry	28.91
88.	Arul Jayachandran S	DMIA NYATI LLP	Proof checking the design of two RoBs (i) Kota Mathura Rd and (ii) Nagda Kota Rd (three superstructure+four substructure and foundation) for M/s DMIA Land (India) Private Limited	5.49
89.	Shiva Nagendra S M	Corporation of Chennai	Source apportionment and carrying capacity assessment for Chennai city under National Clean Air Mission	223.73
90.	Arul Jayachandran S	PERI Werk (India) Private Limited	Testing of nine aluminium towers for M/s PERI India	10.62
91.	Ravindra Gettu	Saint-Gobain India Private Limited (Research and Development)	Optimization of e-glass reinforcement for cementitious matrices	82.55
92.	Sathish Kumar S R	Preetech	Proof checking of RC building for ISBT at Bhubaneshwar	13.43
93.	Meher Prasad A	Axles India Limited	Vertical fatigue test	7.08
94.	Atul Narayan S P	Saint-Gobain India Private Limited (Research & Development)	Studies on effectiveness of crack sealing treatment with GlasGrid on Devihalli Hassan Road executed by Saint-Gobain Adfors	40.35
95.	Rupen Goswami	Central Public Works Department Division No II, Pondicherry	Office building for ITD at Tiruvannamalai	3.78
96.	Arul Jayachandran S	Skipper Limited	Design checking of steel poles for the SOUDFY212200008 NHAI-HVPLN-REWARI 132 kV and 220 project	4.37

97.	Nageswara Rao B	EKK Infrastructure Limited	Proof checking and vetting of structural design documents and drawings of proposed construction of viaduct from Ch: 174+600 to Ch: 174+860.105	3.54
98.	Meher Prasad A	Daewoo-L&T JV	Construction of greenfield six lane extradosed cable bridge over river Ganga near Kacchi dargah on NH-30 near Bidupur in district Vaishali on NH-103, Patna, Bihar	11.80
99.	Devdas Menon	Ircon International Limited	Proof checking of design and drawings of foundation substructure and superstructure for Mithapur leg of ROB in lieu of LC-79, Patna	4.37
100.	Apparao G	Sree Ramadutha Engineering Consultants Private Limited	Proof checking of structural design calculations and drawings major and minor bridges, and miscellaneous structures	11.80
101.	Arul Jayachandran S	Nikitha Build-Tech Private Limited	Proof check of steel structural design/drawings of JJMMC Hospital, Davangere	11.80
102.	Meher Prasad A	SPR Construction Private Limited	SPR City-High Living	23.60
103.	Arul Jayachandran S	Horizon - Warehouse Consulting	Professional advice towards steel warehousing solutions	23.60
104.	Benny Raphael	Lafarge Centre de Recherche	3D Printing housing hack	0.79
105.	Nageswara Rao B	Olympia Merlin Developers Private Limited	Proof checking and vetting of the structural design of the proposed construction of three towers of stilt+17 storey buildings with BUA of three (3) lakh sq.ft, located at ECR, Chennai	10.62
106.	Arul Jayachandran S	Aquarian Enterprises	Ten Monopoles Design Verification For NCRTC Project (DA/UD/COROF/24)	5.90
107.	Shiva Nagendra S M	Tiruchirappalli City Corporation	Source apportionment and carrying capacity assessment for Tiruchirappalli city under National Clean Air Programme	88.45
108.	Alagusundaramoorthy P	Tamil Nadu Trade Promotion Organisation	Review of the analysis and design of altered MLCP for TNTPO in Chennai	11.65
109.	Alagusundaramoorthy P	Centre for Urbanization Buildings and Environment	Review of the structural design and approval of drawings of residential, commercial and utility blocks at CPCL Manali	9.34
110.	Mohan S	Tamil Nadu Waste Management Limited	Feasibility study for the use of Bentonite along with clay for landfill liner	2.36

111.	Alagusundaramoorthy P	PST Engineering Construction	Reanalysis of the structural adequacy of Block B in 864 (G+9) EWS multi-storied tenements at K.P. Park in Chennai Corporation under Pradhan Mantri Awas Yojana	3.84
112.	Robinson R G	Keller Ground Engineering India Private Limited	Proof checking of design of vibro stone column for storage tanks at NRL, Assam	8.85
113.	Ligy Philip	IEC Fabchem Limited	Design and development of odour control bio-trickling filter for sewage treatment plants	14.30
114.	Chandan Sarangi	Defence Research Geoinformatics Establishment	Study the impact of light absorbing particles on snow cover of Western Himalaya	48.90
115.	Alagusundaramoorthy P	Indian Oil Corporation Limited	Third-party supervision for peripheral repairs and rehabilitation works of Indian Oil Bhavan in Chennai	38.94
116.	Alagusundaramoorthy P	Indian Oil Corporation Limited	Condition Assessment of IOCL Administrative Building in Foreshore Terminal inside Chennai Port Trust	7.91
117.	Alagusundaramoorthy P	Centre for Urbanization Buildings and Environment	Condition assessment of prefabricated wall elements at NIT Karaikal and remedial measures	4.13
118.	Meher Prasad A	Tata Consulting Engineers Limited	Proof checking and certification of Inter Disciplinary Research (IDR) Building (TCS Smart X Hub) with Development of Onsite Infrastructure Works	9.20
119.	Apparao G	Kataria Industries Private Limited	Evaluation of 19T15 and 19T12 PT (Dynamic, Load Transfer and Anchorage Efficiency Studies) Systems	11.21
120.	Apparao G	DSI-Bridgecon India Private Limited	Testing of 4T15, 12T15 and 19T15 PT systems	16.82
121.	Nageswara Rao B	Rail Vikas Nigam Limited	Condition assessment of the PSC U-girders of the proposed bridge No. (19X12.20m) on Gudur-Vijayawada Section Third Line Project	4.13
122.	Arul Jayachandran S	Marmag Infra Private Limited	Proof check of structural design/ drawings of steel - concrete composite tower at Taramani for M/s DLF	20.00
123.	Meher Prasad A	Teemage Builders Private Limited	Proof checking of construction of Kalyan Mall at Calicut for the client: Kalyan Silks, Thrissur	10.09
124.	Alagusundaramoorthy P	HPR Construction	Technical guidance and inspection of repair and rehabilitation of pile caps, pedestals, pier caps, girders, cross beams and pile foundation soil stabilization in Vettar Bridge at KM 186/621 - 187/091 of NH 45A in Nagapattinam, Tamil Nadu	37.17

125.	Soumendra Nath Kuiry	Tata Projects Limited	Consultancy services for hydraulic design and general arrangement for a piped irrigation network project (Banda Irrigation Project)-BINA PMU, WRD, Sagar, MP	11.80
126.	Murali Krishnan J	Salaipudhur-Madurai Tollway Limited	RAP mix design for project -SMTL	5.90
127.	Indumathi Manivannan Nambi	Common Code	CETeDDD	5.00
128.	Indumathi Manivannan Nambi	Common Code	CETeDDD	5.00
129.	Gitakrishnan Ramadurai	Renault Nissan Technology & Business Centre India Private Limited	Reducing accidents involving public transit buses in Chennai	62.64
130.	Balaji Narasimhan	Highways Department	Flood remedial measures through construction of macro drain along the highway roads from Pallikaranai Marsh to B. Canal - proof checking	11.80
131.	Mohan S	Tamil Nadu Waste Management Limited	Ground water pollution assessment study for treatment, storage and disposal facilities (TSDF)	5.31
132.	Ligy Philip	Thirumalai Chemicals Limited	Assessment of the efficacy of bioremediation status of contaminated site within the premises of M/S Thirumalai Chemicals Limited (TCL)	9.18
133.	Meher Prasad A	Larsen & Toubro Limited	Proof checking and approval of design and drawings of minor bridges and allied structures for the project, Western Dedicated Freight Corridor Package - 3R (Iqbalgarh-Vadodara Section)	4.72
134.	Manu Santhanam	Concrete Quality Concepts Private Limited	Evaluation of composition of plaster samples	3.54
135.	Nageswara Rao B	Office Of The Executive Engineer R And B National Highways Kadapa	Consultancy services for inspection to assess damages to existing major bridge across (i) Papagni River on NH-716 at kM 153/200; and (ii) Penna River on NH-716 at kM 541/600, and submission of report to that effect	5.90
136.	Sathish Kumar S R	NBCC India Limited	Proof checking of RCC building for M/s. NBCC at Kerala	7.26
137.	Sathish Kumar S R	GMR Hyderabad International Airport Limited	Proof checking of structural safety of existing buildings at Hyderabad International Airport	3.40
138.	Arul Jayachandran S	Shri Rathna Akshaya Estates Private Limited	Design vetting of S3 Mall with 2B+G+9 stories for Block A, Block B and Block submitted ES Structural Consultants	22.42

139.	Alagusundaramoorthy P	Larsen & Toubro Limited Construction	Proof checking, vetting and approval of civil engineering design and drawings for Individual Rural Water Supply Scheme, pertaining to Jharsuguda district, Odisha	11.80
140.	Alagusundaramoorthy P	Larsen & Toubro Limited Construction	Proof checking, vetting and approval of civil engineering design and drawings for the rural piped water supply projects pertaining to Keonjhar III	12.69
141.	Alagusundaramoorthy P	Larsen & Toubro Limited Construction	Proof checking, vetting and approval of civil engineering design and drawings for the Jawai Dam Based Cluster IV Drinking Water Supply Project Pali district	6.20
142.	Alagusundaramoorthy P	Larsen & Toubro Limited Construction	Proof checking, vetting and approval of civil engineering design and drawings for WSP of Dungarpur	6.24
143.	Alagusundaramoorthy P	Larsen & Toubro Limited Construction	Proof checking, vetting and approval of civil engineering design and drawings for WTP in Kushalgarh Block (Package 02)	3.25
144.	Alagusundaramoorthy P	Larsen & Toubro Limited Construction	Proof checking, vetting and approval of civil engineering design and drawings for WTP in Kushalgarh Block (Package 01)	3.98
145.	Alagusundaramoorthy P	Larsen & Toubro Limited Construction	Proof checking, vetting and approval of civil engineering design and drawings for WTP in Kushalgarh Block (Package 03)	2.21
146.	Soumendra Nath Kuiry	Larsen and Toubro Limited	Vetting of surge analysis report of pumping and pipeline system - Tapi Karjan Link Project	3.25
147.	Soumendra Nath Kuiry	Larsen and Toubro Limited	Vetting of design and drawings for Sone-Kanhar UGPL Scheme under Water Ways Division, Garhwa of Water Resources Department, Government of Jharkhand	4.13
148.	Ravindra Gettu	Global Cement and Concrete Association	LCCA/LCA for the comparison of different methods of recycling concrete	17.00
149.	Nageswara Rao B	PTK Project Consultants LLP	Proof checking and vetting of the structural design of the proposed construction of housing unit in Maldives	9.00
150.	Alagusundaramoorthy P	Larsen and Toubro Limited, Construction	Proof checking and approval of structural design and drawings of Ranchi Smart City	16.96
151.	Alagusundaramoorthy P	Larsen and Toubro Limited Construction Water and Effluent Treatment IC	Proof checking and approval of structural and civil design and drawings for Coimbatore 30.53 MLD STP Project	7.97

152.	Mohan S	DLF Limited	Design of storm water drainage system for DLF garden city considering land use change and climate variation	14.75
153.	Rupen Goswami	Central Public Works Department Division No II Pondicherry	OTM Accommodation and CGOM for Coast Guard at Puducherry	22.42
154.	Subhadeep Banerjee	MNU Consultants Private Limited	Geotechnical Advisor for CCU1 - Amazons 1st Fulfilment Centre in Uluberia, Howrah	5.90
155.	Shiva Nagendra S M	Madurai City Municipal Corporation	Source apportionment and carrying capacity assessment for Madurai city under National Clean Air Mission	88.45
156.	Mathava Kumar S	Euro Detox	Testing the oxygen transfer performance of Euro Detox Jet Aerators	2.95
157.	Dodagoudar G R	K Kumar Raja Projects Private Limited	Finite element analysis and design of foundations: verification and validation studies	11.80
158.	Venkatraman Srinivasan	Sri Seyon Machinery	Study to investigate possible soil, water and air pollution for new horizontal airflow charcoal processing unit	2.31
159.	Venkatraman Srinivasan	NTPC LIMITED	Preliminary assessment for ascertaining the reason for excessive water discharge from an agricultural tube well in Dalchi village, near NTPC Khargone, MP	4.09
160.	Nageswara Rao B	Rail Vikas Nigam Limited, Vijayawada	Proof checking and vetting of structural design and drawings of proposed construction of all weather covered shed at Vijayawada	5.90
161.	Ligy Philip	Donors	Aqua MAP-Water Management and Policy Centre at IIT Madras	300.00
162.	Shiva Nagendra S M	Karnataka State Pollution Control Board	Source apportionment study and emission inventory studies for the three non-attainment cities viz., Hubli-Dharwad, Davangere and Kalaburgi	50.28
163.	Meher Prasad A	Larsen & Toubro Limited	Proof checking of structural design, documents and drawings for LTI Mahape Commercial SEZ campus, Navi Mumbai	29.49
164.	Nageswara Rao B	Andhra Pradesh Urban Infrastructure Asset Management Limited	Proof checking and vetting of structural design and drawings of proposed construction of (i) Skill Training Academy; and (ii) City Centrum for Pulivendula Area Development Authority, Andhra Pradesh	9.15
165.	Benny Raphael	Indian Railways	Scheme for lifting road over bridge ROB 9A for electrification	5.66

166.	Sathish Kumar S R	Seven Hills PEB Systems Private Limited	Proof checking design of PEB for M/s Brakes India Private Limited at Thervoikandigai	2.80
167.	Sathish Kumar S R	Navayuga Engineering Company Limited	Checking structural design and drawings of shipyard facilities and allied services at SBC Visakhapatnam	30.00
168.	Rajagopal K	Techfab (India) Industries Limited	Development of connection system for welded mesh facing panels	7.08
169.	Nageswara Rao B	Megha Engineering and Infrastructures Limited	Proof checking and vetting of structural design documents and drawings of major bridge at Ch:28+689 across Swarnamukhi River for proposed construction of six-laning of NH-71 from Renigunta (Design Km 0.000/Existing Km 124.600 of NH-71) to Naidupeta	5.00
170.	Indumathi Manivannan Nambi	Sony Pictures Networks India Private Limited	Decentralized zero emission biomedical waste plastic pyrolysis	56.00
171.	Piyush Chaunsali	Saint Gobain India Private Limited (Research & Development)	Development of clay-based alternative cementitious mortars	16.14
172.	Balaji Narasimhan	Ooze Architects	Design and monitoring of water harvesting, recharge and discharge systems	14.28
173.	Nageswara Rao B	Kerala State Electricity Board Limited	Condition assessment of concrete in the RC generator foundation of Unit 4 at Sabarigi Hydro Electric Project at Moozhiyar of M/s Kerala State Electricity Board Limited (KSEBL), Kerala	4.25
174.	Nageswara Rao B	Kerala State Electricity Board Limited	Condition assessment of concrete in the RC beams above the tail race channel and supporting the deck slab of the Sabarigi Hydro Electric Project at Moozhiyar of M/s Kerala State Electricity Board Limited (KSEBL), Kerala	5.90
175.	Alagusundaramoorthy P	Adaniconnex Private Limited	Structural stability certification for diesel generator building at data center (DC), Chennai	9.70
176.	Shiva Nagendra S M	V-Guard Foundation	CYCLOFINE - A smart ambient air purification system	38.90
177.	Ashwin Mahalingam	Initiative fur Neue Bildung e.V	Empowering marginalised youth to acquire new skills and knowledge for better livelihoods	63.80
178.	Apparao G	Sangir Plastics Private Limited	Testing of PT ducts	5.43
179.	Raghukanth S T G	L&T Infrastructure Engineering Limited	Seismic hazard analysis of Karaikal	8.26

180.	Sathish Kumar S R	Ocean Lifespaces India Private Limited	Proof checking design of PEB and RCC buildings for M/s Indian Oil Corp. Limited	40.96
181.	Mohan S	Ramky Enviro Engineers Limited	Landfill stability analysis for coastal waste management project	7.08
182.	Nageswara Rao B	Garrison Engineer (I) (Cg) Chennai	Structural audit of Blocks 8, 9 and 11 at Coast Guard Residential Area Ragamaliga at Mogappair, Chennai (Ref: WO No. 2322/WO/04/E2 dated 07/02/2022)	17.70
183.	Apparao G	DSI-Bridgecon India Private Limited	Testing of PT (12T15 and 19T15) system	11.21
184.	Arul Jayachandran S	New Life Assembly of God Community	Proof checking the design and drawings of a large span steel prayer hall	14.16
185.	Meher Prasad A	L&T Construction Buildings & Factories	Third-party proof check of structural design/drawings for the MLCP and Advocate Chambers for Allahabad High Court at Allahabad	49.56
186.	Ravindra Gettu	Rail Vikas Nigam Limited	Proof checking of TBM tunnel segment design under Package-4 of Rishikesh-Karnprayag Rail line project	14.16
187.	Atul Narayan S P	Arcishmaan Elements Private Limited	Laboratory characterization of the effect of a new additive on the nature and performance of bitumen	12.10
188.	Ligy Philip	Toray Industries, Inc	Investigation of water treatment technology	10.90
189.	Radhakrishna G Pillai	International Zinc Association	Corrosion and service life assessment of concrete structures with galvanized steel reinforcement	30.85
190.	Piyush Chaunsali	Common Code	Mercury intrusion porosimeter, isothermal calorimeter and scanning electron microscope	5.00
191.	Piyush Chaunsali	Common Code	Mercury intrusion porosimeter, isothermal calorimeter and scanning electron microscope	5.00
192.	Veeraragavan A	L&T Infrastructure Engineering Limited	Urban roads improvement plan—proof check on pavement design	5.90
193.	Mohan S	Tamil Nadu Waste Management Limited	Environmental audit for TSDF Gummidipoondi	7.08
194.	Ravindra Gettu	Max Infra (I) Limited	Budhni Barkheda Third Railway Line Project (Tunneling) Bhopal	9.56
195.	Phanisri Pradeep Pratapa	Silres Energy Solutions Private Limited	Developing a novel support structure for rooftop solar panel installation	2.83
196.	Arul Jayachandran S	Tata Steel Limited	Revision of IS:806 Code of practice for steel tubes in general building construction and development of design utilities	4.99

197.	Rupen Goswami	Andaman Public Work Department	Retrofit design of District Hospital at Garacharma, Andaman	7.08
198.	Manu Santhanam	Patil Rail Infrastructure Private Limited	Investigation of DEF in sleepers	11.80
199.	Benny Raphael	Southern Railways	Condition assessment of railway bridges in the Madurai division	53.10
200.	Nageswara Rao B	Tensa India Engineering Private Limited	Testing of TENSA Posttensioning Anchorages	15.22
201.	Nageswara Rao B	Centre for Urbanization Buildings and Environment (Cube)	Proof checking and vetting of structural design documents and drawings of four residential blocks of (S+13) comprising a total of 240 tenements and allied infrastructures (built-up area: 100,000 sqft (approx)) for TNUHDB	3.54
202.	Venkatraman Srinivasan	Project Office District Rural Development Agency	Combined flood and drought mitigation through rapid groundwater recharge in karst aquifers	69.13
203.	Sathish Kumar S R	Tata Projects Limited	Proof checking design of PEB warehouse at Hosur for M/s Tata Projects Limited	32.00
204.	Alagusundaramoorthy P	National Bank for Agriculture and Rural Development	Preliminary assessment of NABARD office complex at Nungambakkam High Road, NABARD officers' quarters at Cenotaph Road and NABARD Staff Quarters at South Boag Road in Chennai	2.92
205.	Benny Raphael	Larsen & Toubro Limited	Proof checking for launching schemes for utility truss in Tallah ROB project	4.72
206.	Manu Santhanam	L&T Construction, Heavy Civil Infrastructure	Advice on mass concrete for UG project	4.13
207.	Ligy Philip	NBCC (India) Limited	Proof-checking or vetting of process design for 5 MLD STP (sewage treatment plant) based on MBBR technology	3.54
208.	Venu Chandra	Bhugan Infracon Private Limited	Consultancy services for 25, 7, 15.25 and 7.75 MLD SPS at Biharsharif, Bihar	4.72
209.	Alagusundaramoorthy P	Larsen & Toubro Limited Construction	Proof check the civil engineering design and vet the drawings for Khatan Water Supply Project in Uttar Pradesh	9.44
210.	Thyagaraj T	Larsen and Toubro Limited Construction Water and Effluent Treatment IC	Foundation recommendations for the proposed RO-DM Plant at IOCL Barauni, Bihar	4.13

211.	Alagusundaramoorthy P	Larsen & Toubro Limited Construction	Proof check the civil engineering design and vet the drawings for Chitrakoot Water Supply Project in Uttar Pradesh	11.21
212.	Alagusundaramoorthy P	Larsen & Toubro Limited Construction	Proof check the civil engineering design and vet the drawings of Parasi-Belowadh Piped Water Supply Project in Uttar Pradesh	7.38
213.	Alagusundaramoorthy P	Larsen & Toubro Limited Construction	Proof check the civil engineering design and vet the drawings for Shivhar Piped Water Supply project in Uttar Pradesh	7.08
214.	Venu Chandra	Larsen and Toubro Limited Construction Water and Effluent Treatment IC	Vetting and approval of mechanical drawings and documents pertaining to Boudh-Kandhamal WSS, Odisha	11.51
215.	Alagusundaramoorthy P	Larsen & Toubro Limited Construction	Strengthening of the intake pump house in Kundalia Irrigation Project Right Bank post unprecedented rainfall	5.31
216.	Alagusundaramoorthy P	Ramalingam Construction Company Private Limited	Assessment of misalignment in the construction of 513 TNGRHS flats (stilt+19 floors) under Group III as 1,387 TNGRHS Flats at Todhunter Nagar Saidapet in Chennai for the TNHB CIT Nagar Redevelopment Works Division	4.31

Faculty members' participation with other institution under MoU

S.No.	Faculty Member	Participation Details	University
1.	Prof. Radhakrishnan Pillai	Faculty champion for the joint supervision agreement	University of Leeds, UK
2.	Prof. Manu Santhanam	Faculty champion for the MoU	University of Cape Town, South Africa
3.	Prof. Balaji Narasimhan	Faculty champion for the MoU	Colorado State University, USA
4.	Prof. Indumathi Nambi	Faculty champion for the MoU	The University of Birmingham

Distinguished visitors to the department

S.No.	Visitor and Designation	Date of Visit	Purpose of Visit
1	Prof Mark Alexander, Emeritus Professor, University of Cape Town	14 Febuary-3 March 2022	Visiting faculty
2	Prof Yunus Ballim, Deputy Vice Chancellor, University of Witwatersrand	14 Febuary-4 March 2022	Visiting Faculty

4.7. Department of Computer Science and Engineering

4.7.1. Introduction

Started as the Computer Centre in 1973, the Department of Computer Science and Engineering was established as a full-fledged department in 1983. The department has a vibrant community of around 700 students and 35 faculty members. About 60% of students are postgraduates, mostly supported

by government of India scholarships and research projects. The department also offers several attractive industry-sponsored fellowships for outstanding Ph.D. scholars. The vision of the CSE Department is “global excellence and local relevance” in research, teaching and technology development in computer science and engineering.

4.7.2. Academic Programmes

B.Tech., Dual Degree (B.Tech. and M.Tech.), M.Tech., M.S., Ph.D., Dual M.S./Ph.D., Dual M.Tech./Ph.D.; Inter-disciplinary Dual Degree in Data Science (B.Tech/M.Tech) and Web based M.Tech. in Information Security.

New courses introduced

S. No.	Course No.	Title
1	CS6515	Stochastic Optimization
2	CS2222	Advanced Programming Techniques
3	CS6854	Topics in Distributed Algorithms
4	CS5210	Linear Programming and Combinatorial Optimization
5	CS6691	Deployability Aspects of Machine Learning
6	CS6101	Parameterized Algorithms
7	CS5205	Internet of Things: Protocols and Programming
8	CS2705	Programming and Data Structures (for non-CSE students)

New labs established

S.No.	Lab
1	CCBR-EEG Lab
2	Speech, Music and Vision Lab
3	Cryptography, Cybersecurity and Distributed Trust Lab
4	Research in Algorithms and Graphs Lab
5	Machine Learning Theory Lab
6	Scalable Programming Languages and Cybersecurity Lab
7	Sensing and Networked Systems Engineering Lab
8	Distributed and Adaptive Wired/Wireless Networks Lab
9	AI4Bharat Lab

Students on roll as of September 2021 + M.S. and Ph.D. admission in January 2022

Programme	I Year	II Year	III Year	IV Year	V Year and Others	Total
B.Tech.	86	87	79	69	6	327

Dual Degree	-	-	2	4	21	27
M.Tech.	73	60	8	1	-	142
M.S.	17	27	16	4	-	64
Ph.D.	16	19	08	17	16	76
Web based MTech	22	30	29	-	-	81
Total	214	223	142	95	43	717

Endowment prize instituted

1. Bro. C. Selvam Endowment Prize to be given to a Ph.D. student based on research performance.

Students/Scholars who won outside prizes and awards

S. No.	Student/Scholar	Roll No.	Prize	Prize Awarded by
1	Prithwish Basu Roy, Pallavi Borkar, Sandeep Saha and Girinath	CS18S021, CS20S005, CS20S044, CS18B032	Cyber Security Awareness - Embedded Security Challenge	New York University and IIT Kanpur

Students/Scholars who won Institute Convocation/Institute Day Prize

S.No.	Student/Scholar	Roll No.	Prizes	Donor
1	Dileep Pattipati	CS15D002	Institute Research Award	IITM
2	Muhammad Arsath	CS16S035	Institute Research Award	IITM

4.7.3. Faculty and Their Activities Faculty

Name and Qualifications	Major Areas of Specialisation
Professors	
Chandra Sekhar C., Ph.D. (IIT Madras) (Head)	Kernel methods, deep learning, metric learning
Deepak Khemani, Ph.D. (IIT Bombay)	Artificial intelligence, knowledge-based systems, natural language processing
Hema A. Murthy, Ph.D. (IIT Madras)	Speech and music technology, signal processing and machine learning, computational brain research
Janakiram D., Ph.D. (IIT Delhi)	Distributed and object-oriented systems, mobile computing, blockchain technology
Kamakoti V., Ph.D. (IIT Madras)	Software for VLSI design, processor design, cyberphysical systems
Krishna Moorthy Sivalingam, Ph.D. (SUNY Buffalo, USA)	Wireless networks, optical networks, computer networks
Siva Ram Murthy C., Ph.D. (IISc, Bengaluru)	Parallel and distributed computing, real-time systems, wireless networks

Sreenivasa Kumar P., Ph.D. (IISc, Bengaluru)	Database systems, applied ontologies
Sukhendu Das, Ph.D. (IIT Kharagpur)	Computer vision and visual perception, image intelligence, graphics and visualization
Madhu Mutyam, Ph.D. (IIT Madras)	Computer architecture
Narayanaswamy N.S., Ph.D. (IISc, Bengaluru)	Algorithms, complexity theory, artificial intelligence
Anurag Mittal, Ph.D. (University of Maryland, USA)	Computer vision, pattern recognition and image understanding
Ravindran B., Ph.D. (University of Massachusetts, Amherst, USA)	Reinforcement learning, artificial intelligence
V. Krishna Nandivada, Ph.D. (University of California, Los Angeles, USA)	Compilers, program analysis, programming languages, high performance computing
Sutanu Chakraborti, Ph.D. (The Robert Gordon University, UK)	Information retrieval, memory-based reasoning, machine learning
Jayalal Sarma M.N., Ph.D. (Institute of Mathematical Sciences, Chennai)	Computational complexity theory, circuit complexity, algebra and computation
Associate Professors	
John Augustine, Ph.D. (University of California, Irvine, USA)	Distributed algorithms, security in distributed computing, randomized algorithms
Manikandan Narayanan, Ph.D. (University of California at Berkeley, USA)	Bioinformatics, computational network biology, systems biology/genomics in health and disease
Raghavendra Rao B.V., Ph.D. (Institute of Mathematical Sciences, Chennai)	Computational complexity theory, algebraic complexity, descriptive complexity theory
Rupesh Nasre, Ph.D. (IISc, Bengaluru)	Compilers, parallelization, program analysis
Shweta Agrawal, Ph.D. (University of Texas, Austin, USA)	Cryptography, security, theoretical computer science
Chester Rebeiro, Ph.D. (IIT Kharagpur)	Hardware and system security, side-channel analysis, cryptography
Mitesh Khapra, Ph.D. (IIT Bombay)	Deep learning, natural language processing, multimodal multilingual conversation systems
Assistant Professors	
Meghana Nasre, Ph.D. IISc, Bengaluru)	Algorithms, graph theory, matching algorithms
LA Prashanth, Ph.D. (IISc, Bengaluru)	Reinforcement learning, stochastic optimization, multi-armed bandits
Yadu Vasudev, Ph.D. (Institute of Mathematical Sciences, Chennai)	Algorithms, sub-linear algorithms and computational complexity theory
Harish Guruprasad, Ph.D. (IISc Bengaluru)	Machine learning, learning theory and optimisation
K C Sivaramakrishnan, Ph.D. (Purdue University, USA)	Programming languages, distributed systems, parallel compilers and runtime systems
Arun Rajkumar, Ph.D. (IISc Bengaluru)	Machine learning, statistical learning, sequential decision making
Kartik Nagar, Ph.D. (IISc Bengaluru)	Automated program verification, program analysis, programming languages

Nishad Bharat Kothari, Ph.D. (University of Waterloo, Canada)	Graph theory, matching theory, combinatorial optimization
Ayon Chakraborty, Ph.D. (State University of New York, Stony Brook, USA)	Networked systems, mobile computing, wireless sensing
Akanksha Agrawal, Ph.D. (University of Bergen, Norway)	Parameterized algorithms, graph algorithms, computational geometry
Aishwarya T, Ph.D. (University of Maryland, College Park)	Cryptography, security, privacy
Chandrashekar Lakshminarayanan (IISc Bengaluru)	Deep learning, reinforcement learning, stochastic approximation
Adjunct Faculty	
Ravishankar Krishnaswamy, Microsoft Research India, Bengaluru	Approximation algorithms, online algorithms
Deepak Padmanabhan, Queen's University, Belfast	Data analytics, machine learning, similarity search
Sriraam Natarajan, The University of Texas at Dallas, USA	Artificial intelligence, machine learning, graphical models, relational learning
Manikantan Srinivasan, Veryx Technologies, Chennai	Data communication networks, network visualization, wireless LANs, cybersecurity
Sarath Chandar, Ecole Polytechnique de Montréal, Canada	Recurrent neural networks, lifelong learning, reinforcement learning, deep learning, natural language processing
Pratyush Kumar, Microsoft India, Chennai	Cyber-physical systems, machine learning
Visiting Faculty	
Partha Mitra (Prof. Mahabala Distinguished Chair in Computational Brain Research), Cold Spring Harbor Laboratory, USA	Intelligent machines, brain-wide mesoscale circuit mapping
Mriganka Sur (N.R. Narayana Murthy Distinguished Chair in Computational Brain Research), Massachusetts Institute of Technology, USA	Cortical development and plasticity, dynamics, brain disorders
David Peleg (Venky Harinarayan and Anand Rajaraman Visiting Chair)	Algorithms, distributed computing, communication networks
Vyas Sekar (Venky Harinarayan and Anand Rajaraman Visiting Chair)	Networking, security, systems
Paul Robert Manger (Visiting Faculty Fellow) University of the Witwatersrand, Johannesburg, Republic of South Africa	Brain evolution, comparative neuroanatomy
Raghu Pasupathy, Purdue University, USA	Stochastic optimization, statistical/probabilistic computation, Monte Carlo
Shrikanth Narayanan (VAJRA Faculty) University of Southern California, USA	Speech and language processing, human behavioral signal processing, spoken dialog and multimodal systems
Gopal Pandurangan (VAJRA Faculty) University of Houston, USA	Theoretical and algorithmic foundations of distributed computing, networks, large-scale data
Srinivasan Parthasarathy (VAJRA Faculty) The Ohio State University, USA	High performance data analytics, graph analytics and network science, machine learning, database systems

Short-term courses/workshops/seminars/symposia/conferences organised by the faculty members

S. No.	Coordinator(s)	Title	Period
Workshop			
1	Akanksha Agrawal and G. Philip (Chennai Mathematical Institute)	ACM India Winter School on Algorithms and Lower Bounds	3-12 January 2022
Short-term courses			
1	Rupesh Nasre	GPU Programming with OpenACC	1-12 February 2022
2	Ayon Chakraborty	Localization for Internet of Things	21-26 March 2022

Special lectures delivered by the faculty in other institutions

S.No.	Faculty Member	Topic of Lecture	Institution	Date
1	Rupesh Nasre	Compiler optimizations	KIIT Bhubaneswar	10 March 2022
2	Rupesh Nasre	GPU Programming	NIT Surathkal	9 October 2022
3.	Ayon Chakraborty	Drones as next-generation IoT devices	NIT Silchar	23 August 2021
4.	Ayon Chakraborty	IoT based sensing	KIIT Bhubaneswar	9 October 2021
5.	Akanksha Agrawal	Hybrid graph parameterizations	IIIT Hyderabad	16 March 2022
6	Madhu Mutyam	Microarchitecture based side channel attacks	IIT Ropar	29 December 2021
7	Madhu Mutyam	ILP Processors	ACM Winter School on Design, Implementation, and Verification of Computer Systems	4-5 January 2022
8	Madhu Mutyam	Introduction to memory consistency and DRAM Memory	ACM Winter School on Design, Implementation, and Verification of Computer Systems	5 January 2022
9	Madhu Mutyam	Cache coherence protocols	NSM Computer Architecture Winter School	3 January 2022
10	John Augustine	Introduction to research	BITS Pilani Hyderabad	30 March 2022
11	Shweta Agrawal	Building cryptography for big data	University of Michigan, Ann Arbor	26 October 2021
12	Shweta Agrawal	Recent progress and challenges in lattice based cryptography	Keynote speaker at conference Latincrypt	7 October 2021
13	Shweta Agrawal	Cryptography: the jugalbandi (duet) of structure and randomness	Keynote at Vigyan Vidushi, TIFR	29 June 2021

14	V. Krishna Nandivada	Challenges in analyzing and optimizing parallel programs	Invited talk, PPEE 2021	17 December 2021
15	V. Krishna Nandivada	Challenges in analyzing and optimizing parallel programs	LLVM Social, Bengaluru	12 February 2022
16	V. Krishna Nandivada	New results in may happen in parallel (MHP) analysis	IIT Goa, invited talk	19 October 2021
17	Sutanu Chakraborti	Computational models of language: challenges from a cognitive perspective	Invited Lecture, International Symposium on Applications and Innovations with Intelligent Systems, Department of Computer Science, Amrita University, Mysuru	12 March 2022
18	C Chandra Sekhar	Deep learning models	Faculty Development Programme on Predictive Intelligence and its Applications at National Engineering College, Kovilpatti	12 July 2021
19	C Chandra Sekhar	Introduction to machine learning, dimension reduction and clustering, artificial neural networks, deep learning	Short-term course on Machine Learning Techniques at RBI Staff College, Chennai	6-8 September 2021
20	C Chandra Sekhar	Deep learning models and applications	Keynote address in National Conference on Recent Innovations in Computing & Data Sciences (NCRICD-2021), GITAM Deemed to be University, Hyderabad	12 November 2021
21	C Chandra Sekhar	Attention based models: transformers	Invited talk at International Research Workshop on Advances Deep Learning and Applications (WADLA), IIIT Sri City	23 February 2022
22	C Chandra Sekhar	Deep learning models for text, speech and image processing	Faculty Development Programme on Recent Advances in Deep Learning, SSN College of Engineering, Chennai	7 March 2022

Awards obtained by faculty

S. No.	Faculty Member	Award	Awarded by	Awarded for	Date of Award
1.	Nishad Kothari	Google exploreCSR award	Google Asia Pacific Pte. Ltd.	Increasing student pursuit of computing research, especially for students historically marginalised in the field	15 November 2021

Fellowships of academies and professional societies

S. No.	Faculty Member	Year of Admission
INAE		
	C. Siva Ram Murthy	2002
	Krishna M. Sivalingam	2015
INSA		
	C. Siva Ram Murthy	2013
Others		
	NASI, C. Siva Ram Murthy	2013
	IEEE, C. Siva Ram Murthy	2012
	TWAS, C. Siva Ram Murthy	2014
	IEEE: Krishna M. Sivalingam	2014
	ICSA: Hema A. Murthy	2021

Journal editorial boards

S. No.	Faculty Member	Position	Journal Name
1	Rupesh Nasre	Associate Editor	<i>Concurrency and Computation: Practice and Experience</i> (Wiley)
2	C Siva Ram Murthy	Area Editor	<i>Computer Networks</i> (Elsevier)
3	Krishna Sivalingam	Editorial Board Member	<i>IEEE Networking Letters</i>
4	Chester Rebeiro	Associate Editor	<i>Journal of Hardware and System Security</i> (Springer)
5	Hema A Murthy	Associate Editor	<i>IEEE/ACM Transactions on Audio, Speech and Language Processing</i>
6	Madhu Mutyam	Associate Editor	<i>IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems</i>
7	John Augustine	Associate Editor	<i>Journal of Parallel and Distributed Computing</i>

4.7.4. Design and Development Activities

Patents awarded

S. No.	Faculty Member	Topic of Patent
1	Rupesh Nasre	A method for consensus prioritization of regression test-cases supported by parallel execution windows
2	P Sreenivasa Kumar, Rupesh Nasre	A system and method for bug identification and fault localization through domain-ontology
3	V Krishna Nandivada	System and method for performing self-stabilizing compilation

4.7.5. Research and Consultancy

Sponsored research projects (ongoing and new)

S. No.	Title	Period	Funding Agency	Amount (₹ in lakh)	Coordinators
1	HPC Application Frameworks	9 March 2020-8 March 2023	MeitY	130.00	Rupesh Nasre

2	NSM Nodal Centre for Training in HPC and AI	15 December 2020-14 December 2022	CDAC	38.00	Rupesh Nasre
3	Multicore OCaml Support for Tezos	June 2019-June 2021	Tezos Foundation	178.00	KC Sivaramakrishnan
4	Post Quantum Cryptography Challenges, Opportunities and Beyond	March 2020-March 2025	SERB	127.73	Shweta Agrawal
5	Design and Development of Blockchain Based Technologies	February 2019-May 2022	National Security Council Secretariat	100.00	Shweta Agrawal
6	Computing on Encrypted Data: New Paradigms in Functional Encryption	January 2019-January 2022	CEFIPRA	51.10	Shweta Agrawal
7	Indigenous 5G Test Bed: Building End to End 5G Test Bed in India	21 March 2018-30 September 2021	Department of Telecommunications, Government of India	6000.00	Krishna Sivalingam (Co-PI); IITM PI: Dr. Radhakrishna Ganti (EE); Overall Project Lead: Prof. Bhaskar Ramamurthi (Director, IIT Madras)
8	Programming Model/ Language and Compiler for Emerging HPC Systems	2019-2022	NSM	255.60	V. Krishna Nandivada (PI)
9	Optimizing HPC Applications	2019-2022	SERB, CRG	30.00	V. Krishna Nandivada
10	SPARE: Safe Portable Partial-Analysis Results for JAVA Programs	2019-2022	IBM Canada	45.00	V. Krishna Nandivada
11	Computational Methods for Multi-Tissue Models of Health and Disease	September 2018-September 2023	Wellcome Trust/ DBT India Alliance Intermediate Fellowship Award	355.00	Manikandan Narayanan
12	Multi-Modal Data Integration and Imputation Methods to Infer Causal Gene Networks and Cellular Composition	February 2021-February 2024	NFSG, IITM	15.00	Manikandan Narayanan
13	Matchings Under Preferences - Theory and Practice	February 2020-February 2023	SERB CRG	15.00	Meghana Nasre (PI), Prajakta Nimbhorkar CMI (Co-PI)

14	Rigorous Verification and Validation of Memory Systems in Heterogeneous Computing Systems Using Statistical Model Checking	2019-2022	Scheme for Promotion of Academic and Research Collaboration	65.05	Madhu Mutyam
15	Simulation-Based Optimization in a Cumulative Prospect Theory Framework	2018-2021	Department of Science & Technology	45.90	Prashanth L.A.
16	Conversation Agents for Urban Navigation	2019-2022	IMPRINT	68.20	Ravindran B. Gitakrishnan Ramadurai, CE
17	JC Bose Fellowship	2016-2021	Department of Science & Technology	95.00	Siva Ram Murthy C.
18	Scene Understanding for Identification of Covert Geo Locations, Using a Hyper-Classifer Based Visual Intelligent System	2017-2022	IMPRINT	187.00	Sukhendu Das Ravindran B Kaushik Mitra, EE
19	Automatic Speech Recognition in Indian English, Tamil, Hindi, and Text to Speech Synthesis for Conversational Speech in Indian Languages	2020-2021	Ministry of Electronics & Information Technology	92.02	Hema A Murthy, Umesh S., EE
20	Speech to Speech Machine Translation (SSMT): Pilot System	2020-2021	Office of the Principal Scientific Adviser	180.15	Hema A Murthy Umesh S., EE
21	National Mission on Interdisciplinary Cyber Physical Systems	2020-2025	Department of Science & Technology	800.00	Kamakoti V
22	Improving the Resource Efficiency of CPUs for Deep Learning	2020-2021	Intel Technology India Private Limited	7.50	Pratyush Kumar
23	Multilayer Network Centrality Measures to Identify Known and Novel Regulators of Tissue-Tissue Communication	2020-2021	Intel Technology India Private Limited	7.50	Ravindran B
24	Addressing the Last Mile Communication Crisis for Efficient Disaster Response	2021-2024	NFSG, IITM	24.00	Ayon Chakraborty
25	Next Generation Telecommunications Networks: Privacy and Security Challenges, Regulatory Interventions and Policy Framework	2021-2023	Australia-India Cyber and Critical Technology Partnership	16.26	Ayon Chakraborty

26	Speech Technologies in Indian Languages (Consortium of 24 Institutions)	2022-2025	MeiTY	5065.48 (₹3,000 lakh are from IIT Madras)	Hema A Murthy, Umesh S (EE)
27	Center for Hardware Security: Hardware Security for Entrepreneurship, Research and Development	2022-2026	MeiTY	360.00	Chester Rebeiro
28	Collecting Datasets and Benchmarks for Building Indian Language Technology	2022-2025	MeiTY	4704.48	Mitesh M. Khapra, Pratyush Kumar
29	Exploring Algorithmic Techniques for Computing with Catalytic Memory	2021-2024	SERB, CRG	21.16	Jayalal Sarma
30	Techniques to Improve GPU Memory Capacity in Heterogeneous Systems	2022-25	SERB, CRG	36.97	Madhu Mutyam
31	Lower Bounds in Distributed Computing	2019-22	SERB, MATRICS	6.00	John Augustine
32	Explainable GI Endoscopy Procedure Assessments	2022-23	RBCDSAI, IITM	12.00	Arun Rajkumar, Chandrashekar L
33	Ethical and Explainable AI in Fintech Applications	2021-22	DART-RBCDSAI	7.04	Arun Rajkumar
34	High Performance Computing (HPC) Architecture for Autonomous Space Systems	2021-23	ISRO	45.08	Kamakoti V

RBIC projects (ongoing and new)

S. No.	Faculty Member	Title	Industry	Amount (₹ in lakh)
1	Kamakoti V	Technology support to combat COVID-19 pandemic	National Stock Exchange Foundation	30.00
2	Kamakoti V	Development of open-source platforms and capability creation initiative	City Union Bank Limited	320.00
3	Ravindran B	PhD Fellowship in Natural Language Processing	Google Research	31.95
4	Ravindran B	Robert Bosch Centre for Data Science and AI	Robert Bosch Engineering and Business Solutions Private Limited	2000.00

5	Ravindran B	Learning representations on network data	Intel Technology India Private Limited	108.00
6	Kamakoti V	Performance assessment of star registration software	IG Registration Office, Government of Tamil Nadu	194.70
7	Mitesh Khapra	Knowledge graph driven domain specific multimodal conversation systems	Google Research	30.11
8	Ravindran B	Research advisory services in the area of data sciences and artificial intelligence for the Corporate Technology Office (CTO) and the TCS Retail Business Unit	Tata Consultancy Services Limited	14.16
9	Ravindran B	Development of machine learning algorithm to model semi-conductor fab manufacturing process as multiple states	Applied Materials India Private Limited	95.09
10	Mitesh Khapra	Attention mechanisms in deep learning	Robert Bosch Engineering and Business Solutions Private Limited	10.00
11	Pratyush Kumar	Connected Autonomous Shared Electric (CASE) Shuttles Project	Robert Bosch Engineering and Business Solutions Private Limited	10.00
12	Kamakoti V	AI and thermal imaging based breast cancer detection	BNY Mellon Technology Private Limited	90.00
13	Ravindran B	Program mentorship consultancy	Greyatom Edutech Private Limited	47.20
14	Anurag Mittal	Google India PhD Fellowship in Machine Perception for Arulkumar S (CS15D202)	Google Ireland Limited	35.85
15	Mitesh Khapra	Automatic question generation using reinforcement learning	Adobe Systems Incorporated	27.11
16	Ravindran B	Deep learning methods for medical language processing	BUDDI Health	24.00
17	Ravindran B	Consultation on education initiatives of GITAA Private Limited	GITAA Private Limited	23.00
18	Ravindran B	A generalized model for lead scoring	Freshworks Inc	56.28
19	Mitesh Khapra	Google India PhD Fellowship in Natural Language Processing for Ananya Sai	Google Ireland Limited	36.42
20	Kamakoti V	Open source based translation research in ICT	TATA Elxsi Limited	100.42
21	Sukhendu Das	Identification and detection of spatial layouts of fixed set of fixtures in images	Nathan Research Systems Private Limited	7.08
22	Chester Rebeiro Kamakoti V	Hardware realizable algorithm for packet classification to support throughput of up to 100Gbps	Center for Artificial Intelligence and Robotics	20.00

23	Krishna Moorthy Sivalingam	Orchestration for network slicing in 5G networks based on SDN/NFV concepts design and implementation	VMware University Research Fund	76.54
24	Mitesh Khapra	AI for social good: NLP tools for under-represented languages	Google Ireland Limited	7.09
25	Chester Rebeiro	Instant side-channel vulnerability estimation of digital designs	Qualcomm Technologies, Inc.	10.20
26	Sukhendu Das	Analyzing ventilator images to detect respiratory abnormalities	Cloudphysician Healthcare Private Limited	0.59
27	Pratyush Kumar Mitesh Khapra	Indian sign language recognition	Microsoft Corporation India Private Limited	62.11
28	Mitesh Khapra	Knowledge graph driven QA benchmark for Indian languages	Google Asia Pacific Private Limited	11.02
29	Narayanaswamy N S	THARANGINI - Exploratory Technology Prototyping	Jivass Technologies	5.00
30	Krishna Moorthy Sivalingam	Federated machine learning for network elements using programmable data plane environments	Ciena USA	95.00
31	Chester Rebeiro	Formal analysis of timing interference in automotive platforms	Vitesco Technologies	41.30
32	Nishad Bharat Kothari	Matching theory	Google Asia Pacific Private Limited	3.75
33	Ravindran B	Research gift for RBCDSAI	Google Asia Pacific Private Limited	30.00
34	Ravindran B	Research gift for supporting research in reinforcement learning	Google Asia Pacific Private Limited	15.00
35	Ravindran B	Research gift to support data commons	Google Asia Pacific Private Limited	15.00
36	Sivaramakrishnan K C	Multicore support for Tezos blockchain	Tezos Foundation	72.36
37	Mitesh Khapra	Centre for AI4Bharat	EkStep Foundation	3850.00

Retainer consultancy (ongoing and new)

S.No.	Faculty Member	Title	Industry	Amount (₹ in lakh)
1	Krishna Moorthy Sivalingam	Consultant	NMSWorks, IITM Research Park, Chennai	5.00

Faculty members participation with other institution under MoU:

S.No.	Faculty Member	Participation details	Institution
1	Ayon Chakraborty	Collaborative research, joint scholar guidance	IDRBT, Hyderabad

4.8. Department of Electrical Engineering

4.8.1. Introduction

One of the largest departments of IIT Madras, the Department of Electrical Engineering carries out teaching, research and technology development in the frontier areas of communications, signal processing, networks, power systems, power electronics microgrids, integrated circuits and systems, microelectronics, MEMS, VLSI, RF, photonics, biomedical devices, control and optimization. The department has initiated the following Centres of Excellence that are recognised nationally for research and development:

- National 5G Testbed
- Centre for Battery Engineering and Electric Vehicles (CBEEV)
- Centre for NEMS and Nanophotonics
- Healthcare Technology Innovation Centre (HTIC)
- Centre of Excellence in Wireless Technology (CEWiT)
- Photonics

- Brain Centre
- AMOLED Research Center

The department received funding to explore the possibility of setting up new Centres of Excellence in various areas. Some such potential centres include the following:

- GaN Research and Development (GRAND)
- Centre of Excellence on Advanced Memory and Computing (CAMAC)
- Advanced technologies for early and non-invasive vascular health assessment
- RF, Analog and Mixed-Signal Integrated Circuits
- OLED Display Tech
- Photonic Integrated Circuits
- Technologies for Micro Grids
- Quantum Information, Communication and Computing (QuICC)
- Computer Vision - Sports Science and Analytics
- Renewable Energy

The collaborative efforts of the department are currently grouped under the following areas of research:

EE1: Communications and Signal Processing

Communications and networks: This research group focuses on cutting-edge problems in wireless communications and networks, including mathematical modeling, analysis, designing of new algorithms and prototyping using test beds. Their

interests span physical-layer aspects, modulation and coding, scheduling and rate adaptation, estimation and detection, resource allocation and optimization, network control, information theory, 4G/5G technology and standards, LTE systems, MIMO systems, cognitive radios, mobile IP, optical backbone networks and software defined radios and networks.



A prototype for in-band full duplex radios using off the shelf RF components

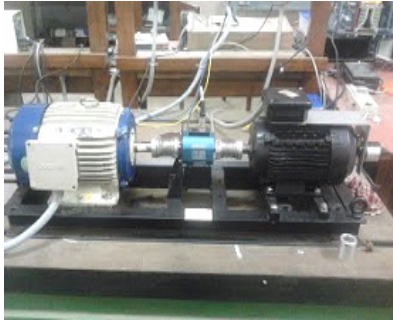
Image enhancement:



Image and speech signal processing: This research group's focus is on image processing and computer vision, including image deblurring and dehazing, underwater imaging, image and video matting, HDR, face recognition, 3D geometry inpainting and depth from motion blur. They work on developing novel computational cameras and mathematical

framework for their analysis as well as deep learning architectures for solving various image processing and computer vision problems. The Speech research group works mainly on the Automatic Speech Recognition (ASR) for Indian language, deep learning methods for speech recognition and multilingual speech recognition.

EE2: Power Systems, Power Electronics and High Voltage



800 kV Test Transformer

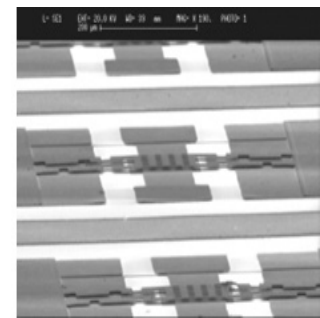


A DSTATCOM Module with Display/R

The group is actively involved in research related to power electronics based motor drives, grid integration of renewable energy sources with a focus on solar and wind, power quality issues and mitigation techniques, smart grids,

power systems modelling and analysis, energy markets, nanotechnology, condition monitoring of power apparatus adopting multi-fusion sensor techniques, sterilisation of liquid foods and effluent treatment.

EE3: Microelectronics and VLSI Design

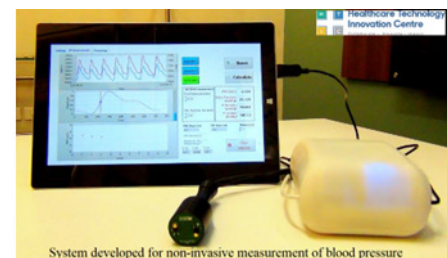
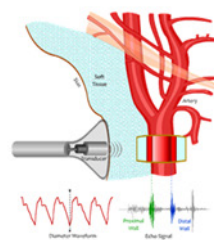


The Microelectronics group focuses on design, simulation, modeling, fabrication and testing of micro and nano scale electronic components and systems. The Microelectronics and MEMS Lab in the department is well-equipped for semiconductor device and MEMS fabrication, characterization, modeling and simulation. It has Class-100 and Class-1000 clean rooms, which house the major

facilities that include a mask writer, double-sided lithography facility, substrate bond aligner, LPCVD for polysilicon deposition, PECVD for dielectrics, diffusion furnaces, e-beam metallization unit and RIE for dry etching.

The VLSI group is involved in research in the areas of DSP architectures, FPGAs, mapping of algorithms, and reconfigurable computing.

EE4: Electronic System Design and Instrumentation

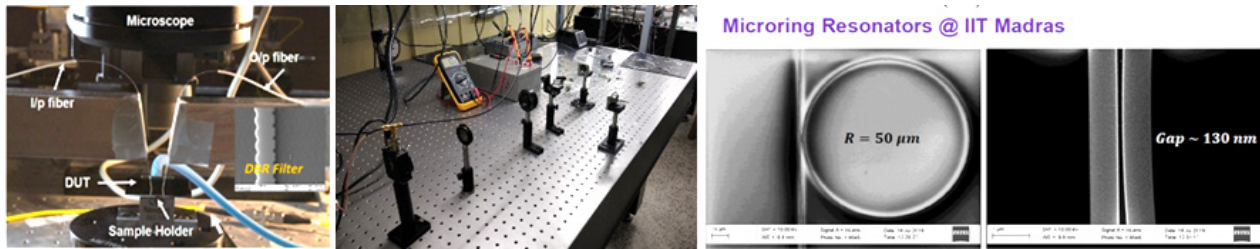


System developed for non-invasive measurement of blood pressure

Electronic System Design and Instrumentation group focuses on addressing the challenges and complexity of automation in industrial structures and manufacturing systems. Nowadays, diverse areas such as the energy systems, infrastructure management, transportation systems, and

medicine are increasingly becoming reliant on progress in this discipline. The recent efforts of the group have been in biomedical instrumentation, healthcare, power networks, sensors for automotive and transport applications, and Cyber Physical Systems.

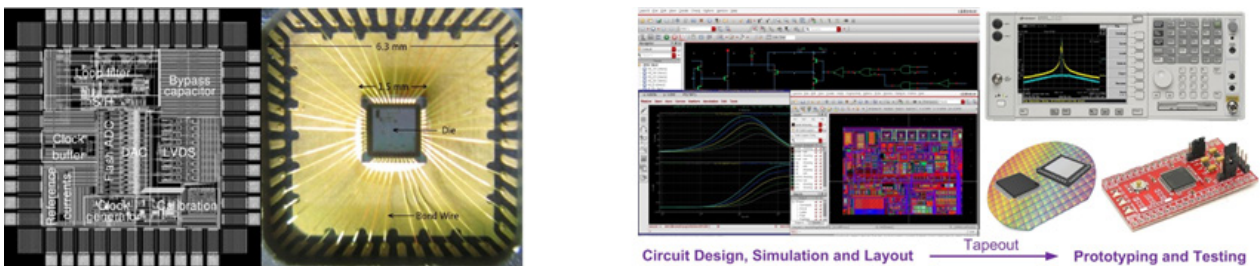
EE5: RF and Photonics



The group focuses on applications in a variety of interdisciplinary areas such as radar systems, satellite imaging, fiber and free-space classical and quantum technologies, optoelectronic devices, lasers, signal processing, metrology and sensing, microwave remote sensing and microwave imaging. Research activities include design, analysis and synthesis of devices, components and aspects of system and network design. The group designs, fabricates and analyses various kinds of silicon photonic, plasmonic and diffractive optic devices. In addition to physical devices, research on Tbps optical communication systems with advanced modulation formats, optical signal processing and quantum communication are also investigated. The group also does active research on discrete and distributed fiber sensors, high-power

fiber lasers operating at different wavelengths, narrow-line lasers and pulsed lasers. In the radio or microwave realm, work is ongoing on aspects of satellite remote sensing, inverse microwave imaging, computational electromagnetics, and radio over fiber millimeter wave communications for radar systems, optical fronthauling for 5G networks. There are active research collaborations with several international universities such as the Optoelectronic Research Center Southampton, University of Rochester, University of Melbourne and University of Glasgow, to name a few, and with different Indian industries such as Sterlite Technologies, LightMotif and Forbes Marshall, among others. The group receives research funding from different government agencies, DRDO and industry.

EE6: Integrated Circuits and Systems



This group deals with various aspects of designing integrated circuits and embedded systems. The group has highly experienced faculty in analog/mixed signal and digital ICs, VLSI CAD and embedded systems with a track record of driving full chip

products right from concept to design, tapeout, prototyping and testing. The areas of research of this group include analog, mixed signal and RF, analysis and simulation of noise in circuits, and high-speed ADCs.

EE7: Control and Optimization



The research focus of the group spans a wide range of topics in modeling, design and control

for intelligent robotics, transportation and power networks, and Cyber Physical Systems.

4.8.2. Academic Programmes

New discipline/branch introduced

The EE7 group that specifically focuses on Control and Optimization has been introduced. Earlier, the EE4 group focused on Control and Instrumentation. With the formation of EE7, the focus of EE4 is on Electronic System Design and Instrumentation.

New courses introduced

S. No.	Course No.	Title
1	ID5841	Quantum Computing Lab
2	EE5419	Advanced Control Laboratory
3	EE5004	Seminar on the History of Electrical Engineering
4	EE5178	Modern Computer Vision
5	EE5179	Deep Learning for Imaging

Students on roll as of September 2021 + M.S. and Ph.D. admission in January 2022

Programme	I Year	II Year	III Year	IV Year	V Year and Others	Total
B.Tech.	154	155	119	63		491
Dual Degree			23	68	78	169
M.Tech.	65	57				122
M.S.	84	76	56	48	42	306
Ph.D.	49	42	78	43	118	330
Total	352	330	276	222	238	1418

Students/Scholars who attended conferences/seminars/symposia abroad or in India

S. No.	Student/Scholar	Roll No.	Conference/Seminar/Symposia/Workshop	Date and Venue	Financial Assistance from
Abroad					
1	Shruti Sundar	EE19S053	Project collaboration at Institute for Gravitational Physics	10 November-24 December 2021, Germany	Project
India					
1	Sushmitha Shree S	EE18D702	COMSNETS 2022	3-8 January 2022, Bengaluru	Department/Institute
2	Gautam Kumar Shaw	EE15D047	QKD Demonstration in CDAC	14-18 February 2022, Bengaluru	Project
3	Advait Sai Narayan	EE19D403	NTRO Delhi Visit	17 February 2022, Delhi	Project
4	Ashish Kumar	EE20D006	Underwater Image Data Collection	23-26 February 2022, Dwarka	Project
5	Ajay Kumar Rai	EE21D024	Joint collaborative project with CDAC Trivandrum	3 March-15 April 2022, Trivandrum	Project

Students/Scholars who won Institute Convocation/Institute Day Prize

S.No.	Student/Scholar	Roll No.	Prize
1	Abhishek Sharma	EE19M003	Bhagyalakshmi and Krishna Ayengar Award
2	Haripriya V.K. and Lakshmi Narayanan	EE14D021 and EE14D402	Dr M. Mukunda Rao Endowment Prize
3	Inaganti Naga Sai Manoj	EE18S022	T.S. Vedagiri Memorial Award
4	Vemuri Pavan	EE17B036	Valadi Sarrma Balaji and Savithri Balaji Award
5	Sumanth R. Hegde	EE17B032	President of India Prize
6	Sumanth R. Hegde	EE17B032	Bharat Ratna M. Visvesvaraya Memorial Prize
7	Sumanth R. Hegde	EE17B032	Siemens Prize
8	Boby Mathachen Mylady	EE19M006	Siemens Prize
9	Ashutosh Nikam	EE16B143	Philips India Prize

4.8.3. Faculty and Their Activities

Faculty

Name and Qualifications	Major Areas of Specialisation
Professors	
Dr David Koilpillai R. (Head)	Signal processing, communication
Dr Amitava DasGupta	Semiconductor devices and MEMS
Dr Andrew Thangaraj	Signal processing, communication
Dr Anil Prabhakar	Photonics, magnonics, assistive technologies
Dr Anjan Chakravorty	Semiconductor devices
Dr Aravind R.	Signal processing, communication
Dr Arun D. Mahindrakar	Digital control and systems theory
Dr Balaji Srinivasan	Fiber laser and sensors
Dr Bhaskar Ramamurthi	Signal processing, communication
Dr Bijoy Krishna Das	Silicon photonics
Dr Boby George	Instrumentation and measurements
Dr Deepa Venkitesh	Photonics, optical communication
Dr Devendra Jalihal	Signal processing, communication
Dr Enakshi Bhattacharya	MEMS, biosensors and semiconductor devices
Dr Giridhar K.	Signal processing, communication
Dr Harishankar R.	Plasma, RF electromagnetics
Dr Jagadeesh Kumar V.	Instrumentation and measurements
Dr Kalyan Kumar	Power systems
Dr Karmalkar S.	Semiconductor devices
Dr Krishna Vasudevan	Power electronics
Dr Mahesh Kumar	Power systems
Dr Nagendra Krishnapura	Analog circuits
Dr Nandita DasGupta	Semiconductor devices
Dr Rajagopalan A. N.	Image processing

Dr Sarathi R.	High voltage
Dr Shanthi Pavan Y.	Analog circuits
Dr Shanti Bhattacharya	Optics
Dr Shanti Swarup	Power systems
Dr Sridharan K.	Control systems and digital architecture
Dr Srikrishna	Signal processing, communication
Dr Srirama Srinivas	Power electronics
Dr Umesh S.	Speech processing
Dr Vinita Vasudevan	Digital systems and VLSI
Associate Professors	
Dr Anbarasu M.	Nanoelectronics, NVRAM, phase change memory
Dr Ananth Krishnan	Computational electromagnetics
Dr Aniruddhan S.	Analog and RF circuits
Dr Arun Pachai Kannu	Signal processing, communication
Dr Bharath Bikkaji	Control theory
Dr Debdutta Ray	Semiconductor devices and organic LEDs
Dr Deleep R. Nair	Semiconductor devices and MEMS
Dr Gaurav Raina	Communication networks, control systems
Dr Kamalesh Hatua	Power electronics
Dr Krishna Jagannathan	Optical networks
Dr Krishna S.	Power systems
Dr Lakshminarasamma N.	Power electronics
Dr Mohansankar S.	Biomedical devices
Dr Nitin Chandrachoodan	Digital systems and architectures
Dr Pradeep Sarvepalli	Classical and quantum coding theory
Dr Radhakrishna Ganti	Communications systems
Dr Ramalingam C. S.	Speech processing
Dr Ramkrishna Pasumarthy	Control theory
Dr Sheetal Kalyani	Machine learning for communications
Dr Soumya Dutta	Semiconductor devices and organic electronic devices
Dr Uday Khankhoje	Inverse problems, computational electromagnetics, remote sensing
Dr Venkatesh Ramaiyan	Wireless networks
Dr Venkatesh T.G.	Communication networks
Assistant Professors	
Dr Abhishek Sinha	Theoretical machine learning, networks
Dr Arun Karuppaswamy	Power electronics
Dr Avhishek Chatterjee	Communication networks
Dr B.N. Shivananju	Instrumentation and nano-bio-photonics
Dr Bhaswar Chakrabarti	Micro and nanoelectronics, neuromorphic computation
Dr Janakiraman Viraraghavan	Digital systems and architectures
Dr Jayaraj Joseph	Medical devices, instrumentation, image-free ultrasound

Dr Kaushik Mitra	Image processing
Dr Manivasakan R.	Communication systems
Dr Mathiazhagan C.	Analog circuits
Dr Puduru Viswanatha Reddy	Control, theory and game theory
Dr Quadeer Ahmad Khan	Digital system, low power design
Dr Rachael Kalpana	Control theory
Dr Saurabh Saxena	Analog and mixed signal circuits, clock generators, SERDES
Dr Sudharsanan Srinivasan	Diode lasers, integrated photonics
INSPIRE Faculty	
Dr Mansi Sharma	Computer vision, machine learning, computational imaging and 3D displays
Ramalingaswami Fellow	
Dr Ramya Balachandran	Image-guided surgery, medical image processing
Visiting Faculty	
Dr M. A. Atmanand	
Dr Liam Paul Barry	
Dr Shayam Mookherjea	
Dr Govind P. Agrawal	
Dr -Ing. Marian Walter	
Emeritus Scientist/Emeritus Professors	
Dr Ashok Jhunjunwala	Optical communication, computer networks, wireless communication
Dr Christopher S.	Radar signal processing
Scientific Officers/Engineers	
Jeyasutha Avudai Thangam	

Short-term courses/workshops/seminars/symposia/conferences organised by the faculty members

S. No.	Coordinator(s)	Title	Period
Conference			
1	Enakshi Bhattacharya	IEEE Sensors (virtual), TPC co-chair	31 October-4 November 2021
Short-term course			
1	Shanthi Pavan	Delta-Sigma data converters	13-24 June 2022
2	Lakshminarasamma N	Grid-connected inverters: operation and control	6-8 July 2022
3	Sarathi R	Emerging trends in transformer insulation adopting green technologies	16 April 2022
4	Boby George	Basics of solar photovoltaic cell and its applications	28 February-4 March 2022
5	Shanthi Pavan	Practical design of data converters	28 February-11 March 2022
6	Qadeer Ahmad Khan	Management for mobile application	28-29 July 2021

Short-term courses/workshops/seminars/symposia/conferences/training attended by the faculty members in academic institutions and public sector undertakings

S.No.	Faculty Member	Title	Institution	Period
Conferences				
1	Nagendra Krishnapura	IEEE Custom Integrated Circuits Conference	USA (virtual)	25 March-30 April 2021
2	Arunkumar D. Mahindrakar	Mediterranean Control Conference	Italy	23 June 2021
3	Nagendra Krishnapura	2022 International Solid-State Circuits Conference	Online	20 February 2022
4	Enakshi Bhattacharya	IEEE Sensors 2021	Sydney (virtual)	31 October-4 November 2021
5	E. Bhattacharya	17th International Workshop on Nanomechanical Sensing	Canada (virtual)	15-18 June 2021
6	Enakshi Bhattacharya	International Conference on Thin films and Nanotechnology	Delhi (virtual)	24-26 August 2021
7	Enakshi Bhattacharya	XXIst International Workshop on the Physics of Semiconductor Devices (IWPSD 2021)	Delhi (online)	14-17 December 2021
8	Soumya Dutta	IWPSD 2021	Delhi (online)	14-17 December 2021
9	Soumya Dutta	Materials Research Society of India Conclave-Annual General Meeting 2021	Chennai (online)	20-23 December 2021
10	Ramya Balachandran	12th Ramalingaswami Re-entry Fellowship Conclave	Online	2 March 2022

Special lectures delivered by the faculty in other institutions

S.No.	Faculty Member	Topic of Lecture	Institution	Date
1	Enakshi Bhattacharya	High sensitivity bio-sensing in liquids with resonant mode cantilevers	IEEE Sensors Council DL at IIT Jodhpur (virtual)	9 October 2021
2	Nagendra Krishnapura	Deriving OPAMP topologies from first principles	IEEE CAS Manipal Student Chapter (virtual)	21 October 2021
3	Qadeer Ahmad Khan	Zero output ripple switching DC-DC converter-challenges, trade-offs and possible solutions	Qualcomm India Academic Council Tech Talk Series, Qualcomm India	22 October 2021
4	Enakshi Bhattacharya	Adapting to research-My tryst with silicon	IEEE Photonics Reignite (virtual)	28 February 2022

Honours and awards obtained by faculty

S. No.	Faculty Member	Award	Awarded by	Awarded for	Date of Award
i. Honours					
1	Enakshi Bhattacharya	Distinguished Lecturer	IEEE Sensors Council	Expertise in the area	2021-2023
2	Enakshi Bhattacharya	Senior Member	IEEE Electron Devices Society	Professional Practice	2021
3	Nagendra Krishnapura	Distinguished Lecturer	IEEE Solid-State Circuits Society	Expertise in the area	March 2022
ii. Awards					
1	Deepa Venkitesh	Abdul Kalam Technology Innovation National Fellowship	Indian National Academy of Engineering (INAE)	Awarded to outstanding engineers to recognise, encourage and support translational research by individuals to achieve excellence in engineering, innovation and technology development	2021
2	Uday Kiran Khankhoje	Young Faculty Recognition Award	Awarded by IIT Madras to three faculty in 2021	Young Faculty Recognition	6 September 2021

Journal editorial boards

S.No.	Faculty Member	Position	Journal Name
1	Amitava DasGupta	Associate Editor	<i>IETE Technical Review</i>
2	Amitava DasGupta	Associate Editor	<i>ISSS Journal of Micro and Smart Systems</i>
3	Andrew Thangaraj	Associate Editor	<i>IEEE Transactions on Information Theory</i>
4	Anil Prabhakar	Member-Editorial Board	<i>Scientific Reports, Nature</i>
5	Anil Prabhakar	Member-Editorial Board	<i>IEEE Transaction on Magnetics</i>
6	Balaji Srinivasan	Associate Editor	<i>Optics Express</i>
7	Boby George	Associate Editor	<i>IEEE Transactions on Industrial Electronics</i>
8	Boby George	Associate Editor	<i>IEEE Transactions on Instrumentation and Measurement</i>
9	Boby George	Associate Editor	<i>IEEE Sensors Journal</i>
10	Boby George	Associate Editor	<i>IET Science Measurement & Technology</i>
11	Deepa Venkitesh	Member-Editorial Board	<i>Advances in Optics and Photonics</i>
12	Deepa Venkitesh	Member-Editorial Board	<i>Photonic Network Communications</i>
13	Jagadeesh Kumar V.	Associate Editor	<i>IEEE Transaction on Instrumentation and Measurement</i>
14	Krishna Jagannathan	Associate Editor	<i>IEEE/ACM Transactions on Networking</i>
15	Krishna Jagannathan	Editor	<i>Performance Evaluation</i>
16	Nagendra Krishnapura	Associate Editor	<i>IEEE Transactions on Circuits and Systems I: Regular Papers</i>

17	S. Umesh	Associate Editor	<i>Circuits, Systems and Signal Processing</i>
18	Shanthi Pavan	Associate Editor	<i>IEEE Journal of Solid-State Circuits</i>
19	Shanthi Pavan	Associate Editor	<i>IEEE Solid-State Circuits: Letters</i>
20	Shanti Bhattacharya	Associate Editor	<i>Optical Engineering</i>
21	Shreepad Karmalkar	Associate Editor	<i>IEEE Transactions on Education</i>
22	Srikrishna Bhashyam	Editor	<i>IEEE Transactions on Communications</i>
23	A.N. Rajagopalan	Senior Area Editor	<i>IEEE Transactions on Image Processing</i>
24	Enakshi Bhattacharya	Member- Editorial Board	<i>J. of Micromechanics and Microengineering, IOP Publishers</i>
25	Pradeep Kiran Sarvepalli	Associate Editor	<i>IEEE Transactions on Information Theory</i>

Scientific management boards/advisory board

S.No.	Faculty Member	Scientific Management Board/Advisory Board	Position
1	Anil Prabhakar	INO Scientific Management Board	Member
2	Anil Prabhakar	LIGO India Scientific Management Board	Member
3	Shreepad Karmalkar	AICTE's All India Board of PG Education and Research in Engineering and Technology	Chairman
4	Shreepad Karmalkar	IIT Council	Member
5	Jagadeesh Kumar V.	BoG, NIT Nagaland	Member
6	Jagadeesh Kumar V.	Senate, NIT Puduchery	Member
7	Jagadeesh Kumar V.	BWC, NIT Tiruchi	Member
8	Jagadeesh Kumar V.	Management Council, VelTech University	Member
9	Jagadeesh Kumar V.	Academic Council, Crescent University	Member
10	Jagadeesh Kumar V.	SERC, DST PRB	
11	Gaurav Raina	Academic Council, Krea University	Member
12	Krishna Vasudevan	Advisory Board of International Journal of Power Electronics	Member
13	Enakshi Bhattacharya	Research Council of CSIR-CEERI, Pilani	Member
14	Enakshi Bhattacharya	Nanosciences Domain Expert Committee, MHRD STARS	Member

4.8.4. Design and Development Activities

Patents filed

S.No.	Faculty Member	Topic of Patent
1	Amitava Dasgupta, Deleep R. Nair	Direct growth of preferential (100) oriented Aluminium Nitride (AlN) thin films on conducting boron doped nanocrystalline diamond (B-NCD) films without using any buffer layer
2	Anil Prabhakar	A system and method for simultaneous live-cell imaging and growing
3	Anil Prabhakar	Quantum random number generator using residual time bins
4	Anil Prabhakar	System for plug-and-play differential phase encoded measurement-device-independent quantum key distribution

5	Balaji S.	Method for determining onset of combustion instability in a combustion system
6	Balaji S.	Excitation of whispering gallery modes (WGM) in a microbottle resonator using an optical beam with orbital angular momentum (OAM)
7	Balaji S., Deepa Venkitesh	Instantaneous wideband frequency measurement and processing using parallel sub-Nyquist sampling based on an optical pulse source
8	Bhaskar Ramamurthi	Methods and systems for UL time synchronization in non-terrestrial networks based communication
9	Bhaskar Ramamurthi	Methods to reduce number of blind decoding attempts
10	Bhaskar Ramamurthi	Signalling aspects in integrated access and backhaul network
11	Bhaskar Ramamurthi	Method and system for resource allocation in integrated access and backhaul network
12	Bhaskar Ramamurthi	Method and apparatus for a low PAPR technique in GHz/THz network
13	Bhaskar Ramamurthi	Signaling and procedures for high-precision positioning and orientation estimation using wireless networks
14	Bhaskar Ramamurthi	Signaling methods for a network with reconfigurable intelligent surface and/or repeaters
15	Bhaskar Ramamurthi	Multiplexing of signaling information related to UL control in DL data channel
16	Bhaskar Ramamurthi	Power management in integrated access and backhaul network
17	Bhaskar Ramamurthi	High-precision positioning for wireless networks
18	Boby George, Mohanasankar Sivaprakasam	Mannequin-based training system for ophthalmic sub-tenon anaesthesia
19	Boby George	A smart primary pad with integrated TMR sensors for wirelessly charged EVs
20	Boby George	TMR Sensor based detection of EVs in semi-dynamic traffic for optimal charging
21	Debdutta Ray	Electro-thermo-chromic touch display devices
22	Deepa Venkitesh	Method and system for direct-detection based FMF optic communication using digital power division multiplexing
23	Deepa Venkitesh, Radhakrishna Ganti, Ravinder David Koilpillai	Scheme for analog optical fronthauling based on frequency multiplication with external modulators
24	Deepa Venkitesh	Design of optical recirculating loop with single switch for long haul optical coherent communication systems
25	Devendra Jalihal	SENSurAIR network for ambient air quality monitoring
26	Kamlesh Hatua	System and method for controlling voltage across switching devices present in circuit
27	Kamlesh Hatua	Structure and winding patterns for 3-phase induction motor with outer-rotor for ceiling fan application
28	Kamlesh Hatua	A simple and low VA rating snubber method for recovering the turn-on switching losses in power electronic converter topologies

29	Kaushik Mitra	Real-time restoration of images captured in extreme low-light conditions
30	Kaushik Mitra	Fast and efficient restoration of light fields captured in the dark
31	Krishna Vasudevan	Thyristors control to suppress the effect of supply voltage even order harmonics on ASD
32	Mohanasankar Sivaprakasam	System for information extraction and mining and method, and computer program product thereof
33	Mohanasankar Sivaprakasam	Multimodal learning framework for carbon footprint prediction for healthcare procurement and waste management activities, system, method, and computer program product
34	Mohanasankar Sivaprakasam	A system and method for monitoring carbon expenditure, anticipated carbon footprint prediction and recommendation, system, method, and computer program product
35	Mohanasankar Sivaprakasam	Multimodal learning framework for recommending greenhouse gas optimization strategies based on healthcare activity, system, method, and computer program product
36	Mohanasankar Sivaprakasam	A system for non-invasive calibration-free blood pressure (BP) measurement
37	Mohanasankar Sivaprakasam	Augmented multimodal flow mediated dilatation
38	Mohanasankar Sivaprakasam	Multimodal learning framework for activity-based carbon footprint prediction for healthcare, system, method, and computer program product
39	Mohanasankar Sivaprakasam	Robotic surgery systems and surgical guidance methods thereof
40	Mohanasankar Sivaprakasam, Jayaraj Joseph	Automated cover-slipper for large format slides (150 X 200 mm) with switchable compatibility to handle multiple format slides
41	Mohanasankar Sivaprakasam, Jayaraj Joseph	Single-element image-free ultrasound probe
42	Mohanasankar Sivaprakasam, Jayaraj Joseph	Image-free ultrasound vascular health monitoring device
43	Ramalingam C. S.	Method and electronic device for estimating frequencies of multiple sinusoids using line spectral pairs
44	Ramalingam C. S.	Method and electronic device for estimating frequencies of multiple sinusoids which trades bias with variance
45	Ravinder David Koilpillai	A novel correction algorithm for discrete digital phase shifters and attenuators
46	Ravinder David Koilpillai	An accurate RF phase shifter and attenuator in CMOS technology based on switched network topology with a novel correction algorithm.
47	Sarathi R.	Design and development automated electrical wire explosion technique for the production of nanoparticles
48	Soumya Dutta	Development of a field-effect device using conducting polymers such as poly(3,4-ethylenedioxythiophene) polystyrene sulfonate (PEDOT:PSS) layers made using microbubble lithography
49	Soumya Dutta	Device and method for mask-less laser-assisted hybrid etching for interdigitated electrodes in semiconductor devices

Patents awarded

S.No.	Faculty Member	Topic of Patent
1	Ravinder David Koilpillai, Deepa Venkitesh	Digital modal decomposition of a three-mode graded index fiber based on stochastic parallel gradient descent (SPGD) algorithm
2	Balaji S., Deepa Venkitesh	Eigen mode solver for two-mode graded index few mode fiber (FMF) using finite difference method (FDM)
3	Giridhar K.	Simultaneous sharing of spectrum in wireless communications
4	Saurabh Saxena, Qadeer Ahmad Khan	Multi-phase low dropout voltage regulator
5	Soumya Dutta	Bilayer resist approach of photolithographic patterning over PMMA based polymer dielectrics

4.8.5. Research and Consultancy

Sponsored research projects (ongoing and new)

S. No.	Title	Period	Funding Agency	Amount (₹ in lakh)	Coordinators
1	Centre of Excellence for Decentralized Power Systems	8 July 2013-31 March 2023	Ministry of Education (formerly MHRD)	2000	Dr Jhunjunwala Ashok
2	Optimization and control of complex dynamical systems	26 April 2017-25 April 2022	Department of Science & Technology	35	Dr Rachel Kalpana Kalaimani
3	Development of accurate and affordable surgical navigation system	28 December 2016-27 December 2022	Department of Biotechnology	126.66	Dr Ramya Balachandran
4	Interconnected multi-village micro-grids	15 September 2016-30 June 2022	Uchhatar Avishkar Yojana - IIT Madras	300	Dr Jhunjunwala Ashok, Dr Devendra Jalihal, Dr Bhaskar Ramamurthi, Dr Krishna Vasudevan, Dr Lakshminarasamma N.
5	Integrated efficient electric power train for electric vehicles	30 September 2016-29 June 2022	Uchhatar Avishkar Yojana - IIT Madras	800	Dr Jhunjunwala Ashok, Dr Devendra Jalihal, Dr Bhaskar Ramamurthi, Dr Lakshminarasamma N.
6	Nanoelectronics NETWORK for Research and Applications (NNetRA)	20 April 2018-19 April 2022	Department of Science & Technology	1584.65	Dr Enakshi Bhattacharya, Dr Nandita DasGupta
7	Harnessing human-centric networks	15 December 2017-14 December 2022	Department of Science & Technology	35	Dr Avhishek Chatterjee
8	UI-ASSIST: US-India Collaborative for Smart Distribution System with Storage	29 September 2017-29 September 2022	Department of Science & Technology	184.5	Dr Mahesh Kumar, Dr Srirama Srinivas

9	UK-India Clean Energy Research Institute (UKICERI)	27 February 2017-4 April 2022	Department of Science & Technology	37.72	Kalyan Kumar B.
10	Center for Battery Engineering (CBE) at TCOE	30 June 2017-29 June 2022	Department of Heavy Industry	1720	Dr Jhunjhunwala Ashok, Dr Devendra Jalihal, Dr Krishna Vasudevan
11	Village electrification programme in J&K, using solar DC inverterless system	22 February 2018-21 February 2023	Jammu and Kashmir State Power Development Corporation Limited	5721.56	Dr Jhunjhunwala Ashok
12	Rural electrification works in 94 villages in Manipur	10 November 2017-31 March 2023	Manipur Renewable Energy Development Agency	1680.94	Dr Jhunjhunwala Ashok
13	A localized microgrid to power an off-grid locality	12 July 2018-30 June 2022	Department of Science & Technology	377.02	Dr Jhunjhunwala Ashok
14	Development of techniques to improve the targeting accuracy of surgical navigation systems	10 August 2018-9 May 2022	Department of Science & Technology	46.54	Dr Ramya Balachandran
15	Energy-efficient software-defined wide-range wireline transceiver	13 September 2018-12 June 2022	Department of Science & Technology	50.17	Dr Saurabh Saxena
16	Tools and processes for multi-view 3D display technologies	11 May 2018-10 May 2023	Department of Science & Technology	106.54	Dr Mansi Sharma
17	Next-generation AMOLED displays, OLED lighting and OPV products development of disruptive technologies to enable cost-effective electronic component manufacturing in India	20 September 2018-30 September 2022	Defence Research and Development Organisation	340	Dr Debdutta Ray, Dr Soumya Dutta, Dr G. Venkatesh, Dr G. Rajeswaran
18	Design of optimal signal constellation and detection algorithm for energy-efficient millimeter wave radio units	3 December 2018-2 June 2022	Science and Engineering Research Board	10.05	Dr Srikrishna B.
19	Microwave inverse scattering for breast cancer detection	15 March 2019-14 September 2022	Science and Engineering Research Board	19.57	Dr Uday K. Khankhoje

20	Advanced photonic signal processing for future optical and wireless communication systems	15 March 2019-30 September 2022	Scheme for Promotion of Academic and Research	72.28	Dr Deepa Venkitesh, Dr Christopher S., Dr David R Koilpillai, Dr Bijoy Krishna Das
21	Shaped light for novel studies in imaging and measurement	15 March 2019-30 September 2022	Scheme for Promotion of Academic and Research	39.5	Dr Shanti Bhattacharya, Dr Balaji Srinivasan
22	Mitigation of Stimulated Brillouin Scattering (SBS) for power scaling of narrow linewidth fiber amplifiers	15 March 2019-30 September 2022	Scheme for Promotion of Academic and Research	72.48	Dr Balaji Srinivasan, Dr Deepa Venkitesh
23	Super resolution microscopy for point-of-care cancer diagnosis	2 January 2019-1 July 2022	Impacting Research Innovation and Technology - IMPRINT	56.76	Dr Kaushik Mitra, Dr Shanti Bhattacharya
24	Coherent one way quantum key distribution	7 May 2018-6 May 2022	Uchhatar Avishkar Yojana - IIT Madras	140	Dr Anil Prabhakar, Dr Andrew Thangaraj
25	Next-generation AMOLED displays, OLED lighting and OPV products development of disruptive technologies to enable cost-effective electronic component manufacturing in India	20 September 2018-30 September 2022	Grantwood Technologies Private Limited	560	Dr Debdutta Ray, Dr Soumya Dutta, Dr G. Venkatesh, Dr G. Rajeswaran
26	Nanoelectronics Network for Research and Application (NNetRA)	28 March 2018-19 April 2023	Ministry of Electronics & Information Technology	1584.65	Dr Enakshi Bhattacharya, Dr Nandita Das Gupta
27	Next-generation AMOLED displays, OLED lighting and OPV products development of disruptive technologies to enable cost-effective electronic component manufacturing in India	20 September 2018-30 September 2022	Ministry of Electronics & Information Technology	2868	Dr Debdutta Ray, Dr Soumya Dutta, Dr G. Venkatesh, Dr G. Rajeswaran
28	Rural Electrification Project in Meghalaya (NEEPCO)	1 May 2018-30 April 2023	North Eastern Electric Power Corporation Limited	111.59	Dr Jhunjunwala Ashok

29	Next-generation AMOLED displays, OLED lighting and OPV products development of disruptive technologies to enable cost-effective electronic component manufacturing in India	20 September 2018-30 September 2022	Tata Sons Limited	340	Dr Debdutta Ray, Dr Soumya Dutta, Dr G. Venkatesh, Dr G. Rajeswaran
30	Next-generation AMOLED displays, OLED lighting and OPV products development of disruptive technologies to enable cost-effective electronic component manufacturing in India	20 September 2018-30 September 2022	Velankani Group	15	Dr Debdutta Ray, Dr Soumya Dutta, Dr G. Venkatesh, Dr G. Rajeswaran
31	Rural Electrification Project in Manipur (MSPDCL)	19 December 2018-18 December 2023	Manipur State Power Distribution Company Limited	1388.75	Dr Jhunjunwala Ashok
32	Energy-efficient & wide-range 15Mb/s-1.5Gb/s SERDES	1 November 2018-30 June 2022	Indian Space Research Organisation	41.6	Dr Saurabh Saxena, Dr Shanthi Pavan, Dr Nagendra Krishnapura, Dr Aniruddhan
33	Design and development of SPDT RF MEMS switches for Ku band applications	1 November 2018-30 June 2022	Indian Space Research Organisation	29.88	Dr Deleep R. Nair, Dr Amitava DasGupta
34	Development of WBG based Integrated Drive System for Electric Vehicles (evIDS)	20 February 2020-19 April 2022	Centre for Development of Advance Computing	63.98	Dr Kamalesh Hatua
35	Phase Sensitive Amplifiers with novel Dispersion-tailored Fibers	3 February 2020-2 August 2022	Department of Science & Technology	30.65	Dr Deepa Venkitesh
36	Design Enablement of Self-aligned Double Poly-silicon Emitter Bipolar Transistors for RF Applications	19 December 2019-17 March 2023	Department of Science & Technology	37.13	Dr Amitava DasGupta, Dr Nandita DasGupta, Dr Deleep R Nair, Dr Anjan Chakravorthy

37	Design and Development of Multi-bit Phase Change Memory for High Density, High Speed Non-volatile Random Access Memory (NVRAM) Applications	15 May 2020-14 May 2023	Ministry of Education	99	Dr Anbarasu Manivannan, Dr Amitava DasGupta
38	Multiplexed Fluorophore Detection on a Miniaturized Optofluidic Platform for Affordable Healthcare and other Applications	30 December 2019-30 November 2022	Ministry of Education	84.6	Dr Anil Prabhakar
39	SPINEROBOT: Towards High-Precision Affordable Spine Surgery	22 September 2019-21 September 2022	Department of Biotechnology	213.7	Dr Mohanasankar S
40	3D Electromagnetic Scattering Tools for Lunar Subsurface Studies	1 October 2019-30 September 2022	Space Application Centre	23.4	Dr Uday K Khankhoje
41	Computational and Experimental Platform for High Resolution Terapixel Imaging of Ex-Vivo Human Brains	13 February 2020-21 September 2022	Office of the Principal Scientific Adviser	3157.45	Dr Mohanasankar S
42	Compact Model Development of GaN High Electron Mobility Transistors and Validation Through Characterization of Fabricated Test Structures	20 May 2019-19 May 2022	Science and Engineering Research Board	52.4	Dr Amitava DasGupta, Dr Anjan Chakravorthy
43	Development of Circuit Building Blocks Using Unique Combination of Solution Based Organic Semiconductor Technology and Microelectronic Technology	22 May 2019-21 May 2022	Science and Engineering Research Board	50.92	Dr Soumya Dutta, Dr Aniruddhan S
44	Impulse control strategies in differential games with applications in cyber security	13 February 2020-12 February 2023	Science and Engineering Research Board	6.6	Dr Puduru Viswanadha Reddy

45	Detection and diagnosis of intentional electromagnetic interference attack on critical network	6 February 2020-30 September 2022	Science and Engineering Research Board	21.93	Dr Saurabh Saxena
46	Contactless physiological monitoring of newborns in hospital settings	11 June 2019-30 September 2022	Scheme for Promotion of Academic and Research collaboration	64.56	Dr Mohanasankar S, Dr Jagadeesh Kumar V, Dr Bobby George
47	Design and Development of Next Generation Photonic Analog to Digital Converters (NG-PADC)	19 November 2019-18 November 2022	Impacting Research Innovation and Technology - IMPRINT	123.64	Dr Deepa Venkitesh, Dr Saurabh Saxena, Dr Balaji Srinivasan
48	In-situ Monitoring of Fire in Tunnels and Underground Transportation Systems using Distributed Anti Stokes Raman Thermometry (DART)	13 January 2020-12 January 2023	Impacting Research Innovation and Technology - IMPRINT	115.27	Dr Balaji Srinivasan, Dr Deepa Venkitesh
49	Islanded operation of solar PV	18 November 2019-17 November 2022	Uchhatar Avishkar Yojana - IIT Madras	309.6	Dr Krishna Vasudevan, Dr Swarup K S, Dr Kamallesh Hatua
50	Development of High Efficiency Motors and Controllers for Electric Vehicles (EVs) such as 2-wheeler (2W), 3-Wheeler (3W) and small 4-Wheeler (4W) Cargo Vehicles used in India	7 November 2019-6 May 2022	Ministry of Electronics & Information Technology	240	Dr Devendra Jalihal, Dr Jhunjunwala A.
51	Demodulation of complex waveforms	15 November 2019-30 September 2022	Defence Research and Development Organisation	91.08	Dr Ganti Radha Krishnan, Dr David R Koilpillai, Dr Bhaskar Ramamurthi, Dr Devendra Jalihal
52	Multi-linguality in speech technologies	26 August 2020-25 August 2023	Department of Science & Technology	38.44	Dr Umesh S
53	Self-aligned Double Poly-silicon Emitter Bipolar Technology for RF Applications	29 September 2020-28 September 2022	Department of Science & Technology	18.6	Dr Amitava DasGupta, Dr Anjan Chakravorthy
54	Demonstration of solution processable, slot-die coated organic photovoltaic modules with GT8 efficiency	1 February 2021-31 January 2024	Department of Science & Technology	351.4	Dr Debdutta Ray, Dr Deleep R. Nair, Dr Soumya Dutta

55	Electromagnetic energy harvester for MR anti-vibration mount and its Integration	3 February 2021-2 February 2023	Defence Research and Development Organisation	31.73	Dr Bobby George
56	Microfabrication and testing of piezo thin film integrated on Si MEMS structures for energy harvesting applications	3 February 2021-2 February 2024	Defence Research and Development Organisation	93.39	Dr Amitava DasGupta, Dr Enakshi Bhattacharya, Dr Nandita DasGupta, Dr Bobby George
57	Fibre Optic Guided Wave Structural Health Integrity Evaluation and Diagnosis (SHIELD) for Autonomous Underwater Vehicles (AUVs)	3 February 2021-2 February 2023	Defence Research and Development Organisation	48.3	Dr Balaji Srinivasan
58	Non-smooth Primal-dual Dynamics: Application to Resource Placement Problem	28 December 2020-27 December 2023	Science and Engineering Research Board	6.6	Dr Arunkumar D. Mahindrakar
59	Design and development of polar encoder and decoder hardware prototype for 5G testbed	23 November 2020-22 November 2023	Science and Engineering Research Board	10.05	Dr Ganti Radha Krishnan
60	Investigation on Partial Discharge Characteristics and Dissolved Gas Analysis of Punga Oil	4 December 2020-3 December 2023	Science and Engineering Research Board	10.05	Dr Sarathi R.
61	VAJRA Visiting Faculty - Dr Shayan Mookherjea	6 December 2019-5 December 2022	Science and Engineering Research Board	11.1	Dr Bijoy Krishna Das
62	Development of atomically thin memristive devices for neuromorphic smart sensor networks	24 November 2020-23 November 2022	Science and Engineering Research Board	28.41	Dr Bhaswar Chakrabarti
63	Centre for Programmable Photonic Integrated Circuits and Systems (CPPICS)	30 December 2020-29 December 2025	Ministry of Electronics & Information Technology	2665.8	Dr Bijoy Krishna Das, Dr Enakshi Bhattacharya
64	A Low-Power 8-16 Gb/s/pin Full - duplex Wire line Transceiver	25 March 2020-29 December 2025	Ministry of Electronics & Information Technology	78.52	Dr Saurabh Saxena, Dr Nagendra Krishnapura

65	Design and development of WBG device based high current converters for Industry applications - NaMPET Phase-III	28 May 2020-27 May 2023	Ministry of Electronics & Information Technology	96.96	Dr Kamalesh Hatua, Dr Arun Karuppaswamy B.
66	Realization of gallium oxide based power devices	10 December 2020-9 June 2023	Ministry of Electronics & Information Technology	21.6	Dr Kamalesh Hatua
67	Metro Area Quantum Access Network (MAQAN)	22 February 2021-21 November 2023	Ministry of Electronics & Information Technology	392.15	Dr Anil Prabhakar
68	Affordable technology solutions to address unmet healthcare needs	23 December 2020-31 December 2022	Stryker Global Technology Center Private Limited	75	Dr Mohanasankar S.
69	Design and development of next-generation photonic analog to digital converters (NG-PADC)	15 November 2019-14 November 2022	Light motif Automation Sensors Systems Private Limited	23	Dr Deepa Venkitesh, Dr Saurabh Saxena, Dr Balaji Srinivasan
70	Magneto optical metasurfaces in a CMOS-compatible material system for enhanced faraday rotation	29 June 2021-28 June 2023	Department of Science & Technology	14.48	Dr Ananth Krishnan, Dr Anil Prabhakar
71	WOS-B: Tactile reader for Braille and non-Braille users	1 October 2021-30 September 2023	Department of Science & Technology	17.5	Dr Anil Prabhakar
72	Nyquist photonic analog to digital converter for instantaneous frequency measurement	1 October 2021-30 September 2024	Indian National Academy of Engineering	57	Dr Deepa Venkitesh
73	Community Health Index (CHI) Measurement of a locality, based on inter-dependency modelling of healthcare establishments with relevant infrastructure setup	29 September 2021-28 June 2022	Department of Science and Technology	27.18	Dr Bharath Bhikkaji
74	Applications in quantum imaging with high frequency squeezing combs	12 October 2021-11 October 2023	Department of Science and Technology	11.85	Dr Anil Prabhakar

75	Reconfigurable bidirectional LC-LC resonant battery charger for microgrid applications	3 March 2022-2 March 2025	Science and Engineering Research Board	38.1	Dr Lakshminarasamma N
76	ARTSENS Age: A multimodal method and system for reliable assessment of vascular ageing associated early health markers in routine clinical practice for early screening and timely intervention	15 March 2022-14 March 2025	Science and Engineering Research Board	27.86	Dr Jayaraj Joseph
77	VAJRA Visiting Faculty - Prof. Ravinder Kumar Jain	6 December 2021-5 December 2022	Science and Engineering Research Board	29.75	Dr Balaji Srinivasan
78	Wideband filtering analog to digital converters	9 February 2022-08 February 2025	Science and Engineering Research Board	48.31	Dr Shanthi Pavan
79	Design and development of a soil analysis system	28 February 2022-27 February 2025	Science and Engineering Research Board	38.1	Dr Shanti Bhattacharya
80	Hybrid intelligent systems in driving autonomy	20 October 2021-19 October 2024	Science and Engineering Research Board	37.31	Dr Ramkrishna Pasumarthy
81	Medium voltage active reactive induction motor drive	30 March 2021-29 March 2023	Science and Engineering Research Board	30.2	Dr Kamalesh Hatua, Dr Krishna Vasudevan
82	Investigation on gassing tendency of nano filler dispersed mineral and ester oil for fault diagnosis in transformers	12 July 2021-11 July 2023	Science and Engineering Research Board	61.64	Dr Sarathi R.
83	Topological development and implementation of multisource multilevel inverter for grid connected photovoltaic applications	12 July 2021-11 July 2023	Science and Engineering Research Board	36.1	Dr Lakshminarasamma N.
84	Point-of-Care (POC) devices for bedside diagnosis of bacteremia and neonatal sepsis	29 December 2021-6 September 2022	Impacting Research Innovation and Technology - IMPRINT	15	Dr Jayaraj Joseph

85	Enabling functional mobility through advanced gait analysis and virtual reality	4 March 2021-3 September 2022	Biotechnology Industry Research Assistance Council	5.9	Dr Ramkrishna Pasumarthy
86	Indigenous 5G Test Bed	26 November 2021-25 May 2022	Department of Telecommunications	768	Dr Ganti Radha Krishnan, Dr Bhaskar Ramamurthi
87	'Indigenous 5G Test Bed' - regarding the Operation & Maintenance (O&M) of the Test Bed	1 January 2022-31 December 2024	Department of Telecommunications	289.62	Dr Ganti Radha Krishnan, Dr Bhaskar Ramamurthi
88	Next-Generation Wireless Research and Standardization on 5G and Beyond	30 July 2021-29 July 2024	Ministry of Electronics & Information Technology	894.49	Dr David R. Koilpillai, Dr Bhasakar Ramamurthi, Dr Sheetal Kalyani
89	Indian Nanoelectronics Users Programme -Idea to Innovation (INUP-i2i)	22 September 2021-21 September 2024	Ministry Of Electronics & Information Technology	700	Dr Deleep R Nair, Dr Ananth Krishnan, Dr Shanti Bhattacharya
90	Coherent Combination of Multiple Fiber Laser Beams Using Tiled Aperture Combining Technique with Robust Phase Control	23 June 2021-22 June 2023	Centre for High Energy Systems and Science	299.66	Dr Balaji Srinivasan, Dr Deepa Venkitesh
91	In-situ monitoring of fire in tunnels and underground transportation systems using Distributed Anti Stokes Raman Thermometry (DART)	13 January 2020-12 January 2023	Forbes Marshall	30	Dr Balaji Srinivasan, Dr Deepa Venkitesh
92	Enabling functional mobility through advanced gait analysis and virtual reality	21 January 2022-20 July 2022	Biotechnology Industry Research Assistance Council	5.9	Dr Ramkrishna Pasumarthy
93	Coherent combination of multiple fiber laser beams using tiled aperture combining technique with robust phase control	23 June 2021-22 June 2023	Centre for High Energy Systems and Science	299.66	Dr Balaji Srinivasan, Dr Deepa Venkitesh
94	Investigation on gassing tendency of nano filler dispersed mineral and ester oil for fault diagnosis in transformers	12 July 2021-11 July 2023	Science and Engineering Research Board	61.64	Dr Sarathi R.

95	Topological development and implementation of multisource multilevel inverter for grid connected photovoltaic applications	12 July 2021-11 July 2023	Science and Engineering Research Board	36.1	Dr Lakshminarasamma N., Dr Mahesh Kumar
96	Next-generation wireless research and standardization on 5G and beyond	30 July 2021-29 July 2024	Ministry of Electronics & Information Technology	894.49	Dr R. David Koilpillai, Dr Bhaskar Ramamurthi, Dr Radhakrishna Ganti, Dr Sheetal Kalyani, Dr Giridhar K
97	Nyquist photonic analog to digital converter for instantaneous frequency measurement	1 October 2021-30 September 2024	Indian National Academy of Engineering	57	Dr Deepa Venkitesh
98	WOS-B: Tactile reader for Braille and non-Braille users	23 September 2021-22 September 2023	Department of Science & Technology	17.5	Dr Anil Prabhakar
99	Magneto optical metasurfaces in a CMOS-compatible material system for enhanced Faraday Rotation	29 June 2021-28 June 2023	Department of Science & Technology	14.48	Dr Ananth Krishnan, Dr Anil Prabhakar
100	Hybrid intelligent systems in driving autonomy	20 October 2021-19 October 2024	Science and Engineering Research Board	37.31	Dr Ramkrishna Pasumarthy
101	Indian Nanoelectronics Users Programme-Idea to Innovation (INUP-i2i)	22 September 2021-21 September 2024	Ministry of Electronics & Information Technology	700	Dr Deleep R. Nair
102	In-situ monitoring of fire in tunnels and underground transportation systems using Distributed Anti Stokes Raman Thermometry (DART)	13 January 2020-12 January 2023	Forbes Marshall	30	Dr Balaji Srinivasan, Dr Deepa Venkitesh
103	Community Health Index (CHI) measurement of a locality, based on inter-dependency modelling of healthcare establishments with relevant infrastructure setup	29 September 2021-28 June 2022	Department of Science and Technology	27.18	Dr Bharath Bhikkaji

104	Applications in quantum imaging with high frequency squeezing combs	12 October 2021-11 October 2023	Department of Science and Technology	11.85	Dr Anil Prabhakar
105	VAJRA Visiting Faculty - Prof. Ravinder Kumar Jain	6 December 2021-5 December 2022	Science and Engineering Research Board	29.75	Dr Balaji Srinivasan
106	Point-of-Care (POC) devices for bedside diagnosis of bacteremia and neonatal sepsis	29 December 2021 06 March 2022	Impacting Research Innovation and Technology - IMPRINT	15	Dr Jayaraj Joseph
107	Indigenous 5G Test Bed	26 November 2021-25 May 2022	Department of Telecommunications	768	Dr Ganti Radha Krishnan, Dr Bhaskar Ramamurthi
108	'Indigenous 5G Test Bed' - regarding the Operation & Maintenance (O&M) of the Test Bed	1 January 2022-31 December 2024	Department of Telecommunications	289.62	Dr Ganti Radha Krishnan, Dr Bhaskar Ramamurthi, Dr Aniruddhan, Dr Nitin C.
109	Wideband filtering analog to digital converters	9 February 2022-8 February 2025	Science and Engineering Research Board	48.31	Dr Shanthi Pavan
110	ICMR-DHR-CoE, IIT Madras	1 November 2021-1 March 2022	Indian Council of Medical Research	415.59	Dr Mohanasankar S., Dr Jayaraj Joseph, Dr Boby George
111	Design and development of a soil analysis system	28 February 2022-27 February 2025	Science and Engineering Research Board	38.1	Dr Shanti Bhattacharya
112	Reconfigurable bidirectional LC-LC resonant battery charger for microgrid applications	3 March 2022-2 March 2025	Science and Engineering Research Board	38.1	Dr Lakshminarasamma N.
113	Combining information and queueing theory for emerging applications	26 December 2019-25 December 2021	Science and Engineering Research Board	20	Dr Avhishek Chatterjee

Industrial consultancy projects (ongoing and new)

S. No.	Faculty Member	Title	Industry	Amount (₹ in lakh)
1	Arun Karuppaswamy B	Study and analysis on failure of Banbury MV drives	MRF limited	6.49
2	Gaurav Raina	Visiting Professor at Krea University	KREA University	34.46
3	Sarathi R.	L&T Electrical Design verification	L& T Construction Water and Effluent Treatment IC	14.05
4	Bharath Bhikkaji	Stabilization of 4-axis gimbal	BigCat Wireless Private Limited	14.16

5	Sarathi R.	Study of electrical arc behavior in transformer oil	Easun MR Tap Changers Private Limited	11.33
6	Balaji Srinivasan	Development of FBG based SHM system	Sasmos Het Technologies Limited	5.9
7	Deleep R. Nair	Fabrication and characterization of thin films and devices	Common Code	35
8	Ramkrishna Pasumarthy	Hybrid intelligent systems in autonomous vehicles	Robert Bosch Engineering and Business Solutions	13.5
9	Mohanasankar S.	High-resolution human brain imaging	Sudha Gopalakrishnan	600
10	Mohanasankar S.	Post-discharge newborn care through highly affordable technology	Cognizant Foundation	263.6
11	Anil Prabhakar	Wearable assistive and rehabilitation devices for the differently abled	Sony Pictures Networks India Private Limited	80
12	Mohanasankar S.	Indegene MS Scholar Program	Indegene Private Limited	20
13	Shanthi Pavan	Analog Mixed-Signal VLSI Research	Silicon Laboratories Inc	59.34
14	Andrew Thangaraj	Scholarship for B.Sc. students	Renault Nissan Technology and Business Centre India Private Limited	254.1
15	Mohanasankar S.	Research scholar support	Thales India Private Limited	31.19
16	Mohanasankar S.	Non-contact physiological monitoring technology platform	Donors	200
17	Mohanasankar S.	Sudha Gopalakrishnan Brain Centre	Donors	350
18	Anil Prabhakar	Industry-Academia Consortium on Quantum Computing - LTI	Larsen & Toubro Infotech Limited	81
19	Ashok Jhunjhunwala	Infrastructure support to CBEEV (SBI)	SBI Foundation	100
20	Ganti Radha Krishnan	5Gi for rural connectivity	Larsen & Toubro Infotech Limited	37.08
21	Andrew Thangaraj	NPTEL Exam Fee Waiver	Sutherland Global Services Private Limited	25
22	Ashok Jhunjhunwala	Development of Battery Energy Storage System	TEK Travels Private Limited	10
23	Shanthi Pavan	Analog mixed-signal VLSI research	Silicon Laboratories Inc	28.99
24	Mohanasankar S.	New-born monitoring devices	Hawe Hydraulics Private Limited	3.74
25	Sarathi R.	Garwah lift irrigation project electrical design vetting	L&T Construction Water and Effluent Treatment IC	3.66
26	Swarup K. S.	Study of 400 kV GIS Substation for TANTRANSCO for circuit breaker ratings	Tamil Nadu Transmission Corporation Limited	4.06
27	Nagendra Krishnapura	Analog mixed-signal VLSI research	Silicon Laboratories Inc	29.5

RBIC projects (ongoing and new)

S. No.	Faculty Member	Title	Industry	Amount (₹ in lakh)
1	Dr Shanthi Pavan	Centre for advanced analog mixed-signal VLSI design - Phase II	Texas Instruments (India) Private Limited	1136.2
2	Jhunjhunwala Ashok	Center of Battery Engineering (ESSEL)	Essel Green Energy Private Limited	177
3	Jhunjhunwala Ashok	Development and testing of Battery Pack for Electric vehicles-Bus and Auto	Amara Raja Batteries Ltd	160
4	Jhunjhunwala Ashok	Development and Testing of Battery Pack for Electric Vehicles - Bus and Auto	EXIDE Industries Limited	160
5	Jhunjhunwala Ashok	Development and Testing of Battery Pack for Electric Vehicle - Bus and Auto	Exicom Tele-Systems Limited	120.36
6	Jhunjhunwala Ashok	Center for Battery Engineering (AL)	Ashok Leyland	177
7	Jhunjhunwala Ashok	Center of Electric Vehicle (ADI)	Analog Devices	176.35
8	Jhunjhunwala Ashok	Center for Battery Engineering (IOCL)	Indian Oil Corporation Limited	150
9	Ramkrishna Pasumarthy	Smart Environment Monitoring using GDML	Cognizant Technology Solutions	30.72
10	Krishna Vasudevan	IGCS Research Programme on Sustainable Power Engineering - Phase II	Maschinenfabrik Reinhausen GmbH	243.94
11	Kamalesh Hatua	Development of low wattage fan motor	Tribi System Private Limited	13.17
12	Swarup K. S.	Active Power Flow Control in Indian Transmission Networks	Maschinenfabrik Reinhausen	15.83
13	Venkatesh R.	WiFi Deployment Strategies	Qualcomm Technologies, Inc.	45.94
14	Abhishek Sinha	Advanced scheduling algorithms for 5G	Qualcomm Technologies, Inc.	24.78
15	Kamalesh Hatua	Development of 10 kV solid state circuit breaker and consultancy support for solid state transformer	Centre for Development of Advanced Computing	20
16	Kamalesh Hatua	Wide band gap device based automotive power supply	Semtronics limited	19.52
17	Rajagopalan A N	Instance super-resolution of SEM images	KLA Tencor Corporation	36.75
18	Giridhar K	Design and development of LPI/LPD waveforms on COTS testbed	Defence Electronics Applications Lab	59.61
19	Christopher S.	Development of sensor with smart antenna	Combat Vehicles Research and Development Establishment	183.05
20	Anil Prabhakar	Design and verification of quantum key chip	National Company of Telecommunication and Information Services	1043.56

21	Kaushik Mitra	Reflection free photography (Phase 1- Reflection Detection)	Samsung R&D Institute India Bangalore Private Limited	21.24
22	Christopher S.	Design methodology towards the development of light weight flat panel prototype of Active Electronically Scanned phased array Antenna (AESA) and low power Quad T/R modules for X- band radar applications	Defence Research and Development Organisation	294.26
23	Mohanasankar S.	Research Scholar Fellowship	Wipro GE Healthcare Private Limited	318.6
24	Mohanasankar S.	MRI Adaptive Protocol Workflow	Wipro GE Healthcare Private Limited	159.3
25	Rajagopalan A. N.	Generalization of Deep Networks for Sparse Defect Inspection	KLA Corporation	38.5
26	Anil Prabhakar	Ising machines for quantum machine learning	KLA Corporation	37.19
27	Umesh S.	2021 Verisk AI Faculty Research Awards	Verisk Analytics India Private Limited	30
28	Nitin Chandrachoodan	Mapping image processing workloads on emerging computational architectures	KLA Tencor Software India Private Limited	42.73
29	Rajagopalan A. N.	Development of Algorithms for Missile Approach Warning System (MAWS)	Instruments Research and Development Establishment	186.4
30	Rajagopalan A. N.	Development of algorithms for motion deblurring of images	Instruments Research and Development Establishment	24.95
31	Ramkrishna Pasumarthy	Novel in-cabin sensing and analytical systems for improving the safety, health and comfort of drivers and occupants	FCA Engineering India Private Limited	17.94
32	Rajagopalan A. N.	Few shot learning for defect detection in SEM images	KLA Corporation	18.75
33	Anjan Chakravorthy	TCAD Simulation, analysis and compact modeling of static thermal effects in GaN high electron mobility transistors	Solid State Physics Laboratory	21.28
34	Mohanasankar S	Ureteroscopy development	Bio Rad Medisys Private Limited	122.72
35	Boby George	Capacitively and inductively coupled parameter sensing: concept evaluation	The Weir Group PLC	11.5
36	Nitin Chandrachoodan (PI), Radhakrishna Ganti (Co-PI)	High data rate quad diversity modem waveform	Defence Electronics Applications Laboratory	30.07
37	Rajagopalan A. N.	Improving text extraction for real world scans	Adobe Systems Incorporated	15
38	Qadeer Ahmad Khan	Qualcomm Faculty Award (QFA)	Qualcomm Technologies, Inc.	11.14

39	Kaushik Mitra	Self-supervised light field video reconstruction for smartphones	Qualcomm Technologies, Inc.	10
40	Aniruddhan S.	Design of WLAN Power Amplifier	NXP Semiconductors Netherlands B.V.	35.75
41	Mohanasankar S.	Digitization of cancer treatment guidelines	Wipro GE Healthcare Private Limited	118
42	Bharath Bhikkaji (PI); Puduru Viswanadha Reddy (Co-PI)	Exploration towards a game theoretic framework for security and critical infrastructure	Centre for Artificial Intelligence and Robotics	47.43
43	Mohanasankar S.	Carbon management platform for healthcare industries	Zasti Limited	450.23
44	Mohanasankar S.	Zasti Climate Tech Center	Zasti Inc	608.04
45	Jayaraj Joseph	Vascular health assessment for clinical diagnosis, research & early screening	Shri Dharmasthala Manjunatheshwara University	8.26
46	Christopher S.	Design of Ku Band Quad Transmit Receive Module (QRTM) System on Chip (SoC) of Active Electronically Scanned Array (AESAs) antenna for seeker applications	RCI Hyderabad	292.98

Retainer consultancy (ongoing and new)

S.No.	Faculty Member	Title	Industry	Amount (₹ in lakh)
1	Dr Gaurav Raina	Advisory Services to United India Insurance Company	United India Insurance Co. Limited	147.2
2	Dr David R. Koilpillai	Retainer Consultant to IITM Pravartak Technology Foundation, IIT Madras	IITM Pravartak Technologies Foundation	1.18
3	Dr Harishankar Ramachandran	Retainer Consultant to IITM Pravarthak Technology Foundation, IIT Madras	IITM Pravartak Technologies Foundation	59
4	Dr Mohanasankar S	Projects with Pravartak	IITM Pravartak Technologies Foundation	5.9
5	Dr Krishna Vasudevan	Technical support to Pravartak	IITM Pravartak Technologies Foundation	4.72
6	Dr Kaushik Mitra	Night-time image sensing and 3D endoscopic imaging	IITM Pravartak Technologies Foundation	100.85
7	Dr Anil Prabhakar	Satellite QKD and standards for QRNG and QKD	QuNu Labs Private Limited	17.7

Distinguished visitors to the department

S.No.	Visitor and Designation	Date of Visit	Purpose of Visit
1	Prof. Ravinder S. Dahiya, University of Glasgow and Chairman IEEE Sensors Council	11 March 2022	Seminar: High-Performance Printed Electronics for Interactive Systems

4.8.6. Other Activities of the Department

Major infrastructure development made in the department

The construction of the Electrical Sciences Block II building was completed in January 2022. This is a G+6 building with district cooling. It is designed to accommodate 28 research labs and 17 offices. The total built area is 51,000 sq ft. The building was inaugurated on January 27, 2022, by Prof. Bhaskar Ramamurthi and Prof. V. Kamakoti.



4.9. Department of Engineering Design

4.9.1. Introduction

Set up in 2006, the Department of Engineering Design is the 16th department to come up at the Indian Institute of Technology Madras. Engineering design is a series of steps that engineers follow to come up with a solution to a problem. Many times, the solution involves designing a product that meets certain criteria and/or accomplishes a certain task. It is a decision-making process, often iterative, in which the basic sciences and the engineering sciences are applied to the optimal conversion of resources to meet a stated objective. Students are first introduced to the design process along with fundamental mathematics, science and engineering, graphic art, design and aesthetics. They are trained not only in the mechanical aspects of design, but also in electronics, control and embedded systems for all-round skill development. Courses in geometric

modelling, finite elements, materials engineering, automotive engineering, mechatronics, robotics, biomedical imaging and diagnostic techniques are also offered.

4.9.2. Academic Programmes

A first-of-its-kind centre in India, the department provides much-needed leadership in engineering design with two novel dual-degree programmes. Both the programmes offer a B.Tech. in Engineering Design, and the first that began in 2006 offers an M.Tech. in Automotive Engineering. The second programme, launched in 2008, offers an M.Tech. in Biomedical Design. From 2007, the department also offers M.S. and Ph.D. programmes. From 2018, the interdisciplinary dual degree programme in Robotics was started with ED as the coordinating department. The department offers M.S. and Ph.D. programmes as well.

New discipline/branch introduced

1. Introduction of new IDDD Programme - Electric Vehicles
2. Introducing a compulsory course on Personal and Professional Growth
3. ED5052 - Electromagnetic Compatibility for a Product Design course in the basket of IDDD - Electric Vehicles Elective

New courses introduced

S.No.	Course No.	Title
1	ED5310	Algorithms in Computational Geometry
2	ED5515	Fundamentals on Thermal Management in Electric Vehicles
3	ED6008	Industry 4.0 and Smart Manufacturing

Modification courses

S. No.	Course No.	Title
1	ED5310	Algorithms in Computational Geometry
2	ED5235	Power Electronics and Motor Drives for Electrified Vehicles
3	ED5340	Data Science: Theory and Practice

Students/Scholars who attended conferences/seminars/symposia/workshops abroad or in India

S.No.	Student/Scholar	Roll No.	Conference/Seminar/Symposium/Workshop	Date and Venue	Financial Assistance from
1	Deepan Jayaraman, Deepak Nagar, Naman, Rashmi Rama Sushil	ED15D002, ED19S004, ED19S009, ED20S004	World Congress of Structural Multidisciplinary Optimisation (WCSMO 14)	13-18 June 2021	IITM

2	Saurabh Gairola	ED18D007	5th International Conference on Structural Integrity and Durability Dubrovnik, Croatia	7-10 September 2021	IITM
3	Naveen G	ED18D602	43rd Annual International Conference of the IEEE Engineering in Medicine Biology Society (EMBC-21)	7-9 July 2021	IITM
4	Divya Basakaran	ED16D002	13th International Congress of Hyperthermic Oncology (ICHO)	6-8 October 2021	
5	Yugandhara Rao Yadam		NDE 2021	9-11 December 2021	
6	Gaurav Singh	ED17D008	Symposium Mechanical Behavior and Degradation of Advanced Nuclear Fuel and Structural Materials	14 March 2022	IITM

Students/Scholars who won outside prizes and awards

S. No.	Student/Scholar	Roll No.	Prize	Prize Awarded by
1	Divya Baskaran	ED16D002	SITARE GYTI Appreciation, 2021	BIRAC SITARE-GYTI 2021 Scheme

Students/Scholars who won Institute Convocation/Institute Day Prize

S. No.	Student/Scholar	Roll No.	Prizes
1	Akash Mitra	ED16B002	Prema and Nagaraja Setty Prize
2	Raghuram V C	ED16B057	Dr K Gopinath and Padmini Gopinath Prize

4.9.3. Faculty and Their Activities Faculty

Name and Qualifications	Major Areas of Specialisation
Professors	
Asokan T (Head)	Robotics, mechatronics, control, electro-hydraulic servo systems
Jayaganthan Rangaswamy	Materials engineering, nanomaterials and design, biomaterials, additive manufacturing, energy storage devices
Kavitha Arunachalam	Biomedical instrumentation, radio frequency and microwave antenna design, hyperthermia physics, non-destructive material evaluation
Nilesh J. Vasa	Opto-mechatronics, laser-based sensing and micro-manufacturing
Ramanathan M	Geometric and solid modelling, CAD, computer vision, computational geometry, computer graphics, computational biology, shape search
Saravana Kumar G	CAD, design optimization, design for additive manufacturing, orthopedic bio-mechanics and biomedical image processing
Shankar Ram C S	Vehicle dynamics and control, transportation systems
Srikanth Vedantam	Design with novel materials, mechanical behavior of materials, wetting, microstructure evolution

Venkatesh Balasubramanian	Design thinking, innovation management, human factors and ergonomics, biomedical devices and implants, and public policy
Associate Professors	
Balkrishna C Rao	Sustainable manufacturing, sustainable design, nano-manufacturing, manufacturing for bio-medical applications, simulation of manufacturing processes
Ganapathy Krishnamurthi	Medical image analysis, pre-clinical imaging systems – X-ray micro-CT, fluorescence imaging
Palaniappan Ramu	Optimization, application of statistical and probabilistic techniques for engineering design under uncertainties, risk/reliability-based engineering design, surrogate-based modeling and analysis
Sandipan Bandyopadhyay	Robotics, dynamics of multibody systems, design
Assistant Professors	
Bijo Sebastian	Mechatronics, autonomous navigation for mobile robots, exoskeleton systems for rehabilitation
Niravkumar Patel	Medical robotics, image-guided surgery
Srikanthan Sridharan	Electrified vehicle systems, modeling and control of power electronic converters and electric machine drives
Tuhin Subhra Santra	Bio-nano/micro electromechanical systems (bio-NEMS/MEMS), biomedical micro/nano devices, bio-micro/nano fabrication, single-cell technology, nanomedicine, biosensors and bioelectronics, bionanomaterials
Emeritus Professor	
Krishna Kumar R	Nonlinear finite elements, vehicle dynamics and tyre mechanics
Vajra Visiting Faculty	
Srinivasan Chandrasekar	

Short-term courses/workshops/seminars/symposia/conferences organised by the faculty members

S. No.	Coordinator(s)	Title	Period
Conference			
1	Palaniappan Ramu; Sourav Rakshit, ME	National Conference on Multidisciplinary Design, Analysis and Optimization	7-9 October 2021
Workshop			
1	Venkatesh Balasubramanian	iRAD - National workshop for competency development	7-15 April 2021
		ToT Workshop for competency development in integrated Road Accident Database (iRAD) - Phase 2	26-29 October 2021
		ToT Workshop for Competency Development in Integrated Road Accident Database (iRAD)	15-17 February 2022
Short-Term Course			
1	Shankar Ram C S	Advanced Control Systems for Mahindra & Mahindra	March-April 2022

Conferences attended by the faculty members in academic institutions and public sector undertakings

S.No.	Faculty Member	Title	Institution	Period
1	Kavitha Arunachalam	Time division multiplexing of phased array excitation for hyperthermia treatment of large localized breast tumors	13th International Congress of Hyperthermic Oncology (ICHO)	6-8 October 2021
2	Kavitha Arunachalam	Partial discharge detection and classification for condition monitoring of high voltage AC gas insulated system, Indian Society for NDT	NDE-2021	9-11 December 2021

Special lectures delivered by the faculty in other institutions

S.No.	Faculty Member	Topic of Lecture	Institution	Date
1	Shankar Ram C S	Model-Based Control of Automotive Systems	Mahindra AFS Tech Symposium	21 January 2022
		Overview of Control Systems	Dr V Ramamurti Memorial Lecture, SAE India Southern Section	12 March 2022
2	Kavitha Arunachalam	Sensors for condition monitoring of power apparatus	IITM	2 March 2022

Visits abroad by faculty

S.No.	Faculty Member	Country Visited	Date	Purpose of Visit	Funding from
1	Balkrishna C Rao	Germany	21 May 2021-30 August 2021	Visiting Professor	
2	Tuhin Subhra Santra	Taiwan	1 December 2021-30 November 2023	Honorary Visiting Professor	

Honours and awards obtained by faculty

S.No.	Faculty Member	Award	Awarded by	Awarded for	Date of Award
i. Honours					
1	Shankar Ram C S	V. Ramamurthi Faculty Fellow	IIT Madras	Research and Teaching	Two years w.e.f. 1 October 2019
2	Venkatesh Balasubramanian	Advisor	Department of Transport and Road Safety	Government of Rajasthan	
3	Tuhin Subhra Santra	Honorary Visiting Professor	National Tsing Hua University, Taiwan		1 November 2021-30 October 2023

4	Kavitha Arunachalam	Session Chair	RF-EMF Technology	13th International Congress of Hyperthermic Oncology	6-8 October 2021
---	---------------------	---------------	-------------------	--	------------------

ii. Awards

1	Tuhin Subhra Santra	Committee Member		16th IEEE International Conference on Nano/Micro Engineered & Molecular Systems (IEEE-NEMS)	
---	---------------------	------------------	--	---	--

Fellowships of academies and professional societies

S.No.	Faculty Member
Member: Expert Advisory Group at Ministry of Road Transport & Highways	
1	Venkatesh Balasubramanian
Independent Director	
1	Venkatesh Balasubramanian
Expert Committee Member: SERB, DST	
1	Kavitha Arunachalam

Journal editorial boards

S. No.	Faculty Member	Position	Journal Name
1	Tuhin Subhra Santra	Guest Editor	<i>Frontier in Bioengineering and Biotechnology</i> , I.F: 5.89
			<i>Cells MDPI</i> , I.F: 6.6
			<i>Journal of Micromachines</i> , I.F: 2.89
2	Shankar Ram C S	Associate Editor	<i>IEEE Transactions on Systems Man and Cybernetics: Systems</i> (IF:13.451)
3	Shankar Ram C S	Senior Member	Institute of Electrical and Electronics Engineers (IEEE)

4.9.4. Design and Development Activities
New facilities added or major equipment procured

S.No.	Equipment	Value (₹ in lakh)
1	GPU Server - Super Server 4029GP, Make: HLBS	23.25
2	Computer-controlled static gas mixing system	6.31

Patents filed

S. No.	Faculty Member	Topic of Patent
1	Jayaganthan R	Semi-automated firefighting bot
2	Tuhin Subhra Santra	Plant extract loaded TiO ₂ nanotubes for enhanced bone healing by localized drug delivery
3	Tuhin Subhra Santra	Carbon nanotubes reinforced chitosan scaffolds assisted intracellular delivery using nanosecond laser pulse
4	Jayaganthan R	Manually operated battery swapping system and comprehensive vehicle design for four-wheeler electric vehicle

5	Kavitha Arunachalam	Polarization-independent frequency selective surfaces for atmospheric remote sensing
6	Jayaganthan R	Linear pedaling bicycle for a single leg disabled person
7	Jayaganthan R	Active wheel alignment mechanism for changing toe angle in a vehicle
8	Jayaganthan R	Design and development automated electrical wire explosion technique for the production of nanoparticles
9	Jayaganthan R	Seat belt locking mechanism
10	Ganapathy Krishnamurthi	Multi-functional X-ray nanoprobe for hybrid imaging
11	Tuhin Subhra Santra	Graphene nanoplatelets reinforced chitosan scaffolds assisted intracellular delivery using nanosecond laser pulse
12	Asokan T	A master slave tele-operated surgical robotic system for robotic surgery training
13	Tuhin Subhra Santra	Drug loaded plasmonic core shell electrospun nanofibres for laser mediated intracellular delivery
14	Tuhin Subhra Santra	Metallic micro-ring for infrared pulse assisted highly efficient intracellular delivery
15	Nilesh Jayantilal Vasa	Mask-less pulsed laser-assisted hybrid etching technique for inter-digitated electrodes in semiconductor devices
16	Tuhin Subhra Santra	Synthesis of toxic-free star-shaped gold nanostructures using microfluidic device and its usage in light activate highly efficient intracellular delivery
17	Jayaganthan R	Design and development of laser powder bed fusion fabricated nickel based alloy with improved corrosion resistance in an aggressive environment
18	Jayaganthan R	Active wheel alignment mechanism for changing camber angle in a vehicle
19	Saravana Kumar G	A novel gyroid tube design concept for fluid-to-fluid heat exchange applications
20	Ganapathy Krishnamurthi	A painless and economical monitoring system to estimate the cardiac and breath rate of the anesthetized rodents
21	Ganapathy Krishnamurthi	Algorithm for X-ray computed tomography image reconstruction using unsupervised deep learning
22	Neel Balar (Student)	Swift Transit Vacuum Tube Infrastructure (STVTI)
23	Tuhin Subhra Santra	Massively parallel high throughput single-cell optoporation
24	Asokan T	A compliant mechanism based variable stiffness robotic grasper
25	Jayaganthan R	Linear and rotary actuator powered 8-wheeled all-terrain wheelchair
26	Nilesh Jayantilal Vasa	A material processing system and method thereof

Patents awarded

S.No.	Faculty Member	Topic of Patent
1	Srikanth Vedantam	Method for controlling lift and timing of engine valves using a sliding rocker arm with an inclined profile
2	Palaniappan Ramu	Alternate time changing mechanism for a wristwatch
3	Palaniappan Ramu	Integrated watch crown battery—battery placed inside crown of the watch

4	Palaniappan Ramu	Loop-based adjustable metal strap
5	Palaniappan Ramu	Variable speed mechanism to eliminate chain shifting in bicycles
6	Asokan T	A minimally invasive surgical tool for robotic surgery with disengaged degrees of freedom
7	Asokan T	A multirotor with a vertically offset overlapping configuration and uses thereof
8	Palaniappan Ramu	An expanding air bag concept for drying in washing machine
9	Palaniappan Ramu	An epicyclic gear mechanism to increase RPM and hence drying rates in washing machines
10	Nilesh Jayantilal Vasa	Quadratic electro-optics based deflection-free wide path-length modulation and later scanning device for time domain optical coherence tomography
11	Asokan T	A magnetically coupled disposable compliant tool tip for robotic surgery
12	Kavitha Arunachalam	Polarization-independent frequency selective surfaces for atmospheric remote sensing
13	Nilesh Jayantilal Vasa	Off-Resonant broadband absorption based photoacoustic sensor for multiple gas sensing
14	Jayaganthan R	Linear and rotary actuator powered 8-wheeled all-terrain wheelchair
15	Jayaganthan R	Manually operated battery swapping system and comprehensive vehicle design for four-wheeler electric vehicle
16	Sankara J Subramanian	Non-destructive structural health monitoring using on-board device
17	Sankara J Subramanian	Orthodontic device and method
18	Sandipan Bandyopadhyay	Design and assembly of a clutch
19	Venkatesh Balasubramanian	Intelligent universal seat and backrest cover for haptic and other feedback to monitor and provide intervention based on driver fatigue and/or behavior
20	Balkrishna C Rao	Fixture to provide constraint during large strain extrusion machining (LSEM) with higher compression ratio using restricted contact type cool to produce ultra fine grained Ti-6Al-4V foils
21	Balkrishna C Rao	Preparation of a dog-bone shaped micro-specimen for testing of mechanical properties
22	Sudhakar S (Staff)	Foot operated revamped tap (FORT) assembly to avoid the use of hands in existing washbasins, urinals to stop the spreading of contagious infections
23	Saravana Kumar G	An expanding air bag concept for drying in washing machine
24	Venkatesh Balasubramanian	A seat assembly for monitoring and alerting a driver based on his/her fatigue and/or behavior

4.9.5. Research and Consultancy Sponsored research projects (ongoing and new)

S. No.	Title	Funding Agency	Amount (₹ in lakh)	Coordinators
1	Centre for Excellence for Road Safety (CoERS)	MoRTH	9950.00	Venkatesh Balasubramanian

2	Integrated Road Accident Database (iRAD)		4248.00	
3	Development of Coastal Water Quality Information System (CWIS) for the coastal states of India	Department of Science & Technology	26.84	Saravana Kumar G
4	Development of broadband photoacoustic interferometry technique for ammonia and acetone detection in exhaled breath matrix	Science and Engineering Research Board	63.61	Nilesh Jayantilal Vasa; Shiva Nagendra S M, CE
5	Technology enhanced learning (TEL)-schools	Department of Science & Technology	34.85	Nilesh Jayantilal Vasa; Piyush Ghosh, AM
6	Development of deep reinforcement learning based socially aware autonomous mobile robot navigation scheme for hospital environment	Science and Engineering Research Board	10.05	Asokan Thondiyath
7	Development of highly efficient electric vehicle e-drive systems for improved range	Science and Engineering Research Board	32.78	Srikanthan Sridharan
8	Development of a robotic system for intraoperative CT guided minimally invasive neurosurgery	Biotechnology Industry Research Assistance Council	44.57	Niravkumar Patel
9	Development of a robotic system for ultrasound-guided percutaneous interventions	Science and Engineering Research Board	32.07	Niravkumar Patel
10	Design and development of optimally graded lattice structured hip prosthesis for the Indian population	Science and Engineering Research Board	22.37	Saravana Kumar G
11	Microfluidic device for single-cell based biosensing and theragnostic applications	Science and Engineering Research Board	22.37	Tuhin Subhra Santra

Industrial consultancy projects (ongoing and new)

S.No.	Faculty Member	Title	Industry	Amount (₹ in lakh)
1	Ganapathy Krishnamurthi	Development of algorithms for safe surgeries using videos and data	Curium Life Technologies LLP	5.31

RBIC projects (ongoing and new)

S.No.	Faculty Member	Title	Industry	Amount (₹ in lakh)
1	Palaniappan Ramu	Advanced machine learning and statistical techniques for analysing internet marketing	Measured Inc	36.75

2	Palaniappan Ramu, Saravana Kumar G, Ramanathan M, Ganapathy Krishnamurthi	Futuristic Product Life Cycle Management framework - Interpretable, interoperable and interactive PLM (i3PLM)	Siemens Technology and Services Private Limited	47.90
3	Nilesh Jayantilal Vasa	IoT enabled telematics hardware and SaaS platform for an on-demand commercial EV rental service	Entrepreneurship Development and Innovation Institute	5.37
4	Shankar Ram C S	Advanced antilock brake system for single unit heavy commercial road vehicles	Madras Engineering Industries Private Limited	101.97
5	Kavitha Arunachalam, and Sarathi R, Balaji Srinivasan, EE	Development of UHF sensor for transformer application	Easun MR Tap Changers Private Limited	27.19
6	Jayaganthan R, Saravana Kumar G, Palaniappan Ramu	Optimization of preform designs and finish forging design for manufacturing of nickel-based superalloys aeroengine turbine disc	Defence Metallurgical Research Laboratory	89.57
7	Venkatesh	Evaluation of suspended seats on driver fatigue in commercial vehicles during on-road driving	Minda Industries Limited	41.30
8	Palaniappan Ramu	Image anomaly detection	Jukshio Technology Innovation Private Limited	12.18
9	Palaniappan Ramu, Ganapathy Krishnamurthi, and Kaushik Mitra, EE	Algorithms for Synthetic Vision System (SVS), Enhanced Vision System (EVS) and Automatic Target Recognition (ATR)	Aeronautical Development Agency	132.76

Retainer consultancy (ongoing and new)

S.No.	Faculty Member	Title	Industry	Amount (₹ in lakh)
1	Kavitha Arunachalam	Technical guidance, skill development and technical reviews	IITM Pravartak Technologies Foundation	1.18
2	Shankar Ram C S	Electronically controlled variable geometry mechanism for a two-wheeled road vehicle	TVS Motor Company Limited	14.16

4.9.6. Other Activities of the Department

Department Degree Distribution Programme

- The Degree Distribution Programme was held on 15 December 2021 at 04.30 pm.
- Mr Chetan Maini, Co-founder and Chairman, Sun Mobility was the Chief Guest.
- Ph.D. - 9, MS - 3 and DD - 53 were awarded in person.
- The department had a get-together and the faculty, and graduands and their family members had an interaction with the Chief Guest.

4.10 Department of Humanities and Social Sciences

4.10.1. Introduction

The Department of Humanities and Social Sciences, one of the oldest in Indian Institute of Technology Madras, has been contributing to the Institute's academic environment since 1959. The department's essentially inter-disciplinary nature is its distinguishing feature, which allows students to develop an appreciation for a diverse set of fields such as development studies, economics, English studies, environmental studies, climate policy, astronomy, history, international relations, philosophy, political

science and sociology. The department offers both master's and doctoral programmes, as well as electives for B. Tech and M. Tech students.

Coupled with its multi-disciplinary background, the department boasts of a highly diverse and experienced faculty. It has an excellent student-teacher ratio, providing opportunities for academically intense learning. Equipped with state-of-the-art facilities in a serene campus, the department offers an enriching academic environment.

4.10.2. Academic Programmes: Integrated M.A. (five-year programme)

New courses introduced

S.No.	Course No.	Title
1	HS1053	Introduction to Philosophy
2	HS2025	Logic and Critical Thinking
3	HS3018	Global Politics
4	HS2015	Culture and Society
5	HS3019	Language and Society
6	HS7650	Himalayan Borderland Studies
7	HS7373	Twentieth Century American Poetry
8	HS6180	Algorithms in Indian Astronomy
9	HS5140	Transitions and Transformations to Sustainability
10	HS4007	Computational Economics and Public Policy
11	HS1080	Korean 1
12	HS5050	Indian Culture

Students on roll as of September 2021 (MA) and January 2022 (Ph.D.)

Programme	I Year	II Year	III Year	IV Year	V Year and Others	Total
M.A.	58	51	43	44	38	234
Ph.D.	36	17	26	28	44	149
Total	94	68	69	72	82	383

Students/Scholars who attended conferences/seminars/symposia abroad or in India

S. No.	Student/Scholar	Roll No.	Conference/Seminar/Symposia/Workshop	Date and Venue	Financial Assistance from
Abroad					
1	Ashna Joy	HS17D025	IPVI Online Conference, Finland	10-11 June 2021	Self
			International Conference China's Belt Road Initiatives: Regional and Global Perspectives	6-7 November 2021	Self

2	Harisankar A	HS17D020	VISAWUS 2021 Conference	14-16 October 2021, USA	Self
3	Irshad CV	HS17D016	Regional Conference on Health and Socioeconomic Well-Being of Older Persons in Developing Asia: Role of Individual and Household Data	7-9 September 2021, Manila (online)	Asian Development Bank (funded by the Government of Japan)
4	Jayat Joshi	HS17H015	Fall Discussion Colloquium	Institute for Humane Studies, George Mason University	
			4th UNCTAD-Young Scholars Initiative Summer School on Globalization and Development Strategies		
5	Ramnath Reghunadhan	HS18D022	62nd ISA Annual Convention organised by the International Studies Association	6-9 April 2021, Storrs, Connecticut, USA	IITM
			British Postgraduate Network for Chinese Studies Annual Conference 2021 on China and the World: Challenges and Opportunities	23-24 June 2021, UK	Self
			APSA Annual Meeting Session (Roundtable) on Cross-Disciplinary Approaches to Contemporary Chinese Politics organised by the American Political Science Association (APSA) and Association of Chinese Political Studies	30 September-3 October 2021, USA	IITM
6	Sancharini Mitra	HS17D004	Kentucky Gender and Women's Studies (KYGWS) Conference	24-25 February 2022, University of Kentucky, USA	Self
			Global Conference on Women and Gender	17-19 March 2022, USA	Self
India					
1	Ashna Joy	HS17D025	1st All India Conference of East Asian Studies	21-22 March 2022	Self
2	Chandrima Mandal	HS18H015	AICTE QIP Short Term Training Program on Indian Sign Language (ISL)	15-20 March 2022	
3	Harisankar A	HS17D020	New Literaria International E conference	22-24 October 2021, India	Self

4	Jayat Joshi	HS17H014	Urban Annual Research Conference	13-15 January 2022, Indian Institute for Human Settlements	
5	Ramnath Reghunadhan	HS18D022	Annual V.P. Dutt Conference organised by Department of East Asian Studies	29-31 October 2021, New Delhi, India	Self
6	Sancharini Mitra	HS17D004	Workshop: Engaging with Qualitative Digital Research	12-20 July 2021, NIT Silchar, Assam	Self

Students/Scholars who won outside prizes and awards

S.No.	Student/Scholar	Roll No.	Prize	Awarded by
1	Anand R	HS20H007	Second prize, Illuminati Open Quiz	MEC Kochi
			Second prize, General Quiz	Ethiraj College Chennai
			First prize, Travel and Living Quiz	Ethiraj College Chennai
			First prize, Fandom Quiz	Ethiraj College Chennai
			First prize, IITMAA Quiz	IITM
			First prize, CUIZ 2022 - General Quiz	Christ University Bangalore
			First prize, CUIZ 2022 - MELAS Quiz	Christ University Bangalore
			First prize, CUIZ 2022 - Business Quiz	Christ University Bangalore
			Third prize, IITM Open Quiz	IITM
			First prize, Madras Minutiae 2022 - MELA Quiz	IITM
			First prize, Madras Minutiae 2022 - General Quiz	IITM
			Second prize, Advitya General Quiz (online)	VIT Pune
			First prize, Lorem Ipsum General Quiz (online)	RV College
			Third prize, Jigyasa General Quiz (online)	IISER Trivandrum
			Second prize, "Not At Your VIT's End" Written Quiz (online)	VIT Pune
Second prize, Almanack MELA Quiz (online)	IIT BHU			
			Third prize, InQuizzitive Quiz (online)	SPJIMR
			First prize, Cognoscentia General Quiz (online)	IIFT
			Third prize, Nihilanth Mela Quiz (online)	
			Third prize, ZOZIMUS MELA Quiz (online)	IIT Hyderabad
			First prize, Film Quiz (online)	College of Engineering, Trivandrum

2	Irshad CV	HS17D016	Integrating Aging Research with Policy and Program in India (Research Grant)	United Nations Population Fund (UNFPA) and International Institute for Population Sciences, Mumbai
3	Malavika Ranjan	HS18H029	Charpak Exchange Scholarship 2021	
4	Ramnath Reghunadhan	HS18D022	2021-22 Huayu Enrichment Scholarship	Ministry of Education, Taiwan
5	Sushant Jaswal	HS20H043	First position in National Level English Debate Competition - 'In Pursuit of Dispute'	Organised by Panacea, the English Literary Society of IIT Bhubaneswar, on 21 August 2021
			First position in National Level English Debate Competition - 'Dais Interdiction Amethyst' 21'	Organised by Army Institute of Technology, Pune, on 26 May 2021
			Second highest distance to be covered by an individual on a cycle in Pedalstorm 3.0	Organised by Cycling Club, IIT Madras under Sports Organising Committee, IIT Madras

Students/Scholars who won Institute Convocation/Institute Day Prize

S.No.	Student/Scholar	Roll No.	Prize	Donor
1	Anamika G	HS20H005	Institute Merit Prize	IIT Madras
2	Neha Susan Cherian	HS19H025	Institute Merit Prize	IIT Madras
3	Ramnath Reghunadhan	HS18D022	IITM Institute Research Award (IITM IR Award)	IIT Madras

4.10.3. Faculty and Their Activities

Faculty

S.No.	Name and Qualifications	Major Areas of Specialisation
Professors		
1	Jyotirmaya Tripathy, Ph.D. (IIT Kharagpur) (Head)	Culture and development, contemporary India
3	Muraleedharan, V.R., Ph.D. (IIT Madras)	Healthcare policy, environmental health, technology and development, history of healthcare in South India
4	Sudhir Chella Rajan, Ph.D. (University of California)	Automobility, sustainability and political theory, social studies of corruption
5	Umakant Dash, Ph.D. (IIT Kanpur)	Financial economics, health policy analysis, economic evaluation of healthcare programmes and inter-industry analysis
6	Srilata K., Ph.D. (University of Hyderabad)	Creative writing studies, women's writing, Indian writing in English and translation
7	Aysha Iqbal Viswamohan Ph.D. (Vikram University)	American literature, film studies and popular culture
8	Sreekumar N., Ph.D. (University of Hyderabad)	Philosophical and phenomenological hermeneutics, philosophies of Wittgenstein and Gadamer, bioethics

9	Dhanavel S.P., Ph.D. (Tripura University)	Literary studies, English language teaching, communication and soft skills
10	Swarnalatha R., Ph.D. (Madras University)	Ecocriticism, American literature
11	Suresh Babu M., Ph.D. (JNU, New Delhi)	Applied macroeconomics, industrial economics and trade and development
12	Rajesh Kumar, Ph.D. (University of Illinois)	Language in education, sociolinguistics, linguistic theory

Associate Professors

13	Satya Sundar Sethy, Ph.D. (University of Hyderabad)	Philosophy of language, analytical philosophy and Indian philosophy
14	Sonika Gupta, Ph.D. (JNU, New Delhi)	Chinese domestic politics, foreign policy, international relations theory, Tibetan Exile Community in India
15	Subash S., Ph.D. (IIT Bombay)	Applied industrial economics, foreign direct investment, economics of innovation and technological change, small firms and industrial development
16	Roland Wittje, Ph.D. (NTNU Trondheim)	History of science and technology
17	John Bosco Lourdasamy, D.Phil. (Oxford University)	Plantation studies, history of S&T and medicine in Modern India
18	Milind Brahme, Ph.D. (JNU, New Delhi)	German language and literature, comparative literature and literary theory, education
19	Prema Rajagopalan, Ph.D. (IIT Kanpur)	Sociology of science and technology, sociology of development
20	Solomon J Benjamin, Ph.D. (Massachusetts Institute of Technology)	Urban studies, world development
21	Sudarsan Padmanabhan, Ph.D. (University of South Florida and Pondicherry University)	Social and political thought, Indian philosophy and culture, philosophy of law
22	Anup Kumar Bhandari, Ph.D. (Indian Statistical Institute)	Industrial economics, applied econometrics, Indian banking and financial economics
23	Binitha V. Thampi, Ph.D. (ISEC, Bengaluru)	Gender and development, decentralisation and governance reforms, welfare state, poverty reduction policies and programmes
25	Kalpana, K., Ph.D. (MIDS)	Gender and development, women's studies and microfinance
30	Santhosh R., Ph.D. (ISEC, University of Mysore)	Sociology, globalisation and change
28	Sabuj Kumar Mandal, Ph.D. (ISEC, University of Mysore)	Energy and environmental economics, applied econometrics, industrial economics
24	Joe Thomas Karackattu, Ph.D. (JNU, New Delhi)	Economic interdependence and conflict, international relations
26	Mathangi Krishnamurthy, Ph.D. (University of Texas at Austin)	Anthropology of work, medical anthropology, gender studies

Assistant Professors

27	Merin Simi Raj, Ph.D. (IIT Bombay)	Postcolonial studies, Indian fiction in English and literary historiography studies
----	------------------------------------	---

29	Santhosh Abraham, Ph.D. (University of Hyderabad)	Colonial psychiatry and institutions, colonial veterinary practices, law and society
31	Tabraz S.S., Ph.D. (JNU, New Delhi)	International relations theory, conflict resolution, international mediation and politics of West and South Asian regions
32	Hemachandran K., Ph.D. (Cambridge University)	Literary criticism and rhetoric, disability studies and comparative musicology
33	Santhosh Kumar Sahu, Ph.D. (IIT Bombay)	Industrial economics, energy economics, economics of global climate change
34	Anindita Sahoo, Ph.D. (IIT Delhi)	Linguistic typology, syntax, pragmatics
35	Divya A, Ph.D. (NTU, Singapore)	19th-Century English fiction and visual culture, early modern English drama and Shakespeare, 19th-century colonial writings on India, colonial picturesque and company paintings, gender studies, children's literature
36	Avishek Parui, Ph.D. (Durham University)	Modernism, masculinity studies, memory studies, posthumanism
37	Vipin Pudiyaath Veetil, Ph.D. (George Mason University)	Monetary economics, production networks, macroeconomics, agent-based modelling
38	Aditya Sri Ram Kolachana, Ph.D. (IIT Bombay)	History of mathematics, astronomy of India
39.	Krishna Malakar, Ph.D. (IIT Bombay)	Risk, vulnerability and adaptation to climate change, community resilience, sustainability, and disaster risk management

Visiting Faculty

40	K.S. Kannan	Sanskrit literature, Indian aesthetics and criticism
41	Christoph Woiwode, Ph.D. (University of London)	Sustainable urban development, social transformation to sustainability, climate change, disaster risks, governance
42	Yuan Hsiao-Hui	Mass media, Chinese language
43	Soo Jin Shim, Ph.D. (Seoul National University)	Foreign language education (Korean and English)

Short-term courses/workshops/seminars/symposia/conferences organised by faculty members

S. No.	Coordinator(s)	Title	Period
Conference			
1	Aysha Iqbal, IITM, in collaboration with St. Thomas College, Thrissur	Cinema at International Film Festivals	7-11 December 2021
Seminar			
1	Sudarshan P., Office of GE, IIT Madras and US Consulate, Chennai	Destination South Asia - Virtual Workshop	16 November 2021
Workshops			
1	Avishek Parui, Merin Simi Raj	Memory, Cognition, Literature	9-12 November 2021
		Food, Memory, Machines	17-20 August 2021
		Memory Studies Workshop	26-30 April 2021

2	Dhanavel S. P.	Summer Workshop on English and Communication Skills (DOST)	9-31 July 2021
		Summer Workshop on English and Communication Skills (DOST)	18 December 2021-6 February 2022
3	Sudarshan P	Data Ethics, Algorithmic Accountability and Digital Inequality in the Global South, Workshop at 13th ACM Web Science Conference 2021	21 June 2021
		Kenyon - IITM Science Writing Workshop	12-16 July 2021
		Clean Water: Challenges and Opportunities, Prof. T. Pradeep - SIDDHI Independence Day Series	13 August 2021
		India's Energy Needs and Innovative Solutions - Prof. Ashok Jhunjhunwala - SIDDHI Independence Day Series	14 August 2021
		India's 5Gi Standard, Manufacturing Ecosystem and Impact - Prof. Bhaskar Ramamurthi - SIDDHI Independence Day Series	15 August 2021
		- India's Medical Device Sector - SIDDHI Gandhi Jayanti Webinar	2 October 2021
		The Role of Innovative Healthcare for Sustainable Development - AARDO - IITM E-training Programme - SIDDHI	22-25 March 2022

Short-term Courses

1	Aysha Iqbal Viswamohan	English Literature for Competitive Exams Technical English for Engineers (NPTEL (rerun))	January-March 2022
2	Aysha Iqbal Viswamohan	American Literature & Culture Film Appreciation	August-December 2021
3	Aysha Iqbal Viswamohan	Introduction to Film Studies, IIT Palakkad (CCE, IITM project semester course)	August-December 2021

Short-term courses/workshops/seminars/symposia/conferences/training attended by the faculty members in academic institutions and public sector undertakings

S. No.	Faculty Member	Title	Institution	Period
Workshop				
1	Sreekumar Nellickappilly	"Body, Mind and Self" - Refresher Course for University Teachers	UGC-Human Resource Development Center, Savitribai Phule Pune University, Pune (organiser)	21 December 2022
Seminar				
1	Sudarshan P	Reasoning, Decision Making, and Judging	School of Law, SAI University, Chennai	24 June 2021
Symposium				
1	Solomon Benjamin	Urban Popular Economies: Territories of Operation for Lives Deemed Worth Living 2019 to 2022	Cities and Global Development, Sheffield University, UK	

Conferences

1	Aditya Kolachana	Mathematics in India	Homi Bhabha Centre for Science Education, Mumbai (NTS Nurture Program)	5 January 2022
		Mādhava and the Kerala school of mathematics	Harish-Chandra Research Institute, Prayagraj	21 January 2022
2	Anindita Sahoo, Vishnu Suresh	The 6th Asian Junior Linguists Conference (AJL6)	Sogang University, Seoul, Korea	10-12 December 2021
3	Anindita Sahoo, Pratiti Palit	Challenging Borders: From Between Borders	The University of Bern, Switzerland	11-13 November 2021
4	Anindita Sahoo, Gunti Prem Sagar	Linguistics Beyond and Within - International Linguistics Conference in Lublin	The John Paul II Catholic University of Lublin	14-15 October 2021
5	Anindita Sahoo, Scherezade Dastur	Linguistics Beyond and Within - International Linguistics Conference in Lublin	The John Paul II Catholic University of Lublin	14-15 October 2021
6	Anindita Sahoo, Snigdha Medhi	43rd International Conference of the Linguistic Society of India (ICOLSI-43)	CIIL, Mysore	21-23 December 2021
7	Divya A	Presented a conference paper on the film Karnan at the Second Rupkatha International Open Conference in Interdisciplinary Humanities	Rupkatha Journal on Interdisciplinary Studies in Humanities	28-30 August 2021
8	Krishna Malakar	Between a rock and a hard place? The impact and effects of climate change, COVID-19, and emerging technologies of communication and governance on the livelihood of artisanal fishing communities in Kerala	Jointly organised by Cochin University of Science and Technology (CUSAT), Centre for Development Studies (CDS Thiruvananthapuram), Inter University Center for Alternative Economics, University of Kerala and University of Sussex (UK)	25-26 March 2022
9	Sayanty Chatterjee and Aysha Iqbal Viswamohan (virtual conference)	Presented paper, 'De-Urbanizing the Screens: A Socio-Semiotic Study on Intermediality in the Hindi Films on Small Town,' Urban Assemblage: The City as Architecture, Media, AI and Big Data	University of Hertfordshire	28-30 June 2021
10	Sonika Gupta	Tibetan Rehabilitation in Arunachal Pradesh: Local, State and Geopolitical Anxieties	Tibet Policy Institute	18-22 October 2021
11	Solomon Benjamin	City as Majority Spaces in Democracy in the Age of Cities	Tel Aviv University, Israel	September 2021
		Land's Deep Materiality in East Asian Alternative Geography (EARCAG) International Conference	Kyushu University, Fukuoka, Japan	March 2022

Special lectures delivered by the faculty in other institutions

S. No.	Faculty Member	Topic of Lecture	Institution	Date
1	Aditya Kolachana	Mathematics in India	Homi Bhabha Centre for Science Education, Mumbai (NTS Nurture Program)	5 January 2022
		Mādhava and the Kerala School of Mathematics	Harish-Chandra Research Institute, Prayagraj	21 January 2022
2	Anindita Sahoo	Linguistic Diversity and Social Inclusion in India	Bennett University	31 August 2021
		Teaching and Learning: Challenges and Opportunities	Kumaraguru College of Technology	26 August 2021
		Language Learning Strategies	NTM, CIIL, Mysore	24 August 2021
3	Avishek Parui	International Conference on Memory and Narrativization: History, Culture and the Self through Creative Expression	Christ University Bangalore	17 April 2021
		Indian Short Fiction in English and in Translation	Sahitya Akademi	26 April 2021
		International Workshop on Methodologies for Slow Memory	COST Action Project Slow Memory: Transformative Practices for Times of Uneven and Accelerated Change	15 July 2021
		Reimagining the Real: Literary Response to Pandemics	University of Kashmir	24 August 2021
		Memory Studies: Research and Pedagogic Possibilities, New Vistas in English Studies	Presidency University, Bengaluru	20 September 2021
		Memory, Storytelling, and Interrupted Embodiment: Reading Heart of Darkness and Mrs Dalloway	Daulat Ram College, University of Delhi	29 September 2021
		Memory, Cognition and Modernism in Virginia Woolf	Lady Shriram College for Women, University of Delhi	9 October 2021
		Workshop on Memory Studies	Central University Tamil Nadu	21 October 2021
		Fictions and Forms of Forgetting: Research in Memory Studies	Manipur University of Culture	23 October 2021
		Research in Memory Studies: Interdisciplinary Possibilities	IIIT Hyderabad	27 October 2021
		Memory Studies Workshop	Banaras Hindu University	29 October 2021
		Fabulation and Forgetting in Literature and Memory Studies	Cultural Identity and Memory Studies Institute, University of St. Andrews	8 November 2021
		Memory Studies Workshop	Sophia College, University of Mumbai	22-24 November 2021

4	Aysha Iqbal Viswamohan	'Post-liberalization Indian Novels in English: Awards & Reception'	Kirori Mal College, Delhi University	23 June 2021
		Hindi Film Directors: A Post2010 Overview	NIT Calicut	10 July 2021
		'OTT Platforms and Visual Literacy'	Institute of Engineering and Management, Kolkata	3 August 2021
		Pedagogy of Film Studies	Ramanujan College, Delhi University	7 August 2021
		A Few Good Men: Directors who Changed the Face of Bollywood (2005-2015)	IIT, BHU	10 November 2021
		Telling Her Tales: Women and Representations in Contemporary Hindi cinema: Keynote lecture	West Bengal State University, Kolkata	21 February 2022
		Potential and Challenges of Indian Regional Cinema	Sharda University, Noida	28 March 2022
5	Dhanavel S. P.	Teacher Cognition in Professional Development	AICTE Short-Term Program, IIT Madras	30 April 2021
		Managing Teacher Stress	Gitam University, Vishakhapatnam	12 June 2021
		Teacher Cognition, Education, and Professional Development	Regional Institute of English, Bengaluru	26 June 2021
		Outcome-Based Teaching and Learning	Thiagarajar College of Engineering, Madurai	23 September 2021
		Research Writing and Publishing	SRM University, Chennai	12 November 2021
6	Divya A	The film Jai Bhim	Department of Humanities and Social Sciences, ITER, Siksha 'O' Anusandhan (Deemed to be University)	24 December 2021
7	Jyotirmaya Tripathy	Culture In/Of Policy Making	Tamil Nadu Young Thinkers Forum, Chennai	4 April 2021
		English Studies in Contemporary India: Problems and Prospects	Mahakalapada College, Kendrapada, Odisha	11 June 2021
		Yoga and India's Cultural Resurgence	Amity University, Chhattisgarh	21 June 2021
		Towards a Material Jagannath	Balasore Study Circle, Odisha	4 July 2021
		Interface of Literary and Cultural Studies: Scope for Research	Stella Maris College, Chennai	25 November 2021
		Vivekananda Yuva Endeavors on Climate Change and Sustainability	Vivekananda Jannothanna Trust, Bengaluru	16 December 2021

8	Solomon Benjamin	Constructing Urban Sustainability: Anti-Politics Machine, Cartography, Spiritual Duty, and Participation	Oxford India Centre for Sustainable Development, Oxford University, UK	May 2021
		Ph.D. Workshop: Theorizing the Urban "South" via Land Practices: Empowering oneself via Grounded Theory & Pedagogy	Kyushu University, Fukuoka, Japan	March 2022
9	Sonika Gupta	Himalayan Geopolitics: Emerging Security Challenges	Institute of South Asian Studies, National University of Singapore	22 July 2021
		Frontiers in Flux: India-Tibet Border 1946-1948	Lecture in the UGC sponsored short-term course on Nature and Society of Indian Himalayan Region conducted by UGC Human Resource Development Centre, University of North Bengal	23 November 2021
10	Swarnalatha Rangarajan	Invited speaker: Stories-We-Live-By: Environmental Communication and Advocacy in the Anthropocene	Enhancing Communication: Empowering Technocrats, School of HSSM, IIT Bhubaneswar, 7-11 June 2021	10 June 2021
		Plenary: Narrating the Asian Anthropocene: Women Writing Nature from India	4th ASLE-ASEAN Ecocritical Workshop, Department of English, Faculty of Modern Languages and Communication, Universiti Putra Malaysia (UPM)	23 August 2021
		Keynote speaker: New Forest Texts, Environmental Justice and the Vision of a Sahrdaya Anthropocene Planthroposcene: Ecofeminist Narratives from India	Cross Straits Ecological Conference, Tamkang University, Taiwan	5 November 2021

Honours achieved by faculty

S. No.	Faculty Member	Award	Awarded by	Awarded for	Date of Award
1	Avishek Parui	Co-founder of the Indian Network for Memory Studies (INMS)	Memory Studies Association	Contribution in the field of Memory Studies	June 2021

Fellowships of academies and professional societies

S. No.	Faculty Member	Year of Admission Others
1	Solomon J Benjamin: Respondent subject expert to the Committee for Reforms in urban planning capacity, All India Council for Technical Education, GOI	February 2022
2	Subash S., Co-Chairman, Working Group on Micro Small and Medium Industries (MSMEs), State Planning Board, Government of Kerala	2021-2022

Journal editorial boards

S.No.	Faculty Member	Position	Journal
1	Aditya Kolachana	Member	<i>History of Science in South Asia</i>
2	Avishek Parui	Editorial Board Member	<i>Media Watch</i> , a SAGE journal

4.10.4. Research and Consultancy

Sponsored research projects (ongoing and new)

S.No.	Title	Period	Funding Agency	Amount (₹ in lakh)	Coordinators
1	British Council Going Global Partnership Exploratory Grant	10 December 2021-31 May 2022	British Council	6.58	Avishek Parui
2	Managing COVID-19 in India's Cities: Reshaping People's Everyday Lives in Poorer Urban Neighbourhoods	1 January 2021-31 December 2022	University of Sheffield	10.22	Binitha V. Thampi
3	Disability Rights and Climate Resilience in Low and Middle-Income Countries: Insights from India	19 January 2022-31 May 2026	Social Sciences and Humanities Research Council	27.50	Binitha V Thampi
4	Memory Studies and Anglo-Indian Identities: The Digital Archive Project	15 March 2021-14 March 2023	Anglo-Ink	10.00	Merin Simi Raj
5	Centre for Technology and Policy (CTaP) - Phase II	28 November 2018-27 November 2023	Ministry of Education	112.96	Muraleedharan V. R.
6	Land-based Urban Commons for Housing	5 September 2019-31 December 2022	Centre national de la recherche scientifique	6.96	Solomon J. Benjamin
7	Prioritising the Displacement-Environment Nexus: Refugee and IDP Settlements as Social Ecological Systems	1 June 2021-30 June 2025	Norwegian Research Council	22.22	Sonika Gupta
8	PERI-CENE (Peri-urbanization & Climate-Environment Change)	23 September 2019-22 September 2021	Department of Biotechnology	107.97	Sudhir Chella Rajan
9	Vulnerability of coastal infrastructure due to climate change in east coastal zones of India: An integrate assessment modeling approach	23 March 2018-22 March 2023	Department of Science & Technology	47.97	Sudhir Chella Rajan

Industrial consultancy projects (ongoing and new)

S. No.	Faculty Member	Title	Industry	Amount (₹ in lakh)
1	Avishek Parui	COST Action CA20105 "Slow Memory"	COST (European Cooperation in Science and Technology)	43.888
2	Binitha V Thampi	Panelist - Kudumbashree NRO, Government of Kerala	Kudumbashree Kerala State Poverty Eradication Mission	0.60
		Gender Ideology, Father Involvement, and Gender Discrimination	Penn State University	6.94
3	Muraleedharan V.R.	Integrated Primary Health Care Costing Activity in India: Proposal for Tamil Nadu	ACCESS Health International	11.91
4	Rajesh Kumar	Aviation English Language Proficiency (ELP) Training	Airports Authority of India	167.84
		Creating Proficiency in English	Fullerton India Credit Company Limited	54.38
5	Santosh Kumar Sahu	Green Growth Index, Energy Use and Economic Growth: Evidence from the United Arab Emirates	Abu Dhabi University	5.10
6	Subash S	ERIA Research on COVID-19: The Role of Digitalization in Shaping India's Global Value Chain Participation	Economic Research Institute for ASEAN and East Asia (ERIA)	6.57
		Cities, Amenities and Global Production Chain in East Asia: India Case Study funded by ERIA, Jakarta, Indonesia	Cities, Amenities and Global Production Chain in East Asia: India Case Study funded by ERIA	8.60
7	Sudarsan P	AI and Ethics for the Indian Context	Robert Bosch Centre for Data Science and Artificial Intelligence	10.00
8	Suresh Babu M	Use of Open-Source Data for Strengthening SDG Monitoring in Tamil Nadu	German Development Cooperation	7.43
9	Umakant Dash	Strengthening Public Hospitals using PMJAY fund	World Health Organisation	33.88

Faculty members' participation with other universities/institutions under MoU

S.No.	Faculty Member	Participation details	University
1	Avishek Parui	British Council's Going Global Partnerships Grant, Joint workshops	University of St. Andrews, UK

4.10.5. Other Activities of the Department

Faculty visit

S.No.	Faculty Member	Purpose of Visit	Date and Venue
1	Avishek Parui	Project visit as part of British Council's Going Global Partnerships Grant with St. Andrews University	June 2022, St. Andrews University, UK

4.11. Department of Management Studies

4.11.1. Introduction

The Department of Management Studies (DoMS) was set up in April 2004. The department offers a two-year full-time M.B.A. programme (started in July 2001), a two-year Executive MBA for working professionals and research programmes leading to M.S. and Ph.D. degrees. DoMS also offers TechMBA as a dual degree option for the engineering graduates of IIT Madras. In addition, the department offers the Visionary Leadership in Manufacturing

(VLM) programme and the Postgraduate Diploma for Executives (PGPEX-VLM), jointly with IIM Calcutta and IIT Kanpur.

Over the years of its existence, the department has thoroughly revised its MBA programme curriculum, expanded its research activities, improved industry interaction and worked towards establishing long-term relationships with globally reputed institutions and organisations. The following sections present an outline of the department's work.

Major research areas at the department:

- Applied statistics
- Combinatorial optimisation
- Finance
- Human resource management
- Information systems
- Knowledge management
- Marketing
- Models in supply chain management
- Production and operations management
- Project management
- Quality management
- Strategy and business policy
- Services management
- Technology management

4.11.2. Academic Programmes New courses introduced

S. No.	Course No.	Title
1	MS4710	Digital Economy and Enterprises (for Tech MBA) by Dr. R.K. Amit
2	MS5985	Pricing Decisions and Optimization (for Tech BMA and MBA) by Dr. R. Madhumathi
3	MS5986	Analytics for Marketing Decision Making-AMDM (for MBA) by Dr. Vartika Srivatsan
4	MS5987	Digital Operations and Technology (for MBA, MS and PhD) by Dr. R.K. Amit
5	MS8030	Algorithmic Trading in Financial Markets by Dr. Thenmozhi M.
6	MS7741	Experimental Research Method (ERM) by Dr. Vartika Srivatsan
7	MS6620	Financing Mega Projects (Multilevel course) by Dr. Thillai Rajan

Students on roll as of September 2021 + M.S. and Ph.D. admission in January 2022

Programme	I Year	II Year	III Year	IV Year	V Year and Others	Total
M.B.A.	67	69	--	--	--	136
E.M.B.A	52	48	--	--	--	100

TechMBA	--	--	7	10	--	17
V.L.M.	40	--	--	--	--	40
M.S.	13	4	11	1	--	29
Ph.D.	5	18	21	28	64	136
Total	177	139	39	39	64	458

Students/Scholars who attended conferences/seminars/symposia/workshops abroad or in India

S.No.	Student/Scholar	Roll No.	Conference/Seminar/Symposia/Workshop	Date and Venue	Financial Assistance from
Abroad					
1	Nibu John Thomas	MS16D017	Paper presented in the Academy of Management Conference (AoM) 2021	29 July-4 August 2021, USA -Virtual	Institute
India					
1	Ashwin J Baliga	MS16D003	Participated in the 9th AIM-AMA Sheth Foundation Doctoral Consortium	25-29 June 2021, Virtual	Institute
2	Ashwin J Baliga	MS16D003	Workshop on Structural Equation Modeling Using AMOS	22-25 July 2021, Virtual	Institute
3	Shipli Saxena	MS15D027	Workshop on Structural Equation Modeling Using AMOS	22-25 July 2021, Virtual	Institute
4	Dhandabani S	MS18D201	Internship programme at Sabre Travel Technologies Private Limited	18 October 2021-18 January 2022	Institute
5	Prabhupad Bharadwaj	MS18D012	Internship programme at Sabre Travel Technologies Private Limited	18 October 2021-18 January 2022	Institute

Students/Scholars who won outside prizes and awards

S.No.	Student/Scholar	Roll No.	Prize	Awarded by
Scholars				
1	Nabila Khan	MS17D021	Best Paper Award in Organizational Behaviour; paper titled: Relational facets of employees' voice: an interactive qualitative analysis at the ANZAM Conference	Australian and New Zealand Academy of Management
2	Kishore Thomas John	MS17D020	Third prize included ₹10,000 in cash and e-certificate of recognition and assured publication of case (and Teaching note)	Emerald journal, Management Matters
3	Bhadra K V	MS19D032	Young Scholar Award	Indian Institute of Management Kozhikode

4	Ramya M	MS17D016	Second Best Paper Award	1st International Conference on Management of MSMEs (ICMM-2022) [Virtual]
5	Jasmine Banu	MS17D200	Second Best Paper Award	1st International Conference on Management of MSMEs (ICMM-2022) [Virtual]
6	Vijaya C	MS20D003	Best Paper Award and Best Presenter Award	International conference on Technology Analysis, Fintech and Financial Services (TAFS-2022), 11-13 March 2022
7	Abraham Cyril Issac	MS16D027	Best Paper award (II Runners up)	CERE 2021, 18-20 June, IIM Indore
8	Abhishek Sharma	MS19D003	Finalist of GDN Springer Best Student Paper	Group Decision and Negotiation Conference 2022
9	Bharda K V	MS19D032	Certificate of Merit Award	All India Management Association - India Case Research Centre (AIMA ICRC) Case Writing Conference and Competition, 2022
10	Dhandabani Srinivasan	MS18D032	2021 Ken Wang Scholars Program	Airline Group of the International Federation of Operational Research Societies (AGIFORS)
11	Jasmine Banu	MS17D200	Nominated for Best Paper Award	INDAM Conference 2022 - IIM Rohtak (January 2022)
12	Rohit Jhunjunwala	MS19D002	Nominated for Best Paper Award	INDAM Conference 2022 - IIM Rohtak (January 2022)
MBA				
13	Abhijit Rathod	MS20A001	First in SDG Case Study Challenge: Zero Hunger	National Institute of Technology, Rourkela
14	Abhijit Rathod	MS20A001	Third in Viral Tweets Prediction Challenge	Delhi Technological University (DTU), New Delhi
15	Anushree Farmania and Sanjana Kumar Abhijit Rathod	MS20A005 MS20A052 MS20A001	First in OpVasion - Parivartan'21	DMS, IIT Delhi
16	Abhijit Rathod, Anushree Farmania, Sakshi Singh and Sanjana Kumar	MS20A001 MS20A005 MS20A050 MS20A052	First in Lynx 8.0 - Case Study	Institute of Management, Nirma University (IMNU), Ahmedabad
17	Abhijit Rathod, Anushree Farmania, Sanjana Kumar and Tanya Gupta	MS20A001 MS20A005 MS20A052 MS20A061	Second in Symvoulos 6.0 (AGON-RUSH 2021)	IIM Ranchi
18	Abhijit Rathod, Anushree Farmania, Sanjana Kumar and Tanya Gupta	MS20A001 MS20A005 MS20A052 MS20A061	National Finalist in Phoenix Global National Analytics Case Competition	IIM Ranchi

19	Abhijit Rathod, Anushree Farmania, Sanjana Kumar and Tanya Gupta	MS20A001 MS20A005 MS20A052 MS20A061	Third in Aghaaz: Passion 2021	IMT, Ghaziabad
20	Abhijit Rathod	MS20A001	Top 10 in SDG Case Study Challenge on 'No Poverty'	NIT Rourkela
21	Anushree Farmania , Abhijit Rathod and Sanjana Kumar	MS20A005 MS20A001 MS20A052	First in Elumiere'21 - Deft Theft	Shaheed Sukhdev College of Business Studies (SSCBS), DU
22	Anushree Farmania and Sanjana Kumar	MS20A005 MS20A052	First in QFiesta	Narsee Monjee Institute of Management Studies, Navi Mumbai
23	Anushree Farmania and Sanjana Kumar	MS20A005 MS20A052	Third in To Infinity and Beyond - Crescita 2021	Bharathidasan Institute of Management (BIM), Trichy
24	Anushree Farmania, Haika Basheer and Sanjana Kumar	MS20A005 MS20A022 MS20A052	Third in Marketrix - Chrysalis 2021	Indian Institute of Management, Kozhikode
25	Anushree Farmania, Sanjana Kumar and Warsha Battu	MS20A005 MS20A052 MS20A070	Second in Ecostacy - Dhruva 2021	IIM, Tiruchirappalli (Trichy)
26	Anushree Farmania, Sanjana Kumar and Warsha Battu	MS20A005 MS20A052 MS20A070	Third in GNOSIS'21 Consilium	Xavier School of Management (XLRI), Jamshedpur
27	Atul Sarkar and Mansi Hada	MS20A010 MS20A031	First in Mind Trigger, #Social Case Study	Enactus PGDAV (Eve)
28	Atul Sarkar and Vishakha Goel	MS20A010 MS20A069	12th in Spill The Ink	IIM Nagpur
29	Atul Sarkar	MS20A010	Third in Inquizzard	National Level Online GK Quiz Contest
30	Bomaleshwar Sahu	MS20A011	Third in Meme Fest	BK School of Professional and Management Studies, Ahmedabad
31	Chirag Arora	MS20A015	Third in Mercurius - Chrysalis 2021	LIBA, Chennai
32	Dayabaran C, Dinakaran V	MS20A016 MS20A017	Second in Binge Hunt - croseus'21	E-Cell Miranda House
33	Dipesh Jindal and Haika Basheer	MS20A018 MS20A022	First in Markade-Brandweiser	NMIMS, Indore
34	Godi Yeshaswi, Sanjhal Jain, Tanya Tomar and Naina Kumari	MS20A020 MS20A053 MS20A062 MS20A033	Second in Markade - Marketer's unknown battleground	NMIMS, Indore
35	Haika Basheer	MS20A022	First in Brand storming	Shaheed Rajguru College, University of Delhi

36	Haika Basheer, Anushree Farmania and Sanjana Kumar	MS20A022 MS20A005 MS20A052	Second in MarcWars - Solaris	IIM Udaipur
37	Haika Basheer	MS20A022	Top 10 E-Summit 22, Meme Marketing Challenge	IIT Bombay
38	Hiteshvar Chandramouli, Roshni Ravi, Khushal Pamnani and Dipesh Jindal	MS20A024 MS20A047 MS20A026 MS20A018	Third in Caseopedia: The Case Study Competition, (BVEST 2020)	Bharati Vidyapeeth's College of Engineering (BVCOE), New Delhi
39	Khushal Pamnani, Niharika Choudhury and Warsha Battu	MS20A026 MS20A036 MS20A070	Finalist (Top 8) in The World Bank Ecoserve: Student Entrepreneurship Challenge	IIM Lucknow
40	Mangulucharan Nahak	MS20A028	Second in Diplomat: The Best Manager	SIMSHREE, Mumbai
41	Mangulucharan Nahak	MS20A028	Third in Shaan-e-Hind: The Indian Quiz	Delhi Technological University
42	Mangulucharan Nahak	MS20A028	First in The Last Offer- Bidding Simulation	Deen Dayal Upadhyaya College
43	Mansi Hada and Atul Sarkar	MS20A031 MS20A010	First in Mind Trigger	Enactus PGDAV
44	Mansi Hada and Atul Sarkar	MS20A031 MS20A010	National Finalist in NITIE-P&G Equality Hackathon 2021	National Institute of Industrial Engineering (NITIE), Mumbai
45	Mansi Hada and Thirumavalavan B	MS20A031 MS20A064	Second in Brand-O-Spectra	Narsee Monjee Institute of Management Studies (NMIMS), Navi Mumbai
46	Mansi Hada	MS20A031	Top 10 in SDG Case Study Challenge on No Poverty	NIT Rourkela
47	Naina Kumari and Tanya Tomar	MS20A033 MS20A062	First in Abhivyaakti'21 Strategy & Crisis Management	BITS Pilani
48	Naina Kumari and Tanya Tomar	MS20A033 MS20A062	First in Anukaran 3.0	Xavier Institute of Management, Bhubaneswar
49	Naina Kumari, Tanya Tomar, Sakshi Singh and Sanjhal Jain	MS20A033 MS20A062 MS20A050 MS20A053	Third in Mantra SoMS	NIT Calicut
50	Niharika Choudhury and Sanjana Kumar	MS20A036 MS20A052	First in Here to Parley - Inter- college Debate Competition	Faculty of Management Studies (FMS), Delhi
51	Niharika Choudhury	MS20A036	Second in Pop Roullete	T.A. Pai Management Institute, Manipal
52	Nishtha Saha, Niharika Choudhury and Hiteshvar Chandramouli	MS20A038 MS20A036 MS20A024	First in ECOSTACY: The Case Study Competition	Delhi Technological University
53	Nishtha Saha, Vipin Uniyal and Tarun Nagdev	MS20A038 MS20A068 MS20A063	First in HSBC IB League 2021	HSBC

54	Roshni Ravi and Swetha Chodavarpu	MS20A047 MS20A060	Third in Cinelytics	K J Somaiya Institute of Management, Mumbai
55	Sakshi Singh, Sanjana Kumar, Abhijit Rathod and Anusree Farmania	MS20A050 MS20A052 MS20A001 MS20A005	First in Lynx 8. Case Study	IMNU, Ahmedabad
56	Sanjana Kumar and Anusree Farmania	MS20A052 MS20A005	First in QFiesta-Business Quiz	NMIMS
57	Sanjana Kumar	MS20A052	Third in Conspiracy Triangles: Extempore and Debate	NIT, Raipur
58	Sanjana Kumar, Abhijit Rathod and Anusree Farmania	MS20A052 MS20A001 MS20A005	First in Deft Theft Elumiere'21	SSCBS, Delhi University
59	Sanjana Kumar, Abhijit Rathod and Anusree Farmania	MS20A052 MS20A001 MS20A005	First in OpVasion, Operations Event	DMS, IIT, Delhi
60	Savitri Kaura, Dr. Manasi Gogate and Manjusha Bhujang	MS20A055 MS20A021 MS20A030	Second in Leader's Garage	IIM Nagpur
61	Savitri Kaura, Naina Kumari and Tanya Tomar	MS20A055 MS20A033 MS20A062	First in Samadhan Case Study	JIMS, Kalkaji
62	Savitri Kaura, Tony Goyal and Manjusha A Bhujang	MS20A055 MS20A065 MS20A030	Third in BrandStruck 2021	SJM SOM, IIT Bombay
63	Shreya Jain	MS20A057	Third in National Marketing Management Quiz	DigiDose
64	Shreya Jain	MS20A057	First in Marketing 2.0	Delhi University
65	Swetha C Naina Kumari	MS20A060 MS20A033	Top 15 out of 400 Participants in CaseCon 2020	CASECON 2020 Business Prodigy's
66	Tanya Tomar and Naina Kumari	MS20A062 MS20A033	First in Abhivyakti'21	BITS Pilani
67	Tanya Tomar and Naina Kumari	MS20A062 MS20A033	Third in dECODE - Econvista	LSR College
68	Tanya Tomar, Savitri Kaura and Naina Kumari	MS20A062 MS20A033 MS20A055	First in Samadhan	JIMS, Kalkaji, New Delhi
69	Tarun Nagdev	MS20A063	Second in Fin wiz - A Finance Quiz	Delhi School of Management, Delhi Technological University
70	Thirumavalavan B, Nishant M	MS20A064 MS20A037	Third in The Binge Hunt	Miranda House

71	Akash Lal, Jayanth Harsha, Jegannath U and Yeshwanth D	MS21A001 MS21A026 MS21A074	First in Case Files, Karmaanta	Indian Institute of Management (IIM), Raipur
72	Jagadeesh ES, Sudipta Mitra, Purvesh Nandy	MS21A024 MS21A064 MS21A046	First in Trilogy	Indian Institute of Management (IIM), Lucknow
73	Joe Larsen R, Nithya Sri T and Saurabh K	MS21A028 MS21A067 MS21A059	Second in Ad-o-holic	IMT, Ghaziabad
74	K Nithish Kanna, Aravinthan R and Sugnathan T	MS21A042 MS21A007 MS21A065	First in ConStrat	Indian Institute of Management (IIM) Jammu
75	M Suresh Raju, Sagapriya T and Varun Kumar	MS21A035 MS21A066 MS21A070	Second in Yukti-Chakravyuha	Thiagarajar School of Management
76	Manas Mehta, Samarth Johnson Prasad and Sivam Sharma	MS21A039 MS21A056 MS21A061	Second in Case Analysis Challenge, Drishticone	IMT, Nagpur
77	Prathysha Deepak	MS21A045	First in DU COEUR	Indian Institute of Management (IIM) Kashipur
78	Ruban Kumar and Lubnaah Jaleel, Sanganathan A	MS21A052 MS21A034 MS21A057	First in Trend Analysis and Auctions	Shiv Nadar University
79	Sanjana Anand and S. Sharath Ram	MS21A058 MS21A053	First in Entrepreneurship 4.0, Tangerine Trails	Indian Institute of Management (IIM), Nagpur
80	Sanjana Anand, M Adhi Vishnu and T Nithya Sri	MS21A058 MS21A037 MS21A067	Second in Finquest	Indian Institute of Management (IIM), Nagpur
VLM				
81	Vignesh Anbazhagan, Tanmoy Bera, Vijay Patil, and Sandeep Vucha	MS21V038 MS21V034 MS21V039 MS21V026	Runners Up in the Global EDGE- NEXT	The University of Tokyo

Students/Scholars who won Institute Convocation/Institute Day Prize

S.No.	Student/Scholar	Roll No.	Prizes	Donor
1	Abraham Cyril Issac	MS16D027	Institute Research Award	Institute
2	Ashwin J Baliga	MS16D003	Institute Research Award	Institute
3	Ramachandran V	MS19S009	Institute Research Award	Institute
4	Ramya M	MS17D016	Institute Research Award	Institute
MBA				
5	Sanjana	MS20A052	KV Arunkumar Memorial Prize	Institute
6	Tanya Gupta	MS20A061	Coka Parthasarathy prize	Institute

EMBA				
7	Anshika	MS20W002	Institute merit prize	Institute
VLM				
8	Kishhore K	MS21V051	Director's Merit List - First Place	Institute
9	Simi Hazra	MS21V029	Director's Merit List - Second Place	Institute
10	Sumit Kumar Jha	MS21V031	Director's Merit List - Third Place	Institute
11	Adarsh Rai	MS21V001	Director's Merit List - Fourth Place	Institute

4.11.3. Faculty and Their Activities

Faculty

S.No.	Faculty Member	Major Areas of Specialisation and Research Interests
Professors		
1	Amit R.K.	Game theory, operations research, decision theory, natural resources management
2	Arshinder Kaur	Operations research, supply chain management, total quality management, services operations management
3	Arun Kumar G (Head)	Mergers and acquisitions, corporate valuation and governance, development finance
4	Ganesh L.S. (Retd. on 30 June 2022)	Systems thinking and applications, project management, technology management, data and decision analysis, forecasting
5	Kamalanabhan T.J.	Organisational behaviour, human resource management and training and development
6	Krishna Prasanna P.	Corporate governance, fixed income securities, financial risk management and market microstructure
7	Madhumathi R.	Financial management and accounting, forex research, bank management, capital market studies
8	Prakash Sai L.	Strategic management, IT outsourcing and IT strategic planning business models, technology management, entrepreneurship
9	Rahul Ratnakar Marathe	Simulation, industrial engineering, TQM, operations research, operations management
10	Rajendran C.	Operations management, production and materials management, supply chain management, scheduling
11	Saji Mathew	Management information systems, IT strategy, data mining and business intelligence, IT services and outsourcing, information systems development
12	Srinivasan G.	Advanced operations research, operations management, supply chain management, manufacturing systems management, O.R. applications, services operations management
13	Sundarraaj R. P.	Information systems, supply chain management, e-Business, computational optimization, decision support system
14	Thenmozhi M.	Applied and policy implications-based research in the domain of corporate finance, market microstructure and financial time series modeling
15	Thillai Rajan A.	Venture capital and private, equity project and infrastructure finance, public-private participation, corporate finance
16	Usha Mohan	Quantitative models in operations management, probability and statistics, combinatorial optimisation

Associate Professors		
17	Lata Dyaram	Leadership development, cognition in organisations, organisational development, industrial and organisation psychology
18	Nandan Sudarsanam	Experimentation, data mining, applied statistics, algorithmic and heuristic approaches to problem solving
19	Richa Agrawal	Marketing tools, CRM, consumer behaviour, design thinking
20	Rupashree Baral	Organisational behaviour, human resource management, work-family interface, women in management, leadership and entrepreneurship, social responsibility, progressive HR practices, technology and human interface, behavior at workplace
21	Varisha Rehman	Marketing management and research, advertising and publicity, experiential marketing
22	Vijayalakshmi V.	Positive organizational behavior, cross-cultural management, creativity and innovative capability, Indian wisdom and management, innovative teaching and learning practices, integral holistic education, women empowerment through entrepreneurship
Assistant Professors		
23	Nargis Pervin	Social network mining, recommender systems, mobile app analytics
24	Pinosh Kumar Hajoary	Management of technology and strategic management: industry 4.0, digitalization, innovation management, technology policy
25	Vaibhav Chawla	Mindfulness and sales call reluctance, spirituality in sales organisations, salesperson performance
Ajit Singhvi Chair Professor		
26	C. Bhaktavatsala Rao	Business leadership and corporate governance, corporate strategy, business development and global alliances, manufacturing, R&D and marketing operations, mentoring and coaching
Professor of Practice		
27	R. Sridhar	Manufacturing systems, strategic supply chain management

Workshops organised by faculty members

S. No.	Faculty Member	Title	Period
1	Prof. Krishna Prasanna	MDP on Option Trading Strategies	24-25 April 2021
2	Prof. Nandan Sudarsanam	Artificial Intelligence and Machine Learning in Healthcare	13 May-30 June 2021
3	Prof. Kamalanabhan and Prof. M.Thenmozhi	Skills for retail outlet Management and Profitability for IOCL	4-5 August 2021
4	Prof. Kamalanabhan and Prof. M.Thenmozhi	Skills for retail outlet Management and Profitability for IOCL	17-18 August 2021
5	Prof. Kamalanabhan and Dr. Rupashree Baral	Skill Development Program	11-12 August 2021
6	Prof. Kamalanabhan and Dr. Rupashree Baral	Skill Development Program	25-26 August 2021
7	Prof. Kamalanabhan and Prof. M. Thenmozhi	Skills for retail outlet Management and Profitability	August 2021
8	Dr. Richa Agrawal	Introduction to Design Thinking Workshop- Continuing Education Program for HP Aruba	7-22 October 2021

9	Dr. Richa Agrawal	Design Thinking for Leaders- Continuing Education program for HP Aruba	15 December 2021
10.	Dr. V. Vijayalakshmi and Dr. Rupashree Baral	AICTE-approved Short-term FDP "Research Methods in Organizational Behaviour and Human Resource Management" at IIT Madras (to be conducted online)	21-26 February 2022

Conferences attended by the faculty members in academic institutions and public sector undertakings

S.No.	Faculty Member	Title	Institution	Period
1	Dr Richa Agrawal	Behavioral Science & Policy Association conference 2021	Durham, NC27717 USA (online mode)	6-7 May 2021
2	Dr Lata Dyaram	Disability and other demographic characteristics: an exploratory study, Management Doctoral Colloquium	Vinod Gupta School of Management, IIT Kharagpur (online mode)	February 2021

Visits abroad by faculty

S. No.	Faculty Member	Country Visited	Date	Purpose	Funding from
1	Dr M. Thenmozhi	Canberra, Australia	28 February-24 May 2022	Private affairs	Without Institute Financial Assistance

Awards obtained by faculty

S.No.	Faculty Member	Award	Awarded by	Awarded for	Date of Award
1	Prof. M. Thenmozhi	Best Researcher Award 2020	Prof. (Dr) K.P. Muraleedharan Endowment Trust, University of Calicut	Best Researcher Award 2020	7 February 2022
2	Prof. A Thillai Rajan	Top 10 books for entrepreneurs	YourStory: Year in review 2021	Book Title: Shifting Orbits	2022
3	Prof. Rupashree Baral	Certificate of Excellence	GLOBE 2020	Outstanding contribution as a Country Co-Investigator	2021

Faculty members' participation with other institution under MoU

S.No.	Faculty Member	Participation Details	University/Institution
1	Prof. Rahul Marathe	Member of Tamil Nadu State Citizens budget advisory committee	Tamil Nadu e-Governance Agency
2	Prof. R K Amit	Member, Branding & Communication Board	SAEINDIA
3	Prof. M.Thenmozhi	Member of Faculty advisory board	Department of Industrial Management & Engineering, IIT Kanpur
4	Prof. M.Thenmozhi	Member, Academic Advisory Board	VGSOM, IIT Kharagpur
5	Prof. A. Thillai Rajan	External Member, Board of Studies	Department of Commerce, Central University of Tamil Nadu, Thiruvarur

Distinguished visitors to the department

S.No.	Visitor and Designation	Date of Visit	Purpose of Visit
1	Shri M. Karthik Murugan, Associate Vice President, Marketing Communication and Digital EdgeVerve Systems (an Infosys company)	3 April 2021	Marketing for superior performance in IT Industry
2	Shri Amit Agarwal, Author & SVP, Sales & BD, Alogonomy	6 August 2021	Three definitive principles to become a trusted advisor and create predictable sales
3	Mr G Sunderraman, Former Executive Vice President-Corporate development at Godrej & Boyce Manufacturing Co. Ltd and Core group Directors' Team-VLFM, CII	11 August 2021	Godrej Chotukool: a cooling solution for mass markets and manufacturing industries
4	Shri Deepak Bahri, Founder & CEO, Sentiss Pharma Private Limited	28 August 2021	New business normal during Covid times
5	Mr. Arjun Kumar, Managing Director, Accenture, Australia	28 August 2021	Talk: Consulting in the age of technological and human ingenuity
6	Mr. Sreenath Kizhakkedath, Head of Growth Programs, Mobility Verticals, Uber, San Francisco	12 September 2021	Talk: Building a startup - a practical approach
7	Mr. Sudhir Tiku, Vice President, AP and China (Building Technology division), Bosch-Singapore	3 October 2021	Talk: AI and the future of jobs
8	Shigeko Inaba (Ms) and Mr Matsumoto Sota, Japan International Cooperation Agency (JICA)	12 October 2021	Integration regarding India and Japan collaboration
9	Shri Sridhar Rao, Professor of Practice	26 October 2021	Supplier's risk mitigation and management
10	Dr Ambi Parameswaran, Brand Coach	29 October 2021	Bouncing back from rejection
11	Shri Amb. (Retd.) Vijay Gokhale, Former Foreign Secretary of India	29 October 2021	Evolution of India's foreign policy: responding to the changing world order
12	Dr K. Ganesh, Senior Knowledge Expert & Global Lead, Manufacturing & Supply Chain Centre of Competence, Mckinsey & Co.	29 October 2021	Emerging supply chain trends post-Covid
13	Mr Gaurav Jha, Consultant, Boston Consulting Group	30 October 2021	Career in strategy consulting
14	Mr Rajendran Dandapani, Business Solutions Evangelist, Zoho Corp. & President, Zoho Schools of Learning	31 October 2021	New paradigm for education
15	Mr Praneeth Yendamuri, Partner, Bain & Company, Singapore	31 October 2021	Panel discussion: Transformational agility: the key to resilience under uncertainty
16	Dr. Karthik Ramesh, Vice President, Strategy & Transformation, Emids Technologies	1 November 2021	Transforming healthcare: adoption of agile principles
17	Ms. Benita Bhatia Dua, Chief Executive Officer, Vanilla Skills, Mumbai	10 November 2021	Talk: Leveraging LinkedIn for your career
18	Mr. Ganesh Mani S, Director Operations of Hyundai Motors	19 November 2021	Leadership in times of uncertainty
19	Dr. C. Bhaktavatsala Rao, Ajit Singhvi Chair Professor	20 November 2021	General business and leadership

20	Ms. V. Kavitha Dutt, Joint Managing Director, KCP Limited	28 March 2022	39th Endowment Lecture of IITM and the Employers' Federation of Southern India
21	Prof. Saras D. Sarasvathy, Paul M. Hamaker Professor in Business Administrations at the Darden School of Business, University of Virginia; author, Effectuation: Elements of Entrepreneurial Expertise. Her research interests include strategy, entrepreneurship and ethics.	27 January 2022	Keynote speaker of DoMS Research Symposium 2022
22	Professor Ganesh Janakiraman, Ashbel Smith Professor at the Naveen Jindal School of Management, University of Texas at Dallas	27 January 2022	Keynote speaker of DoMS Research Symposium 2022
23	Mr. M. Srinivasan, Business Awareness Coach & Consultant	4 February 2022	The pathbreaker MBA
24	Mr. Nishanth Chandran, Founder & CEO, Tender Cuts	26 February 2022	Role of supply chain and delivery management in reaching company excellence
25	Shri S. Ramesh Shankar, Chief Joy Officer, Hrishti	20 March 2022	How to be a professional?

4.12 Department of Mathematics

4.12.1 Introduction

The Department of Mathematics was established in 1959 along with the institute. It offers M.Sc. programme in Mathematics, M.Tech. programme in Industrial Mathematics and Scientific Computing

(IMSC), and Ph.D. programme. In addition, the department has taken the responsibility of teaching mathematics courses to B.Tech., M.Tech. (other than IMSC), M.Sc. and Ph.D. students at the institute.

The major research areas of the department are the following:

1. Algebraic Combinatorics
2. Algebraic Geometry
3. Algebraic Topology
4. Applied Probability
5. Approximation Theory
6. Category Theory
7. Combinatorial Optimization
8. Combinatorics
9. Combinatorics of Words
10. Commutative Algebra
11. Complex Analysis
12. Conformal Geometry
13. Contact and Symplectic Topology
14. Convective Heat & Mass Transfer
15. Computational Fluid Dynamics
16. Computational Number Theory
17. Cryptology
18. Differential and Integral Equations
19. Differential Topology
20. Fixed Point Theory
21. Fluid Mechanics
22. Functional Analysis
23. Fractals
24. Game Theory
25. Graph Algorithms
26. Graph Theory
27. Harmonic Analysis
28. Inverse and Ill-Posed Problems
29. Linear Algebra
30. Low-dimensional Topology
31. Mathematical Modeling
32. Mathematical Study of Ferromagnetic Networks
33. Nonlinear Analysis
34. Nonlinear Analysis of Functional Differential Equations
35. Nonlinear Differential Equations
36. Number Theory
37. Operator Algebras
38. Operator Equations
39. Operator Theory
40. Optimization
41. Partial Differential Equations
42. PDE Numerics
43. Solid Mechanics
44. Special Functions
45. Systems and Control Theory
46. Theory of Codes
47. Theory of Computation
48. Theory of Wavelets
49. Time Frequency Analysis
50. Wave Structure Interactions

4.12.2 Academic Programmes

New courses introduced

S. No.	Course No.	Title
1.	MA5520	Bayesian Data Analysis

New lab established

Centre of Excellence for Computational Mathematics & Data Science

Students on roll as of September 2021 + M.S. and Ph.D. admission in January 2022

Programme	I Year	II Year	III Year	IV Year	V Year and Others	Total
M.Sc.	41	31	-	-	-	72
M.Tech.	24	17	-	-	-	41
Ph.D.	11	13	18	17	44	103

Students/Scholars who attended conferences/seminars/symposia/workshops abroad or in India

S.No.	Student/Scholar	Roll No.	Conference/Seminar/Symposia/Workshop	Date and Venue	Financial Assistance from
Abroad					
1.	Koushik Brahma	MA18D002	Toric Topology 2022 in Osaka	23-25 March 2022, Osaka City University, Japan	Online, free
2.	Subhankar Sau	MA17D022	Toric Topology 2022 in Osaka	23-25 March 2022, Osaka City University, Japan	Online, free
3.	Sreethin Sreedharan K	MA16D033	74th Annual Meeting of the APS Division of Fluid Dynamics 2021	21-23 November 2021, Phoenix Convention Center, Phoenix, Arizona	IITM
India					
1.	Supriya Karmakar	MA18D201	National Conference on Numerical Analysis and Applications	6-7 January 2022, virtual mode, Department of Mathematics, National Institute of Technology Puducherry, Karaikal	Self
2.	Sreethin Sreedharan K	MA16D033	National Conference on Numerical Analysis and Applications	6-7 January 2022, National Institute of Technology Puducherry, Karaikal	Self
3.	Sujit Sakham Damase	MA21D007	17th Discussion Meeting in Harmonic Analysis	5-8 January 2022, NISER Bhubaneswar	Self
4.	Jyoti	MA15D206	Symposium on Differential Equations: Analysis, Computation and Applications; presented paper: A meshfree approach to two-dimensional fluid structure interaction of radiofrequency ablation treatment for liver tumors	2-3 December 2021, online symposium, Department of Mathematics, IIT Roorkee	Free
5.	Anand O R	MA20D006	International Conference on Semigroups, Algebras and Operator Theory	28-31 March 2022, online event conducted by Cochin University of Science and Technology	Free
6.	Vinayak Gupta	MA20D016	International Workshop on Algorithms for Cooperative TU Games Using Matrices and Graphs	20-31 December 2021, Manipal, Karnataka	Self

7.	Shubhangi Sikaria	MA16D203	63rd ISI World Statistics Congress; presented paper: Granger causality analysis for functional time series data	11-16 July 2021, virtual, organised by International Statistical Institute	Online, free
8.	Vinay Kumar	MA17D025	Joint Indo-Japanese Smart City Conference 2022	24-25 March 2022, IIT Madras	Online, free
9.	Mohit Kumar	MA15D203	8th International Conference on Mathematics and Computing (ICMC 2022)	6-8 January 2022, Department of Mathematics,	Self
10.	Kamla Kant Mishra	MA16D037	International Conference on Fractional Calculus 2022	18-19 January 2022, School of Mathematics and Statistics, University of Hyderabad	Self
11.	V A Kandappan	MA16D300	Invited talk: Hands-on session on low-rank approximations and	11 March 2022, IIITDM, Kancheepuram	Online, free

Students/Scholars who won outside prizes and awards

S.No.	Student/Scholar	Roll No.	Prize	Prize Awarded by
1.	Ashok Kumar K	MA15D027	Institute Research Award	IITM
2.	Md Mansur Alam	MA14D201	Institute Research Award	IITM

Students/Scholars who won Institute Convocation/Institute Day Prize

S.No.	Student/Scholar	Roll No.	Prizes
1.	Sowmia M	MA19M020	Prof Helmut Neunzert Endowment Prize
2.	Mohit Ram Sharma	MA19C020	Mira Paul Memorial Prize
3.	Shivani Goel	MA16D023	Smt. Lakshmikutty Amma and Shri A Krishnankutty Nair Prize

4.12.3. Faculty and Their Activities

Faculty

Name and Qualifications	Major Areas of Specialisation
Professors	
Dr A.K.B. Chand, Ph.D. (IIT Kanpur)	Fractals, approximation theory and wavelets
Prof. Arindama Singh, Ph.D. (IIT Kanpur)	Logic, numerical analysis
Prof. S. Ponnusamy, Ph.D. (IIT Kanpur)	Complex analysis, function spaces, special functions and conformal geometry
Prof. R. Radha, Ph.D. (IMSc Chennai)	Harmonic analysis, wavelets, time-frequency analysis
Prof. R. Rama, Ph.D. (Anna University)	Formal language and automata theory/molecular computing
Prof. Y.V.S.S. Sanyasiraju, Ph.D. (IIT Madras)	Computational fluid dynamics

Prof. Satyajit Roy, Ph.D. (IISc Bangalore)	Convective heat and mass transfer, computational fluid dynamics
Prof. K.C. Sivakumar, Ph.D. (IIT Madras)	Functional analysis, mathematical programming
Prof. Ch. Srinivasa Rao, Ph.D. (IISc Bangalore)	Non-linear differential equations
Dr S.R. Manam, Ph.D. (IISc Bangalore)	Applied mathematics
Prof. S. Sundar, Ph.D. (IIT Madras)	Computational fluid dynamics, numerical analysis for partial differential equations, mathematical modeling
Prof. M. Thamban Nair, Ph.D. (IIT Bombay)	Applicable functional analysis: spectral approximation, operator equations, inverse and ill-posed problems
Prof. V. Vetrivel, Ph.D. (IIT Madras)	Non-smooth optimization, fixed point theory, complementarity problems
Dr A.V. Jayanthan, Ph.D. (IIT Bombay)	Commutative algebra and algebraic combinatorics
Dr A.J. Shaiju, Ph.D. (IISc, Bangalore)	Game theory, systems and control theory
Dr Kalpana Mahalingam, Ph.D. (University of South Florida, Tampa)	Theory of codes, DNA computing, combinatorics of words
Dr Shruti Dubey, Ph.D. (IIT Kanpur)	Nonlinear analysis of functional differential equations, mathematical study of ferromagnetic systems
Associate Professors	
Dr Kunal Krishna Mukherjee, Ph.D. (Texas, A&M)	Operator algebras
Dr Neelesh S Upadhye, Ph.D. (IIT Bombay)	Probability theory and applications
Dr Sounaka Mishra, Ph.D. (ISI, Kolkata)	Discrete mathematics, approximation algorithm, combinatorial optimization
Dr R. Balaji, Ph.D. (IIT Madras)	Linear algebra and optimization
Dr V. Uma, Ph.D. (IMSC Chennai)	Topology and geometry of toric varieties and related spaces
Dr Arijit Dey, Ph.D.	Algebraic geometry
Dr Santanu Sarkar, Ph.D. (ISI, Kolkata)	Cryptology and computational number theory
Assistant Professors	
Dr P. Aprameyan, Ph.D.	Analysis on symmetric spaces, representations of real Lie groups, geometric quantization
Dr T.V. Anoop, Ph.D. (IMSc Chennai)	Linear and nonlinear partial differential equations, nonlinear functional analysis
Dr Dipramit Majumdar, Ph.D. (Brandeis University)	Algebraic number theory, p-adic aspects of modular forms and Galois representations
Dr N. Narayanan, Ph.D. (IMSC, Chennai)	Graph Theory: graph colouring, structural and extremal graph theory probabilistic combinatorics, discrete mathematics
Dr Priyanka Shukla, Ph.D. (JNCASR, Bangalore)	Fluid Mechanics: hydrodynamic instability; nonlinear dynamics; numerical PDE; granular flows; pattern formation
Dr Ramesh Kasilingam, Ph.D. (IIT Bombay)	Differential and algebraic topology and their interactions with differential geometry
Dr Sarang S. Sane, Ph.D. (TIFR, Bombay)	Commutative algebra, homological algebra, algebraic k-theory, algebraic geometry

Dr Sivaraman Ambikasaran, Ph.D. (Stanford University)	Numerical linear algebra, fast algorithms, scientific computing
Dr Soumen Sarkar, Ph.D. (ISI, Kolkata)	Algebraic topology, geometric topology, differential geometry, convex geometry, K-theory, topological complexity, persistent homology, ring of continuous functions
Dr Sriram Balasubramanian, Ph.D. (University of Florida)	Functional analysis
Dr Suhas Jaykumar Pandit, Ph.D. (ISI, Bangalore)	Geometric group theory and low-dimensional topology
Dr Sumesh K., Ph.D. (ISI, Bangalore)	Operator algebra
Dr T.E. Venkata Balaji, Ph.D. (CMI, Chennai)	Algebraic geometry and commutative algebra
Dr Barun Sarkar	Stochastic PDEs and probability theory
Dr Surjit Kumar	Operator theory
Dr Jayanth Jha	Directional statistics, Bayesian inference, biostatistics, applied statistics
Emeritus Faculty	
Prof. R. Usha, Ph.D. (IIT Madras)	Fluid dynamics

Short-term courses/workshops/seminars/symposia/conferences organised by the faculty members

S.No.	Coordinator(s)	Title	Period
Seminar			
1	Soumen Sarkar	Geometry and Topology Seminar	Occurring twice a month during the semester
Symposium			
1	Ramesh Kasilingam	National Symposium On Mathematics And Its Applications (NSMA 2021)	22 December 2021
Short-Term Course			
1	Jayant Jha and Neelesh S. Upadhye	Data analysis using statistical learning techniques	21-26 March 2022

Short-term courses/workshops/seminars/symposia/conferences/training attended by the faculty members in academic institutions and public sector undertakings

S. No.	Faculty Member	Title	Institution	Period
Workshop				
1.	Soumen Sarkar	Toric Topology 2022 in Osaka	Osaka City University	23-25 March 2022 (online)
Seminars				
1.	Soumen Sarkar	Algebraic Topology Seminar	Princeton University	On Thursdays during the semester
2.	Soumen Sarkar	International Polyhedral Products Seminar	Princeton University	On the first and third Thursdays of each month during the semester

3.	T.E. Venkata Balaji	International Seminar on Geometry 2021	Department of Mathematics, St Berchmans College, Changanassery, Kerala	9 December 2021
4.	T.E. Venkata Balaji	Prof. Vaidyanathaswamy Colloquium RIASM 2022	Ramanujan Institute for Advanced Studies in Mathematics RIASM, University of Madras	23 March 2022
5.	A.J. Shaiju	NSMA	IIT Madras	22 December 2021

Symposium

1.	Soumen Sarkar	Generalized equivariant cohomologies of weighted Grassmann orbifolds, Annual Math Symposium	IISER Bhopal	25-26 March 2022
----	---------------	---	--------------	------------------

Conferences

1.	Dipramit Majumdar	Talk: Ribet's conjecture for non-rational Eisenstein Ideal, Cefipra 2020 conference L- functions and Iwasawa theory	Roscoff, France (online)	19 November 2021
2.	Ponnusamy S	Talk: Coefficient conjectures on univalent harmonic mappings, National Conference on Mathematical Analysis and Applications-2022 (NCMAA-2022)	Shivaji University, Kolhapur	21-22 March 2022
3.	Ponnusamy S	Talk: Planar harmonic mappings, Conference on Mathematical Sciences and Applications in Engineering (CMSAE2021-Virtual Conference)	Hindustan Institute of Technology & Science, Chennai	9-10 December 2021
4.	Ponnusamy S	Bohr's power series inequality and planar harmonic mappings, Third International Conference on Mathematical Techniques and Applications (e-ICMTA 2022)	SRM Institute of Science and Technology, Chennai, India	23-25 March 2022
5.	Ponnusamy S	Some aspects of power series and univalent functions, International Conference on Mathematical Modelling, Applied Analysis and Computational Intelligence (ICMMAACI - 2022)	Gandhigram Rural Institute, Dindigul 624302, India	2-4 March 2022
6.	Vijay, A. K. B. Chand	Positivity preserving rational quartic spline zipper fractal interpolation functions	4th International Conference on Frontiers in Industrial and Applied Mathematics (FIAM-2021: Online), SLIET Longowal, Punjab, India	21-22 December 2022

7.	R. Pasupathi, M.A. Navascues, A.K.B. Chand	Fractal Convolution Bessel Sequences on Rectangle	FIAM-2021: Online, Punjab	21-22 December 2022
8.	Mohit Kumar, N.S. Upadhye, A.K.B. Chand	Distribution of noise in linear recurrent fractal interpolation functions for data sets with α -stable noise	FIAM-2021: Online, Punjab	21-22 December 2022
9.	Vijay, A.K.B. Chand	C1-Rational quadratic trigonometric spline fractal interpolation functions	8th International Conference on Mathematics and Computing (ICMC-2022 Online), Vellore Institute of Technology	6-8 January 2022
10.	R. Pasupathi, A.K.B. Chand, M.A. Navascues	Cyclic multivalued iterated function systems	Vellore Institute of Technology, Vellore	6-8 January 2022
11.	Mohit Kumar, N.S. Upadhye, A.K.B. Chand	Linear recurrent fractal interpolation function for data set with Gaussian noise	Vellore Institute of Technology, Vellore	6-8 January 2022
12.	K. Sumesh	41st International Conference on Quantum Probability & Related Topics (QP41-2021)	UAEU (online)	28 March-1 April 2021
13.	K. Sumesh	Non-commutative algebra, probability and analysis in action	Alfried Krupp Kolleg, Greifswald, Germany (online)	20-25 September 2021
14.	K. Sumesh	42nd International Conference on Quantum Probability, and Infinite Dimensional Analysis (QP-42)	ISI Bangalore (online)	7-20 January 2022

Special lectures delivered by the faculty in other institutions

S. No.	Faculty Member	Topic of Lecture	Institution	Date
1.	Dr Y.V.S.S. Sanyasiraju	Arnoldi based Krylov solvers for unsymmetric systems In the short-term course (STC) on Numerical Linear Algebra in Applications to Data Sciences	IIITDM Kancheepuram	9 March 2022
2.	Dr Y.V.S.S. Sanyasiraju	Some upwind options for the meshless RBF schemes with PDE points, International Conference on Nonlinear Analysis and Optimization	Department of Mathematics, IIT BHU	21-23 December 2021
3.	Dr R. Balaji	Invited talk: Generalised Euclidean distance matrices, International Conference on Linear Algebra and its Applications (ICLAA 2021)	Online	16 December 2021
4.	Arindama Singh	Least squares in Krylov subspace methods for approximating eigenpairs	Ramanujan Institute, University of Madras	5 January 2022
5.	Arindama Singh	Subspace iteration techniques for approximating eigenpairs of large matrices	NIT Puducherry	6 January 2022

6.	Arindama Singh	A new variant of Arnoldi method for approximating eigenpairs of large matrices	IIITDM, Kancheepuram	9 March 2022
7.	Arindama Singh	Is it possible to write a shortest program?	Odisha Mathematical Society	26 March 2022
8.	Barun Sarkar	Connection between SDEs and a class of SPDEs, on Prof. V.K. Balachandran Endowment Lecture 2021-22	Ramanujan Institute for Advanced Study in Mathematics, University of Madras	5 January 2022
9.	Ramesh Kasilingam	Webinar: Fundamental Problem in Mathematics	Justice Basheer Ahmed Sayeed College For Women, Chennai	23 October 2021
10.	Ramesh Kasilingam	One-day webinar in Poincare Conjecture	KPR Institute of Engineering and Technology, Coimbatore, Tamil Nadu	19 June 2021
11.	Ramesh Kasilingam	Workshop on Space, Number and Symmetry	Guru Nanak College, Chennai, Tamil Nadu	19 August 2021
12.	Ramesh Kasilingam	ICTE-ISTE sponsored Refresher Programme on Applied Mathematics (RPAM - 2021)	M. Kumarasamy College of Engineering, Karur, Tamil Nadu	19-24 April 2021
13.	Ramesh Kasilingam	Contractual Panel Interview 2021	KV IIT Chennai	20 October 2021
14.	A.J. Shaiju	Games: Equilibria and beyond	S.B. College, Changanassery	12 February 2022
15.	Soumen Sarkar	Equivariant cohomology of weighted Grassmann orbifolds	IIT Guwahati	23 December 2021
16.	M Thamban Nair	Seminar talk (online)	Krea University, Sricity, AP	25 August 2021
17.	M Thamban Nair	Webinar talk	Department of Mathematics and Statistics, Aquinas College, Edakochi	5 September 2021
18.	M Thamban Nair	Talk at a refresher course for mathematics teachers	University of Calicut, Kerala	20 October 2021
19.	M Thamban Nair	Plenary talk at the International Conference of International Academy of Physical Sciences (CONIAPS XXVII) on Mathematical Analysis and its Applications	Central University of Kerala	26-28 October 2021
20.	M Thamban Nair	Seminar talk (online)	Department of Mathematics, BITS-Pilani, Goa Campus	19 November 2021
21.	M Thamban Nair	Invited talk at the international conference on Recent Advances in Mathematical Sciences and its Applications (RAMSA-2021)	Jaypee Institute of Information Technology, Noida	2-4 December 2021

21.	M Thamban Nair	Participated and chaired session at BRICS Mathematics Conference	IISER Thiruvananthapuram	6-9 December 2021
22.	M Thamban Nair	Talk at a refresher course for mathematics teachers	Kannur University, Kerala	14 December 2021
23.	M Thamban Nair	The first Yuktibhasha Seminar talk (online)	IIT Palakkad	16 February 2022
24.	M Thamban Nair	Invited at the National Conference on Control and Inverse Problems (CIP 2022)	Central University of Tamil Nadu	25-26 February 2022
25.	M Thamban Nair	Vaidyanathaswamy Endowment Lecture	Ramanujan Institute, University of Madras	23 March 2022
26.	T.E. Venkata Balaji	What makes a good definition and why does it matter? --- Invited Online Talk, MathClinic, Youtube	Mathclinic Lecture Series, organised by Prof. Inder K. Rana, IIT Bombay	11 September 2021
27.	T.E. Venkata Balaji	What is Geometry? --- Invited talk, St Berchmans International Seminar on Geometry 2021	Department of Mathematics, St Berchmans College, Changanassery, Kerala	9 December 2021
28.	T. E. Venkata Balaji	Mathematics lectures in higher algebra and complex numbers, Tamil Nadu Government Model Schools Teachers' Training Programme	Initiative of the Chief Minister of Tamil Nadu and State Education Department, Government of Tamil Nadu	Weekends, October 2021-January 2022
29.	T. E. Venkata Balaji	Geometries of the line and the plane, International Mathematics Day Celebrations, Chief Guest Talk	Navi Mumbai Science Foundation and Karmaveer Bhaurao Patil College, Vashi & Navi Mumbai Science Foundation (NMSF)	14 March 2022
30.	T. E. Venkata Balaji	Arrow-Power in Mathematics, Prof. Vaidyanathaswamy Colloquium RIASM 2022	Ramanujan Institute for Advanced Studies in Mathematics (RIASM), University of Madras	23 March 2022
31.	Aprameyan P	Talk: Eigenfunctions, quantum resonances, and scattering poles	In-House Symposium, IISER Bhopal	25 March 2022
32.	A. K. B. Chand	Talk: Fractals and fractal dimensions in deep learning, AICTE-ISTE, Induction Program on Deep Learning-3	BIT Mesra	29 May 2021
33.	A. K. B. Chand	Talk: Non-linearity and fractals in deep learning, AICTE-ISTE, Induction Program on Deep Learning-2	BIT Mesra	5 May 2021
34.	A. K. B. Chand	Talk: Non-linearity and fractals, National Workshop on Data Science and Advanced Computing	VIT-AP	20 March 2022
35.	A. K. B. Chand	Talk: Zipper fractal approximation, International Conference on Analysis and Discrete Mathematics	49th Annual conference of Odisha Mathematical Society	26 March 2022

36.	Shruti Dubey	Solution of time fractional differential equation with delay term, International Conference on Technology, Research, and Innovation for Betterment of Society	IIIT Naya Raipur	17-19 December 2021
37.	Shruti Dubey	Study on Navier-Stokes Equations with time fractional derivative, International Conference on Recent Trends in Applied Sciences Technology and Health (RASTH)	SRM Institute of Science and Technology	3-5 March 2021
38.	Arindama Singh	Lecture on Meta theorems of logic	SRMIST-Ramapuram, Tamil Nadu	16 September 2021
39.	Arindama Singh	Lecture: A linear algebra proof of fundamental theorem of algebra	IIT Palakkad	23 September 2021
40.	Arindama Singh	V.K. Balachandran Endowment Lecture on Krylov subspace methods for approximating eigenpairs	Ramanujan Institute, Chennai	5 January 2022
41.	Arindama Singh	Lecture on Subspace iteration techniques for approximating eigenpairs of large matrices	NIT Puducherry	6 January 2022
42.	Arindama Singh	Invited lecture: Computationally efficient Krylov solvers for eigenvalues in AICTE workshop on Data Sciences	IIITDM, Kancheepuram	9 March 2022
43.	Ponnusamy S	Recent developments around Bohr's Inequality; Plenary Speaker at the American Mathematical Society' session on Complex Analysis and Potential Theory (AMS Western Sectional Meeting)	Texas Tech University, Lubbock, USA	23-24 October 2021
44.	Santanu Sarkar	Subset sum problem	SETS, Chennai	29 March 2022

Honours and awards obtained by faculty

S. No.	Faculty Member	Award	Awarded by	Awarded for	Date of Award
i. Honours					
1.	Dr S. Sundar	Taken over charge as Director, NIT Mizoram			14 March 2022
2.	Dr S. Ponnusamy	Appointed as Director, Center for Functions Theory Problem	Petrozavodsk State University, Russia		1 March 2022
3.	Dr S. Ponnusamy	President, Ramanujan Mathematical Society (elected second term)			
4.	Dr V. Vetrivel	EC Member	DST-SERB	ECT/SRG/ Matrics/NPDF	2022-23
5.	Dr S. Sundar	Member of SIRE selection Committee	DST-SERB		2022-23

6.	Dr S. Ponnusamy	Member, FIST Mathematical Sciences Subject Expert Committee			
----	-----------------	--	--	--	--

ii. Award

1.	Soumen Sarkar	Young Scientist Awards	Academy of Sciences, Chennai	Research in Mathematics	24 March 2022
----	---------------	------------------------	------------------------------------	----------------------------	------------------

Journal editorial boards

S. No.	Faculty Member	Position	Journal Name
1.	S. Sundar	Guest Editor for the January 2022 Special Issue	<i>International Journal of Advances in Engineering Sciences and Applied Mathematics</i>
2.	V. Vetrivel	Editorial Member	<i>The Journal of the Indian Mathematical Society</i>

**4.12.4. Research and Consultancy
Sponsored research projects (ongoing and new)**

S.No.	Title	Period	Funding Agency	Amount (₹ in lakh)	Coordinators
1.	Evolutionary stability in asymmetric games with continuous strategy space	Ended in May 2021	DST	6	A.J. Shaiju
2.	Part 1. Robot motion planning and topological data analysis. Part 2. Algebraic and geometric properties of smooth manifolds and orbifolds	April 2021-March 2024	SEED Grant, IIT Madras	10	Soumen Sarkar
3.	Supported by DST with Grant No. MTR/2019/000561				S R Manam
4.	CFD of Thin film flow on substrates featuring topography MAT1819065DSTXYVSS	September 2018- April 2022	SERB, DST	19.98	Dr Y. V. S. S. Sanyasiraju
5.	Mathematical study of anomalous diffusion processes via partial differential equations	2020-2023	Science and Engineering Research Board (SERB)	6.6	Dr Shruti Dubey
6.	Exploratory research project from IIT Madras, titled, Relating p-Selmer group of elliptic curves and p-class group of number fields	December 2020 - December 2021			Dr Dipramit Majumdar
7.	CP-maps, entanglement breaking quantum channels, CP-H-extendable maps and their multiplicative domains	2021-2024	SERB	6	Dr Sumesh K

Distinguished visitors to the department

S.No.	Visitor and Designation	Date of Visit	Purpose of Visit
1.	Prof. T.E.S. Raghavan, University of Illinois, Chicago, USA	3 March 2022	Delivered talk on LCP, Lemke's algorithm and Matrix games

4.12.5. Other Activities of the Department

Faculty visit

S.No.	Faculty Member	Purpose of Visit	Date and Venue
1.	Soumen Sarkar	Collaborative works	18-27 December 2021, IIT Guwahati
2.	Dr Y. V. S. S. Sanyasiraju	Expert Member in Faculty recruitment, Department of Mathematics	27 February 2022, VIT University, Vellore
3.	Dr Y. V. S. S. Sanyasiraju	Expert member in faculty recruitment, Department of Mathematics	4 March 2022, GITAM University, Hyderabad
4.	Dr Y. V. S. S. Sanyasiraju	Expert member, BoS of Mathematics	14 March 2022, NIT Nagpur
5.	Dr Y. V. S. S. Sanyasiraju	Expert Member in Faculty recruitment for Assistant Professors, Department of Mathematics	22 October 2021, GITAM Deemed to be University (Hyderabad Campus)
6.	Dr Y. V. S. S. Sanyasiraju	Expert Member in Faculty recruitment, Department of Mathematics	8 June 2021, Rajiv Gandhi University of Knowledge Technologies-AP (RK Valley, Nuzvid, Ongole, Srikakulam campuses)
7.	Dr Y. V. S. S. Sanyasiraju	Expert member in faculty recruitment for Professors, Department of Mathematics, GITAM Deemed to be University (for three campuses at Visakhapatnam, Hyderabad and Bengaluru)	2 June 2021
8.	Dr Y. V. S. S. Sanyasiraju	Expert member in faculty recruitment for Associate and Assistant Professors, Department of Mathematics, GITAM Deemed to be University (for three campuses at Visakhapatnam, Hyderabad and Bengaluru)	31 May 2021
9.	S. Sundar	Faculty Selection Committee Member	March 2022, IISc Bangalore
10.	S. Sundar	Governor's nominee for Faculty Promotion	February 2022, University of Madras
11.	S. Sundar	Selection Committee Member	February 2022, IIT Dhanbad
12.	S. Sundar	Selection Committee Member	March 2022, IIT Bhilai
13.	V. Vetrivel	EC Meeting, SRG	28-30 September 2021, DST, New Delhi
14.	V. Vetrivel	Third EC-Physical and Mathematical Sciences, DST-SERB meeting	29-31 March 2022, DST, New Delhi
15.	V. Vetrivel	Mathematics Faculty Selection Committee Meeting	27 February 2022, VIT Vellore
16.	Shruti Dubey	Faculty Selection Committee Meeting	20 February 2022, VIT, Chennai
17.	A.K. B. Chand	Member of faculty selection committee	20 February 2022, VIT-AP, Vijayawada
18.	A.K. B. Chand	Member of faculty selection committee	21 November 2021, VIT-AP, Vijayawada
19.	Dr A. K. B. Chand	Member of External Expert in Board of Studies	2021-2022, Bennet University, Noida

20.	Dr A. K. B. Chand	Member of Research & Recognition Committee	2021-2022, Mukesh Patel School of Technology Management & Engineering, NMIMS University, Mumbai
21.	Ponnusamy S	Delivered an invited talk at the online refresher course in Mathematics; title: On Schwarz Lemma	10-22 January 2022, Human Resource Development Centre (HRDC), Pandit Ravishankar Shukla University (PRSU), Raipur
22.	Ponnusamy S	Inaugural talk on National Mathematics Day 2021; title: Ramanujan on hypergeometric series	22 December 2021, Department of Mathematics, IIT Bhilai
23.	Ponnusamy S	Resource person at the Refresher Course in Mathematics/Operational Research/Statistics and Computer Science; title: Branches of multivalued functions	4-18 October 2021, Centre for Professional Development in Higher Education (CPDHE), UGC-HRDC, University of Delhi
24.	Ponnusamy S	Delivered an invited talk at the National Webinar on Real and Complex Analysis; title: Analytic functions and power series	25 August 2021, PG and Research Department of Mathematics, K.M.G. College of Arts and Science, Gudiyattam
25.	Ponnusamy S	Academic Advisor and Resource Person (Summer Training Programme in Mathematics, STPM-2021)	5-17 April 2021, 24 May-5 June 2021, St Berchmans College, Changanassery, Kottayam, Kerala
26.	Arindama Singh	Syllabus committee meeting	23-24 August 2021, MNIT, Jaipur
27.	Arindama Singh	Faculty Recruitment meeting	15 January 2022, VSSUT, Burla
28.	Arindama Singh	Faculty Recruitment meeting	21 March 2022, IIT Delhi
29.	M Thamban Nair	Subject expert in faculty selection committee meeting	IIT (ISM) Dhanbad, 2 April 2021
30.	M Thamban Nair	Member, Steering committee to formulate the new programme of M.Sc. Mathematics and to prepare syllabi (along with Prof. Sameer Chavan, IIT Kanpur) for courses on (i) Real Analysis, (ii) Complex Analysis, (iii) Measure and Integration, (iv) Functional Analysis, (v) Operator Theory, and (vi) Advanced Complex Analysis	Central University of Andhra Pradesh January-May 2021
31.	M Thamban Nair	Subject expert in faculty selection committee meeting	IIT Delhi 26 April 2021
32.	M Thamban Nair	Subject expert in faculty selection committee related meetings (Stage 1,2,3)	IIT Jammu June 2021
33.	M Thamban Nair	Subject expert to the Selection Committee for promotion as Senior Professor (Academic Level 15)	CUSAT 30 June 2021
34.	M Thamban Nair	Visitor's nominee for HAG scale Selection Committee	IEST Shibpur July 2021
35.	M Thamban Nair	Subject expert for HAG scale Selection Committee	IIT Guwahati August 2021

4.13 Department of Mechanical Engineering

4.13.1. Introduction

The Department of Mechanical Engineering at IIT Madras is as old as the institute itself. Its impact on the institute and on society is easily demonstrated by noting the alignment of the department's evolution with key events and technological advances in the India and elsewhere. Today, the department attracts and features an extraordinary rich diversity and quantity of talented individuals, with nearly 700 undergraduates, 600 graduate students and over 60

faculty members.

In addition to teaching undergraduate and graduate students, the faculty of Mechanical Engineering actively pursues research through graduate students. The current graduate students include nearly 171 Master of Technology students (M.Tech), 150 Master of Science (by research) students (M.S.) and 313 students pursuing their doctoral programme (Ph.D).

4.13.2. Academic Programmes New courses introduced

S. No.	Course No.	Title
1.	MM5250	"Process and Design for Additive Manufacturing" Pre-requisite: Additive Manufacturing

New lab(s) established

In the year 2020, two new research labs were developed at the department.



1. High-speed superabrasive grinding facility for miniature wheels located at Machine Tool Lab, Central Workshop.



2. Next-generation abrasive tool development facility located at MSB 309 (being developed)

Students on roll as of September 2021 + M.S. and Ph.D. admission in January 2022

Programme	I Year	II Year	III Year	IV Year	V Year and Others	Total
B.Tech.	218	207	142	75	8	650
Dual Degree	-	-	2	81	121	204
M.Tech.	85	70	14	2	-	171
M.S.	53	36	42	18	1	150
Ph.D.	42	35	56	49	131	313
Total	398	348	256	225	261	1488

Endowment prize instituted

Mr. Suman Deb (ME13D214) received the Prof R Krishnamurthy Endowment Award for the best PhD work in the area of Surface Engineering, Tribology, Advanced Materials - Composites, Coatings and Treatments.

Student/Scholar who attended conferences/seminars/symposia/workshops abroad or in India

S. No.	Student/Scholar	Roll No.	Conference/Seminar/Symposia/Workshop	Date and Venue	Financial Assistance from
Abroad					
1	Trilochan Prasad Nanda	ME17D003	41st MATADOR International Conference in Manufacturing	15-17 September 2021, University of Manchester, UK (online)	IITM
India					
1	Kali Prasad	ME17D043	ICTMP2021	24-26 November 2021, Chennai	None
2	Chayan Ranjan Das	ME17D001	11th International Conference on Fundamentals and Industrial applications of HIPIMS 2021	14-18 June 2021, Sheffield, UK (online)	Not required (free for scholars)
3	Nikhil Papetla	ME15D428	26th National and 4th International ISHMT-ASTFE Heat and Mass Transfer Conference	17-20 December 2021, IIT Madras, Chennai-600036, Tamil Nadu, India	IITM
4	Swatantra Kumar	ME19S076	13th International Conference on Materials, Processing & Characterization (ICMPC 2022)	22-24 April 2022, Hyderabad, India	IIT Madras

Students/Scholars who won outside prizes and awards

S.No.	Student/Scholar	Roll No.	Prize	Prize Awarded by
1.	Sharad Kumar Yadav	ME18D303	NanoSparX award 2020	India Nano
2.	K. Venkata Krishna, Ph.D. Scholar		Best Paper Award for Geometrical Optimization of Longitudinal Cooling Fins for Metal Hydride Based Hydrogen Storage Reactor	International Conference on Computational Intelligence and Knowledge Economy (ICCIKE-2021)
3.	Aravind Nehrujee	ME17D600	NRDC 2020	National Meritorious Invention Awards
4.	Harikrishnan		Editor's Pick	Physics of Fluids

Students/Scholars who won Institute Convocation/Institute Day Prize

S.No.	Student/Scholar	Roll No.	Prizes	Donor
1.	Kali Prasad	ME17D043	Institute Research Award	Dr Shanthi Pavan (Dean Academic Research)
2.	Raghava Simhan D	ME15D211	Institute Research Award	IITM (awarded in June 2021)
3.	Kabilan B	ME15D200	Institute Research Award	IITM (awarded in June 2021)
4.	Hari M Nair	ME14D200	Institute Research Award	IITM (awarded in June 2021)
5.	Marri Girish Kumar	ME16D408	Institute Research Award	IITM (awarded in June 2021)
6.	Akhil Dass D	ME14D400	Institute Research Award	IITM (awarded in June 2021)
7.	Naveen Kumar Agrawal	ME17S070	Institute Research Award	IITM (awarded in June 2021)

4.13.3. Faculty and Their Activities Faculty

Name and Qualifications	Major Areas of Specialisation
Professors	
Dr Seshadri Sekhar A. (Head)	Rotor dynamics, condition monitoring, tribology
Dr Amitava Ghosh	Active brazing of superabrasives and development of abrasive tools, advanced PVD coating for cutting tool applications, advanced machining in micro/meso/macro domain
Dr Arunn Narasimhan	Heat transfer and fluid flow in biological systems, heat transfer and fluid flow in porous medium, phase change materials, convection heat transfer, fluid mechanics
Dr Arvind Pattamatta	Micro/nano scale energy transport, computational heat transfer, mesoscopic modeling, phase change heat transfer, turbulence modeling
Dr Ashis Kumar Sen	Microfluidics, microsystems, thermo-fluids
Dr Balaji Srinivasan	Fluid dynamics, turbulence in compressible and hypersonic flows, computation of rarefied flows, numerical analysis and high-performance computing
Dr Babu Viswanathan	CFD, high-speed reacting flows, high-performance computing
Dr Chakravarthy Balaji	Fundamental heat transfer, optimisation of thermal systems, inverse problems in heat transfer, satellite meteorology, numerical weather prediction
Dr Chandramouli P.	Nonlinear dynamics, acoustics and noise control
Dr Dhiman Chatterjee	Fluid mechanics, turbomachines, cavitation
Dr Gnanamoorthy R.	Advanced materials and product design, design with polymer and nanocomposites, machine element and special purpose test machine design, damage tolerant and tribo design, behaviour of implant materials, surface engineering
Dr Krishnan Balasubramaniam	Nondestructive evaluation, materials characterisation, online measurements
Dr Krishna Kannan	Continuum mechanics, thermodynamics, constitutive modelling of polymeric materials
Dr Maiya M. P.	Sorption technology, metal hydride systems, hybrid air conditioning
Dr Mallikarjuna J. M.	In-cylinder flow studies in engines, HCCI and GDI engines, alternate fuels
Dr Mani A.	Refrigeration, desalination, solar energy

Dr Prabhu Rajagopal	Ultrasonic waves for nondestructive evaluation, health monitoring and process control, computational methods for modelling elastic wave phenomena
Dr Raghavan V.	Combustion modeling, droplet combustion, laminar flames
Dr Raghu Prakash V.	Fatigue and fracture mechanics, random load life prediction, product design
Dr Raju Sethuraman	Computational solid mechanics, fatigue and fracture of material
Dr Ramesh A.	I.C. engine combustion and emissions, electronic engine management, alternative fuels
Dr Ramesh Babu N.	Manufacturing engineering—advanced machining processes, automation, process modeling, precision machine tool development
Dr Samuel G. L.	Machining, metrology and computer-aided inspection, micromachining
Dr Sarit Kumar Das	Heat exchangers, two-phase flow, nano fluids, jet oscillations, nuclear heat transfer
Dr Sathyan Subbiah	Novel applications of machining, diamond turning, layered material exfoliation, surface texturing
Dr Shaligram Tiwari	Thermocapillary convection, heat and mass transfer
Dr Shamit Bakshi	CFD in I.C. engines, liquid atomisation and spray systems, fuel nozzle modelling
Dr Shankar Krishnapillai	Structural vibrations, design optimisation, system identification
Dr Srinivasa Reddy K.	Renewable energies, solar energy, energy conservation, energy environment, heat transfer in two-phase systems
Dr Srinivasan K.	Jet flow and noise, active and passive flow control, measurement and instrumentation
Dr Sujatha C.	Vehicle dynamics, machinery diagnostics, signal analysis
Dr Sujatha Srinivasan	Biomechanics, mechanisms, assistive devices
Dr Sundararajan T.	Droplet combustion, supersonic reacting jet flows, CFD
Dr Venkatrathnam G.	Refrigerant mixtures, new processes that work with refrigerant mixtures, improvement of performance of vapour compression refrigerators
Associate Professors	
Dr Abhijit Sarkar	Vibration, acoustics, computational methods
Dr Anand Krishnasamy	Low-temperature combustion engines, surrogate modelling of automotive fuels, engine emission reduction through fuel modifications
Dr Anand T.N.C.	CFD simulations of I.C. engines processes, laser-based diagnostics of sprays and combustion
Dr Arunachalam N.	Sustainable manufacturing, diagnostics, prognostics and health management of machine tools, smart machine tools
Dr Hariharan K.	Sheet metal forming, plasticity, fatigue and mechanical behaviour of materials
Dr Manivannan P.V.	Robotics, automotive control system, autonomous vehicles, instrumentation and controls, mechatronic system design, microprocessor
Dr Manoj Pandey	Finite element analysis, dynamics and MEMS
Dr Mayank Mittal	I.C. engines, optical diagnostics, fluid mechanics
Dr Narasimhan Swaminathan	Computational materials science and mechanics, radiation damage in materials, multiscale modeling of complex phenomenon in nuclear and fuel cell materials, finite element method, continuum mechanics, multiscale modeling, radiation damage in materials, computational materials science
Dr Parag Ravindran	Viscoelastic fluids constitutive modeling

Dr Ramkumar Penchaliah	Tribology, engine tribology, coatings, bio-implants, condition monitoring, WTG bearing failures, wear modelling and nano lubrication
Dr Ratna Kumar Annabattula	Finite element analysis, granular mechanics, buckle-driven de-lamination, fusion materials, mechanics of micro-systems
Dr Shyama Prasad Das	interfacial hydrodynamics, heat and mass transfer, turbomachines
Dr Somashekhar S. Hiremath	Micromachining, mechatronic system design, oil hydraulics, system simulation and modeling, finite element method (FEM)
Dr Srikrishna Sahu	Spray dynamics, two-phase flows, optical diagnostics
Dr Sundararajan Natarajan	Computational mechanics, moving boundary problems, composite mechanics
Dr Sushanta Kumar Panigrahi	Friction stir processing and welding, superplasticity, advanced metal forming techniques for producing bulk nanostructured/UFG metals and alloys, thermo-mechanical processing of light-weight structural metallic materials
Dr Varunkumar S.	Thermo-chemical conversion of biomass and coal for energy and fuels and modeling instability in solid rocket motors
Assistant Professors	
Dr Anil Kumar Meena	Casting processes, cast irons and steels manufacturing, microstructure and properties of ADI, dry and near-dry machining process
Dr Kameswararao Anupidi	Fluid mechanics, computational fluid dynamics, bio-fluid dynamics, turbulence modelling
Dr Krithika Narayanaswamy	Thermodynamics, combustion concepts and applications, numerical methods for thermal engineering
Dr Manish Anand	Mechatronics, biomechanics, dynamics
Dr Pallab Sinha Mahapatra	Surface engineering and wettability patterning, open surface microfluidics, multiphase flow, single and multiphase heat transfer
Dr Piyush Shakya	Condition monitoring, fault diagnosis, prognosis
Dr Sateesh Gedupudi	Heat exchangers, two-phase flow, nano fluids, jet oscillations, nuclear heat transfer
Dr Sivasrinivasu Devadula	Abrasive waterjet machining, multi-objective optimization, mathematical modelling, simulation and control of machining processes
Dr Sourav Ratshit	Multibody dynamics, topology optimization, robotics
Dr Vishal V. R. Nandigana	Artificial intelligence, membrane technology, nanofluidics and microfluidics
Dr Vishwanath K.	Turbomachinery noise

Short-term courses/workshops/seminars/symposia/conferences/training attended by the faculty members in academic institutions and public sector undertakings

S.No.	Faculty Member	Title	Institution	Period
Workshop				
1.	Vishal Nandigana	Non-linear electrokinetic flow and ion transport near/in the nanofluidic devices: insights using molecular dynamics simulations	Center for Micro Nano Bio-Fluidics Group	20 January 2022
Conference				
1.	Dr Shyama Prasad Das	26th National and 4th International ISHMT-ASTFE Heat and Mass Transfer Conference	IIT Madras	17-20 December 2021

Special lectures delivered by the faculty in other institutions

S. No.	Faculty Member	Topic of Lecture	Institution	Date
1.	Vishal Nandigana	Artificial intelligence application in combustion modeling	AIAA SciTech Forum 2021-0928 Session: Machine Learning in Thermophysics I	4 January 2021
2.	Dr Amitava Ghosh (coordinated by Prof. G.L. Samuel)	IRIS Webinar on Advanced Laser Materials Processing; topic of lecture delivered: Laser assisted diamond brazing: the trending future	IITM	27 January 2022
3.	Dr Amitava Ghosh (coordinated by Prof. G.L. Samuel)	Laser Applications in Machining and Material Processing; topic of lecture delivered: Emerging trends of laser application in diamond brazing	IITM	12 March 2022
4.	Dr Sujatha C	Prototype to product: a journey in assistive device development	SSN College of Engineering, Chennai	11 June 2021

Honours and awards obtained by faculty

S. No.	Faculty Member	Award	Awarded by	Awarded for	Date of Award
i. Honours					
1.	Vishal Nandigana	Certified Awardee with Team AIDesign	I-NCUBATE Program offered by the Gopalakrishnan-Deshpande Centre for Innovation and Entrepreneurship, Indian Institute of Technology Madras	In the 12th cohort of the I-NCUBATE Program in Entrepreneurship program	6 January 2021
2.	Prof. Krishnan Balasubramanian	Fellow of the National Academia of Sciences	National Academia of Sciences		
3.	Prof. Prabhu Rajagopal	National Swarnajayanti Fellowship Award			
4.	Prof. Raghu Prakash	Senior Vice-President	Indian Structural Integrity Society		
5.	Prof. Ashis Kumar Sen	Board member	Ultrasonic Standing Wave Network, now named as the Acoustofluidics Society		2021
6.	Prof. Sujatha Srinivasan	50 Inspirational Women in STEM Education	STEM education, CII		2021
7.	Prof. N. Ramesh Babu	Honorary Professor	College of Engineering, Swansea University		1 March 2021
8.	Prof. K Srinivas Reddy	Honorary Professor	University of Exeter, UK		7 October 2021

9.	Dr Manoj Pandey	Unlocking idea proposal	LAM Foundation's Unlocking Idea Proposal	Noncontact wafer handling	2021
----	-----------------	-------------------------	--	---------------------------	------

ii. Awards

1.	Prof. G. Venkatarathnam	Srimathi Marti Annapurna Gurunath Award for Excellence in Teaching		Excellence in Teaching	
2.	Dr N. Arunachalam's team	Winner for Dare to Dream 2.0		Diamond-based MEMS acoustic vector sensor	October 2021
3.	Prof. Sujatha Srinivasan	Best Assistive Technology Initiative among Educational Institutes	R2D2, the TTK Centre for Rehabilitation Research and Device Development	Enablers' Category at the AssisTech Foundation Awards	2021
4.	The Most Innovative Institute of the Year	CII Industrial Innovation Awards	Arise standing wheelchair	2021	

Journal editorial boards

S.No.	Faculty Member	Position	Journal Name
1.	Dr Anand T N C	Associate Editor	<i>Sadhana - Academy Proceedings in Engineering Sciences</i>
2.	Dr Shyama Prasad	Guest Editor	<i>International Journal of Energy for a Clean Environment</i>
3.	Dr C. Balaji	Editor	<i>Thermal System Design and Optimization (2nd Edition)</i> , Springer International, Switzerland
4.		Editor	The international edition of the book, <i>Essentials of Radiation Heat Transfer</i> , Springer International, Switzerland
5.		Author	கற்பித்தல் ஆனந்தம் (Tamil edition of <i>The Joy of Teaching</i>) and the same has been published by Ane Books Private Limited
6.		Editor-in-Chief	<i>International Journal of Thermal Sciences</i>
7.	Dr V. Raghavan	Editor	<i>Mechanisms of Fire - Chemistry and Physical Aspects</i> (jointly with Prof. Ali S. Rangwala from Department of Fire Protection Engineering, WPI USA). This book is published by Ane Books.
8.	Sivasrinivasu Devadula	Guest Editor	<i>Advances in Materials and Processing Technologies</i>
9.		Review Editor	<i>Precision Engineering</i> , a specialty section of <i>Frontiers in Manufacturing Technology</i>
10.	Prof. A. Seshadri Sekhar	Associate Editor	<i>Journal of Vibration Engineering & Technologies</i>

4.13.4. Design and Development Activities

- I. In-house custom-designed and fabricated vertical sheet metal fixture with 1.5m x 1m sheet holding area; cost - ₹4.95 lakh.
- II. Brief and specific details of process/instruments/equipment/software designed and developed: AI design package, AI Soft for engineering applications' completion of software package for commercial sales and businesses
- III. Abrasive particle micro-manipulator set-up: A customised set-up has been developed for the automatic coordinate-controlled positioning of micro-abrasives in developing highly precise advanced abrasive tools. The set-up has two linear stages and a rotary stage fitted with two Panasonic servo motors and an HIWIN torque motor. PLC controlled by advanced programming software is employed for the efficient positioning of the stages.

New facilities added or major equipment procured

S.No.	Equipment	Value (₹ in lakh)
1.	KALPAK Universal Testing Machine - 30kN	6
2.	FRONIUS DC Power Source - 900Amps	25
3.	2 ABB Industrial Robots IRB7600 + 2 SCHUNK Force/Torque sensors FT Omega 191	112
4.	45 MG Ultrasonic thickness gauge OLYMPUS	2.87
5.	Induction furnace for gas-atomization system	45
6.	Thermal imaging camera with microscopic lens	20
7.	Confocal sensor for film thickness measurement	10
8.	High-speed customized grinding test rig	31.4
9.	Abrasive particle micro-manipulator set-up	11.6
10.	Small footprint machine tool	7



Universal testing machine with DC power source for electrical-assisted uniaxial deformation.



Industrial robot along with vertical sheet metal fixture in the middle

Patents filed

S.No.	Faculty Member	Topic of Patent
1.	Dr Sujatha C	Modular and portable plug-and-train robot for providing hand rehabilitation, Indian Patent Application no: 202141022805, filed 21 May 2021 [with Aravind Nehrujee and Sivakumar Balasubramanian (CMC Vellore)]
2.	Dr Vishal Nandigana	System and method for interpreting real-data signals into speech signals
3.		Machine learning, deep learning and artificial intelligence for physical transport phenomenon in thermal management
4.	Dr Amitava Ghosh	System and method for developing uni-layer brazed grinding wheels by placing grit in a pre-defined array, PCT filing completed

Patents awarded

S.No.	Faculty Member	Topic of Patent
1.	Dr Sujatha C	Indian Patent No. 376689 (granted September 20, 2021): Easy-to-use portable standing wheelchair with safety feature and for outdoor use (Vivek Sarda, Swostik Dash and Sujatha Srinivasan); Indian Patent Application No. 201741019125, filed 31 May 2017
2.		Indian Patent No. 368005 (granted May 30, 2021): Hybrid manual electric wheelchair (Sripriya Kalidoss, Karthikeyan SD, Vivek Sarda and Sujatha Srinivasan), Indian patent application no.1067/CHE/2015, filed 5 March 2015
3.	Dr Anand T N C, Dr Saransh Jain	Mixture preparation unit for port fuel injected engines
4.	Dr Pratyush Garg, Dr Srikanth Vedantam, Dr Anand T N C	Mechanism and methods for controlling lift and timing of engine valves using an inclined profile on the rocker arm

5.	Dr K Srinivas Reddy	A solar photovoltaic panel with heat recovery jacket; granted by the Indian Patent Office on 20 May 2021
6.	Dr Prakash Maiya	Personal breath filter cooler for protection and comfort, 202141061798, 30 December 2021

4.13.5. Research and Consultancy Sponsored research projects (ongoing and new)

S. No.	Title	Period	Funding Agency	Amount (₹ in lakh)	Coordinators
1.	Electroplastic deformation for enhanced formability	2020-2023	Science and Engineering Research Board (SERB), Department of Science and Technology (DST) India	55.81	Dr K Hariharan, Dr Sushanta K Panigrahi and Dr Murugaiyan Amirthalingam
2.	3D Forming of sheet metal for industrial applications	2019-ongoing	1) DCCAI, Department of Heavy Industries (DHI), Ministry of Heavy Industries and Public Enterprises 2) Industry partner - Mahindra and Mahindra	137.5 (100 - DHI, 37.5 - Mahindra and Mahindra)	PI: Dr K Hariharan; Co-PI: Dr Sushanta K Panigrahi; Industry Co, PI: Achyut Deshmukh, Mahindra and Mahindra
3.	Enhancing the accuracy of roboforming through prediction and compensation of elastic behaviour using artificial intelligence techniques	2021-2024	1) DST, India 2) Government of India 3) Russian Science Foundation (RSF)	181.4	India PI: Dr K Hariharan; Co-PI: Dr Saurav Rakshit, Dr Anupam Agarawal (IIT Ropar), Dr Kaushik Bandopadhyay (IIT Bhilai) Russia PI: Dr Alexander Klimchik; Co-PI: Dr Sergei Savin, Dr Alexander Malotelov, Dr Ribi Abraham Boby, Dr Ramil Khusainov, Dr Alena Sidorova, Mr. Dimitry Popov, Prof. Anatol Pashkevich
4.	Thermo-fluid dynamic measurement of evaporating film on a heated surface	Three years	SERB	60.6	Dr Shamit Bakshi
5.	Gas-atomization system for producing steel powders	Three years	IMPRINT-2, SERB	156	Dr Shamit Bakshi, Dr Anand TNC

6.	Fundamental study of organic solvent transport in nanochannels for energy and environment applications	2019-2022	Ministry of Education, STARS Grant	98.92	PI: Vishal Nandigana
7.	Fundamental study of polar liquids inside slit-like nanochannels	2021-2024	SERB CRG Exponential Technology Grant	70.38	PI: Vishal Nandigana
8.	Analyses of grinding performance and ground surface integrity in high MRR precision grinding by indigenously developed brazed diamond wheels having patterned grit distribution	16 May 2019-to date	SERB	50.1	Dr Amitava Ghosh
9.	Advanced Laser Material Processing (CoE)	Two years	Under institute of Eminence scheme by Ministry of Education	354.8	Dr Amitava Ghosh
10.	Development of new generation grinding tools and advanced grinding applications	17 January 2022-17 June 2023	Sponsored (internal)	50	
11.	Study of chronic failure modes in off-hand rigid disc grinding	1 January 2022-30 June 2024	SGRI, India	13.51	
12.	Center of Excellence (CoE) in Extra-Terrestrial Manufacturing	2021	Ministry of Education, India	30	Prof. Sathyan Subbaiah, Prof. Sivasrinivasu Devadula, Prof. Ramesh Babu, Prof. Murugaiyan
13.	Demonstration of multi-WAP results leading to novel, validated multiplexed, label-free fiberoptic biosensor array system for waterborne pathogen detection	2021	Indo-German Science & Technology Centre (IGSTC), Department of Science and Technology, Government of India	10	Prof. Raghavendra Sai, Prof. Sivasrinivasu Devadula

14.	Development of an IIoT-enabled actively damped boring bar to mitigate chatter in machining of aerospace alloys	2021	Department of Science and Technology, India	30	Prof. Sivasrinivasu Devadula, Prof Mohit Law
15.	Industrial Internet of Things (IIoT) enabled, thermally induced drift compensation module for milling machine tool	2021	Department of Science and Technology, India	30	Prof. Sivasrinivasu Devadula, Prof N Ramesh Babu, Prof G Venkataratnam
16.	Cyber physical system for a machine tool spindle with variable preload technology	2021	Department of Science and Technology, India	30	Prof. Sivasrinivasu Devadula, Prof. N Ramesh Babu
17.	Support for Sustaining Research (SSR)	August 2020-June 2022	Support for Sustaining Research (SSR)	6.3	Dr Prakash Maiya M
18.	Desiccant solar still	March 2019-March 2023	Aero Nero Solutions Private Limited	15	
19.	Residential Building Energy Demand Reduction in India (RESIDE)	April 2019-December 2022	Department of Science & Technology	10.9	
20.	Performance enhancement of CO ₂ refrigeration system with thermal energy storage (TES) for Indian Dairy Industry (DAIRY-TES)	May 2019-March 2022	Scheme for Promotion of Academic and Research Collaboration	48.9	
21.	Desiccant solar still	December 2018-December 2021	Impacting Research Innovation and Technology - IMPRINT	46.6	
22.	DST-NFTDC Centre for Materials & Energy Storage Platforms - H2	February 2019-February 2024	Department of Science & Technology	136	

Industrial consultancy projects (ongoing and new)

S. No.	Faculty Member	Title	Industry	Amount (₹ in lakh)
1.	Dr Prakash Maiya M	Performance testing and design vetting of air conditioning systems	Common Code	10
2.		Peer review for MEP design for Tamil Nadu Commerce Hub at Anna Salai, Nandanam, Chennai	Tamil Nadu Infrastructure Fund Management Corporation Limited	30
3.		Development of tools to assess thermal comfort and energy savings in a passenger vehicle cabin	Saint-Gobain India Private Limited (Research & Development)	48.2
4.		Future Refrigeration India: INDEE+	Norwegian University of Science and Technology (NTNU)	92.9
5.		Energy-efficient and environmentally friendly refrigeration and air conditioning for supermarkets in India - INDEE	Norwegian University of Science and Technology (NTNU)	43.8
6.		Third-party proof checking of MEPF design/drawings for the construction of LIC Investment Building at Kolkata	L&T Limited, Construction Buildings and Factories	37

RBIC projects (ongoing and new)

S. No.	Faculty Member	Title	Industry	Amount (₹ in lakh)
1.	Dr Amitava Ghosh	Micro-Tool grinding	A Chennai-based MSME	9.34

4.13.6. Other Activities of the Department**Faculty visit**

S.No.	Faculty Member	Purpose of Visit	Date and Venue
1.	Dr Sujatha C	Invited Speaker at the National Technology Day Celebrations 2021	14 May 2021; Kerala State Council for Science, Technology, and Environment
2.		Invited Speaker at the 4th International Conference on Clinical Spine and Orthopedic Biomechanics	18 April 2021; CSOB

4.14 Department of Metallurgical and Materials Engineering

4.14.1 Introduction

One of the oldest departments of IIT Madras, the Department of Metallurgical and Materials Engineering (MME) was established in 1959 as the Department of Metallurgy. It was renamed as Department of Metallurgical and Materials Engineering in 2003.

The department is actively engaged in research, education and industrial consultancy. Its teaching, research and consultancy activities cover a broad spectrum, ranging from conventional metallurgy to frontiers of materials science and engineering. The department is respected for its strong linkages with industry and expertise in industrial metallurgy. Over the

years, it has hosted excellent research infrastructure in the broad areas of material science and engineering, such as materials processing (forming, joining, casting, particulate processing and nanostructured materials), characterisation (X-ray diffraction, electron microscopy and thermal analysis), mechanical testing, corrosion engineering, surface engineering, computational materials science and electronic materials. The department continues to strive for excellence and realising its vision of becoming a pioneering department in the areas of materials science and engineering, while consolidating its strength in traditional areas of metallurgical engineering.

4.14.2. Academic Programmes

The department offers B.Tech., M.Tech., M.S. and Ph.D. programmes.

Students on roll as of September 2021 + M.S. and Ph.D. admission in January 2022

Programme	Year I	Year II	Year III	Year IV	Year V and Others	Total
B.Tech.	70	66	32	25	7	200
Dual Degree	-	-	19	21	20	60
M.Tech.	28	19	2	-	1	50
M.S.	12	12	8	2	1	35
Ph.D.	28	23	16	39	63	169
Total	138	120	77	87	92	514

Students/Scholars who attended conferences/seminars/workshops/symposia abroad/India

S. No.	Student/Scholar	Roll No.	Conference/Seminar/Symposia/Workshop	Date and Venue
1	S S Lokeash Vendra	MM16D017	Oral presentation, 2nd Edition of International Conference of Materials Science and Engineering	28-30 March 2022 (online)
1	Jag Parvesh Dahiya	MM19D022	IIT Madras AM Research Group - University of Louisville Virtual Research Symposium	8-9 April 2022 (online)
2	Mainak Saha	MM18D704	PM22 (Powder Metallurgy Association of India) conference	18-20 April 2022 (online)

Students/Scholars who won outside prizes and awards

S.No.	Student/Scholar	Roll No.	Prize	Awarded by
1	Shivam Kumar Dwivedi, Abhishek M	MM20S015, MM19D751	3rd Place Winner in the NanoArtography 2021 Competition	Purdue School of Engineering and Technology, IUPUI, USA

2	Shivam Kumar Dwivedi	MM20S015	Junior Research Fellowship	RWTH Aachen-IIT Madras collaborative programme
3	Ankit Bansal	MM21S007	Visiting Students Program (VSP) in Physics	Harish Chandra Research Institute, Allahabad
4	Dr Nitheesh M. Nair	MM16D300	National Award for Research Excellence 2021 in Nano-Innovation for his Ph.D. thesis work	INVAS

Students/Scholars who won Institute Convocation/Institute Day Prize

S.No.	Student/Scholar	Roll No.	Prize
1	Lalith Kumar	MM15D404	Institute Research Award for 2021-2022

4.14.3. Faculty and Their Activities

Faculty

Name and Qualifications	Major Areas of Specialisation
Professors	
N.V. Ravi Kumar, Ph.D. (MPI-Stuttgart and University of Stuttgart, Germany) (Head)	Processing and characterisation of precursor derived ceramics, atomistic design/molecular design/microstructure design for the development of high-performance ceramics, investigation of thermal and mechanical properties and correlation with structure
M. Balasubramanian, Ph.D. (IIT Madras)	Advanced ceramics and composites, nanocomposites processing, materials characterisation
S.S. Bhattacharya, Ph.D. (IIT Madras)	Nanocrystalline materials—synthesis, consolidation, characterisation and property evaluation, superplasticity of materials (analytical and experimental), superplastic forming, advanced materials testing
S. Ganesh Sundara Raman, Ph.D. (IIT Madras)	Fatigue and fracture of metallic materials and their weldments, fretting fatigue, fretting wear, high-temperature deformation, coatings, thermal spray processing, surface engineering
K.C. Hari Kumar, Ph.D. (IIT Delhi)	Computational thermodynamics and kinetics, ab initio calculations of thermochemical and thermophysical properties
M. Kamaraj, Ph.D. (IIT Madras)	High-temperature deformation studies on steels/super alloys, hot-corrosion studies, surface technology, development of wear surfacing materials, tribological studies on weld deposits/coatings/composites, failure analysis
B.S. Murty, Ph.D. (IISc, Bengaluru) (On lien - currently at IIT Hyderabad)	Nanocrystalline materials, bulk metallic glasses, high-entropy alloys, composites, phase transformations, electron microscopy, atom probe tomography
G. Phanikumar, Ph.D. (IISc, Bengaluru)	Solidification using electromagnetic levitation and melt spinning, transport phenomena in manufacturing processes, microstructure simulation and characterisation
Prathap Haridoss, Ph.D. (University of Wisconsin-Madison, USA)	Production and characterisation of carbon nanotubes, synthesis of CdS nanocrystals, CO-tolerant PEM fuel cell catalysts
Ranjit Bauri, Ph.D. (IISc, Bengaluru)	Metal matrix composites, aluminium alloys, solid oxide fuel cells
V. Sampath, Ph.D. (IISc, Bengaluru)	Shape memory alloys/smart materials, composite materials, powder metallurgy, structure-property correlations in materials
T.S. Sampath Kumar, Ph.D. (IISc, Bengaluru)	Nanostructured biomaterials, antimicrobial ceramics and delivery systems, value-added biomaterials from natural wastes
S. Sankaran, Ph.D. (IIT Kanpur)	Mechanical behaviour of materials, electron microscopy, structure-property correlations

Somnath Bhattacharyya, Ph.D. (MPI-Stuttgart and University of Stuttgart, Germany)	Studying correlation of the structure and chemistry of materials at atomic scale with physical properties using transmission electron microscopy, development of new methodology related to TEM/STEM to study materials, studying nano-bio conjugation using electron probe
V. Subramanya Sarma, Ph.D. (IIT Madras)	Materials processing, development, characterisation and microstructure, mechanical property correlations in engineering materials
Uday Chakkingal, Ph.D. (Rensselaer Polytechnic Institute, USA)	Metal forming and material processing, severe plastic deformation processes, aluminium alloys, sheet metal forming
Associate Professors	
Ajay Kumar Shukla, Ph.D. (IIT Kanpur)	Process modeling, control and optimisation of iron and steel making, computational thermodynamics and its application to high-temperature metallurgical processes, heat and mass transfer
Anand K. Kanjarla, Ph.D. (Katholieke Universiteit Leuven Belgium)	Microstructural approach to mechanics of materials, finite element method and fast Fourier transform approach to crystal plasticity (CPFEM and CPFEM), plastic anisotropy and crystallographic texture, microstructure evolution in irradiated systems
Lakshman Neelakantan, Ph.D. (MPIE Dusseldorf and RUB, Bochum, Germany)	Corrosion characteristics, smart coating for corrosion protection, electro-dissolution, planarisation and deposition
Manas Mukherjee, Ph.D. (Technical University Berlin, Germany)	Metal foam production and characterisation, physics of foaming, X-ray tomography, solidification
K. Ravi Sankar, Ph.D. (IISc, Bengaluru)	High-temperature deformation, super plasticity, nanocrystalline materials, size effects in plastic deformation
Parasuraman Swaminathan, Ph.D. (University of Illinois, Urbana-Champaign, USA)	Printed electronics, vapour-deposited thin films and nanoparticles, optical and electrical properties of doped metal oxides, photovoltaics
Srinivasa Rao Bakshi, Ph.D. (Florida International University, Miami, USA)	Thermal spraying, carbon nanotube-reinforced composites, microstructure property correlations at different length scales, nuclear materials
Sabita Sarkar, Ph.D. (IISc, Bengaluru)	Process modelling/design of metallurgical and chemical processes, modeling and simulation of flows through packed beds, fluidised beds, heat and mass transfer, granular flows, multi-phase flows, reacting flows
Tiju Thomas, Ph.D. (Cornell University, USA)	Energy materials, environmental remediation materials [nitrides, oxynitrides, oxides (in nano, meso and bulk forms)], photofunctional materials (for solar cells, photocatalytic applications), optical materials and devices, surfaces, interfaces and transformation of nanostructures, green approaches to functional nanomaterials
Assistant Professors	
Murugaiyan Amirthalingam, Ph.D. (Delft University of Technology, Netherlands)	Welding metallurgy, welding processes development, steels product development, in situ 3D synchrotron X-ray diffraction and additive manufacturing
Sreeram K. Kalpathy, Ph.D. (University of Minnesota, USA)	Soft matter: colloid and polymer science, interfacial fluid mechanics, physical chemistry of surfaces, coating and printing methods
Satyesh Kumar Yadav, Ph.D. (University of Connecticut, USA)	Physics and chemistry of materials from first-principles electronic structure modelling, first-principles thermodynamics, modeling of materials using quantum mechanics derived potentials, understanding structure, property, and processing relation of materials

K.G. Pradeep, Ph.D. (MPIE-Düsseldorf and RWTH Aachen University, Germany)	Combinatorial alloy design, atom probe tomography and field ion microscopy, magnetic materials, thin films and hard coatings, correlative microscopy, amorphous and nanocrystalline materials mechanical behaviour of materials
Adjunct Faculty	
R. Gopalan, Ph.D. (IIT Madras), Associate Director and Head, Centre for Automotive Energy Materials, ARCI, Chennai	Magnetic materials, thermo-electric materials, fuel cells
Raju Ramanujan, Ph.D. (CMU, USA), Professor, NTU, Singapore	Nanofunctional materials
T. Venugopalan, Ph.D. (NIT, Rourkela)	R&D in steel technology
M. Sundararaman, Ph.D. (University of Mumbai)	Phase transformation and structure property correlation in metallic materials, ordered-disordered transformation under equilibrium and non-equilibrium conditions, micromechanics of plasticity, materials characterisation, physical metallurgy of super alloys, defect analysis using microscopy

Short-term courses/workshops/seminars/symposia/conferences organised by faculty members

S.No.	Coordinator	Title	Period
Workshops			
1	Prof. K. C. Hari Kumar	Thermo-Calc Hands-on Training Course (10 hours of training sessions, 50 participants), organised by Department of Metallurgical & Materials Engineering, IIT Madras, in collaboration with ASM International, Chennai Chapter	24-28 January 2022
2	Prof. K. C. Hari Kumar	Thermo-Calc Hands-on Training Course (10 hours of training sessions, 30 participants), organised by Department of Metallurgical & Materials Engineering, IIT Madras, in collaboration with ASM International, Chennai Chapter	15-19 March 2022
3	Prof. Uday Chakkingal	"An overview of the tube hydroforming process" at Workshop on Engineered tubes for automobile industry organised by International Tube Association - India Chapter (online)	20 May 2022
Short-term courses			
1	Prof. K.C. Hari Kumar	Tata Steel, Jamshedpur, Thermo-Calc and Tools (50 hours of lecture, around 25 participants), done under CCE	February-July 2022
2	Prof. K. Ravi Sankar and Dr Sreeram K. Kalpathy, MME (organisers)	"Science and Magic Workshop" by Prof. Anil Kumar, Department of Chemistry, IIT Bombay	17 May 2022

Special lectures delivered by the faculty in other institutions

S. No.	Faculty	Topic of Lecture	Institution	Date
1.	Prof. Lakshman Neelakantan	Controlled corrosion: a method to synthesize nanomaterials for various functional applications	Online, PSGR Krishnammal College for Women, Coimbatore	16-18 February 2022
2.	Prof. Lakshman Neelakantan	Corrosion principles and corrosion prevention	Online, IIT Indore	24-26 February 2022
3.	Prof. Sampath V	Smart materials	Online, NIT Nagaland	22 February 2022
4.	Prof. Sampath V	Piezoelectric materials	Online, NIT Nagaland	22 February 2022
5.	Prof. Sampath V	Shape memory alloys	Online, NIT Nagaland	23 February 2022
6.	Prof. Sampath V	Robotic applications of shape memory alloys	Online, NIT Nagaland	23 February 2022
7.	Prof. Sampath V	Magnetorheological fluids	Online Andhra Loyola College, Vijayawada	26 February 2022
8.	Prof. K.C. Harikumar	Thermo-Calc hands-on training session	Online, for ASM Chennai Chapter	15-29 March 2022

Honours and awards obtained by faculty

S. No.	Faculty Member	Award/Honour	Awarded by	Awarded for	Date of Award
i. Awards					
1	Dr Sreeram K. Kalpathy	Young Faculty Recognition Award	IIT Madras	Excellence in Teaching and Research (2021)	2020-2021
2	Prof. Tiju Thomas	Dr M. Anandakrishnan Prize (Young Scientist Award)	Academy of Sciences, Chennai	Engineering and Technology category	23 March 2022
3	Prof. B.S. Murty	National Metallurgist Award	Ministry of Steel, Government of India	-	20 April 2022
ii. Honours					
1	Prof. Ravi Kumar N. V.	Plenary Talk at 1st International Conference on Innovative Materials in Extreme Conditions (IMEC2022)	Belgrade, Serbia	-	22-23 March 2022
2	Dr Murugaiyan Amirthalingam	Member, Technical Management Board	International Institute of Welding	Contribution to Welding	2020-2023
3	Dr Murugaiyan Amirthalingam	Chairman, Technical Committee	Indian Institute of Welding	Contribution to Welding	2021-2022
4	Dr Murugaiyan Amirthalingam	Central Council Member	Indian Institute of Welding	Contribution to Welding	2021-2022

Fellowships of academies and professional societies

S.No.	Faculty Member	Year of Admission
INAE		
1	Dr B.S. Murty	2007
INSA		
1	Dr B.S. Murty	2013
Others		
FASM (Fellow of ASM International, USA)	Dr B.S. Murty Dr M. Kamaraj	2010 2018
FIWS (Fellow of Indian Welding Society)	Dr M. Kamaraj	2018
FIE (Fellow of Institution of Engineers)	Dr M. Kamaraj	
FIMSA (Fellow of International Medical Sciences Academy)	Dr T.S. Sampath Kumar	2007
FBOA (Fellow of Society of Biomaterials and Artificial Organs)	Dr T.S. Sampath Kumar	2011
FTWAS (Fellow of The World Academy of Sciences)	Dr B.S. Murty	2018
FAPAS (Fellow of Andhra Pradesh Academy of Sciences)	Dr B.S. Murty	2016
FIIM (Fellow of Indian Institute of Metals)	Dr B.S. Murty Dr M. Kamaraj	2015 2019
FAPAM (Fellow of Asia Pacific Academy of Materials)	Dr B.S. Murty	2013
FIAS (Fellow of Indian Academy of Sciences)	Dr B.S. Murty	2008
FNAS (Fellow of National Academy of Sciences)	Dr B.S. Murty	2008

4.14.4. Design and Development Activities

New facilities added or major equipment procured

S. No.	Equipment	Value (₹ in lakh)
1	Laser Flash Apparatus (LFA 427) for the measurement of thermal diffusivity	141.8
2	DSC 404 Fx - Pegasus	

Patents awarded

S.No.	Faculty Members	Topic of Patent
1	T.S. Sampath Kumar, Uday Chakkingal, B. Ratna Sunil	An Indian patent titled, An improved process for controlled degradation of grain refined magnesium alloy in temporary orthopaedic implants, has been granted for a term of 20 years. An electrospinning set-up from M/s. Physics Equipment Co., Chennai, has been installed in Medical Materials Laboratory. IIT Madras-Deakin University-IIT Hyderabad Centre of Excellence in Advanced Materials and Manufacturing has received support for continuation and retaining of the seed grant from Deakin University, Australia for three years.

4.14.5. Research and Consultancy

Sponsored research projects (ongoing and new)

S.No.	Title	Period	Funding Agency	Amount (₹ in lakh)	Coordinators
New					
1	3D Metal/Ceramic interfaces	1 year	ICSR-IITM	09.50	Satyesh Kumar Yadav
2	Fabrication of nanostructured copper surfaces for functional applications	3 years	SERB	39.29	Lakshman Neelakantan, Manas Mukherjee
3	Stability of microstructure under thermal and stress conditions in Alloy718 Plus		SERB	70.00	S. Sankaran, M. Sundararaman, Shyam Kerala Varma
4	Investigation of novel high temperature shape memory alloys for critical applications		SERB	60.66	V. Sampath
5	Polymer thin film based soil meter for detecting heavy transition metals in agricultural soil		IC&SR	09.72	Sreeram K. Kalpathy
6	Non-noble plasmonics and BaTaO ₂ -xNy/CuO quantum dot heterostructure based photocatalysts for tandem grey water reactors		SERB	46.03	Sreeram K. Kalpathy, Tiju Thomas, Indumathi Manivannan
7	Fabrication of nanostructured copper surfaces for functional applications	1 December 2020-31 December 2023	SERB	39.08	Manas Mukherjee, Lakshman Neelakantan
8	A novel integration of TiO ₂ nanotubes and hydrogen storage alloy for a solar water based rechargeable fuel cell battery	Two years	DST	11.10	Ranjit Bauri
9	Physics-based modelling of powder size distribution (PSD) of Ni-based superalloy as a function of experimental design variables and process and material parameters during inert gas atomization	18 months	DMRL	23.36	Sabita Sarkar
10	Fabrication of nanostructured copper surfaces for functional applications	1 December 2020-31 December 2023	SERB	38.31	Manas Mukherjee, Lakshman Neelakantan
11	Development of Boron based ternary MAB phase material for thermal control in space crafts	1 July 2021-30 June 2023	ISRO-IITM	23.55	M. Kamaraj
12	Improvement in stretch flangeability of sheet metals for automotive applications	28 February 2022-28 February 2025	DST	34.08	Dr Uday Chakkingal, Dr Murugaiyan A, Dr Hariharan K (ME)
13	IR Reflective polymer/PCM encapsulations for rendering perovskite photovoltaics environmentally robust: aging, durability and efficiency studies through solar simulations, spectroscopy and ab initio simulations	10 February 2022-11 February 2025	DST	11.64	Dr Tiju Thomas, Sreeram K. Kalpathy

Industrial consultancy projects (ongoing and new)

S.No.	Faculty Member	Title	Industry	Amount (₹ in lakh)
New (IC and Retainer Consultancy)				
1	Dr Uday Chakkingal, Dr T.S. Sampath Kumar	Development of Magnesium based biodegradable implants by severe plastic deformation	Tata Steel	35.76
2	Sreeram K. Kalpathy	Plastic door part testing	Hanon Automotive Systems India Private Limited	0.59

Distinguished visitors to the department

- Dilip Subramaniam visited our department to raise funds for the establishment of a Centre of Excellence and corpus for MME students' start-ups.
- Ranga Srinivasan contributed ₹10 lakh towards the creation of Shri Vijay Jagannathan (1984 MT) Endowment/Scholarship Fund for B.Tech. students of the department.

4.14.6. Other Activities of the Department

Table 7.1. New equipment installed in the department in the year 2021-2022

S. No.	Equipment	Value (₹ in lakh)
1	Laser Flash Apparatus (LFA 427) for the measurement of thermal diffusivity	141.8
2	DSC 404 Fx - Pegasus	

4.15 Department of Ocean Engineering

4.15.1. Introduction

The Ministry of Education and Social Welfare, as per the decision of Council of Indian Institute of Technology, established the Ocean Engineering Centre of IIT Madras in 1977 based on the recommendation of the committee headed by Dr Y. Nayudamma. The department is to act as a Centre of Excellence for advancing the frontiers of science and to provide breakthrough technology and develop education and training programmes in the field of ocean engineering. A national advisory committee consisting of the representatives of the then Ministry of Education and institutions such as Council of Scientific and Industrial Research (CSIR), University Grants Commission (UGC),

Department of Science & Technology (DST), Oil and Natural Gas Corporation (ONGC) and Engineers India Limited (EIL), other IITs and user industries with the Director, IIT Madras as the chairman monitored the progress of the department over the years. A review committee headed by Prof. M.G.K. Menon also reviewed the progress of the department in 1982, and its recommendation has since been implemented towards progress of the department as an independent Centre of Excellence. Even since, several peer reviews were done and recommendations were implemented. The last review of the department was done in 2013. The recommendations of this review have also been implemented by the department.

4.15.2. Academic Programmes

B.Tech and M.Tech (Dual Degree) in Naval Architecture and Ocean Engineering, B.Tech and M.Tech (Dual Degree) in Naval Architecture and Applied Mechanics, M.Tech in Offshore Structures (before Ocean Engineering), M.Tech in Ocean Technology - UoP (MoES), M.Tech in Petroleum Engineering, M.S. and Ph.D. in Ocean Engineering (OE) and Petroleum Engineering (PE).

New courses introduced

S. No.	Course No.	Title
1	OE5515	Subsea Systems in Oil and Gas Engineering
2	OE5510	Machine Learning for Ocean Engineers

New lab established

In 2022, Marine Autonomous Vessels (MAV) Laboratory (<https://www.youtube.com/channel/UC49Bk7gRRmmyQv6HM2wLayQ>) was established at the Department of Ocean Engineering, IIT Madras.

Students on roll as of September 2021+M.S. and Ph.D. admission in January 2022

Programme	I Year	II Year	III Year	IV Year	V Year and Others	Total
B.Tech.	76	72	47	27	9	231
Dual Degree			13	22	26	61
M.Tech.	42 (OE-29, PE-13)	35 (OE -20, PE-15)	3 (OE-3)	1 (OE-1)		81
M.S.	14	11	14	5	3	47
Ph.D.	20	15	21	32	63	151
Total	152	133	98	87	101	571

Students/Scholars who attended conferences/seminars/symposia/workshops abroad or in India

S.No.	Student/Scholar	Roll No.	Conference/Seminar/Symposium/Workshop	Date and Venue	Financial Assistance from	
Abroad						
1	Nikita R. Pinto	OE17S024	Acoustical Society of America Spring 2021 Meeting	April 2021, online meeting	Registration fees from NRB project	
2	P. Sivaselvi	OE15D008	Acoustical Society of America Spring 2021 Meeting	April 2021, online meeting	Registration fees from NRB project	
3	P. Sadees	OE16D021	ASME TurboExpo	7-11 June 2021, virtual, USA	Online mode-due to COVID-19	
4	Doddamani Hithaish	OE18D005	The 14th European Wave and Tidal Energy Conference	5-9 September 2021, Plymouth, UK		
5	N.K. Kathyayani	OE19S027	The 14th European Wave and Tidal Energy Conference	5-9 September 2021, Plymouth, UK		
6	Amit Kumar	OE18S015	The 16th Asian International Conference on Fluid Machinery	13-15 September 2021, Yokohama, Japan		
7	Doddamani Hithaish	OE18D005	The 16th Asian International Conference on Fluid Machinery	13-15 September 2021, Yokohama, Japan		
8	Amit Kumar	OE18S015	Global Oceans Conference	5-14 October 2021, USA		
9	N.K. Kathyayani	OE19S027	International Mechanical Engineering Congress & Exposition (IMECE 21)	1-4 November 2021, USA		
10	Amit Kumar	OE18S015	IEEE OCEANS 2021	20-23 September 2021, San Diego - Porto		
11	Ashok Kumar	A short review on composite material	3rd International Conference on Smart & Green Technology for Shipping and Maritime Industries (including Ballast Water Management)	21-22 October 2021, virtual		Institute
12	Pranitha Bachimanchi	OE18D701	OMAE 2022	5-10 June 2022, Hamburg, Germany		IIT Madras
13	Mallela Mounika	OE21D020	OMAE 2022	5-10 June 2022, Hamburg, Germany	OMAE	
14	Leo D	OE18D032	Autonomous Ships 2022 (conference conducted by Royal Institution of Naval Architects)	31 March 2022 London, (hybrid conference, attended remotely)	NTCPWC	

India					
1	Doddamani Hithaish	OE18D005	4th National Conference on Multidisciplinary Design, Analysis, and Optimization	7-9 October 2021, Chennai, India	Online mode-due to COVID-19
2	Doddamani Hithaish	OE18D005	ASME Gas Turbine (GT-India) Conference	2-3 December 2021, India	
3	N.K. Kathyayani	OE19S027	ASME Gas Turbine (GT-India) Conference	2-3 December 2021, India	
4	Suchithra Ravikumar	-	IEEE Oceans 2022	21-24 February 2022, Chennai, India	
5	Ashiq Ahmed M	OE18D026	Hydro 2022	23-25 December 2021, Surat	IIT Madras
6	Leo D	OE18D032	Oceans 2022, Chennai (OES-IEEE conference)	21-24 February 2022, IITM Research Park, Chennai	NTCPWC
7	Nandhini D	OE19D022	Oceans2022, Chennai (OES-IEEE conference)	21-24 February 2022, IITM Research Park, Chennai	NTCPWC
8	Saichenthur N		Oceans 2022, Chennai (OES-IEEE conference)	21-24 February 2022, IITM Research Park, Chennai	NTCPWC
9	Aswin Vijay	NA17B115	OCEANS 2022	February 2022, Chennai	SORCERS and IIT Madras

Students/Scholars who won outside prizes and awards

S. No.	Student/Scholar	Roll No.	Prize	Prize Awarded By
1	Kathyayani N	OE19S027	First place in a poster competition of ASME Gas Turbine (GT-India) Conference	ASME Gas Turbine
2	Doddamani Hithaish	OE18D005	Third place in a poster competition of ASME Gas Turbine (GT-India) Conference	ASME Gas Turbine
3	Karthikeyan T	OE14D009	Young Researcher Award 2021	Institution of Engineers India, Rajasthan
4	Madhan Kumar P	OE15D027	Young Researcher Award 2021	Institution of Engineers India, Rajasthan
5	Lakshman	OE18S003	First Prize for the theme, Coastal Environment and Measure	HYDRO 2021
6	Mallela Mounika	OE21D020	OMAE Outreach Fellowship	ASME
7	S. Sivaraman	OE19S012	Best Presentation Award	International Conference on Industrial Technology and Management (ICITM 2022), Oxford, UK

8	Vishnu Vijay Kumar	OE16D016	Best Paper Award	IEEE International Conference on Nanoelectronics, Nanophotonics, Nanomaterials, Nanobioscience & Nanotechnology (5NANO 2022)
9	Vishnu Vijay Kumar	OE16D016	Best Oral Presentation Award	International Conference of Recent Advancements in Materials Science and Nanotechnology- 2022 (RAMAN-2022)
10	Nandhini D	OE19D022	ABCD Future Environmental Leaders Scholarship 2022	Global Water and Climate Adaptation Centre–Aachen, Bangkok, Chennai, Dresden (ABCD Centre)
11	Shrenik Zinage	NA17B030	Class NK 100 Prize	

Students/Scholars who won Convocation/Institute Day Prize

S. No.	Name	Roll No.	Prizes	Donor
1	Anulekha Majumdar	OE20D201	Subrath Kumar Malik Prize	IIT Madras
2	Kathyayani N	OE19S027	Institute Research Award	IIT Madras
3	Rishav Raj	OE17S021	Institute Research Award	IIT Madras
4	Gautam Maurya	OE17S020	Certificate for Outstanding Service to the Institute during COVID-19	IIT Madras
5	Tapas Kumar Das	OE15D016	Institute Research Award	IIT Madras
6	R. Suchithra	-	Vallam Sundar Prize	IIT Madras
7	Madhan Kumar P	OE15D027	Institute Research Award	IIT Madras
8	Nitha Ayinippully Nalarajan	CE15D007	Institute Research Award	IIT Madras
9	Nitha Ayinippully Nalarajan	CE15D007	Doctoral Thesis Award-July 2022	IIT Madras
10	Subhashini Nainar	OE16D004	Doctoral Thesis Award-July 2022	IIT Madras
11	Bokam Rajasekhar	CE14D035	Doctoral Thesis Award-July 2022	IIT Madras

4.15.3. Faculty and their Activities Faculty

Name and Qualifications	Major Areas of Specialisation
Professors	
Prof. S. Nallayarasu (Head)	Analysis and design of offshore structures, wave-structure interaction, hydrodynamic response of spar hulls, damping elements in floating systems
Prof. K Murali	Computational hydrodynamics, sediment transport and dredging, multiphase flows
Prof. S.A. Sannasiraj	Wave-structure interaction, breaking waves, numerical modeling of nonlinear wave propagation, climate change adaptation of coastal infrastructures
Prof. Rajiv Sharma	Analysis, design and production of marine structures, modeling and simulation, and fluid mechanics for high pressure and temperature
Prof. Srinivasan Chandrasekaran	Nonlinear dynamic analysis of offshore structures, earthquake-resistant analysis and design of structures, base-isolated structures, semi-active damping devices for response control of structures, wave energy devices

Prof. P. Shanmugam	Oceanography, coastal zone management; ocean optics and imaging; satellite oceanography/ocean remote sensing; radiative transfer modelling and algorithm development
Prof. R. Panner Selvam	Stochastic modelling and simulation analysis, system identification; nonlinear dynamical fluid structure systems—applications in ocean and wind engineering
Prof. P. Ananthakrishnan	Water wave mechanics, ship hydrodynamics, dynamical oceanography, ocean energy conversion, air-sea interaction, hydro-elasticity, numerical methods for nonlinear wave-body interaction problems, computational ocean acoustics
Prof. P. Krishnankutty	Ship maneuvering and motions, ocean wave-structure interaction, ship-to-ship hydrodynamic interaction, high-speed vessel passenger comfort, HSV wave wash
Prof. Abdus Samad	Marine energy, fluid machinery, design optimization
Prof. G Suresh Kumar	Fluid flow through fractured reservoirs; non-isothermal single and multi-phase fluid flow; thermal/chemical/biological enhanced oil recovery; fluid flow through shale gas reservoirs; pressure transient analysis: fractured reservoirs; onshore oil spill; offshore oil spill; hydraulic fracturing; shale gas production; coal bed methane production; groundwater and contaminant transport; fractured geothermal reservoir
Prof. Nilanjan Saha	Offshore wind and wave energy, dynamics of offshore structures, extreme value statistics and fatigue, nonlinear methods in ocean engineering, offshore soil-structure interaction, stochastic processes, filtering and identification

Associate Professors

Dr R Vijayakumar	Green ship initiatives, ship-helo interactions, hydro-acoustic analysis
Dr V. Sriram	Computational hydrodynamics, wave structure interactions, experimental hydrodynamics, extreme waves, flooding
Dr Deepak Kumar	Structural dynamics, random vibration, nonlinear dynamics, stochastic control and stability, time-frequency domain analysis, structural dynamics experiments
Dr Rajesh R. Nair	Petroleum: geomechanics, fracturing and recovery process, geostatistics for reservoir modeling and seismic characterisation and near surface geophysics, including ground penetrating radar data analysis and seismic refraction

Assistant Professor

Dr Tarun K. Chandrayadula	Underwater acoustics, signal processing, propagation modeling
Dr Suresh Rajendran	Numerical modelling of fluid-structure interaction, nonlinear ship dynamics and hydrodynamics, hydroelasticity, maneuvering in waves, parametric rolling of ships
Dr Abhilash Sharma	Autonomous vessels, AI for autonomy, hydrodynamics
Dr K. Narendran	Experimental and computational hydrodynamics, marine renewable energy, fluid- and wave-structure interaction
Dr K G Vijay	Fluid-structure interaction, wave energy converters, floating offshore wind turbines
Dr Arjun Jagannathan	Ocean modelling, turbulent boundary layers and separation, fluid-structure interactions, wave hydrodynamics, numerical methods

Visiting Faculty

Prof. V Sundar Emeritus Professor	Coastal engineering, port and harbour structures, fluid flow problems
Prof. R. Sundaravadivelu Emeritus Professor	Computer-aided analysis, design and experimental studies of coastal and offshore structures, port and harbour structures

Short-term courses/workshops/seminars/symposia/conferences organised by the faculty members

S. No.	Coordinator(s)	Title	Date and Venue
Conferences			
1.	Prof. V. Sundar	Special session on Coastal Environment and Measurement as part of HYDRO 2021 International	23-25 December 2021
2	Prof. Abdus Samad - Session Organiser and Session Chair	ASME Gas Turbine (GT-India) Conference	2-3 December 2021, India
3	Prof. Abdus Samad - Organiser	National Conference on Multidisciplinary Design Analysis and Optimization (NCMDAO) 2021	7-9 October 2021, Chennai, India
4	Prof. Abdus Samad - Session Organiser	The 16th Asian International Conference on Fluid Machinery	13-15 September 2021, Yokohama, Japan
5	Prof. Abdus Samad - Technical Advisory Panel	5th International Conference on Offshore Renewable Energy (CORE 2021)	24-25 May 2021, Glasgow, UK
6	Prof. Abdus Samad - Program Committee, Session Chair	8th International and 47th National Conference on Fluid Mechanics and Fluid Power held at Indian Institute of Technology (IIT) Guwahati	9-11 December 2020, Guwahati, Assam, India
7	Prof. Abdus Samad - Session Organiser	The 18th International Symposium on Transport Phenomena and Dynamics of Rotating Machinery (ISROMAC)	23-26 November 2020, Honolulu, Hawaii, USA (virtual)
8.	Prof. S.A. Sannasiraj and M.A. Atmanand	IEEE-MTS OCEANS 2022, Chennai	20-24 February 2022
9.	Prof. Murali K	International conference - OCEANS 2022	21-24 February 2022
Workshops			
1	Prof. P Shanmugam	Advanced Level 2: Recent Advances in Marine Geospatial Technology	3-23 January 2022
2	Prof. V. Sundar, Prof. S. A. Sannasiraj, Prof. K. Murali	Virtual International Workshop on Coastal Information System-Management and Engineering	6 May 2021
3	V. Sundar, S.A. Sannasiraj, K. Murali	Webinar: International Workshop on Coastal Information System: Management and Engineering	6 May 2021
4	Prof. K. Murali	Training on Dredging for GMB Engineers	March 2022
Short-Term Courses			
1.	Prof. S. Nallayarasu	Training on Port and harbour engineering for Gujarat Maritime Board	27-31 July 2021
2.	Prof. V. Sundar, Prof. S. A. Sannasiraj, Prof. K. Murali	Second Training Program: Coastal Management Information System for Ministry of Water Resources	24 May 2021
3.	Prof. S. Chandrasekaran	Quality improvement and HR management in engineering education	7 December 2021
4.	Prof. S. Chandrasekaran	Fire-resistant design of structures	25-30 April 2022
5.	Prof. S. Chandrasekaran	Advanced design of steel structures for L&T engineers	11-13 May 2022, 25-27 May 2022

Short-term courses/workshops/seminars/symposia/conferences/training attended by the faculty members in academic institutions and public sector undertakings

S. No.	Faculty Member	Title	Institution	Period
Workshop				
1	Prof. Nilanjan Saha	Global Wind Day and Silver Jubilee Celebration	Ministry of New and Renewable Energy	15 June 2022
Seminars				
1	Dr R Vijayakumar	Maneuverability Studies of Legacy and Blended Wing Underwater Gliders	Trends and Technologies in Underwater Vehicles	16-17 July 2021
2	Dr R Vijayakumar	Experimental and Numerical Analysis of Underwater Glider at IIT Madras	Technology Challenges in the Design of Unmanned Underwater Vehicles	27 November 2021
3	Prof. K. Murali	International Seminar on "Six Sustainable Technologies for Ports"	Auto tune up service in Deinze, Belgium	30 May-3 June 2022
Conference				
1	Prof. Nilanjan Saha	HYDRO-2021 International conference	SVNIT, Surat	23-25 December 2021

Special lectures delivered by the faculty in other institutions

S. No.	Faculty Member	Topic of Lecture	Institution	Date
1	Dr Vijay K G	Applications of boundary element methods to water wave problems	BITS Pilani, Hyderabad Campus	May 2021
2	Dr Vijay K G	Surface wave interaction with coastal structures and renewable energy	Bapatla Engineering College, Bapatla	June 2021
3	Dr Vijay K G	Applications of boundary element methods to water wave problems	PDEU, Gujarat	October 2021
4	Prof. V. Sundar	Vulnerability to coastal hazards and protection measures	EVIRO WEBTALK 2021, Environmental Engineering Webinar series, Lovely Professional University, Punjab	18 May 2021
5		Vulnerability to coastal hazards and protection measures	IIT Bombay	20 May 2021
6		Coastal flooding and protection	Summer School 2021 as part of Indo-German Sustainability Centre Cooperation	15 July 2021
7		Mitigation measures against coastal hazards	M. S. University of Baroda	18 June 2021
8		Vulnerability to coastal hazards and protection measures	ASCE IS SR 22 Student chapter's faculties	8 July 2021
9	Prof. V. Sundar	Coastal flooding and protection	Summer School 2021 as part of Indo-German Sustainability Centre Cooperation	

10		Coastal-related problems and mitigation measures through case studies	AICTE Training and Learning, Academy Faculty Development Programme	9 August 2021
11		An overview on the tidal and wave energy potential and application along the Indian coast	1st International Conference on Advancement in Structural Engineering	25 September 2021
12		Energy from ocean and green chemistry	P.G. & Research Department of Chemistry, Sri Sarada College for Women, Salem, and Indian Chemical Society (ICS), T.N. Branch	20 November 2021
13.	Prof. Abdus Samad	Invited lecture	Department of Petroleum Engineering, Chandigarh University	23 April 2022, Chandigarh, India
14		Invited lecture	SRM Institute of Science & Technology	3-8 January 2022
15		Invited lecture and Panel discussion	IIT Roorkee, Roorkee, India	27-28 September 2021
16		Invited lecture	The North-Eastern Regional Institute of Science and Technology, Itanagar (Arunanchal Pradesh), India	17-18 September 2021
17		Invited lecture	College of Engineering, Pune, India	27 March 2021
18	Prof. Abdus Samad	Invited lecture	VIT Vellore	14-18 December 2020
19		Invited lecture	Gayatri Vidya Parishad College of Engineering (A), Visakhapatnam, Andhra Pradesh, India	7 September 2020
20		Invited lecture	National Institute of Engineering Mysore, Karnataka, India	27 August 2020
21		Invited lecture	VIT University, Chennai, India	28 August 2020
22		Invited lecture	NIT Kurukshetra, India	11-20 June 2020
23		Invited lecture	Satyug Darshan Institute of Engineering & Technology, India	6-7 May 2020
24		Guest lecture	Danish Ahmed College of Engineering, Chennai, India	12 February 2020
25	Dr R Vijayakumar	Experimental studies of stern flap performance on a high-speed displacement vessel	3rd International Conference on Smart & Green Technology for Shipping and Maritime Industries (including Ballast Water Management) - SMATECH 21	22 October 2021
26		Hydrodynamics testing and research activities at Ocean Engineering department IIT Madras	Institute of Naval Architecture	27 February 2021

27	Prof. S.A. Sannasiraj	Tsunami impacts/modelling on coastal infrastructure, ports and harbors	IIT Madras	12 January 2022
28	Prof. S.A. Sannasiraj	Wave climate projections for coastal impact assessments	IIT Madras	13 January 2022
29	Prof. S.A. Sannasiraj	Water security and climate change adaptation: understanding the complexity of a global challenge	German Sustainability Science Summit	9 July 2021
30	Dr V. Sriram	IITM-RANS3D: A Hybrid FNPT-RANS model for complex wave-structure interactions	NSTL	19 May 2022
31	Dr V. Sriram	State-of-the-art numerical modelling for wave-structure interactions	NIT Calicut	4-8 October 2021
32	Prof. Nilanjan Saha	Offshore wind power development in India: Potential contribution from O&G sector	IEOT, ONGC - IEOT Foundation Day	11 November 2021
33	Prof. G. Suresh Kumar	Reservoir simulation: challenges and current trends	RGIPT - Jais, Amethi	14 December 2021

Visits abroad by faculty

S. No.	Faculty Member	Country Visited	Date	Purpose of visit	Funding from
1	Prof. S.A. Sannasiraj	Myanmar	17-25 November 2021	Development of harbour for Myanmar Government	Project
2	Prof K Murali	Belgium	29, May 2021 to 9, June 2021	Seminar on Sustainable Technologies	Projects

Honours and awards obtained by faculty

S. No.	Faculty Member	Award	Awarded by	Awarded for	Date of Award
--------	----------------	-------	------------	-------------	---------------

i. Honours

1	Prof. P Shanmugam	Expert Committee Member of Thiruvallur University	Governor, Government of Tamil Nadu		
2	Prof. S. Nallayarasu	Member, Board of Academic Studies	SSN College of Engineering		

ii. Awards

1.	Prof. V. Sundar	Distinguished Alumni Award 2022	College of Engineering Guindy, Anna University	Renowned Professor	
----	-----------------	---------------------------------	--	--------------------	--

2.	Prof. V. Sundar	IEEE Senior Member	IEEE	For contributions to IEEE	
3.	Prof. Abdus Samad	Outstanding Engineering Services	Institution of Engineers-India	Outstanding Engineering Services Award to Society given on Independence Day	15 August 2021
4	Dr V Sriram	Prestigious DFG- Mercator Professorship	Collaborative Research Centre	Offshore Megastructure	
5	Prof. Nilanjan Saha	Prof. R.J. Garde Research Award	ISH, India	Coastal Engineering in general and Hydraulics in particular	23 December 2021

Fellowships of academies and professional societies

S. No.	Fellowships	Faculty	Year of Admission
1.	Fellow of IE (India)	Prof. S. A. Sannasiraj	2021
2.	Fellow of IEI	Prof. S. Nallayarasu	2017
3.	Fellow, Indian Society of Hydraulics, India	Prof. Nilanjan Saha	2021

Journal editorial boards

S. No.	Faculty Member	Position	Journal Name
1	Prof. V. Sundar	Member	<i>Journal of Applied Water Engineering and Research</i>
2		Associate Editor	<i>Journal of Hydro-environment Research</i> (Elsevier Publishing Co.)
3		Associate Editor	<i>Ocean Engineering journal</i> (Elsevier Publishing Co.)
4		Member	<i>Institution of Mechanical Engineers, Part M: Journal of Engineering for the Maritime Environment</i>
5		Associate Editor	<i>Indian Society of Hydraulics Journal</i>
6		Member	Fourth Editorial Board of <i>China Ocean Engineering</i>
7		Member	<i>International Journal of Ocean and Coastal Engineering (IJOCE)</i>
8	Prof. Abdus Samad	Editorial Board Member	<i>International Marine Energy Journal (IMEJ)</i>
9		Associate Editor	<i>International Journal of Fluid Machinery and Systems</i>
10		Editor	<i>Mathematical Problems in Engineering</i>
11		Editor	<i>International Journal of Naval Architecture and Ocean Engineering (IJNAOE)</i>
12	Prof. S.A. Sannasiraj	Member	<i>Journal of Marine Environmental Engineering</i>
13	Dr V. Sriram	Guest Editor for Special Issue	<i>Ocean Engineering</i>

14	Prof. Nilanjan Saha	Associate Editor	<i>Journal of Offshore Mechanics and Arctic Engineering, ASME</i>
15	Dr Suresh Rajendran	Associate Board Member	<i>Journal of Marine Science and Application</i>
16	Prof. S. Chandrasekaran	Associate Editor	<i>International Journal of Sustainable Marine Structures</i>
17	Prof. S. Chandrasekaran	Member	<i>International Journal of Steel structures</i>
18	Prof. Rajiv Sharma	Associate Editor	<i>Ocean Systems Engineering - an international journal</i> (http://www.techno-press.org/?journal=ose&subpage=5)
19	Prof. Rajiv Sharma	Deputy Editor	<i>Journal of Marine Science and Technology</i> (https://www.springer.com/journal/773/)
20	Prof. Rajiv Sharma	Member	<i>Proceedings of the Institution of Mechanical Engineers, Part M: Journal of Engineering for the Maritime Environment</i> (https://journals.sagepub.com/home/pim)
21	Prof. Rajiv Sharma	Member	<i>Advances in Computational Design (ACD) - an international journal</i> (www.techno-press.org/?journal=acd#)
22	Prof. S. Nallayarasu	Associate Editor	<i>Journal of Ocean Engineering and Marine Energy</i>

Faculty members involved activities in other university/institutions

S. No.	Faculty Member	Participation Details	University/ Institutions
1.	Prof. G. Suresh Kumar	Member, Promotion Committee, Faculty Promotion in the Department of Petroleum Engineering and Geoscience	RGIPT - Jais, Amethi, June 2022
2.		Member, Promotion Committee, Faculty Promotion Committee (Selection of Full-Time Professor & Associate Professor)	Department of Civil Engineering, IIT-Bombay, April 2022
3.		Member, Selection Committee, Faculty Recruitment - Deysarkar Centre of Excellence in Petroleum Engineering	Department of Petroleum Engineering, IIT-Kharagpur, March 2022
4.		Member, External Examiner Committee - Development of Nano-Based Preformed Particle Gel (PPG) to Improve Performance of Water Shut-Off Jobs by Mr Abhinav Kumar (2015DR0198) - Ph.D. Thesis	IIT(ISM)-Dhanbad, June 2022
5.		Member - Evaluation of PMRF Applications	PMRF Selection 2022-23 (MHRD), March 2022
6.		Member, External Examiner Committee - Comprehensive studies on reservoir aspects of gas hydrates and thermodynamics and kinetics of hydrate formation and dissociation in the presence of different additives by Ekta Chaturvedi (16DR000280) - Ph.D. thesis	IIT(ISM)-Dhanbad, March 2022
7.		Member, External Examiner Committee - Synthesis and characterization of ionic liquids for application in enhanced oil recovery by Prathiba Pillai (16DR000183) - Ph.D. thesis	IIT(ISM)-Dhanbad, June 2022

8		Member, External Examiner Committee - Reactive transport simulation in groundwater and contaminant source identification by inverse modelling using meshfree based numerical methods and simulation optimization models by Aatish Anshuman (Roll No: 174046017) - Ph.D. thesis	IIT-Bombay, March 2022
9		Member, Board of Studies, Petroleum Engineering	JNTU, Kakinada, March 2022 (involved in finalising B.Tech Petroleum Engineering syllabus)
10		Member, Board of Studies, Petroleum Engineering	JNTU, Kakinada, February 2022 (involved in finalising B.Tech Petroleum Engineering syllabus)
11		Petroleum Engineering - Chief Paper Setter	GATE 2021
12		Member, Selection Committee, Faculty Recruitment @ Indian Institute of Petroleum Engineering and Energy	IPE-Vizag, October 2021
13		Member, Selection Committee, Faculty Recruitment in the Discipline of Civil Engineering - School of Engineering	IIT-Mandi, August 2021
14		Member, Selection Committee, Faculty Recruitment in the Department of Petroleum Engineering and Geoscience	RGPT-Jais, Amethi, January-April-June 2021
15		Member, External Examiner Committee - Development of emulsion based drilling fluid system for shale formation by Bhola Kumar Paswan (2015DR0157) - Ph.D. Thesis	IIT (Dhanbad), December 2021
16		Member, External Examiner Committee - Formulation and characterization of nanoemulsion for application in enhanced oil recovery by Narendra Kumar Rawat - Ph.D. Thesis	IIT (Dhanbad), April 2021
17		Member - Evaluation of PMRF Applications	PMRF Selection 2021-2022 (MHRD), March-September 2021
18		Member, External Examiner Committee - Development of self-healing cement for oil wells by Gaurav Richhariya - Ph.D. Thesis	DIT University, Dehradun, September 2021
19		Member, Board of Studies, Petroleum Engineering	JNTU, Kakinada, April 2021 (involved in finalising B.Tech Petroleum Engineering syllabus)
20	Prof. S. Nallayarasu	Member, Board of Studies	SSN Engineering College, 2018
21		Member, Board of Naval Architecture & Ocean Engineering	Naval Architecture & Ocean Engineering, 2021

4.15.4. Design and Development Activities

Brief and specific details of process/instruments/equipment/software designed and developed

Dr Tarun K. Chandrayadula developed a propagation model to predict underwater noise levels at any location in the Indian Ocean. The inputs to the model were ship traffic densities, bathymetry and oceanography. The model used the parabolic equation method. This software was developed for the National Technical Research Organisation in Delhi.

New facilities added or major equipment procured

S. No.	Equipment	Value (₹ in lakh)
1	Autonomous Surface Vessel (ASV)	20.0
2	RTK GPS System	5.0

Patents filed

S. No.	Faculty Member	Topic of Patent
1.	Prof. V. Sundar and Dr V. Sriram	Semi-circular breakwater integrated with oscillating water column device
2.	Keerthi Raj S, Nilanjan Saha, R Sundaravadivelu	Foldable Torpedo Anchor (FOTOAN)

4.15.5. Research and Consultancy

Sponsored research projects (ongoing and new)

S. No.	Title	Period	Funding Agency	Amount (₹ in lakh)	Coordinators
1	Vortex induced vibration of slender cylindrical structures and cables under wave and current	23 November 2016-22 October 2021	Navel Research Board	63.96	Prof. S.Nallayarasu and Prof. S.K. Bhattacharyya
2	Fluid-structure interaction with permeable coastal structures	Two years	IIT Madras	5	Dr K G Vijay
3	Optical characterization and detection of micro/macro plastics in oceanic waters using laboratory-based volume scattering function experiments and remote sensing techniques	2022-2024	IITM-ISRO Cell	39.17	Prof. P. Shanmugam
4	Development of particulate organic carbon (POC) algorithm in the water of Bay of Bengal and Arabian Sea	2022	SAC, ISRO	7	Prof. P. Shanmugam
5	The feasibility of estimating marine bioluminescence and detecting submerged vessels from remote sensing data	2021-2024	Indian Navy	193.64	Prof. P. Shanmugam

6	Assessment of sea surface solar radiation and pCO ₂ fluxes in coastal and estuarine waters using OCM-2/OCM-3 data	2017-2021	IITM-ISRO Cell	25.56	Prof. P. Shanmugam
7	Estimation of heat content and its variability depending on the determining factors in the Arctic Seas from multi-mission satellite and in-situ observation data	2020-2022	Indo-Russian project	39	Prof. P. Shanmugam
8	National Geospatial Professorship	2018-2022	DST	41	Prof. P. Shanmugam
9	Potential impact of climate change on extreme waves and wave induced sediment transport coastal erosion siltation and shoreline shifts, DST	March 2018-March 2023	DST	34.46	Prof. S A Sannasiraj
10	Prediction of coastal morphological changes due to climate change variation of sea level rise, DST	March 2018-March 2023	DST	34.46	Prof. S A Sannasiraj
11	Effects and adaptation for sea level rise on major coastal infrastructure in India, DST	March 2018-March 2023	DST	95.96	Prof. K Murali, Prof. S A Sannasiraj, Prof. R Sundaravadivelu
12	Climate change impacts on coastal infrastructure and the adaptation strategies	March 2018-March 2023	DST	860.20	Prof. S A Sannasiraj, Prof. R Sundaravadivelu
13	National Technology Centre for Ports, Waterways and Coasts (NTCPWC)	March 2018-March 2023	Ministry of Shipping	76.03	Prof. S A Sannasiraj, Prof. K Murali
14	Buffer blocks as wave energy dissipators (BB-WEnDis)	January 2022-December 2025	German Science Foundation (DFG) with RWTH Aachen, Germany	130	Dr V Sriram
15	Disinfecting indoor air against diseases such as COVID-19 and TB in cities in the Indian subcontinent	2021-2023	Royal Academy of Engineering	76	Eldad Avital, Nithya Venkatesan, Himanshu Agarwal
16	Design and development of retrofit solution for fruits and vegetable vending cart	2021-2022	DST	13.50	Abhijit Deshpande, R Venkatrathnam, Rajiv Sharma

17	Experimental investigations and parametric optimization of spherical helical free flow hydro-kinetic water turbines using towing tank tests	2019-2022	DST-TARE project	10.05	D. Muruganandam
18	Optimization of design parameters of a double helical two-blade hydrofoil hydrokinetic turbines based on water flume tests and validation by deployment at the sites	2019-2022	DST-TARE project	10.05	S. Ganapathy
19	Optimization of wave energy system - a primitive model for Indian Coastal Lines	2019-2022	DST/DAAD	6.64 (only DST's allocation, it does not include DAAD sanctioning to the German counterpart)	Dominique Thevenin, Nithya Venkatesan
20	Novel air filter to suppress viral load in confined space	2020-2021	Royal Academy of Engineering	19.19	Eldad Avital, Nithya Venkatesan, Clive Beggs
21	Development of a strategy for optimal power production from 100 kW class horizontal axis tidal turbines	2018-2021	India-Korea Project, funded by DST-KNRF	32 (only DST's allocation, it does not include KNRF sanctioning to the Korean counterpart)	Shin-Hyung Rhee, Nithya Venkatesan
22	Study of airwake and its control over flight deck of aircraft carrier for safe aircraft landing operations	December 2019-December 2021	NRB	11.28	
23	Hydro-acoustic performance marine propeller in non-cavitating regime	December 2018-2022	NRB	32.57	PI: Dr R Vijayakumar; Co-PI: Suresh Rajendran
24	Applications of IITM-RANS3D for ship slamming and motion responses	January 2022-25	NRB	49.63	PI: Dr V Sriram, Co-PI: Dr R Vijayakumar
25	VIV enhancement of oscillatory rotation cylinder for high energy capture	2021-2023	IC&SR, IIT Madras	5	
26	Development of hazard and risk maps along east coast on India for coastal flooding due to sea level rise	March 2018-March 2023	DST	34.71560	S A Sannasiraj, K Murali
27	Development of smoothed particle hydrodynamics (SPH) capability for naval applications	February 2018-December 2022	NRB	24.06733	-

28	Development of numerical and experimental model for unified seakeeping and manoeuvring of ships in seaway	16 May 2019-15 August 2022	SERB	35.283	Dr Suresh Rajendran
29	Development of numerical methods for calculation of hydroelastic responses of ships in extreme sea conditions	26 February 2019-31 August 2022	Naval Research Board	36.1752	Dr Suresh Rajendran
30	Development of guidance and control systems for sea going autonomous surface vehicles (ASV)	15 March 2019-30 September 2022	Scheme for Promotion of Academic and Research collaboration (SPARC)	40.13382	Dr Suresh Rajendran
31	Advanced ship manoeuvring prediction based on machine learning and artificial intelligence for autonomous ship navigation	15 May 2019-30 September 2022	SPARC	43.1375	Dr Suresh Rajendran
32	SMART Maritime Technology	February 2021-December 2026	MHRD	277	Prof. Murali K (PI)
33	Effects and adaptation for sea level rise on major coastal infrastructure in India	March 2018-March 2023	DST	95.96	Prof. Murali K (PI), Prof. Sundar V (Co-PI), Prof. Sundaravadevelu R (Co-PI), Prof. Sannasiraj S A (Co-PI)
34	Coastal inundation mapping due to extreme events in view of climate change scenarios	March 2018-March 2023	DST	35.21	Prof. Murali K (PI), Prof. Sannasiraj S A (Co-PI), Prof. Sriram V (Co-PI)
35	Common Project-NTCPWC	March 2018-December 2024	Ministry of Shipping	1485	Prof. Murali K (PI)
36	Capital Project- NTCPWC	March 2018-March 2023	Ministry of Shipping	5029	Prof. Murali K (PI), Prof. Sundar V (Co-PI), Prof. Sannasiraj S A (Co-PI)
37	Fund for Improvement of S&T Infrastructure - Project (level -2) for Industrial R&D support and SSR activities	March 2022-March 27	DST	153	Prof. Nallayarasu S (PI), Prof. Sriram V (Co-PI), Prof. Suresh Rajendran (Co-PI), Prof. Murali K (Co-PI), Prof. Narendran K (Co-PI), Prof. Vijay K G (Co-PI)

38	Experimental and numerical modelling of wave-vegetation-structure interactions (EMOD-WVS Int)	March 2019-September 2022	SPARC	53.17	Prof. Sriram V (PI), Prof. Murali K (Co-PI)
39	Storm surge impact on estuaries	March 2018-March 2023	DST	41.46	Prof. Soumendranath Kuiry (PI), Prof. Murali K (Co-PI)
40	Development of hazard and risk maps along east coast on India for coastal flooding due to sea level rise	March 2018-March 2023	DST	34.71	Prof. Nilanjan Saha- (PI), Prof. Sannasiraj S A (Co-PI), Prof. Murali K (Co-PI)
41	Beach monitoring	March 2018-March 2023	DST	114	Prof. Sannasiraj S A (PI), Prof. Murali K (Co-PI)
42	Climate change impacts on coastal infrastructure and the adaptation strategies	March 2018-March 2023	DST	860	Prof. Sannasiraj S A (PI), Prof. Murali K and 15 others (Co-PI)
43	Investigation of wave action on a vertical wall attached with a submerged horizontal plate	One year	Kuwait University	4000 KWD	Dr Ahmad Al Yousif (PI), Dr Neelamani S (Co-PI), Dr Vijay K G (Co-PI)
44	Development of AI (Artificial Intelligence) based autonomy for unmanned surface vehicles	Three years	IIT Madras	27 + 6 (Department Contribution)	Dr Abhilash Somayajula
45	Proposed Centre for Marine Autonomous Systems	Two years	Ministry of Human Resource and Development	78.25	Dr Abhilash Somayajula, Dr Suresh Rajendran, Dr R Vijaykumar
46	Data driven control for marine vehicle maneuvering	Three years	Science and Engineering Research Board	25.88	Dr Abhilash Somayajula, Dr Suresh Rajendran
47	Design and development of a modular e-vending cart	1 June-30 November 2022	RuTAG, IIT Madras, India	5	Prof. Rajiv Sharma and Prof. Abhijit Deshpande P.
48	Design and development of retrofit solution for fruits and vegetable vending cart	1 July 2020-30 June 2022	DST, India	10	Prof. Rajiv Sharma, Prof. G. Venkatarathnam, Prof. Abdus Samad, and Prof. Abhijit Deshpande P

Industrial consultancy projects (ongoing and new)

S.No.	Faculty Member	Title	Industry	Amount (₹ in lakh)
1	Prof. R Sundravadivelu, Prof. P Shanmugam	Subsidence studies in ONGC's operational area in onshore Ramanathapuram PML Block, Ramanathapuram district, Tamil Nadu	Oil and Natural Gas Corporation Limited	138.06
2	Prof V. Sundar and colleagues	Shore protection works in Vypin coastal area in Ernakulam district, Kerala—studies and mitigation measures	Kerala State Coastal Area Development Corporation Limited	35
3		Consultancy services on peer review of breakwater design for fishing harbour at Jetty in Alappuzha district, Kerala	Kerala Infrastructure Investment Fund Board	8
4		Study and preparation of DPR—distress over the approach of NTR bridge in Kakinada city due to leaning of CC retaining wall work	Municipal Corporation Kakinada	22
5		Detailed engineering design for Perkhidmatan Perunding Bagi Rekabentuk Terperinci Projek Pemuliharaan Muara Sungai Kerang, Mukim Sungai Tinggi, Perak	PB JURUTERA SDN BHD	39.09
6		Proof checking of report on design engineering of marine outfall pipeline at Kesanapalli, Andhra Pradesh	Indomer Coastal Hydraulics Private Limited	2
7		Consultancy services for preparation of detailed project report for protection measures for Vakalapudi-Edatam Road (Beach Road) in East Godavari district, Andhra Pradesh	Executive Engineer Roads and Buildings Kakinada	23
8		Consultancy for internal shore protection works at LPG Import Terminal, Ernakulam (LITE)	Indian Oil Corporation Limited	9.85
9		Preparation of a sustainable development plan for Kollam beach	Kerala State Coastal Area Development Corporation Limited	9.75
10		River training work at Shinya in Kasaragod district, Kerala—vetting of model study	Harbour Engineering Department	3
11		Construction of groyne field at Ambalappuzha, Arattupuzha, Pathiyankara, Vattachal and Kattoor in Alappuzha district, Kerala—IIT Madras site inspection	Kerala Irrigation Infrastructure Development Corporation Limited	1.40

		Planning and design of fishing harbours at Budagatlapalem, Pudimadaka, Biyyaputhippa, Kothapatnam and Vadarevu	Andhra Pradesh Maritime Infrastructure Development Corporation Limited	325
12		Construction of fish landing centre at Thazhanguda in Cuddalore district, Tamil Nadu	Executive Engineer Fishing Harbour Project Division Chennai	9
13		Preparation of DPR for the development of naval base infrastructure in Myanmar	RITES Limited	161
14		Preparation of DPR for Maldives Coast Guard Facilities at Uthuru Thila Falhu (UTF) Island, Maldives	RITES Limited	78
15		Construction of fish landing centre and shore protection works at Chinnameedu village in Nagapattinam district, Tamil Nadu	Executive Engineer Fishing Harbour Project Division Nagapattinam	9
16		Project Management (PMC) services for development of Greenfield Port at Machilipatnam in Andhra Pradesh and detailed project report (DPR) for development of Greenfield Port at Bhavanapadu in Andhra Pradesh	RITES Limited	95
17		Annual maintenance, support and management of web-enabled GIS based integrated land management system for Paradip Port Trust	Paradip Port Trust	104
18	Dr R Vijayakumar	Resistance and seakeeping model testing of inspection barge	Aquarius Shipyard Private Limited	18.57
19		Model testing of LUH with floats	HAL	63.25
20		Replacement of walkways of HOJ-II, HDC, Haldia	Syama Prasad Mookerjee Port, Kolkata	16.00
21		Strengthening of Brabourne Road Flyover and Brace Bridge	Syama Prasad Mookerjee Port, Kolkata	8.50
22	Prof. Nilanjan Saha	Strengthening of Rabindra Setu (erstwhile Howrah Bridge)	Syama Prasad Mookerjee Port, Kolkata	30
23		Civil construction of Outer Terminal II (jetty structures including Escape Route) at Haldia	Kolkata Port Trust	121
24		Strengthening Kedarnath Bridge for ash utilization	NTPC Limited	40
25		Assessment of Pasonallah guide bund performance and design for additional spurs	Dibang Infra Projects Private Limited	6

26		Marine study of exposed condition of buried sea bed Naphtha pipeline at Suvali Beach, Hazira, Gujarat	Reliance Industries Limited	16.75
27	Dr Suresh Rajendran	Floating restaurant - Kadalundi-Kozhikode, Kerala		0.49
28	Prof. Murali K	Providing technical services for laying of pipeline and allied facilities for Oil Jetty no. 7 at Old Kandla	Deendayal Port Trust	61
29		Providing the technical advisory services for the preparation of tender document, bid process management and PMC service for the firefighting system at OJ 8, Old Kandla, Gujarat	Deendayal Port Trust	35
30		Technical study on management of siltation at CSL quay side including monitoring of project site and numerical modeling	Cochin Shipyard Limited	42.28
31		Project Management Consultancy (PMC) for the work of dredging in Approach Channel, Turning Circle, Berth Pockets and surrounding of landing pontoon at Ghogha Ro-Ro Terminal	Deendayal Port Trust	60
32		Conducting of passing ship analysis for operation of RoRo ferry services at Hazira, Gujarat	Deendayal Port Trust	40
33		Improvement of the MIRS application for effective tracking of project progress through comprehensive and centralised data management including asset and financial modules	Inland Waterways Authority of India	13.41
34		Technical study/ assessment for strengthening and upgradation of JD Entrance walls at Chennai Port with permanent remedial measures	Chennai Port Trust	49
35		Consultancy services for providing project management consultancy for dredging/ deepening of Approach Channel at North Mandapam for CG Jetty	Garrison Engineer (I) (CG) Chennai	48
36		Review of the preliminary design of the stone column foundation proposed for the breakwaters for development of a deep-water port at Azhikkal in Kannur district of Kerala	Malabar International Ports and SEZ Limited	20
37		Design consultancy and project management services for development of ship repair facility at Pandu, Guwahati, Assam	Hooghly Cochin Shipyard Limited	477
38		Extended monitoring study of shipping channel leading to HDC (Phase-V)	Syama Prasad Mookerjee Port, Kolkata	528
39		Stability analysis of Haldia approach channel short-term and long-term measures	Inland Waterways Authority of India	49
40		Providing the technical advisory services for laying of pipeline and allied facilities for Oil Jetty no. 8 at Kandla	Deendayal Port Trust	168

41		Preparation of DPR for NW-27, NW-68 and NW-111	Inland Waterways Authority of India	14.64
42		Comprehensive study for the deepening of navigational channel to increase the draft of navigational channel at Deendayal Port Trust including capital and maintenance dredging requirements and preparation of technical and commercial feasibility report	Deendayal Port Trust	36
43		Consultancy service for ascertaining the transportation logistics of bulk petroleum products to Lakshadweep Islands from Kochi for an end-to-end solution	Indian Oil Corporation Limited	12.61
44		Preparation of DPR for river information services, manning, maintenance implementation and cost of the project for NW 2, 16 and 97	Inland Waterways Authority of India	40.25
45		Consultancy services for assessing structural soundness of buildings at SMA Rameswaram, Kochi	Ge (1) (NW) Fort Kochi, Veli Post, Kochi	25.40
46		Third-Party Quality Assurance (TPOA) Services by M/s NTCPWC at VOCPT	V O Chidambaranar Port Trust	83.76
47	Prof. Murali K (PI), Prof. Sannasiraj S A (Co-PI)	Structural stability of berths and residual life of structures' assessment of rehabilitation of work	New Mangalore Port Trust	45
48		Comprehensive report Regarding - Consultancy services for evolving short-term and long-term solution (sustainable dredging) in river estuary of Narmada at Dahej for plying GMB's ROPAX services with minimum 5m CD bed levels	Gujarat Maritime Board	6
49		Integrated project management and performance monitoring system development for Ministry of Ports shipping and Waterways	Department of Shipping, Ministry of Shipping, Road Transport and Highways	65.88
50	Prof. Murali K	Third-party survey agency for witnessing, certification of charts, dredge quantity calculation and certification of pre and post dredging surveys for maintenance dredging season 2021-2022	Jawaharlal Nehru Port Trust	31.50
51		Consultancy services for dredging works for GMB	Gujarat Maritime Board	45.79
52		Integrated project management and performance monitoring system - development for ALHW	Andaman Lakshadweep Harbour Works	29.89
53		Reuse of dredged material at NMPT	New Mangalore Port Trust	17.08

54		Third-party surveyor to witness and certify bathymetry survey and quantity calculation to proposed maintenance dredging at Chennai Port	Chennai Port Trust	8
55		Technical feasibility study to install new loading/unloading arm at berth nos. 10 and 11 for optimum utilization of berth	New Mangalore Port Trust	12
56		Technical feasibility study to handle smaller size ships at berth nos. 9, 10, 11 and 12	New Mangalore Port Trust	40
57		Technical feasibility study for gangway at Jetty no. 10, 11, 12 and 13 by using floating jetty	New Mangalore Port Trust	8
58		Detailed feasibility report for Capital Dredging Phase IV (b) to provide 18m draft at Kamarajar Port Limited	Kamarajar Port Limited	14.55
59		Preparation of DPR for floating jetties at 50 identified sites	Department of Shipping, Ministry of Shipping Road Transport and Highways	200
60		Common Code-AAAA	Common Code	20
61		Study on Impact analysis of developments on overall health of the river/navigable depth in the shipping channel of HDC	Syama Prasad Mookerjee Port, Kolkata	136
62		Extended monitoring study of shipping channel leading to HDC and updated numerical model study for removal of lock at HDC/alternate option for Haldia Dock (Phase IV)	Kolkata Port Trust	232
63	Prof. Murali K (PI), Prof. Ramanathan S (Co-PI)	Replacement and revamping of pipeline network at Oil Jetty Area, Kandla	Deendayal Port Trust	216
64	Prof. Murali K (PI), Prof. Sannasiraj S A (Co-PI)	Bore hole investigation for preparation of detailed project report for revised capital dredging	V. O. Chidambaranar Port Trust	273
65	Prof. Sannasiraj S A (PI), Prof. Murali K (Co-PI), Prof. Vijayakumar R (Co-PI), Prof. Sundar V (Co-PI)	Preparation of DPR for the development of naval base infrastructure in Myanmar	Rites Limited	161
66	Prof. Sannasiraj S A (PI), Prof. Murali K (Co-PI), Prof. Sundar V (Co-PI)	Preparation of DPR for Maldives Coast Guard facilities at Uthuru Thila Falhu (UTF) Island	RITES Limited	78
67	Prof. Sannasiraj S A (PI), Prof. Murali K (Co-PI)	Breakwater stability analysis and dredging analysis	Karaikal Port Private Limited	8

68	Prof. Sannasiraj S A (PI), Prof. Murali K (Co-PI), Prof. Sundar V (Co-PI)	Project Management (PMC) services for development of greenfield port at Machilipatnam in Andhra Pradesh and Detailed Project Report (DPR) for development of greenfield port at Bhavanapadu in Andhra Pradesh	RITES Limited	95
69	Prof. Sundaravadivelu R (PI), Prof. Sannasiraj S A (Co-PI), Prof. Murali K (Co-PI)	IE Oil Jetty Kandla	Deendayal Port Trust (Kandla Port Trust)	130
71	Prof. Sundaravadivelu R (PI), Prof. Murali K (Co-PI)	Setting up slipway facilities at ICGS Ratnagiri	Garrison Engineer (I) Project, Ratnagiri	291
72	Dr Abhilash Somayajula	Third-party proof check for floating solar blocks	AdTech Systems Ltd	5.08
73	Prof. S. Nallayarasu	Detailed engineering for connectivity of O-Yard Road and Spending Beach Road near BD II backup area at Chennai Port	Chennai Port Trust	12
74		Detailed engineering for construction of new fish jetty with approach trestle at Mallet Bunder, Mazgaon	Mumbai Port Trust	192
75		Detailed design for RO-RO facility at Kashid, Raigad district, Maharashtra	Maharashtra Maritime Board	30
76		DSF-II Block KG/OSDSF/GSKW/2018-Phase 1-pre-feed for jackets and decks	Petro6 Engineering and Construction Private Limited	20
77		Fatigue analysis and fire\blast analysis for sea water treatment (SWT) Module-Mero 4 project	NOV Intervention and Stimulation Equipment	45.39
78		Engineering investigation and validation of variation for TCB at Pir Pau, MBPT	Mumbai Port Trust	36
79		Detailed engineering for upgradation/ improvement of water supply system, storm water drainage system and rainwater harvesting of JNPT Township - Phase I Development	Jawaharlal Nehru Port Trust	85
80		Verification of HDD design of (stress analysis) various product pipeline at railway crossing in 0-5.5 km of Chennai-Asanur Section	Indian Oil Corporation Limited	8
81		Engineering Consultancy services for Búzios FPSO Project, Brazil	NOV Intervention and Stimulation Equipment	22.50
82		Validation, revision to cost estimate, detailed design and drawings and preparation of tender and bid valuation for the work of Fishery Harbour Project at Madhvad, Gir Somnath, Gujarat	Gujarat Maritime Board	180

83	Validation, revision to cost estimate, detailed design and drawings and preparation of tender and bid valuation for the work of Fishery Harbour Project at Sutrapada, Gir Somnath, Gujarat	Gujarat Maritime Board	150
84	Validation, revision to cost estimate, detailed design and drawings and preparation of tender and bid valuation for the work of Fishery Harbour Project at Veraval, Gir Somnath, Gujarat	Gujarat Maritime Board	150
85	Detailed engineering for (secondary steel) Scarborough MRU and PWT Module Project	Avineon India Private Limited	37.25
86	Design of boat landing at the mooring dolphin at Karaikal	Chemplast Sanmar Limited	4.5
87	Study and opinion with respect to the proposed early operation of Swan Energy LNG berth	Gujarat Maritime Board	10
88	Verification of HDD design of (stress analysis) various natural gas pipelines under city gas distribution project of IOCL at Salem	Indian Oil Corporation Limited	7.5
89	Design and proof consultancy of Coast Guard jetty at Hutbay, Andaman and Nicobar Islands	Ministry of Shipping	12
90	Expert witness in the arbitration proceedings between GMB and DDIL	Gujarat Maritime Board	15
91	Field development concept study for DSF-II Block KG/OSDSF/GSKW/2018 - Stage A - Phase 1	Petro6 Engineering & Construction Private Limited	20
92	Proof checking floating solar panel boards, mooring and anchor design	Novus Green Energy Systems Limited	15
93	Design and detail engineering of temporary structure for Caisson erection works at IOCL, Mult Jetty, Cochin	Mastek Engineering Private Limited	18
94	Detailed project report on dredging of berth pocket, turning circle and approach to -7m for Ghogha RoRo/RoPax Berth	Deendayal Port Trust	20
95	Proof checking and validation of GTI Terminal infrastructure augmentation	Jawaharlal Nehru Port Trust	35
96	Feasibility study report for fishery harbour facilities around Vadhavan Project Region, Maharashtra	Jawaharlal Nehru Port Trust	30
97	Structural analysis of platform LA & LB helideck for CTU operations	Petro6 Engineering & Construction Private Limited	7.07
98	Structural analysis of LA platform deck for temporary compressor on helideck	Petro6 Engineering & Construction Private Limited	4.11

99	Pre-feasibility report for coastal berths at Gangoli, Haryana	Ports & Inland Water Transport Department	10
100	Pre-feasibility report for coastal berth at Hangarakatte, Karnataka	Ports & Inland Water Transport Department	10
101	Advisory services for development of FSRU in Mumbai Harbour	Mumbai Port Trust	30
102	Verification of HDD design of (stress analysis) various R-LNG pipelines at railway crossing near Manali	Indian Oil Corporation Limited	8
103	Consultancy services independent assessment of timeline for construction of outer harbour, Varsha project	Navayuga Engineering Company Limited	20
104	Design and detail engineering for Caisson & Control Building Works at IOCL Mult Jetty, Cochin	Mastek Engineering Private Limited	28
105	Validation of technical reports submitted by APMT berthing and mooring of higher displacement container vessels at existing berth	Jawaharlal Nehru Port Trust	35
106	Feed design breasting and mooring dolphins for jetty in South KAS Port, Basra, Iraq	Capital Engineering Consultancy LLC	12
107	Revision to DPR for OTR Port at Campbell Bay	Ministry of Shipping	20
108	Project Management Unit (PMU) at Gujarat Maritime Board Head Office at Ahmedabad	Gujarat Maritime Board	132
109	Pre-feasibility report for greenfield port at Dahej using existing data	Gujarat Maritime Board	10
110	PMC for construction of the new jetty on south side of USL jetty at port Navlakhi (Part A, B, C & D)	Gujarat Maritime Board	220
111	Site selection study along east coast of India for LNG terminal/FSRU	Indian Oil Corporation Limited	32
112	Preparation of detailed feasibility report (DFR) for berthing and mooring of Medium Range (MR) tankers at OSTT, Visakhapatnam Port	Hindustan Petroleum Corporation Limited	27
113	Detailed engineering for berthing of small chemical carriers at second chemical jetty at Pir Pau	Mumbai Port Trust	10
114	Structural repair engineering to BPCL Jetty at JNPT	Jawaharlal Nehru Port Trust	10

115		Engineering services for operationalising RO-RO berth at JNPT	Jawaharlal Nehru Port Trust	12
116		Operation of RO-RO/RO-Pax services between JNPT, Navi Mumbai and Ghogha Terminal at Gujarat	Deendayal Port Trust	8
117		Technical feasibility report, detailed design, drawings, estimates, tender and monitoring work for setting up RO-RO/RO-Pax/ferry services at Pipavav	Deendayal Port Trust	215
118		Consultancy services for geotechnical review of foundations for Greater Male Connectivity Project - Male to Thilafushi bridge project	Afcons Infrastructure Limited	10
119		Technical feasibility report, detailed design, drawings, estimates, tender and monitoring work for setting up Ro-Ro/RoPax/Ferry Services at Mul-Dwarka, Gujarat	Deendayal Port Trust	215
120		Consultancy services for preparing assessment report for HM Jacket post damage to the brace during installation of HRP III project	L&T Hydrocarbon Engineering Limited	15

RBIC projects (ongoing and new)

S. No.	Faculty Member	Title	Industry	Amount (₹ in lakh)
1.	Prof. S. Nallayarasu	Development structural integrity management system (SIMS) for offshore platforms in western offshore India	PAN-IIT Project from ONGC	221
2.	Dr Tarun K. Chandrayadula	Hydroacoustic studies for the Indian Ocean Region	National Technical Research Organisation	40
3.	Dr Vijay K G	Code development for free spanning pipelines	Oceaneering International Services Limited, Chandigarh	1.4
4.	S. Balaji, Prof. P. Shanmugam	Feasibility study of underwater optical wireless communication	DEAL, DRDO	299
5.	Prof. Abdus Samad/ Abhijit Chaudhuri	Design of easily deployable wave-powered RO desalination system	University of Hawai'i at Mānoa, US	18.78
6.	Prof. Nilanjan Saha	Health assessment for towers on river crossing	Haldia Energy Limited	5
7.		Development of real time under keel clearance (RT-UKC) tool for Jawaharlal Nehru Port Authority	Jawaharlal Nehru Port Trust	212
8.	Prof. Murali K	Development of E-navigation software for National Waterways-1, IWAI	Inland Waterways Authority of India	42
9.		Operation and maintenance of VTS along with development of indigenous VTMIS software for Kamaraja Port Limited	Kamarajar Port Limited	507

10.		Annual maintenance contract of vessel traffic management system and development of indigenous VTMS software	Paradip Port Trust	169
11.		Development and implementation of indigenous smart docking aid for JNPT	Jawaharlal Nehru Port Trust	64.22
12.		Supply, installation, integration and commissioning of three smart buoys at JNPT	Jawaharlal Nehru Port Trust	499
13.		Night navigation in upper reaches of KDS channel from Garden Reach to Hooghly Point	Syama Prasad Mookerjee Port, Kolkata	109
14.		Development of integrated GIS and location-based project management system and mobile application and SMS integration with MIRS	Inland Waterways Authority of India	20.72
15.		Operation, manning and maintenance of VTS platform	V O Chidambaranar Port Trust	175
16.		Indigenous VTS Software System Development	V O Chidambaranar Port Trust	27.81
17.		Assessment and implementation of night navigation system for cross-river ferry service on river Brahmaputra under AIWTDS Project	Assam Inland Water Transport Development Society	344
18.		Supply, deployment and commissioning of civil structures including platform and mooring components for installation of ATG in River Hugli	Syama Prasad Mookerjee Port, Kolkata	629
19.		Supply, installation, telemetry integration and commission of automated tide gauge (ATG) system in River Hugli and its estuary	Kolkata Port Trust	1009
20.		Formation of geophysical information system (GIS) cell in the Tamil Nadu Disaster Management Agency	Disaster Management	1.51 crore
21.	Dr Rajesh R Nair	Geophysical assessment and data analysis of RGT flooding and modeling	Vedanta Limited	38

Faculty members' participation with other universities under MoU

S. No.	Faculty Member	Participation Details	University
1	Dr Abhilash Somayajula	Collaborations with Dr Srikanth Saripalli	Texas A&M University
2	Dr Abhilash Somayajula	Collaboration with Dr Paul Koola	Texas A&M University

Distinguished visitors to the department

S. No.	Visitor and Designation	Date of Visit	Purpose of Visit
1.	Dr RK Sarangi, Scientist G, SAC-ISRO, Ahmedabad	25-26 April 2022	Project Discussion
2	Visitors from Global Water and Climate Adaptation Centre - Aachen, Bangkok, Chennai, Dresden (ABCD-Centre)	4 April 2022	Project Discussion

4.15.6. Other Activities of the Department

Socially relevant activities carried out by the department

The department designed and fabricated a vending cart at the RuTAG, IIT Madras, to be used by the fruits or vegetables or milk vendors in different parts of India in all-weather conditions. This work was supported by a sponsored research grant from the Ministry of Panchayati Raj through DST, India. The team has been led by Prof. Rajiv Sharma and other members, including Prof. G. Venkatarathnam, Prof. Abdus Samad, Prof. Abhijit Deshpande P. and Karthikeyan G.

Other activities

Prof. G. Sureshkumar was the NCC Chief Coordinator between May 2009 and December 2021.

Student visit

S.No.	Student	Purpose of Visit	Date and Venue
1	Doddamani Hithaish	Student exchange (IGCS-Funding)	December 2021-April 2022, Otto von Guericke University Magdeburg, Germany

4.16. Department of Physics

4.16.1. Introduction

The Department of Physics was established in 1959. The department conducts research in many frontier areas in the sylvan campus of IIT Madras.

These include experimental solid-state physics, quantum electronics, optical and laser physics, soft condensed matter physics, and various theoretical and computational physics aspects, ranging from condensed matter to string theory and cosmology.

4.16.2. Academic Programmes

The Department of Physics offers a variety of programmes. It offers the undergraduate program B.Tech. (Engineering Physics) in coordination with the

Department of Electrical Engineering, three master's programs namely the Dual Degree (B.S. + M.S.), M.Sc., IDDD, and M.Tech. programs in Physics as well as the regular doctoral research (Ph.D.) program.

New lab established

1. Tunable laser source and power meter

The department has designed a set-up using a newly purchased tunable laser source and power meter at

1550 nm for detecting whispering gallery modes of bigger microspheres and micro-bottle resonators.

Students on the roll as of September 2021 + Ph.D. admission in January 2022

Programme	I Year	II Year	III Year	IV Year	V Year and Others	Total
B.Tech.	43	40	24	23	1	131
Dual Degree	12	13	19	17	13 +3	77
M.Sc.	47	35	2	1		85
M.Tech.	6	9	3			18
Ph.D.	22	45	47	40	28 + 31	213
Total	130	142	95	81	76	524

Students/Scholars who attended conferences/seminars/symposia abroad or in India

S.No.	Student/Scholar	Roll No.	Conference/Seminar/Symposia/Workshop	Date and Venue	Financial Assistance from
Abroad					
1	Bibekananda Das	PH16D004	17th International Conference on Advanced Nano Materials (ANM-2021), University of Aveiro	22-24 July 2021, Portugal (virtual)	Institute
2	Anita	PH15D203	European Physical Society Conference on High Energy Physics (EPS-HEP) 2021	26-30 July 2021, Hamburg (virtual)	None
3	Raghunath Pradhan	PH18D026	Particles and Nuclei International Conference (PANIC 2021), Lisbon	5-10 September 2021, Portugal (virtual)	Institute
4	Subash Chandra Behera	PH18D015	Particles and Nuclei International Conference (PANIC 2021) at Lisbon	5-10 September 2021, Portugal (virtual)	Institute

5	Niharika Rout	PH16D021	11th International Workshop on the CKM Unitarity Triangle 2021, University of Melbourne	22-26 November 2021, Australia (virtual)	None
6	Harikrishnan R	PH15D045	15th Joint MMM - INTERMAG Conference, New Orleans, LA	10 -14 January 2022 New Orleans, USA (virtual)	None
India					
1	Bibekananda Das	PH16D004	International Conference on Functional Material and Applied Physics (FMAP-2021), Sardar Vallabhbhai National Institute of Technology	14-15 May 2021, Surat (virtual)	None
2	Akash Mohapatra	PH16D001	National Conference on Low Dimensional Materials LDMAT-2021 UM-DAE CEBS, Mumbai & Material Research Society of India	2-4 June 2021, Mumbai (virtual)	None
3	Lavudya Devendar	PH17D044	National Conference on Low Dimensional Materials LDMAT-2021 UM-DAE CEBS, Mumbai & Material Research Society of India	2-4 June 2021, Mumbai (virtual)	None
4	Akash Mohapatra	PH16D001	ICSMMT 2021 - 3rd International Conference on Sustainable Manufacturing, Materials and Technologies Coimbatore	11-12 June 2021, Tamil Nadu (virtual)	None
5	Sugandh Sirohi	PH20D752	Participated in National Symposium on Radiation & Photochemistry (NSRP-2021), IIT Gandhinagar	25-26 June 2021, Gujarat (virtual)	None
6	Pranav Satheesh	PH17B008	9th KAGRA International Workshop organised by National Astronomical Observatories of the Chinese Academy of Sciences (NAOC) and co-organised by Beijing Normal University and Chinese Academy of Sciences (ITP, CAS)	7-9 July 2021 (virtual)	None
7	Divyajyoti	PH19D057	Amaldi Conference	19-23 July 2021 (virtual)	None
8	Pranav Satheesh	PH17B008	Amaldi Conference	19-23 July 2021 (virtual)	None
9	Bibekananda Das	PH16D004	International Conference on Thin Films and Nanotechnology: Knowledge, Leadership & Commercialization (ICTN-KLC), IIT Delhi	24-26 August 2021, Delhi (virtual)	None

10	Dinesh Kumar S	PH18D027	International Conference on Thin Films and Nanotechnology: Knowledge, Leadership & Commercialization (ICTN-KLC), IIT Delhi	24-26 August 2021, Delhi (virtual)	None
11	Divyajyoti	PH19D057	LIGO-Virgo-KAGRA Collaboration Meeting	6-9 September 2021 (virtual)	None
12	Bibekananda Das	PH16D004	International Conference on Condensed Matter and Device Physics (ICCMDP 2021) at Department of Physics, School of Technology, Pandit Deendayal Energy University, Gandhinagar	9-11 September 2021, Gujarat (virtual)	None
13	Bibekananda Das	PH16D004	9th National Conference on Condensed Matter Physics and Applications (CMPA 2021) at Manipal Academy of Higher Education, Manipal	16-17 September 2021, Karnataka (virtual)	None
14	Bibekananda Das	PH16D004	International Conference on Energy and Advanced Materials (ICEAM 2021) at Department of Physics and Materials Science and Engineering, Jaypee Institute of Information Technology	21-23 October 2021, Noida (virtual)	None
15	Bibekananda Das	PH16D004	Second International Conference on Physics of Materials and Nanotechnology (ICPN-2021) at Department of Physics, Mangalore University	28-30 October 2021, Mangala Gangotri (virtual)	None
16	Sugandh Sirohi	PH20D752	Ultrafast Science Conference (UFS-2021), UM-DAE Centre for Excellence in Basic Sciences, Mumbai University	12-14 November 2021, Mumbai (virtual)	None
17	Tulika Agrawal	PH18D010	UFS-2021, UM-DAE Centre for Excellence in Basic Sciences, Mumbai University	12-14 November 2021, Mumbai (virtual)	None
18	Tulika Agrawal	PH18D010	Conference on Frontier in Optics and Photonics (FOP21), IIT Delhi	24-27 September 2021, Delhi (virtual)	None
19	Bibekananda Das	PH16D004	Symposium on Magnetism and Spintronics (SMS 2021) School of Physical Sciences, National Institute of Science Education and Research (NISER)	25-27 November 2021, Bhubaneswar (virtual)	None
20	Bibekananda Das	PH16D004	International Winter School-2021, Jawaharlal Nehru Centre for Advanced Scientific Research	6-10 December 2021, Bangalore (virtual)	None

21	Satyasiban Das	PH19D005	65th DAE Solid State Physics Symposium (DAE-SSPS-2021), DAE Convention Centre, Anushaktinagar	15-19 December 2021, Mumbai (virtual)	Institute
22	Bibekananda Das	PH16D004	DAE-SSPS-2021, DAE Convention Centre, Anushaktinagar	15-19 December 2021, Mumbai (virtual)	Institute
23	Lavudya Devendar	PH17D044	3rd Indian Materials Conclave and 32nd AGM of MRSI	20-23 December 2021 (virtual)	None
24	Sugandh Sirohi	PH20D752	DAE-BRNS National Laser Symposium (NLS-30), Indian Laser Association and Bhabha Atomic Research Centre, Mumbai	19-22 January 2022, Mumbai (virtual)	None
25	Divyajyoti	PH19D057	Short talk: Observing higher modes of gravitational radiation in future detectors, CSGC 2022	2-5 February 2022 (virtual)	None
26	Bibekananda Das	PH16D004	Research Conclave 2022, Indian Institute of Technology Indore	10-12 February 2022, Indore (virtual)	None
27	Vetrivel Sankar	PH17D300	Poster presentation: Porous graphene-based polymer nanocomposite flexible piezoresistive strain sensors for new generation applications, IIT Madras	8-12 February 2022, Indore (virtual)	None
28	Divya Jyoti	PH19D057	Poster presentation: Probing waveform systematics caused due to the effect of orbital eccentricity, LIGO-Virgo-KAGRA Collaboration meeting jointly organised by National Science Foundation and operated jointly by Caltech and MIT	14-17 March 2022 (virtual)	None
29	Shashank Gandhi	PH20C040	LIGO-Virgo-KAGRA Collaboration meeting jointly organised by National Science Foundation and operated jointly by Caltech and MIT	14-17 March 2022 (virtual)	None
30	Pranav Satheesh	PH17B008	LIGO-Virgo-KAGRA Collaboration meeting jointly organised by National Science Foundation and operated jointly by Caltech and MIT	14-17 March 2022 (virtual)	None
31	Madhura Ghosh	PH20D750	Poster presentation: Entanglement Detection of Multiphoton States, American Physical Society Meeting 2022	14-18 March 2022 (virtual)	None

32	Zainab Chowdhry	PH18D060	Poster presentation: Analysis of population dynamics and amplification of electron paramagnetic resonance signal of nitrogen-vacancy spins in diamond under laser illumination, American Physical Society Meeting 2022	14-18 March 2022 (virtual)	None
33	Kaushik Paul	PH19D018	Poster presentation: Gravitational-wave phase for high mass ratio compact binary black hole system till fifth post-Newtonian order and tenth order in eccentricity, 40th ASI Meeting	25-29 March 2022 (virtual)	Institute
34	M Laxman	PH20D008	Poster presentation: Gravitational-wave phase for high mass ratio compact binary black hole system till fifth post-Newtonian order and tenth order in eccentricity, 40th ASI Meeting	25-29 March 2022 (virtual)	Institute
35	Divya Jyoti	PH19D057	Short talk: Exploring the effects of orbital eccentricity in the future detectors, 40th ASI Meeting	25-29 March 2022 (virtual)	Institute
36	Subhamoy Sahoo	PH14D202	International Conference on Advances in Chemical and Material Sciences (ACMS-2022) held at Indian Institute of Chemical Engineers, Kolkata	14-16 April 2022, Kolkata (virtual)	Institute

Students/Scholars who won outside prizes and awards

S.No.	Student/Scholar	Roll No.	Prize	Prize Awarded by
1	Dinesh Kumar S	PH18D027	Best Poster Award	International Conference on Thin Films and Nanotechnology: Knowledge, Leadership, and Commercialization, 24-26 August 2021
2	Bibekananda Das	PH16D004	Best Poster Award	International Conference on Advanced Physics, 1-3 April 2021
3	Bibekananda Das	PH16D004	Best Poster Award	International Conference on Thin Films and Nanotechnology: Knowledge, Leadership, and Commercialization, 24-26 August 2021
4	Bibekananda Das	PH16D004	Best Poster Award	International Conference on Energy and Advanced Materials, 21-23 October 2021
5	Bibekananda Das	PH16D004	Best Poster Award	Research Conclave 2022, IIT Indore, 10-12 February 2022

6	Sourav Kumar Kajli	PH15D037	Best Oral Presentation Award	Best Oral Presentation Award, 2nd Virtual International Conference on Hierarchically Structured Materials (ICHSM 2022) organised by the SRM University, Chennai on 24-25 March 2022, title: Efficient nanoscale photosensors based on CuO/Cu ₂ O core-shell single nanowire
7	Bibekananda Das	PH16D004	Best paper presentation	Best Paper Presentation in the conference, International Conference on Advanced Physics (IEMPHYS 2021); paper title: Perovskite/Wurtzite heterostructures for spintronics applications
8	Shanmuga Priya K	PH17D202	Poster Prize	Nanoscale Advances Poster Prize at Interdisciplinary Topics in Materials Science (ITAM-2021), 27-30 July 2021, on title: Fabrication of organic ferroelectric diisopropylammonium bromide (DIPAB) film for self-powered photodetector characteristics
9	Sutapa Dey	PH16D010	Best Oral Presentation Award	6th International Virtual Conference on Nanostructuring by Ion Beams (ICNIB 2021), 5-8 October 2021, co-organised by Inter-University Accelerator Centre, New Delhi, Institute of Physics, Bhubaneswar, Indian Institute of Technology Bhubaneswar, National Institute of Science Education and Research Bhubaneswar, and Ion Beam Society of India
10	Suhail Ahmad Rather	PH18D018	Editor's Suggestion	Chosen as an Editor's Suggestion in the journal Phys. Rev. Letts and featured in a focus story written by the well-known science writer, Phillip Ball.
11	Induja P	PH17D302	Best Paper Award	The paper, presented at ASME Turbo Expo 2021 (The American Society of Mechanical Engineers Turbo Expo Technical Conference), was chosen for the award.

Students/Scholars who won Institute Convocation/Institute Day Prize

S.No.	Student/Scholar	Roll No.	Prizes	Donor
1	Bibekananda Das	PH16D004	Institute Research Award	Institute
2	Athrey C D	PH17D022	Institute Research Award	Institute
3	Dipshika Ganguly	PH16D301	Keshav Ranganath Award	Endowment Prize
4	Mangiseti Sandhyarani	PH14D301	Mrs. Abayambal and Mr Natarajan Award for the best thesis in Ph.D. in Energy/Physics	Endowment Prize
5	Subhajit Pal	PH15D041	Mrs Abayambal and Mr Natarajan Award for the best thesis in Ph.D. in Energy/Physics	Endowment Prize
6	Shashi Bhusan Mishra	PH13D045	Prof A L Lashkar Prize for the best Ph.D. thesis in Physics	Endowment Prize
7	Kiran Kumar Panigrahi	PH19C019	Shri Jandhyala Lakshmi Kantam & Srimati Sitamahalakshmi Prize for the second topper with the best academic record in M.Sc. (Physics)	Endowment Prize

8	Abhik Bhattacharjee	PH19C001	Prof Chilukury Rama Sastry Memorial Prize for the best academic record in M.Sc. Physics	Endowment Prize
9	Mayank Sharma	PH19M005	Shri Krishnamurthy Sundarambal Prize for the best academic record in Functional Materials & Nanotechnology	Endowment Prize
10	Rohan Rajgopalan Iyer	PH16B007	Prof J Sobhanadri Prize for the best academic record in Physics in Dual Degree	Endowment Prize
11	Saurabh Vaishampayan	EP17B028	Shri Jandhyala Lakshmi Kantam & Shrimati Sitamahalakshmi Prize for the second-best academic record in B.Tech. (Engineering Physics)	Endowment Prize
12	Swetha Srinivasan	EP17B011	American Express Award to a woman student with the best academic record amongst the B.Tech. students and Dual Degree programmes	Endowment Prize
13	Swetha Srinivasan	EP17B011	Hema Balasubramanian Excellence Award for the best academic record in Engineering Physics	Endowment Prize
14	P. Induja	PH17D302	Institute Research Award	Endowment Prize
15	Suhail Ahmad	PH18D018	Keshav Ranganath Awards	Endowment Prize

4.16.3. Faculty and Their Activities

Faculty

Name and Qualifications	Major Areas of Specialisation
Professors	
Dr Arul Lakshminarayan (Head)	Quantum information, complex quantum systems, mathematical physics
Dr Aravind G	Autoionization and autodetachment resonances in atomic, molecular and cluster systems
Dr Ganesan A R	Applied optics, holography, adaptive optics
Dr Harish Kumar N	Superconductivity, spintronics, novel magnetic materials
Dr James Frederick Libby	Experimental high energy physics, experimental particle physics
Dr Jatindra Kumar Rath	Photovoltaics, nanomaterials, CVD
Dr Kasiviswanathan S	Near-and far-field response of plasmonic structures, films of transparent oxide and ternary semiconductors, systems exhibiting quantum coherence
Dr Krishnamurthy C V	Non-destructive evaluation, microstructural modelling, light scattering
Dr Lakshmi Bala S	Quantum dynamics and dynamical systems
Dr Manoj Gopalakrishnan	Theoretical biological physics, stochastic processes, statistical mechanics
Dr Markandeyulu G	Magnetism, magnetic materials
Dr Murugavel P	Multiferroic oxides, photo-ferroelectricity, energy storage materials
Dr Nirmala R	Intermetallics, rare earth intermetallics
Dr Prafulla Kumar Behera	Standard model physics and beyond, neutrino physics, detector and instrumentation
Dr Prasanta Kumar Tripathy	String theory, high energy physics
Dr Prem B. Bisht	Ultrafast laser spectroscopy, fluorescence microscopy

Dr Rajesh Narayanan	Condensed Matter Theory
Dr Ramachandra Rao M S	Correlation effect in metal oxide and doped diamond, electrical, optical and magnetic properties of metal oxide thin films and nanostructures and photovoltaic materials
Dr Ranjit Kumar Nanda B	Condensed matter physics
Dr Santhosh P N	Multiferroics, layered oxide materials, CuO-based nanomaterials
Dr Satyanarayana M V	Quantum optics, laser physics, photonics
Dr Sethupathi K	Experimental condensed matter physics, magnetic oxide materials and cryogenic insulation
Dr Somnath Chanda Roy	Experimental materials science, nanomaterials and thin films, nanotechnology for energy and environment
Dr Srinivas V	Magnetic materials
Dr Sriramkumar L	Gravitation and cosmology
Dr Subramanian V	Microwave techniques, propagation and devices dielectrics and multiferroics
Dr Sudakar Chandran	Materials for energy applications, defect-structure property correlations, multifunctional materials
Dr Sunil Kumar P B (IIT Palakkad)	Soft condensed matter physics, biological physics and computational physics
Dr Suresh Govindarajan	String theory
Dr Vijayan C	Nano-photonics, light-matter interaction
Associate Professors	
Dr Dawood Kothawala	Semi-classical gravity, quantum mechanics of black holes, QFT with minimal length scale
Dr Dillip Kumar Satapathy	Experimental soft condensed matter physics, X-ray and neutron characterization of materials organic and hybrid thermoelectrics
Dr Jayeeta Bhattacharyya	Semiconductors, optical spectroscopy, THz spectroscopy
Dr Mahaveer Kumar Jain	Semiconductors, photovoltaics, chemical sensors
Dr Manu Jaiswal	Experimental condensed matter physics, graphene and 2D systems, confined water
Dr Pattabiraman M	Experimental atomic physics, quantum optics, magnetometry
Dr Prabha Mandayam	Quantum information and computing, quantum optics
Dr Prahallad Padhan	Magnetic materials and heterostructures, spintronic devices
Dr Sivarama Krishnan	Femtosecond dynamics, photonics, quantum dynamics
Assistant Professors	
Dr Abhishek Misra	Electrical transport in quantum materials, device physics, nanoelectronics
Dr Ashwin Joy	Soft condensed matter theory
Dr Ayan Mukhopadhyay	Theoretical physics, quantum field theory and string theory, quantum many-body systems
Dr Basudev Roy	Soft condensed matter physics, optics and optical tweezers
Dr Chandra Kant Mishra	Gravitational waves
Dr Panchanana Khuntia	Experimental condensed matter physics
Dr Prabhat Ranjan Pujahari	Experimental high energy physics

Dr Prasanta Kumar Muduli	Quantum devices, quantum material, Weyltronics, Dirac fermions, topological antiferromagnetic spintronics
Dr Rajesh Singh	Soft matter
Dr Shanthanu Mukherjee	Condensed matter theory
Dr Sunethra Ramanan	Nuclear structure, renormalization group/effective field theory approaches, neutron star physics
Dr Vaibhav Madhok	Quantum information theory, chaos and complex systems
Dr Yasir Iqbal	Theoretical condensed matter physics, strongly correlated systems, frustrated magnetism
Dr Vidya Praveen Bhallamudi (ID)	Condensed matter physics magnetism, magnetic resonance, optics
Distinguished Professors	
Prof. G. Baskaran, IMSc, Chennai	Condensed matter physics and strongly correlated materials
Prof. Ramamurti Shankar	Theoretical particle physics and condensed matter physics
Emeritus Faculty	
Dr Neelima M. Gupte	Nonlinear dynamics, statistical physics
Prof. Ramaprabhu S. (Emeritus Professor)	Nanomaterials, energy storage, energy utilization
Visiting Faculty	
Prof. Surendra Pal Singh, University Distinguished Professor, University of Arkansas, Fayetteville, USA	Lasers, quantum, classical, and nonlinear optics, light-matter interaction, optical techniques in biophysics
Prof. Marcel Mudrich, SPARC - Aarhus University	Nature and technology, molecules and atoms, spectroscopy, molecular physics
Dr Srinivasan Krishnamurthy, Emeritus Scientist, SRI International, Menlo Park, CA	Dielectric metamaterials, nonlinear absorption and high-intensity light propagation in semiconductors, high-field transport in submicron devices, and optical properties of semiconductors, modeling MBE growth
Dr Nicolas Gheeraert	Circuit QED, spin-boson model, quantum information
Adjunct Faculty	
Prof. V. Balakrishnan, IIT Madras	Dynamical systems, quantum dynamics and stochastics
Prof. Shanker Balasubramanian, University Distinguished Professor, Michigan State University, USA	Applied electromagnetics, computational electromagnetics, non-linear materials
Dr Rajeev Pattathil, Rutherford Appleton Laboratory	Novel accelerator science
Prof. Peter van Straten, Utrecht University	Optics and photonics
Prof. Sampath Kumaran, Distinguished Professor, Tata Institute of Fundamental Research, Mumbai	Magnetism, superconductivity, physics of d- and f-electron systems (oxides and intermetallics), Kondo lattices, geometrically frustrated magnetism, spin-chain magnetism, multiferroics, nanomagnetism
Prof. Werner Paulus, Professor, University of Montpellier	Non-stoichiometric oxides, low-T reactivity of solids, materials for energy storage and transformation
Prof. Prellier Wilfrid, Director, CRISMAT Laboratory	Thin film

Prof. Miryala Muralidhar, Professor, Dy. President, Shibaura Institute of Technology (SIT), Tokyo, Japan	Superconductor, magnetization
Prof. Bent Weber, School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore	Electronic properties of novel two-dimensional and topological materials, quantum information processing science and technology, nanoelectronics and quantum device physics, structural and electronic characterizations of materials using scanning probe microscopy
Prof. Murukeshan, Director, Centre for Optical and Laser Engineering, Nanyang Technological University, Singapore	Optical engineering, optomechanics
Prof. Dr Ronny Thomale, Julius-Maximilian's University of Würzburg, Germany	Theoretical condensed matter physics, strongly correlated electron systems
DST INSPIRE Faculty	
Dr K. Lakshmi Ganapathi	Nanoelectronics devices, device physics, 2D materials and high-k dielectrics integration, thin films synthesis, properties and their applications
DST Ramanujan Fellow	
Dr Pramoda Kumar Nayak	Two-dimensional materials, topological insulators, quantum dots, van der Waals heterostructures, novel superconducting materials

Short-term courses/workshops/seminars/symposia/conferences organised by the faculty members

S.No.	Coordinator(s)	Title	Period
Seminars			
1	Dr Prem B Bisht	Online seminar on World Environment Day for school children of Uttarakhand	5 June 2021
2	Dr Basudev Roy	In-House Colloquium Talk: Study of soft and biological matter systems using optical tweezers	20 October 2021
Workshops			
1	Dr Prem B Bisht	Two-day of online workshop: IITM-University of Sydney Joint Workshop on Translational Health Science	15-16 March 2021
2	Dr Prafulla Kumar Behera	Member of International Advisory Committee and Convener of one of the sessions in the 30th International Workshop on Vertex Detectors	27-30 September 2021
3	Dr Prabhat Ranjan Pujahari	International workshop on Multiple Partonic Interactions at the LHC, LIP Lisbon (virtual)	11-15 October 2021
4	Dr Arul Lakshminarayan Dr Aravinda S, Mr Suhail Ahmad Rather	Virtual workshop on Spacetime duality in quantum circuits	10-11 November 2021
5	Dr Prabhat Ranjan Pujahari	Invited talk at SYMPHY 2021 Conference, IIT Bombay	11-12 December 2021

6	Dr L Sriramkumar, Dr Dawood Kothawala, Dr Chandra Kant Mishra	Seminar on School on Black Holes and Gravitational Waves as a part of CoE's activities	17-22 January 2022 (Virtual)
7	Dr L Sriramkumar, Dr Dawood Kothawala, Dr Chandra Kant Mishra	Second Chennai Symposium on Gravitation and Cosmology as a part of CoE's activities	2-5 February 2022
8	Dr L Sriramkumar, Dr Suresh Govindrajan, Dr Dawood Kothawala, Dr Chandra Kant Mishra, Dr Ayan Mukhopadhyay	Chandrasekhar Lecture Series 2021-2022 as a part of CoE's activities	2021-2022

Short-term courses/workshops/seminars/symposia/conferences/training attended by the faculty members in academic institutions and public sector undertakings

S. No.	Faculty Member	Title	Institution	Period
Seminar				
1	Dr Prem B Bisht	Time-Resolved Microscopy of Luminescent Nanodiamonds-Microcavity System	Focus on Microscopy	29 March 2021
Conferences				
1	Dr Jim Libby	The XV International Conference on Heavy Quarks and Leptons (HQL 2021)	University of Warwick (virtual)	13-17 September 2021
2	Dr Prafulla Kumar Behera	Higgs boson production and decay	PIC2021: The 40th International Symposium on Physics in Collision 2021, RWTH Aachen University, Aachen Germany	14-17 September 2021 Virtual
3	Dr Jim Libby	11th International Workshop on the CKM Unitarity Triangle (CKM 2021)	University of Melbourne (virtual)	22-26 November 2021

Special lectures delivered by the faculty in other institutions

S.No.	Faculty	Topic of Lecture	Institution	Date
1	Dr Sudakar Chandran	Invited talk: Defect engineering the materials for improved energy storage and energy conversion performance	B.M.S. College of Engineering Bengaluru	15-19 February 2021
2	Dr Prem B Bisht	Seminar talk: Time-resolved microscopy and imaging	IIT (ISM) Dhanbad	18 February 2021
3	Dr Sudakar Chandran	Seminar talk: X-ray photoelectron spectroscopy and Raman spectroscopy	Coimbatore Institute of Technology, Coimbatore	22-26 March 2021
4	Dr N. Harish Kumar	Delivered the inaugural address and the keynote address: The journey from electronics to spintronics; First International Conference on Research in Electronics Engineering and Communication Techniques (ICREACT 2021)	SRM, Vadapalani Campus, Chennai	3 May 2021

5	Dr N. Harish Kumar	Delivered a lecture, Half metallic fully compensated ferimagnets, through online mode in the seminar organised by the School of Physics	University of Hyderabad	8 July 2021
6	Dr Jim Libby	Four lectures on Relativistic mechanics and flavour physics at High-End Workshop (Karyashala) on Software Tools and Techniques Used in EHEP and its Applications	MNIT Jaipur	12-19 July 2021
7	Dr Manu Jaiswal	Invited lecture: Graphene and Its nanostructures for thermal management applications	AMBT-2021	13 July 2021
8	Dr Prem B Bisht	Webinar lecture of pCoE on Biosensing	Online (International)	20 July 2021
9	Dr Sudakar Chandran	Invited lecture talk: Defect engineering in multifunctional materials for enhanced functional properties	CSIR - Institute of Minerals & Materials Technology, Bhubaneswar	4-6 August 2021
10	Dr Prem B Bisht	Seminar talk: Optics, nonlinear optics and applications	Anna University	6 August 2021
11	Dr Sudakar Chandran	Special seminar: Defect-engineering of functional materials for improved energy conversion and energy storage applications	Sathyabama Institute of Science and Technology, Tamil Nadu	16-28 August 2021
12	Dr Manu Jaiswal	Invited lecture talk: Interplay of morphology and heat transport in graphene-based systems	4th Conference on Quantum Condensed Matter Physics-2021 QMAT-2021 (online)	7-11 September 2021
13	Dr Sudakar Chandran	Gave special seminar: Multifunctional properties of bismuth ferrite nanostructures	Bharathiar University, Coimbatore	10 September 2021
14	Dr Sudakar Chandran	Gave special seminar: Nanostructured cathode and anode materials for Li-ion battery energy storage applications	Bharathiar University, Coimbatore	11 September 2021
15	Dr Manu Jaiswal	Invited talk: Paradigms in heat transport in graphene and its nanostructures	9th National Conference on Condensed Matter and its Applications CMPA-2021, MAHE, Manipal (online)	16-17 September 2021
16	Dr Jim Libby	Belle II: flavour physics at the intensity frontier	IISER Mohali	10 November 2021
17	Dr Prafulla Kumar Behera	Higgs: Past, Present and Future	Lucknow University, India	12 November 2021
18	Dr Subramanian V	Invited talk: Electromagnetic Metamaterials	SRM-AP, Amaravati	16 November 2021
19	Dr Prem B Bisht	Basics of experimental ultrafast optics and spectroscopy for the beginners	Conference on Optics and Photonics (SCOP), Physical Research Laboratory, Ahmedabad	26 November 2021

20	Dr Manu Jaiswal	Invited lecture talk: Interplay of morphology and heat transport in graphene-based systems	QMAT-2021	9 December 2021
21	Dr Harish Kumar N	Invited talk: Heusler alloy half metals and spin gapless semiconductors, in the online symposium, Recent Advances in Magnetism and Spintronics	IIT Hyderabad	20 December 2021
22	Dr Harish Kumar N	Lecture: Half metals and spin gapless semiconductors, webinar series organised by the Department of Physics, St. Joseph's College	St. Josephs College, Tiruchirappalli, Tamil Nadu	20 December 2021
23	Dr Subramanian V	Invited lecture: Metamaterials and applications	IIT Indore	28 February 2022
24	Dr Subramanian V	Talk: Electromagnetics and applications	Sona College, Salem	28 February 2022
25	Dr Prafulla Kumar Behera	New Physics Searches at CMS	Institute of Physical Science, Spain	1 March 2022

Visits abroad by faculty

S. No.	Faculty Member	Country Visited	Date	Purpose of Visit	Funding from
1	Dr Sivaramakrishnan	Germany	10 September-6 October 2021	Present Research/Project work at Deutsches Elektronen - Synchrotron DESY, Hamburg	IITM
2	Dr Sivaramakrishnan	Italy	26 November-14 December 2021	Attend and present a paper in Time-resolved studies of double interatomic Coulombic decay and roaming reactions in	IITM
3	Dr Yasir Iqbal	Hungary	28 November-24 December 2021	Short visit to give a talk in the seminar, Numerical Many-Body Approaches in Emergent Quantum Materials, and scientific discussion and collaborative research to Wigner Research Centre for Physics, Budapest, Hungary	IITM
4	Dr Yasir Iqbal	Toulouse, France	13 January-11 February 2022	Collaborative research work and discussion under the ongoing joint project at Laboratoire de Physique Theorique de Toulouse	IITM
5	Dr Yasir Iqbal	Wurzburg, Germany	14-18 February 2022	Delivered a talk in workshop at the Lehrstuhl für Theoretische Physik in Julius - Maximilian Universität	IITM
6	Dr Prafulla Kumar Behera	Santander, Spain	21 February-5 March 2022	Undertake collaborative research work at the University of Cantabria, Spain	Spain
7	Dr Vidya Praveen Bhallamudi	Barcelona, Spain	21-25 March 2022	Invited talk: Magnetic resonance spectroscopy using NV relaxometry, Nano MRI-7	IITM

Awards obtained by faculty

S. No.	Faculty Member	Award	Awarded by	Awarded for	Date of Award
1	Dr Santhosh P N	Medal Lecture	Materials Research Society of India (MRSI)	Research contributions	21-23 December 2021
2	Dr Basudev Roy	IISER Kolkata Alumni Award 2022	IISER Kolkata	Academic excellence	2 January 2022
3	Dr S Ramaprabhu	Prestigious Fellowship	National Academy of Sciences, India (NASI)	Excellence in research	2022

Fellowships of academies and professional societies

S. No.	Faculty Member	Year of Admission
Humboldt Fellowship		
1	Prof. A.R. Ganesan	1992
Others		
1	Dr Prem B Bisht	2021 (Senior member, Optica, formerly OSA)
2	Dr A.R. Ganesan	Senior Member, Society of Photo Instrumentation Engineers SPIE (USA) from 2018
3	Dr A.R. Ganesan	Fellow of the Optical Society of India (OSI) from 1989

Journal editorial boards

S. No.	Faculty Member	Position	Journal Name
1	Dr Prafulla Kumar Behera	Published (along with co-editors) two large volumes of the XXIII DAE High Energy Physics Symposium Proceedings held at IIT Madras in 2018	<i>Springer Proceedings in Physics</i>
2	Dr Manu Jaiswal	Appointed as an Editorial Board Member of the <i>Journal of Physics D: Applied Physics</i> , an international journal, for a period of two years beginning from 1 January 2022	<i>Journal of Physics D: Applied Physics</i> (IOP, UK)

4.16.4. Design and Development Activities

New facilities added or major equipment procured

S. No.	Equipment	Value (₹ in lakh)
1	Tunable laser source and power meter	44
2	RF Sputtering and thermal evaporation in microwave laboratory	60
3	Scanning tunneling microscope	14
4	Assembled Dell Precision 7920 workstations x 2 (24 C)	26

Patents filed

S. No.	Faculty Member	Topic of Patent
1	Dr Prem B Bisht	Excitation of whispering gallery modes (WGM) in a micro-bottle resonator using an optical beam with orbital angular momentum (OAM)
2	Dr Prem B Bisht	Method for generating white light using WL-GQD
3	Dr Manu Jaiswal	A membrane with patterned binder, method of preparation and application thereof

4.16.5. Research and Consultancy Sponsored research projects (ongoing and new)

S. No.	Title	Period	Funding Agency	Amount (₹ in lakh)	Coordinator(s)
1	Scaling electronic dynamics in finite quantum systems from angstrom to nanoscale	15 November 2016-31 October 2022	Max Planck Institute for Nuclear Physics	89.07	Dr Sivarama Krishnan
2	Surface dominated electronic transport in lateral and vertical two-dimensional layered topological insulator heterostructures – Ramanujan Fellowship	18 September 2017-17 September 2022	Department of Science & Technology	114.30	Dr Pramoda Kumar Nayak
3	2D Semiconductor heterostructure devices for next-generation electronics	5 June 2017-4 June 2022	Department of Science & Technology	94.91	Dr Lakshmi Ganapathi K
4	A novel paradigm for strongly correlated systems – Ramanujan Fellowship	5 June 2018-4 June 2023	Department of Science & Technology	38.00	Dr Ayan Mukhopadhyay
5	Development of technology and processes to produce nanomaterials, nanocomposites, nanocoatings, nanolubricants and nanoceramics	8 January 2019-30 June 2022	Department of Science & Technology	919.95	Dr Ramachandra Rao MS, Dr Bhattacharya S S, Dr Ramaprabhu S, Dr Arunachalam N
6	Exploring magnetic, magnetocaloric and magnetoresistive properties of $Ti(Fe_{1-x}Co_x)_2$ ($0 < x < 1$)	4 December 2018-3 June 2022	Science and Engineering Research Board	10.05	Dr Nirmala R
7	Unravelling radiation damage processes in biologically relevant mesoscopic systems	15 March 2019-30 September 2022	Scheme for Promotion of Academic and Research	74.27	Dr Sivarama Krishnan
8	Investigation of effect of carbon quantum dots on carrier generation in organic semiconductor thin films for photovoltaic applications	21 October 2021-20 October 2024	Council of Scientific and Industrial Research	13.23	Dr Jayeeta Bhattacharyya, Dr Vijayan C, Dr Debductta Ray
9	Quantum information technologies with nitrogen vacancy and magnetic resonance	27 March 2020-26 March 2023	Department of Science & Technology	502.14	Dr Bhallamudi V Praveen, Dr Ramachandra Rao MS, Dr Basudev Roy, Dr Ranjit Kumar Nanda, Dr Sethupathi K, Dr Anil Prabhakar
10	Exotic magnetic properties and spin dynamics of low-dimensional and frustrated quantum magnets	16 May 2019-15 November 2022	Department of Science & Technology	90.89	Dr Panchanana Khuntia

11	Quantum emitters based on atomic defects in diamond and 2D materials	15 May 2020-14 May 2023	Ministry of Education	97.27	Dr Bhallamudi V Praveen, Dr Pramoda Kumar Nayak
12	Reprogrammable polymer based soft actuators	15 May 2020-14 May 2023	Ministry of Education	49.88	Dr Dillip Kumar Satapathy
13	Whispering gallery enabled light scattering: achieving enhanced efficiency in perovskite quantum dot sensitized mesoporous metal oxide Whisperonic solar cells	15 May 2020-14 May 2023	Ministry of Education	99.41	Dr Sudakar Chandran, Dr Ranjit Kumar Nanda
14	Development of large area two-dimensional layered quantum material for memristor applications	5 February 2020-4 February 2023	Ministry of Education	99.48	Dr Abhishek Misra, Dr Anbarasan P, Dr Lakshmi Ganapathi K, Dr Pramoda Kumar Nayak
15	Network models for climate studies	30 October 2019-29 April 2022	Department of Science and Technology	13.76	Dr Neelima M Gupte
16	Bolometer based millimeter wave sensing for the development of microwave camera	6 July 2019-5 July 2022	Science and Engineering Research Board	40.52	Dr Subramanian V, Dr Ramachandra Rao MS
17	Investigating the observational imprints of non-trivial inflationary dynamics	2 July 2019-1 July 2022	Science and Engineering Research Board	10.19	Dr Sriramkumar L
18	An experimental investigation of resonances and stable excited states of interstellar medium anions through photoexcitation	22 May 2019-21 May 2022	Science and Engineering Research Board	69.29	Dr Aravind G
19	Sn Integrated 3D, porous carbon-based scaffolds as high-capacity anode for sodium-ion batteries	21 October 2019-20 October 2022	Science and Engineering Research Board	10.05	Dr Sudakar Chandran
20	Exploring photocatalytic and photovoltaic properties of dimensionally tuned, vertically aligned BiFeO ₃ nanorods and heterostructures	10 February 2020-9 February 2023	Science and Engineering Research Board	29.30	Dr Somnath Chanda Roy
21	Projective symmetry group classification of quantum spin liquids and spin nematics for systems with arbitrary spin	17 February 2020-16 February 2023	Science and Engineering Research Board	6.60	Dr Yasir Iqbal
22	Flexible quantum light emitting devices from van der Waals layered materials	2 December 2019-1 December 2022	Impacting Research Innovation and Technology - IMPRINT	87.76	Dr Abhishek Misra, Dr Jayeeta Bhattacharyya, Dr Ramachandra Rao MS, Dr Lakshmi Ganapathi K, Dr Pramoda Kumar Nayak

23	Development of high-performance and low-cost boron-doped diamond electrodes for wastewater treatment	9 December 2019-8 December 2022	Impacting Research Innovation and Technology - IMPRINT	142.78	Dr Ramachandra Rao MS, Dr Sathyan S, Dr Kothandaraman Ramanujam, Dr Arunachalam N
24	Multifunctional plasmonic nanosystems for photodynamic therapy	1 April 2019-31 March 2023	Alumni Association	2.75	Dr Prem B Bisht
25	Physical and mathematical modelling of microtubule-cortex interaction and the dynamic of the mitotic spindle during eukaryotic cell division	18 November 2020-17 November 2023	Department of Science & Technology	23.65	Dr Manoj Gopalakrishnan
26	Network planning of secured quantum key distribution network	27 March 2020-26 March 2023	Department of Science & Technology	51.10	Dr Prabha Mandayam, Dr Pradeep Sarvepalli
27	Nonclassical resources: from quantum simulations to incompatibility	27 March 2020-26 March 2023	Department of Science & Technology	63.65	Dr Arul Lakshminarayan, Dr Rajesh Narayanan, Dr Vaibhav Madhok, Dr Prabha Mandayam
28	Growth and systematic characterization of PLD grown large area ferroelectric PMN-PT thin film for naval device worthiness	3 February 2021-2 February 2023	Defence Research and Development Organisation	99.08	Dr Ramachandra Rao MS, Dr Sethupathi K
29	Glass transition and turbulence in active fluids	28 December 2020-27 December 2023	Science and Engineering Research Board	26.51	Dr Ashwin Joy
30	Intertwining crystal and orbital symmetries to explore novel nontrivial electronic phases	3 February 2021-2 February 2024	Science and Engineering Research Board	35.35	Dr Ranjit Kumar Nanda
31	Modelling strong electron-phonon interactions in systems with emergent order	29 December 2020-28 December 2023	Science and Engineering Research Board	6.60	Dr Shantanu Mukherjee
32	Magnetocaloric and electrocaloric properties of 'Ru/Sn/Ti' modified copper-zinc ferrite for refrigeration, solid-state cooling and energy storage applications	1 March 2021-28 February 2023	Science and Engineering Research Board	22.37	Dr Murugavel P
33	Numerical investigations of quantum spin liquids in SU(N) antiferromagnetic models	19 April 2021-18 April 2024	Indo-French Centre for the Promotion of Advanced Research	17.79	Dr Yasir Iqbal
34	Pairing in neutron-star matter with renormalization-group based low-momentum interactions	1 October 2020-30 September 2023	Indo-French Centre for the Promotion of Advanced Research	21.71	Dr Sunethra Ramanan

35	Correlated quantum materials: exploring spin transport properties in non-stoichiometric iridium oxide thin films and single crystals	1 October 2020-30 September 2023	Indo-French Centre for the Promotion of Advanced Research	74.11	Dr Ramachandra Rao MS
36	Novel non-perturbative approaches to strongly coupled QCD matter	1 October 2020-30 September 2023	Indo-French Centre for the Promotion of Advanced Research	29.89	Dr Ayan Mukhopadhyay
37	Rheological studies of activity of the cell membrane, cytoplasm and organelles using new rotational mode of probing in optical tweezers	1 January 2021-31 December 2025	Wellcome Trust	317.43	Dr Basudev Roy
38	Development of high-performance and low-cost boron-doped diamond electrodes for wastewater treatment	18 May 2020-8 December 2022	Kapindra Precision Engineering Private Limited	3.00	Dr Ramachandra Rao MS, Dr Sathyan S, Dr Kothandaraman Ramanujam, Dr Arunachalam N
39	Development of technology and processes to produce nanomaterials, nanocomposites, nanocoatings, nanolubricants and nanoceramics	11 February 2021-30 June 2022	Tube Investments of India Limited	109.26	Dr Ramachandra Rao MS, Dr Bhattacharya S S, Dr Ramaprabhu S, Dr Arunachalam N, Dr Ramaprabhu S
40	Flexible quantum light emitting devices from van der Waals layered materials - (Industry Position of the IMPRINT - PH1920738MIMP008913)	30 October 2019-29 October 2022	Ants Innovations Private Limited	23.13	Dr Abhishek Misra,
41	Tribological devices by ultrashort laser pulse texturing: high-throughput and precision	27 May 2021-26 May 2024	Department of Science & Technology	89.15	Dr Sivarama Krishnan
42	Sublattice distortion tailored $A_2B'B''X_6$ ($A=Cs$, $B'=Ag$, Na ; $B''=In$, Bi , Sb); $X=Cl$, Br) inorganic perovskites for optoelectronic and photovoltaic applications	14 March 2022-13 March 2025	Science and Engineering Research Board	47.78	Dr Sudakar Chandran
43	Quest for low-field large magnetoresistance at room temperature and quantum effect in the $La_{0.7}Sr_{0.3}MnO_3$ - $LaAlO_3$ superlattice	8 March 2022-7 March 2025	Science and Engineering Research Board	31.85	Dr Prahallad Padhan
44	Investigation on electromagnetic wave propagation in a photonic crystal having temporal dependence of impedance	5 March 2022-4 March 2025	Science and Engineering Research Board	43.78	Dr Subramanian V, Dr Krishnamurthy C V
45	VAJRA Visiting Faculty - Prof. Sashi Satpathy	4 January 2022-3 January 2023	Science and Engineering Research Board	21.00	Dr Ranjit Kumar Nanda

46	Study of self-powered wearable tribo-electric nano generator fabrics with different contact modes	15 December 2021-14 December 2024	Science and Engineering Research Board	10.05	Dr Sudakar Chandran
47	Development of novel 2D organic-inorganic hybrid halide perovskite materials for efficient photovoltaic applications	8 December 2021-7 December 2024	Science and Engineering Research Board	10.05	Dr Jatindra Kumar Rath
48	Investigations on 2D vanadium carbide MXene (V ₂ CTx) nanosheets for sensing non-polar gases and volatile organic compounds at room temperature	1 February 2022-31 January 2024	Science and Engineering Research Board	22.37	Dr Ramaprabhu S
49	Nano, micro whispers and their applications in imaging technologies	21 February 2022-20 February 2025	Science and Engineering Research Board	18.03	Dr Prem B Bisht
50	Dynamical signatures of quantum spin liquids in frustrated magnets	7 February 2022-6 February 2023	I-HUB Quantum Technology Foundation	12.60	Dr Yasir Iqbal
51	Synthesis and characterization of hexagonal boron nitride ceramic aerogels as thermal insulation layer for future space missions	23 July 2021-22 January 2023	Indian Space Research Organization	22.92	Dr Manu Jaiswal
52	Structural insights through X-ray absorption studies to enhance the electrochemical performance of oxide electrodes and electrolyte	18 March 2021-17 March 2022	UGC-DAE Consortium for Scientific Research	0.45	Dr Sudakar Chandran

Industrial consultancy projects (ongoing and new)

S. No.	Faculty Member	Title	Industry	Amount (₹ in lakh)
1	Dr Ramachandra Rao MS, Dr Bhattacharya S S, Dr Ramaprabhu S	Testing of internal samples by various sophisticated instruments	Common Code	5.90
2	Dr Ramachandra Rao MS, Dr Ramaprabhu S	Testing of the external sample by various sophisticated instruments	Common Code	5.00
3	Dr Murugavel P, Dr Dillip Kumar Satapathy	Dielectric relaxation spectroscopic measurements at Physics department facility	Common Code	5.00
4	Dr Murugavel P, Dr Dillip Kumar Satapathy	Dielectric relaxation spectroscopic measurements at Physics department facility - IT	Common Code	5.00
5	Dr Ramaprabhu S, Dr Manu Jaiswal	Synthesis and characterization of platinum nano-catalyst for fuel cell, hydrogen sensor applications in the context of cold trap regeneration of sodium-cooled fast reactors	Indira Gandhi Centre for Atomic Research	42.48

6	Dr Prem B Bisht, Dr Jeevandoss C R	Development of laser measurement devices	Laser Science Services India Private Limited	4.00
7	Dr Ramaprabhu S, Dr Manu Jaiswal	Capture and conversion of CO ₂ gas for automobile I.C. engine exhaust gases using nanocomposite materials	Tide Water Oil Company (India) Limited	25.00
8	Dr Ramaprabhu S, Dr Manu Jaiswal	Study of GCN coating on the glass to explore applications	Saint-Gobain Research India Private Limited	9.91
9	Dr Sivarama Krishnan	Femto Science Facility	Common Code	5.00
10	Dr Sivarama Krishnan	Femto Science Facility	Common Code	5.00
11	Dr Subramanian V	Measurements at microwave frequencies (Phase II)	Common Code	5.00
12	Dr Ramaprabhu S, Dr Manu Jaiswal	Development of nanocarbon-sulfur cathode to minimize Li-polysulfides shuttling in Li-S battery	Electrodrive Powertrain Solutions Private Limited	24.66
13	Dr Krishnamurthy C V, Dr Subramanya Sarma V	Numerical modeling of ultrasonic defect response and its subsequent effect on the probability of detection (POD) in a polycrystalline nickel-based superalloy	Defence Metallurgical Research Laboratory	74.23
14	Dr Ramaprabhu S, Dr Manu Jaiswal	Study of GCN coating on glass to explore applications	Saint-Gobain India Private Limited (Research and Development)	16.99

Faculty members' participation with other institutions under MoU

S. No.	Faculty	Participation Details	University
1	Dr Prem B Bisht	Collaborator	University of Southampton, UK
2	Dr Prem B Bisht	Collaborator	University of Sydney, Australia

Distinguished visitors to the department

S.No.	Visitor and Designation	Date of Visit	Purpose of Visit
1	Prof. Surendra Singh, Visiting faculty	8 February-28 April 2022	Periodic visit to the department, delivered series of lectures and interacted with research students

Faculty visit

S.No.	Faculty Member	Purpose of Visit	Date and Venue
1	Prof. Sunil Mukhi, IISER, Pune	Colloquium talk: Quantum gravity in three space-time dimensions	11 August 2021, virtual
2	Prof. Vijay B Shenoy, Indian Institute of Science, Bangalore	Colloquium talk: Fractons, from fields to paper and trees	18 August 2021, virtual
3	Prof. B Sriram Shastry, University of California, Santa Cruz	Colloquium talk: Towards unraveling the puzzling cuprates	25 August 2021, virtual

4	Dr Sutapa Samata, IACS Kolkata	Seminar talk: Study of DC and Hall resistivity for a new semi-holographic non-Fermi liquid model	26 August 2021, virtual
5	Mr Debajyoti Sarkar, IIT Indore	Seminar talk: Light-ray moments as endpoint contributions to modular Hamiltonians	2 September 2021, virtual
6	Mr B. Ananthanarayan, CHEP, IISc Bangalore	Seminar talk: $(g-2)$ of the muon: where theory and experiment challenge one another	3 September 2021, virtual
7	Dr Artem Mishchenko, University of Manchester, UK	Public lecture: 2D Materials research and innovation: programmable van der Waals materials	6 September 2021, virtual
8	Dr S. Aravinda	Journal Club talk: Quantum teleportation is a reversal of quantum measurement	17 September 2021, virtual
9	Prof. Mohamed Rameez, TIFR, Mumbai	Colloquium talk: Neutrino astronomy and fundamental physics with Ice Cube	22 September 2021, virtual
10	Mr Alexandre Belin, CERN	Seminar talk: Bootstrapping quantum extremal surfaces	23 September 2021, virtual
11	S Rahul, Poornaprajna Institute of Scientific Research	Seminar talk: Majorana zero modes and bulk-boundary correspondence at quantum criticality	23 September 2021, virtual
12	Dr Saurabh Pradhan, TU Dortmund	Seminar talk: Transport properties of magnetic impurities in superconductor	24 September 2021, virtual
13	Ms Sukanya Mitra, TIFR	Seminar talk: Correspondence between momentum-dependent relaxation time and field redefinitions in relativistic hydrodynamics	27 September 2021, virtual
14	Mr Onkar Parrikar, TIFR	Seminar talk: Quantum error correction in the black hole interior	30 September 2021, virtual
15	Mr K Narayan, Chennai Mathematical Institute	Seminar talk: Cosmologies, entanglement and extremal surfaces	7 October 2021, virtual
16	Dr Rahul Trivedi, PDF, Max Planck Institute of Quantum Optics	Seminar talk: Algorithms for simulations and technological applications of many-body open quantum systems	8 October 2021, virtual
17	Dr Josef Leutgeb, TU Wien	Seminar talk: Holographic QCD and the anomalous magnetic moment of the muon	11 October 2021, virtual
18	Dr Surbhi Khetrpal, IMSc	Seminar talk: Quantum information scrambling in out-of-equilibrium quantum systems	12 October 2021, virtual

19	Mr Somnath Maity, IIT Kanpur	Seminar talk: Equilibration and information propagation in integrable many-body quantum systems	13 October 2021, virtual
20	Mr Harold Erbin, MIT	Seminar talk: Non-perturbative renormalization for the neural network-QFT correspondence	18 October 2021, virtual
21	Mr Eran Palti, Ben-Gurion University	Seminar talk: Convexity of charged operators in CFTs and the weak gravity conjecture	27 October 2021, virtual
22	Mr Teresa Bautista Solans, King's College London	Seminar talk: Timelike Liouville gravity	28 October 2021, virtual
23	Mr Wilke van der Schee, CERN	Seminar talk: Non-equilibrium steady state formation in holographic theories	1 November 2021, virtual
24	Prof. R. Shankar, IISc, Chennai	Colloquium talk: Climate Physics	1 November 2021, virtual
25	Mr Hans Jockers, University of Mainz	Seminar talk: Deformations of JT gravity	2 November 2021, virtual
26	Mr Nima Lashkari, Purdue University	Seminar talk: Renormalization and approximate error correction	11 November 2021, virtual
27	Mr Matthias Kaminski, University of Alabama	Seminar talk: Relativistic spin hydrodynamics with torsion	22 November 2021, virtual
28	Dr Lata Joshi, Institute for Quantum Optics and Quantum Information (IQOQI), Innsbruck	Seminar talk: Proposal to probe many-body quantum chaos with quantum simulators	25 November 2021, virtual
29	Prof. Jae Hyun Lee, Department of Materials Science & Engineering & Department of Energy Systems Research, Ajou University, South Korea	Seminar talk: Toward scalable production of 2-dimensional materials	25 November 2021, virtual
30	Dr Johanna Erdmenger, University of Wurzburg	Seminar talk: Relating quantum information aspects of quantum mechanics and gravity	2 December 2021, virtual
31	Dr Soumita Pramanick, NCBJ, Warsaw	Seminar talk: Realistic neutrino mass models with discrete flavour symmetries	16 December 2021, virtual
32	Dr Ameen Yasir P.A., Indian Institute of Science, Bangalore	Seminar talk: Realization of some unitary transformations and generation of entanglement between different degrees of freedom of light	16 December 2021, virtual
33	Dr Tamoghna Das, University of Gdansk, Poland	Seminar talk: Non-locality of quantum optical fields and its application in quantum information protocols	17 December 2021, virtual
34	Dr Apurv Chaitanya Nellikka, Tecnológico de Monterrey, Puebla, México	Seminar talk: Light-matter interaction with structured optical beams	17 December 2021, virtual

35	Prof. Chong-Haur Sow, Department of Physics, National University of Singapore	Physics demo aimed primarily at students and seminar talk: The physics professor's suitcase of travelling science wonders: a physics demo for students	17 December 2021, virtual
36	Dr Jacky Kumar, Institute for Advanced Study (IAS), Technische Universität München (TUM)	Seminar talk: Connecting the physical phenomena at different scales using effective field theories	20 December 2021, virtual
37	Dr Chandrakala Meena	Seminar talk: Emergent pattern and dynamic stability of complex systems	20 December 2021, virtual
38	Dr Rakshyakar Giri, Technical University of Denmark	Seminar talk: Quantum sensing using nitrogen-vacancy centers in diamond: detrimental effect of charge state dynamics on spin-based sensing	20 December 2021, virtual
39	Dr Soumya Sadhukhan, RKM Residential College (Autonomous) & Vivekananda Center for Research	Seminar talk: The dark and the invisibles: quest for new physics	21 December 2021, virtual
40	Dr Nanasaheb M. Shinde, School of Electrical Engineering, Korea University	Seminar talk: Importance of chemically processed metal oxide nanostructures in energy storage devices	22 December 2021, virtual
41	Dr Parvendra Kumar, Bhagini Nivedita College, University of Delhi	Seminar talk: Quantum dot- cavity system as a resource for photonic quantum technologies	28 December 2021, virtual
42	Dr Monojit Ghosh, University of Hyderabad	Seminar talk: Physics Performance of ESSnuSB experiment	29 December 2021, virtual
43	Dr Sourav Kundu, Techno India University, Kolkata	Seminar talk: Detection of base-pair mismatches in double- stranded DNA via nanopore sequencing: A new beginning	5 January 2022, virtual
44	Prof. Timo Betz, The third Institute of Physics, Georg August University, Gottingen	Colloquium talk: How fundamental physics leads the way to a better understanding of life's complexity	9 February 2022, virtual
45	Mr Hong Liu, MIT	Seminar talk: Emergent times in holography	3 February 2022, virtual
46	Prof. Surendra Singh, Honorary Visiting Faculty, IIT Madras	Seminar talk: Structured electromagnetic beams	2 March 2022, virtual
47	Dr Debarghya Banerjee, MIPKs, Dresden, Germany	Journal Club Talk: Angular momentum coupling in active- matter hydrodynamics	4 March 2022, virtual
48	Prof. B. S. Sathyaprakash, The Pennsylvania State University, USA	Colloquium talk: Unveiling the universe with gravitational- wave observations	9 March 2022, virtual
49	Prof. Tommaso Roscilde, Ecole Normale Supérieure de Lyon	Colloquium talk: Using quantum many-body physics to generate "resourceful" entanglement	17 March 2022, virtual

50	Prof. Ady Arie, Tel-Aviv University, Israel	Colloquium talk: Generation, control and applications of photonic spatial qubits	18 March 2022 Virtual
51	Ramakrishna Ramaswamy, Indian Institute of Technology Delhi	Seminar talk: Synchrony as constrain	21 March 2022, virtual
52	Prof. Manuel Bibes, Université Paris-Saclay, France	Public lecture: Spin-charge interconversion with two-dimensional oxide systems	23 March 2022, virtual
53	Mr Yiming Chen, Princeton University	Seminar talk: Spectral form factor for free large N gauge theory and strings	24 March 2022, virtual
54	Prof. Sibasish Ghosh, The Institute of Mathematical Sciences, Chennai	Colloquium talk: Towards universal detection of bi-partite entanglement	30 March 2022, virtual

Student visit

S.No.	Student	Purpose of Visit	Date and Venue
1	Anup Kumar Sikdar, PH16D055	Research activities	3 March-15 July 2022, University of Cantabria, Spain

Event held

New faculty appointments and retirements

In the academic year 2020-21, two new Assistant Professors, namely Dr Prasanta Kumar Muduli and Dr Rajesh Singh joined the department. Prof. Neelima M Gupte joined as Emeritus Professor after her retirement. Dr Ranjit Kumar Nanda, Dr Prahallad Padhan, Dr Sudakar Chandran, Dr Aravind G, Dr C V Krishnamurthy and Dr Somnath Chanda Roy were promoted to professors and Dr Prabha Mandayam and Dr Jayeeta Bhattacharyya were promoted to Associate Professors.

Degrees awarded

This year, the department awarded 25 Ph.D. degrees (including two Dual Ph.D. Degree. M.Sc. and Ph.D.), four M.Tech., 38 M.Sc., nine B.S.+M.S., and 26 B.Tech. (including one B.S. and two B.Tech. Honours).

4.16.6. Other Activities of the Department

Socially relevant activities carried out by the department

Prof. Prem B Bisht coordinated and conducted a one-day seminar for school children in Uttarakhand on World Environment Day (5 June 2021).

International collaboration achievements by the department

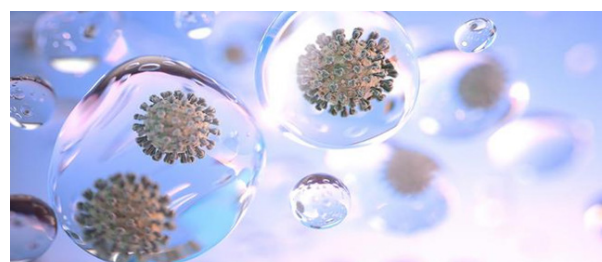
Journal publications in collaboration with the University of Sydney
Nanoscale Photodetector: Publication: The Hindu Business Line

Researchers at IIT-Madras have developed an alternative to silicon photodetector, a major component in modern appliances. A nanoscale photodetector developed by IIT-Madras has higher energy efficiency compared to existing materials.

A photodetector or photosensor converts light radiation into an electrical signal, which results in excess charge carriers. They are used in applications ranging from high-tech night vision equipment, camera, optical spectroscopy systems and optical communications to everyday appliances such as automatic door opening systems, barcode readers and intelligent lighting systems.

Prof Somnath C. Roy, Department of Physics, who led the research, says, they have “demonstrated a device made from a common oxide material that is highly stable and versatile and achieves excellent response to a wide-spectrum of light because of unique core-shell nanostructure-based design”.

The device was fabricated via single-step photolithography comprising a cupric oxide and cuprous oxide core-shell architecture – that is, cupric oxide nanowire as the inner core and the cuprous oxide nanoparticles’ layer as the outer shell.





Sophisticated Analytical Instrument Facility

5.1. Introduction

The Sophisticated Analytical Instrument Facility (SAIF)—established with financial support from the Department of Science and Technology, Government of India—provides sophisticated instruments and equipment to students, scientists, researchers and faculty members from IIT Madras and academia, educational institutions, national laboratories, R&D establishments and industries from all over India in general and south India in particular. The primary purpose of the facility is to enable the scientific community to collect data and carry out analysis using extremely sophisticated analytical equipment

for advanced research at very nominal rates.

SAIF also undertakes, on request, servicing of sophisticated analytical instruments at other institutions and provides training in the operation and maintenance of such equipment. Periodically, SAIF conducts workshops, seminars and conferences to disseminate information on new trends in sophisticated instrumentation and methods in addition to providing training and hands-on experience. Students from educational institutions, colleges and schools visit SAIF regularly to gain exposure to the use of sophisticated instruments for analysis.

5.2. Faculty and Their Specialisations

Faculty

Name and Qualifications	Major Areas of Specialisation
Professor	
Prof. S.S. Bhattacharya, Ph.D. (Head)	Nanocrystalline materials - synthesis and characterisation, Superplasticity - theoretical and experimental, metal forming
Adjunct Professor	
Prof. S. Subramanian, Ph.D.	Nuclear magnetic resonance spectroscopy, electron spin resonance spectroscopy
Senior Technical Officers	
C. Baby, Ph.D.	Nuclear magnetic resonance spectroscopy, LC-HRMS, GC-MS
K.V. Rama, Ph.D.	ICP-OES, thermal and elemental analyses
Technical Officers	
Sudhadevi Antharjanam, Ph.D.	Single crystal X-ray diffractometry, optical spectroscopy
Junior Technical Superintendent	
N.K. Gopinath, M.Sc., M.Phil.	Materials science, thermogravimetry and thermal analysis
Junior Technicians	
P. Thiruppathi, IEEE	Electronics and Instrumentation
A. Varalakshmi, M.Sc	Chemistry
P. V. Narayanan, M.Sc	Physics

5.3. Design and Development Activities

New facilities added or major equipment procured

S. No.	Equipment	Value (lakh of ₹)
1.	Gas Chromatograph - Mass Spectrometer (GC-MS (Agilent))	50
2.	Ultra-High Pressure-Quadrupole Time of Flight-High Resolution Mass Spectrometer, UHPLC-QTOF-HRMS (Waters)	200

Activities initiated

Major infrastructure development made in the department

The following two research facilities have been set up in the SAIF:

- Gas chromatograph-Mass Spectrometer (GC-MS): Agilent GC System with single quadrupole Mass analyzer is used to separate and identify thermally stable volatile compounds. The GC consists of split/spitless injectors and capillary columns for different applications. NIST spectral library search is also available.
- Ultra-High Pressure Liquid Chromatograph-Quadrupole Time of Flight-High Resolution Mass Spectrometer (UHPLC-QTOF-HRMS): Waters' state-of-the-art ACQUITY HCLASS PLUS UPLC system coupled with XevoG2XS QTOF spectrometer can perform UPLC separation and MS, MS/MS and TOF-MRM measurements.

These facilities are now being used, at a nominal charge, by students and research scholars from IIT Madras as well as academic institutions from all over the country. In addition, the facility is available for government R&D institutions and industries against payment.

Short-term courses/workshops/seminars/symposia/conferences organised by faculty members

S. No.	Coordinator	Title	Period
1.	Dr K.V. Rama, SAIF and Dr John Hawkins, LECO Corporation, USA	Elemental Analysis LECO CS744, ONH836, TruSpec Micro, 628 O (CHNSO analysers)	7 July 2021
2.	Dr P.K. Sudhadevi and Perkin Elmer India Limited	Basic, Instrumentation and Applications of UV-Vis-NIR Spectroscopy	17 February 2022
3.	Dr P.K. Sudhadevi and Laser Spectra Services, HORIBA products, Bengaluru	Steady State and Time Resolved Fluorescence Spectroscopy, From Concept to Practice	24 March 2022

Photographs of the new facilities created are given below



Gas Chromatograph - Mass Spectrometer (GC-MS)



Ultra-High Pressure Liquid Chromatograph-Quadrupole Time of Flight-High Resolution Mass Spectrometer (UHPLC-QTOF-HRMS)



Centres of Special Facilities

6.1 Centre for Continuing Education

6.1.1. Introduction

The Centre for Continuing Education (CCE) was established in June 1986. The centre supports faculty members in meeting the following objectives of IIT Madras:

- Providing knowledge-based technological services to satisfy the needs of society and industry
- Helping build national capabilities in science, technology, humanities, management, education and research
- Effectively participating and contributing to the institute's commitment of providing a broad base of learning opportunities through the following major activities:
 1. Conducting PhD programme under the Quality Improvement Programme (QIP) sponsored by the AICTE
 2. Conducting short-term courses (STCs) sponsored by the AICTE
 3. Writing books under the Book Writing Scheme

4. Conducting Continuing Education Programmes (CEPs) for professionals from industry
5. Developing and conducting User-Oriented Programmes (UOPs) for specific industries through which their engineers acquire higher degrees (M.Tech.)
6. Developing and conducting web-enabled M.Tech. programmes for industries.
7. Conducting courses under National Programme on Technology-Enhanced Learning (NPTEL)
8. Recording important activities through the facilities in the Central Photographic Section
9. Conducting conferences/seminars/workshops/symposia
10. Allotment of ISBN numbers for textbooks and other publications of faculty members
11. Conducting courses under Global Initiative of Academic Networks (GIAN) sponsored by the Ministry of Education
12. Conducting courses under IIT PAL

6.1.2. Quality Improvement Programme

The faculty development activities under AICTE that are funded by the Ministry of Education are geared to ensure quality, relevance, excellence and equity in technical education by supporting activities under the Quality Improvement Programme (QIP) scheme. Deputation to the academic programmes (mainly to Ph.D.) of the institute facilitates the career development of the faculty members of AICTE-

approved technical institutions in the country. Since the inception of the programme to 2021-2022, 568 faculty members from other institutions have obtained Ph.D. degrees and 610 faculty members have obtained M.Tech. degrees. The M.Tech. programme has been discontinued by AICTE from 2020 since there are many institutions in the country offering the course.

Period	Ph.D.			M. Tech.		
	Admitted	No. on Roll	Awarded	Admitted	No. on Roll	Awarded
2021-2022	13	38	6	--	--	--
Since inception	702 (689+13)	–	568 (562+6)	643	–	610

Short-term training programmes under QIP

Organisation of short-term courses under QIP for faculty members of engineering institutions is supported by the AICTE, and these courses (AICTE-STC) open avenues in which the institute's faculty members with rich experience in new and upcoming areas can share their expertise with others. Under this programme, 17 courses (with a total duration of 17 weeks) were conducted during 2021-2022

and 402 teachers of engineering institutions participated. From 1970-1971 to 2021-2022, 467 (450+17) programmes have been conducted, and 11,881 (11,265+616) teachers from various engineering colleges have participated and benefited from these courses. The details of the courses conducted in 2021-2022 are given in the following table:

List of Short-Term Course under QIP (AICTE-STC-2021-22)					
S.No.	Coordinators	Department	Title and Project No	Date	Participants
1.	C. Lakshmana Rao	Applied Mechanics	Recent Advances in the Modeling of Inelastic Response and Integrity Assessment of Metals CCE/QIP/STC/10/CLR/AM/2021-22	10-13 January and 17-20 January 2022	44
2.	Ramesh Kannan Kandasami, R G Robinson	Civil Engineering	Characterization and Modelling of Geomaterials CCE/QIP/STC/07/RKK&RGR/CE/2021-22	17-22 January 2022	40
3.	Deepa Venkitesh, Anil Prabhakar	Electrical Engineering	Advances in Optical Communication CCE/QIP/STC/06/DV&AP/EE/2021-22	27 January-2 February 2022	42
4.	Somashekhar S	Mechanical Engineering	Power Transmission and Motion Control: Fluid Power Circuit, Control and Application CCE/QIP/STC/05/SS/ME/2021-22	14-19 February 2022	52
5.	Benny Raphael	Civil Engineering	Machine Learning for Construction Automation CCE/QIP/STC/02/BR/CE/2021-22	19, 26 February-5, 12, 19, 26 March 2022	30
6.	V. Vijayalakshmi, Rupashree Baral	Management Studies	Research Methods in Organizational Behaviour and Human Resource Management CCE/QIP/STC/17/VV&RB/MS/2021-22	21-26 February 2022	35

7.	R. Sarathi	Electrical Engineering	Condition Monitoring of Power Apparatus Adopting Multi Sensor Fusion Technique CCE/QIP/STC/09/RS/EE/2021-22	28 February-5 March 2022	31
8.	Chandan Sarangi, Sachin Gunthe, S. M. Shiva Nagendra	Civil Engineering	Concepts in Measurement, Laboratory Experiment and Modelling of Atmospheric Pollutants CCE/QIP/STC/16/CS&SG&SMSN/CE/2021-22	7-12 March 2022	30
9.	G. L. Samuel	Mechanical Engineering	Laser Applications in Machining and Material Processing (LAMMP) CCE/QIP/STC/14/GLS/ME/2021-22	7-12 March 2022	30
10.	N. Arunachalam	Mechanical Engineering	Prognostics and Health Management of Engineering Systems CCE/QIP/STC/03/NA/ME/2021-22	7-12 March 2022	31
11.	Somashekhar S	Mechanical Engineering	Mechatronics: Integrated Technology for Intelligent Machines CCE/QIP/STC/04/SS/ME/2021-22	14-19 March 2022	65
12.	Devaprakash Muniraj, Satadal Ghosh, Nandan Kumar Sinha	Aerospace Engineering	Unmanned Aircraft Systems: Road to Autonomy CCE/QIP/STC/12/DM&SG&NKS/AE/2021-22	21-26 March 2022	35
13.	Ayon Chakraborty	Computer science	Location Tracking for Internet of Things CCE/QIP/STC/19/AC/CSE/2021-22	21-26 March 2022	30
14.	Ethayaraja Mani, Tarak Patra	Chemical Engineering	Applications of Molecular Simulations and Machine Learning in Research CCE/QIP/STC/18/EM&TP/CH/2021-22	21-26 March 2022	31
15.	Jayant Jha, Neelesh S Upadhye	Mathematics	Data Analysis Using Statistical Learning Techniques 21-26 March 2022	21-26 March 2022	30
16.	Rajesh Kumar	Humanities Science	Practical Challenges and Theoretical Approaches in Learning English CCE/QIP/STC/11/RK/HSS/2021-22	21-26 March 2022	30
17.	Prasad Patnaik BSV, Ninitha A J, B Jayanand Sudhir	Applied Mechanics Biotechnology Applied Mechanics	Circulatory Physiology, Mechanics and Design (CPMD) CCE/QIP/STC/13/BSVPP&AJN&BJS/AM&BT/2021-22	18-20, 25-27 March 2022	30
Total					616

6.1.3. Continuing Education Programmes

Several short-term courses (STCs) were organised for professionals from industry and R&D establishments on a need basis. The programmes were tailor-made to suit the requirements of industries. The Continuing Education Programmes (CEPs) are divided in two categories: Internal CEPs and External CEPs. From their inception in 1980 to 2021-2022, 1,713 (1,653+60) STCs have been conducted, benefitting 5,40,564 (5,38,628+1936) participants. In 2021-2022, 60 STCs were conducted. The following table lists these STCs:

List of Internal CEPs 2021-2022

S. No.	Department/s	Coordinator/s	Title of the Proceedings	Duration	Number of Participants
1.	Mechanical Engineering	G.L. Samuel	Cyber Physical Manufacturing and Inspection Systems	10 April-10 September 2021	8
2.	Humanities and Social Sciences	Merin Simi Raj, Avishek Parui	Workshop on Memory Studies	12-16 April 2021	108
3.	Management Studies	P. Krishna Prasanna	MDP on Option Trading Strategies	25-25 April 2021	51
4.	Robert Bosch Centre for Data Science and Artificial Intelligence (RBCDSAI)	Arun Rajkumar	Applied Data Science and Machine Intelligence	6 May 2021-6 May 2024	60
5.	Electrical Engineering	Anil Prabhakar, Prabha Mandyam	Option Trading Strategies	24 May-30 June 2021	24
6.	Computer Science and Engineering	Arun Rajkumar	A Short Course on Machine Learning	5 July-13 August 2021	65
7.	Electrical Engineering	Andrew Thangaraj	Digital Skilling Course	5 July-16 July 2021	-
8.	Civil Engineering	Murali Krishna	Performance Grading and Polymer Modified Binder	16-17 July 2021	49
9.	Electrical Engineering	Qadeer Ahmad Khan	Power Management for Mobile Application	28-29 July 2021	20
10.	Humanities and Social Sciences	Aysha Iqbal	Introduction to Film Studies	1 August-15 December 2021	110
11.	Management Studies	T.J. Kamalanabhan, M. Thenmozhi	Skills for Retail Management and Profitability	4-5 August 2021	60

12.	Management Studies	T.J. Kamalanabhan, Rupashree Baral	Skill Development Program	11-12 August 2021	40
13.	Humanities and Social Science	Merin Simi Raj	Food, Memory, Machines	17-20 August 2021	104
14.	Management Studies	T.J. Kamalanabhan, M. Thenmozhi	Skills for Retail Management and Profitability	17-18 August 2021	40
15.	Management Studies	V. Vijayalakshmi	Coaching with Depth	18-28 August 2021	-
16.	Management Studies	T.J. Kamalanabhan, Rupashree Baral	Skill Development Program	25-26 August 2021	40
17.	Management Studies	T.J. Kamalanabhan, M. Thenmozhi	Skills for Retail Management and Profitability	27 August 2021	40
18.	Management Studies	V. Vijayalakshmi	Coaching with Depth	28 August 2021	-
19.	Engineering Design	Palaniappan Ramu	Introduction to Optimization and Robust Design	20 September-17 November 2021	24
20.	Management Studies	Richa Agrawal	Design Thinking Workshop	7-22 October 2021	-
21.	RBCDSAI	Nirav Bhatt, Arun Rajkumar	Introduction to Data Science	11 October-6 November 2021	25
22.	Mechanical Engineering	Ratna Kumar Annabattula	Simulation of Granular Material Systems using Discrete Element Method	23 October-20 November 2021	
23.	Humanities and Social Sciences	Avishek Parui, Merin Simi Raj	Memory, Cognition, Literature	9-12 November 2021	101
24.	Civil Engineering	Ashwin Mahalingam	Training Program on Public Private Partnerships	16-18 December 2021	6
25.	Chemical Engineering	Rajagopalan Srinivasan	Process Safety: Deep Skilling for PI Industries	20 December 2021-31 March 2022	22
26.	NCCRD	V. Raghavan, Amit Kumar, Muruganandam T.M.	Training in Combustion Modeling	1-16 January 2022	23

27.	Civil Engineering	Piyush Chaunsali	Online Course on Environmental Sustainability Assessment	17-20 January 2022	51
28.	Electrical Engineering	Deepa Venkitesh	Advances in Optical Communication	27 January-2 February 2022	15
29.	Mechanical Engineering	Somashekhar S.	Power Transmission and Motion Control Fluid Power Circuit: Control and Applications	14-19 February 2022	8
30.	Management Studies	T.J. Kamalanabhan, M. Thenmozhi	Supervisory Development Programme	14-19 February 2022	-
31.	Metallurgical and Materials Engineering	K. C. Hari Kumar	Advanced Computational Thermodynamics and Kinetics	15 February-14 August 2022	-
32.	Management Studies	T.J. Kamalanabhan, M. Thenmozhi	BLOOM- Management Development Programme	16-23 February 2022	-
33.	Civil Engineering	Benny Raphal	Machine Learning for Construction Automation (only on Saturday)	19 February-26 March 2022	39
34.	Management Studies	M. Thenmozhi, T.J. Kamalanabhan	Project Leadership and Managerial Development Programme	21 February- 2 March 2022	-
35.	Management Studies	V. Vijayalakshmi	Research Methods in Organizational Behaviour and Human Resource Management	21-26 February 2022	98
36.	Central Electronics Centre	Boby George, K. Sulochana	Basics of Solar Photovoltaic System and its Applications	28 February-4 March 2022	9
37.	Engineering Design	Shankar Ram	Advanced Control Systems: State Space Based Approaches for Control System Design	1 March-30 April 2022	-

38.	Mechanical Engineering	Ratna Kumar Annabattula	Training for Caterpillar Engineers	9 March-26 May 2022	-
39.	Mechanical Engineering	G.L. Samuel	Laser Application in Machine and Material Processing	7-13 March 2022	16
40.	Mechanical Engineering	N. Arunachalam	Prognostics and Health Management of Engineering Systems	7-12 March 2022	53
41.	Mechanical Engineering	Somashekhar S.	Mechatronics: Integrated Technology for Intelligent Machines	14-19 March 2022	14
42.	Applied Mechanics	Prasad Patnaik B S V	Circulatory Physiology, Mechanics and Design (CPMD)	18-20 and 25-27 March 2022	34
43.	Chemical Engineering	Ethayaraja Mani	Applications of Molecular Simulations and Machine Learning in Research	21-26 March 2022	11
44.	Computer Science & Engineering	Ayon Chakraborty	Location Tracking for Internet of Things	21-26 March 2022	96
45.	Aerospace Engineering	Devaprakash Muniraj	Unmanned Aircraft Systems: Road to Autonomy	21-26 March 2022	7
46.	Mathematics	Jayant Jha, Neelesh S Upadhye	Data Analysis Using Statistical Learning Techniques	21-26 March 2022	52
47.	Humanities and Social Sciences	Rajesh Kumar	Practical Challenges and Theoretical Applications in Teaching English	21-26 March 2022	16
Total					1531

List of External CEPs 2021-2022

S.No.	Department/s	Coordinator/s	Title of the Proceedings	Duration	Number of Participants
1.	Engineering Design	Venkatesh Balasubramanian	Design Thinking for Organizational Excellence	20 March 2021-15 January 2022	22
2.	Management Studies	R K Amit	Decision Making for Engineering	22-23 April 2022	-
3.	Management Studies	Nandan Sudarsanam	Artificial Intelligence and Machine Learning in Healthcare	13 May-30 July 2021	40
4.	Electrical Engineering	Shanthi Pavan	Practical Design of Data Converters	30 June-15 July 2021	75
5.	Ocean Engineering	S. Nallayarasu	Training on Port and Harbour Engineering for Gujarat Maritime Board	27-31 July 2021	11
6.	Civil Engineering	Ashwin Mahalingam	Mentoring and Augmenting Planning Skills 8.1	6 September 2021-28 February 2022	20
7.	Ocean Engineering	Srinivasan Chandrasekaran	Workshop on Quality Improvement and HR Management in Engineering Education	26-27 November 2021	70
8.	Applied Mechanics	Babji Srinivasan	Business Analytic Models	1 December 2021-1 February 2022	40
9.	Management Studies	Saji K Mathew	Management Development Programme	31 January-4 February 2022	34
10.	Chemical Engineering	Rajagopalan Srinivasan	Natural Gas: An India Panorama	24 February 2022	20
11.	Electrical Engineering	Shanthi Pavan	Practical Design of Data Converters	28 February-11 March 2022	75
12.	Management Studies	Nandan Sudarsanam	Reinforcement Learning	6 March-4 April 2022	20
13.	Electrical Engineering	Shanthi Pavan	Practical Design of Data Converters	28 February-11 March 2022	-
Total					405

6.1.4. User-Oriented Programmes

The User-Oriented Programmes (UOPs) are designed to suit the requirements of industrial organisations. Two-year M.Tech programmes are being organised to meet the specific needs of the associated industries. So far, 28 programmes have been conducted or are being conducted by the Departments of Civil Engineering, Ocean Engineering, Mechanical Engineering, Engineering Design and Management Studies.

List of User-Oriented Programmes (UOPs)

S. No.	Department/s	Coordinator/s	Title of the Proceedings	Project No.
1	Management Studies	Arshinder Kaur, Lata Dyaram	VLM Project	CCE/UoP/28/PGPEX-VLM/21-22
2	Civil Engineering	K. Ramamurthy, Koshy Varghese	Construction Technology & Management (CT&M)	CCE/CEP/UoP/24/KR&KV/CE/19-20
3	Civil Engineering	K. Ramamurthy, Koshy Varghese	Construction Technology & Management (CT&M)	CCE/CEP/UoP/26/KR&KV/CE/20-21
4	Civil Engineering	Rupen Goswami	Post-Graduate Diploma in Bridge Engineering (PGDPBE)	CCE/CEP/UoP/27/RG/CE/21-22

6.1.5. Web-enabled M.Tech. programmes for industries

IIT Madras has been actively interacting with leading industries through R&D, consultancy projects and continuing education programmes. Several projects have been undertaken towards development of products and processes. Based on approval and guidelines of the Senate and the needs of industries, IIT Madras has come up with web-based M.Tech. programmes with adequate opportunity for student and teacher interaction. In these programmes, post-class interaction is facilitated by an effective course management platform. Candidates have to take approved core and elective courses of their choice and can complete the entire M.Tech. programme at their own pace. On completion of each course, a certificate will be awarded, and on finishing the required credits in different categories, the candidate will be eligible for a master's degree. The candidate may also do a set of laboratory experiments and projects as defined by the curriculum. Seven programmes jointly worked out with industries by the concerned departments have

been approved by the Senate. The details are given in the table below. The web-enabled M.Tech (Automotive Technology) course was started in May 2017. Five automotive industries sponsored 29 students for this course in the first year. This was followed by two other courses offered by the Department of Electrical Engineering, namely M.Tech (VLSI) with 27 students and M.Tech (Communication Systems Engineering) with 49 students. The second batch of students joined the M.Tech (Automotive Technology) programme in November 2018. Two more automotive industries sent their candidates for this programme for the second batch. The second batch of students joined the M.Tech (VLSI) and M.Tech (Communication Systems Engineering) programmes in September 2018. A new web-enabled programme, M.Tech (Information Security) was started in September 2018 with 33 students. A new web-enabled programme, M.Tech (Aerospace Engineering) was started in August 2021 with 20 students.

List of Senate-approved web-enabled M.Tech programmes for industries

S. No.	Department	Title
1.	Aerospace Engineering	Mathematical Methods for Aerospace Engineers
2.	Aerospace Engineering	Aerodynamics and Aircraft Performance
3.	Computer Science and Engineering	M.Tech in Computer Science and Engineering with specialisation in Information Security
4.	Electrical Engineering	Master's in Communications Systems Engineering
5.	Electrical Engineering	Master's in VLSI
6.	Mechanical Engineering	Automotive Technology
7.	Metallurgical and Materials Engineering	Industrial Metallurgy

	2017	2018	2019	2020	2021	Companies	Total Earnings (in ₹)	Number of Faculty
Aerospace Engineering					20	HAL	81.5 lakh	6
EE-Comm	40**	44	31	42	48	Qualcomm, BEL, ADI, Signal Chip, Sankalp, Valeo, Cypress, Analog Devices, Synopsis, Silicon Labs, Honeywell	17.67 crore	18
EE-VLSI	26**	26	23	34	36			
CS-Soft Security		28	28	25	22	Qualcomm, BNY, Cypress, Valeo, Synopsis, Silicon Labs	6.18 crore	7
ME-Automotive Technology	29	21	15	7		Mahindra, TAFE, FCA, SCL, BOSCH, TVS, Hanon Automotive, Sundaram Clayton, Daimler, Lam Research, Siemens, Fiat Chrysler Auto	3.15 crore	13
ME-Machine Design	-	-	-	21	19		1.10 crore	

6.1.6. Conferences

IIT Madras has instructed faculty members (vide circular no. F.R.150/3/2011 dated 31 March 2011) to register all national and international conferences, workshops, seminars, symposiums and other such events organised by them with the CCE. The following programmes were registered with the CCE in 2021-2022:

S.No.	Coordinator	Department	Title	Period	No. of Participants
1.	Venkatesh Balasubramanian	Engineering Design	iRAD - National Workshop for Competency Development	7-15 April 2021	450
2.	Palaniappan Ramu, Sourav Rakshit	Engineering Design, Mechanical Engineering	National Conference on Multidisciplinary Design, Analysis and Optimization	7-9 October 2021	120
3.	Arun Rajkumar, Balaji Srinivasan	Computer Science & Engineering, Mechanical Engineering	RBCDSAI Conference on Deployable AI (RBCDSAI-DAI-21)	16-18 June 2021	310
4.	V. Sundar, S.A. Sannasiraj	Ocean Engineering	Conducting Workshop for Engineers in Irrigation Department, Government of Kerala	14-18 June 2021	

5.	Sannasiraj S.A.	Ocean Engineering	23rd Congress of the International Association for Hydro Environmental Engineering and Research - Asia Pacific Division	14-17 December 2022	225
6.	Venkatesh Balasubramanian	Engineering Design	Recent Advances in Road Safety and Systems	24-25 June 2021	150
7.	G.L. Samuel	Mechanical Engineering	Cyber Physical Manufacturing and Inspection Systems	4-9 October 2021	25
8.	Karthik Raman, Ashmita Aravindhana	Biotechnology	IITM-EBI Winter School 2021	6-9 December 2021	40
9.	P. Shanmugam, R. Panner Selvam	Ocean Engineering	Recent Advances in Marine Geospatial Technologies (Winter School in Geospatial Science and Technology, Level-2)	1-21 December 2021	50
10.	M.S. Ramachandra Rao, S. Sathyan, R Kothandaraman	Physics, Mechanical Engineering, Chemistry	Recent Advances and Innovations in Solar Energy (RAISE-2021)	2-4 December 2021	125
11.	Shiva Nagendra S M	Civil Engineering	6th Indian Conference on Air Quality Management (IICAQM 2021)	14-18 December 2021	120
12.	Sathyan Subbiah	Mechanical Engineering	International Conference on Tribology in Manufacturing Processes & Joining by Plastic Deformation (9th ICTMP2021)	24-26 November 2021	250
13.	Venkatesh Balasubramanian	Engineering Design	ToT Workshop for Competency Development in Integrated Road Accident Database (iRAD) - Phase 2	26-29 October 2021	200
14.	Devendra Jalihal, Venkatesh Ramaiyan	Electrical Engineering	Smart City Workshop 2022	24-25 March 2022	25

15.	B.S. Murty, Indumathi M. Nambi, Sridhara Kumar Narasimhan	Civil Engineering, Chemical Engineering	First IITM International Conference on Circular Economy for Sustainable Water Management	23-25 March 2022	250
16.	Nilanjan Saha	Ocean Engineering	Indian Symposium for Offshore Geotechnics	5-7 December 2022	120
17.	K. Muraleedharan, Hema Chandra Kotamarthi	Chemistry	Emerging Infectious Diseases and Therapeutic Strategies	1-4 December 2021	400
18.	Manu Santhanam, Piyush Chaunsali	Civil Engineering	International Workshop on Advances in Low Carbon Lean Construction	10-11 November 2021	110
19.	Sudhir Chella Rajan	Humanities and Social Sciences	3rd Annual Energy Finance Conference	14-17 December 2021	18
20.	Karthik Raman, Sivaram Ambikasaran, Ashmita Aravindhan	Biotechnology, Mathematics	DSAI-IBSE HPC Symposium	4-7 January 2022	40
21.	Roland Wittje	Humanities and Social Sciences	Archiving the Contemporary: Memory, Technology, and People	6-8 April 2022	30
22.	Himanshu Sinha, Ashmita Aravindhan	Biotechnology	3rd International IBSE Symposium	1-4 February 2022	105
23.	M.S. Ramachandra Rao, K. Sethupathi Thiyagarajan and Sai Prashanth Sadhu	Physics	MRSI-AGM 2021	20-23 December 2021	400
24.	Akanksha Agrawal	Computer Science and Engineering	ACM India Winter School, in association with CMI-NASI	3-12 January 2022	50
25.	Arun Rajkumar	Computer Science and Engineering	RBCDSAI-FCAI Conference on Deployable AI (DAI- 22)	7-10 March 2022	310
26.	Radhakrishnan G Pillai, Dr Surender Singh	Civil Engineering	PhD Symposium on Construction Materials (Technologies for Low Carbon & Lean Construction)	24 September 2021	

27.	S.A. Sannasiraj, R. Vijayakumar, S Rajesh	Ocean Engineering	IEEE OES Madras Chapter	1 January 2022-31 December 2025	150
28.	Venkatesh Balasubramanian, Srinath, Anand Lakshmanan	Engineering Design	ToT Workshop for Competency Development in Integrated Road Accident Database (iRAD)	15-17 February 2022	200
29.	Raghunathan Rengaswamy, Karthik Raman	Office of Global Engagement, Chemical Engineering	Destination South India	1-30 November 2021	30
Total					4703

6.1.7. NPTEL: A Joint Initiative of the IITs and IISc - Funded by MHRD

NPTEL, implemented using information and communication technology (ICT), is India's largest technical dissemination program involving seven IITs (Bombay, Delhi, Guwahati, Kanpur, Kharagpur, Madras and Roorkee) and IISc, Bengaluru. Together, several Web and video-based material for science and engineering courses have been developed. IIT Madras is the coordinating institute of this project.

Courses completed

NPTEL courses are used extensively by faculty members and students across the world to further their knowledge on various subjects in different disciplines. The learning material is supplemented with references and recommended reading material and contains self-assessment quizzes for students. The courses developed for NPTEL can be viewed at <http://nptel.ac.in> and on YouTube (as a separate channel, at <http://www.youtube.com/iit>).

Web - 434

Video - 2019

Total - 2453

Transcripts and MP3 versions of video lectures

Edited transcripts (in the form of PDF files), audio extract of video lectures (in the MP3 format) and subtitled text (in the form of srt files) are all hosted at the NPTEL page, the URL of which is <https://nptel.ac.in/course.html> by choosing the course. These may be downloaded by users free of charge. Total transcripts = 89214

Translation of text transcripts to local languages

Translation of English text transcripts of NPTEL courses are being carried out in 11 Indian regional Languages viz., Assamese, Bengali, Gujarati, Hindi, Kannada, Malayalam, Marathi, Odia, Punjabi, Tamil, and Telugu. Once verified by language experts, notes and subtitles of language transcripts are made available. Following is the progress that happened in Translation.

NPTEL Online Courses

The objective of 'enabling students obtain certificates for courses' is to make students employable in industry or pursue a suitable higher education programme. 4-week, 8-week and 12-week online courses, typically on topics relevant to students (typically in their final years of higher education), basic core courses in sciences and humanities and relevant exposure to tools and technologies are being offered through an online portal. Enrollment in these courses and the learning process involve no cost. At the end of each online course, an in-person, proctored certification exam is conducted, and a certificate is provided through participating institutions and industry, when applicable. Till date about 3496+ courses have been offered under NPTEL online certification.

From March 2014 till now - 26 exam runs; 3496 courses completed

Ongoing: 593 courses for Jan-April 2022

Upcoming: 627 courses for July-Dec 2022

Role of CCE of IIT in NOC

Each online course will be conducted administratively

under the CCE of the IIT whose faculty member is offering the course for certification. All financial transactions and contracts will be done through the CCE. The final course completion certificate and scorecard from the proctored exam will be issued by the Chairman of the CCE and NPTEL jointly.

Use of NPTEL video and Web material as GATE preparation aids

NPTEL has developed a dedicated portal for GATE preparation for the benefit of the students. The development of this portal is supported by Amadeus through CSR funds. GATE Portal will also integrate all the existing NPTEL material related to GATE. It will be a one stop platform for GATE Preparation - from concepts to cracking the exam and will have the following features:

NPTEL Local Chapters (LCs)

NPTEL has been actively organizing Local Chapters in colleges. These local chapters will provide a platform for continuous engagement with the colleges involved and serve as a direct point of contact that will act as champions of NPTEL in these colleges. These chapters are a recent initiative of NPTEL but have received a tremendous response. We have Local Chapters outside India too: in Afghanistan, Ethiopia, Ghana, etc.

Today there are 4645 colleges across India and abroad that have NPTEL Local Chapters. The Local Chapters have helped spread awareness about NPTEL, gauge the needs of colleges in the academic environment, fill the gaps and identify how more students across colleges can benefit from the certification courses. It is through the Local Chapters that NPTEL is able to interact with colleges and award fee waivers to deserving candidates who come from economically poor backgrounds.

NPTEL Awareness Workshops

Workshops are routinely conducted for students and faculty members of other institutes to create awareness about NPTEL. The participants at these workshops are from various institutes; so the information reaches a large number of colleges. Typically, these issues are addressed: What is NPTEL? How is the content procured? How can the content be used by students and faculty members? What are the special features of NPTEL? Online Certification, Domain Certification etc. are also covered. Suggestions are invited from the participants for improvements to enhance the learning experience. Workshops conducted till date - 269.

NPTEL Lab workshops

Many colleges across the country, be it engineering or science, have very poor facilities in terms of laboratories for performing experiments, especially colleges in Tier 2 and Tier 3 towns. To provide an opportunity for the NPTEL course toppers with an experience of world class facilities that might motivate them further, we propose week long laboratory workshops at some of the top institutes, such as the IITs, IISERs and IIITs which will be attended by the students in person and online. Total lab workshops - 17

Collaboration with Industry

NPTEL is working towards bringing in an industry perspective to its technically rich courses which led to the inception of NPTEL INDUSTRY ASSOCIATE (NIA). NPTEL aims to partner with organizations in a mutually beneficial manner by offering courses to train the fresher graduates and to cross-skill and up-skill the existing workforce. NPTEL aims to partner with companies and bridge the gap between academics and the companies. CSR initiatives are also explored as part of this association. We have 62 industry partners till date.

NPTEL Stars

Over the past five years, we have seen a small group of learners coming back repeatedly to NPTEL courses and completing exams with us. In its current operational format, barring the individual course certificates there aren't any other incentives for these learners. The "NPTEL Stars" has been initiated in 2019 to acknowledge such dedicated efforts by learners. We have looked at various meaningful ways in which such learners can take up more than one course exam in NPTEL and have identified 7 broad categories into which these Stars can be classified. More details are available in our webpage.

Internship

NPTEL internship is offered for student toppers of NPTEL Online Certification exams. The internship program will be with the course instructor and the duration of the internship can be 4 /6/8 /12 weeks based on the mutual convenience of the faculty and the interns. The internship will be held in the institute that the faculty is attached to. The main intent of the internship is to provide opportunity for the toppers to be able to interact with the Instructor and his team and be motivated to pursue higher education or identify projects they may want to be a part of at the institute.

6.2 Centre for Industrial Consultancy and Sponsored Research

6.2.1 Introduction

The Centre for Industrial Consultancy and Sponsored Research (IC&SR) at IIT Madras was set up in 1973 to foster and promote sponsored research activities as well as relationships with industries and other organisations. It facilitates active participation of the faculty in various interactive programmes organised for the benefit of the industries and the institute. The centre also plays a pro-active role in providing legal support for MoUs with funding

agencies, and intellectual property protection and commercialisation. In addition, the centre provides administrative support for carrying out consultancy and sponsored research projects, particularly for project staff recruitment and related establishment activities, maintenance of accounts and funding agencies' compliance such as issuing of UCs and Statement of Accounts, GST, TDS, and purchase of equipment and consumables.

Some of the major activities of the centre are:

- Sponsored research programmes
- Consultancy projects: research based, retainer, institutional
- Collaborative projects with organisations and industries in India and foreign countries
- ISRO-IITM Space Technology Cell joint projects and TCS-IITM Programme
- IP protection (patenting) and technology transfer
- Faculty and student entrepreneurship and incubation
- Faculty research enhancement: new faculty initiation and seed grants, exploratory research, support for sustaining research, Institute Research and Development Award
- Maintenance of common research facilities
- Blue Sky and team research initiatives
- Facilitation of international collaborations
- Centres of Excellence in frontier areas

Main Functionaries and Permanent Officers

Designations	Names
Dean	Prof. Ravindra Gettu
Associate Dean	Prof. Manu Santhanam
Deputy Registrar i/c	B. Vijay Shankar

Research and innovation awards received during the year

During the current year, IIT Madras has received following two awards in recognition of its quality research, innovation, entrepreneurship and technology transfer:

ARIIA, Ministry of Education: IIT Madras is ranked as the No.1 Institute among centrally funded universities in the Atal Ranking of Institutions on Innovation Achievements (ARIIA) by Ministry of Education, Government of India. ARIIA ranks the institutes based on high-quality research, innovation and entrepreneurship development, among others.

Most Innovative Research Institute 2021 by CII: IIT Madras was one among the top three institutes for the Most Innovative Institute of the Year 2021. This award was one of the categories in Confederation of Indian Industry (CII) Industrial Innovation Awards 2021 bestowed during the DST-CII Technology Summit held virtually on 17 December 2021.

Funds received for R&D Activities: IIT Madras received major funding for sponsored projects, consultancy projects and royalty receipts for technology transfer from various funding agencies and organisations. The funds received during 2021-22 are listed below.

R&D Activity	Number of Projects	Received Amount (₹ in lakh)
Sponsored Research Projects	673	41,848.64
Industrial Consultancy	713	10,868.91
Research Based Industrial Project (RBIP)	348	8,236.87
Corporate Social Responsibility (CSR) Projects	78	5,672.18
Technology Transfer	22	660.27
Total	1,842	67,286.87

6.2.2. Sponsored Research

In 2021-22, 186 sponsored research projects with a total sanctioned value of ₹ 61146.25 lakh were approved for the institute by various government agencies and other organisations, both from India and abroad. For executing these projects, 137 faculty members were involved as Principal Investigators. The details of the sanctioned projects-agency wise (number and sanctioned value) are given below.

Details of Sponsored Research Projects sanctioned during 2021-22

Sponsored Research Projects - Agency wise			
S.No.	Agency Name	No. of Projects	Value (₹ In lakh)
1	Ministry of Education	2	30128.00
2	Ministry of Electronics & Information Technology	4	11364.45
3	Ministry of Road Transport and Highways	1	9950.00
4	Science and Engineering Research Board	69	2289.99
5	Department of Science & Technology	26	2008.32
6	Department of Telecommunications	2	1057.62
7	Indian Council of Medical Research	9	691.05
8	Department of Biotechnology	9	432.75
9	Indian Space Research Organisation	14	366.72
10	Coir Board	5	336.17
11	Centre for High Energy Systems and Science	1	299.66
12	German Academic Exchange Service (DAAD)	1	273.74
13	Department of Heavy Industry	1	273.60
14	Tamil Nadu Health System Reform Program	1	200.00
15	Welcome Trust	1	148.43
16	Office of Naval Research Global	1	146.29
17	(DFG) German Science Foundation	1	137.31
18	Defence Research and Development Organisation	1	132.48
19	Indo-German Science & Technology Centre	1	101.95
20	Council of Scientific and Industrial Research	6	95.82
21	U S Department of State	1	75.37
22	Armament Research Board	1	58.95
23	Indian National Academy of Engineering	1	57.00
24	Ministry of Mines	1	52.50
25	Biotechnology Industry Research Assistance Council	2	50.47

26	GE India Industrial Private Limited	1	50.00
27	The Royal Academy of Engineering	1	40.98
28	Aeronautics Research & Development Board	1	34.80
29	Department of Administrative Reforms and Public Grievances	1	30.00
30	Forbes Marshall	1	30.00
31	Social Sciences and Humanities Research Council	1	27.50
32	Norwegian Research Council	1	22.22
33	The Technical University of Berlin (Technische Universität Berlin)	1	22.12
34	Board of Research in Nuclear Sciences	1	20.40
35	Deloitte Touche Tohmatsu India LLP	1	20.00
36	Department of Foreign Affairs and Trade, Australia	1	16.26
37	Impacting Research Innovation and Technology - IMPRINT	1	15.00
38	Indian Council of Agricultural Research	1	14.65
39	Indian National Science Academy	1	13.80
40	Saint-Gobain India Private Limited	1	13.51
41	I-HUB Quantum Technology Foundation	1	12.60
42	Cardiff University, UK	1	8.00
43	Indian Institute of Technology Bombay	1	7.50
44	Mahindra & Mahindra	1	7.50
45	British Council	1	6.58
46	Shastri Indo-Canadian Institute	1	1.71
47	NACE Foundation	1	1.50
48	University of Surrey	1	0.52
49	UGC-DAE Consortium for Scientific Research	1	0.45
Total		186	61146.25

The total sanctioned value of the ongoing sponsored projects in 2021-22 is ₹230,980.22 lakh. About 328 faculty members were actively involved in executing these projects.

6.2.3 Consultancy Programmes

In 2021-22, 609 consultancy assignments with the sanctioned value of ₹27,961.26 lakh were initiated by the faculty members in the institute. The details are given below:

Consultancy Projects-Type wise

Type of Consultancy	Number of Projects	Value (₹ in lakh)
Corporate Social Responsibility	47	10679.90
Institutional Consultancy	350	8446.92
Research-Based Industrial Project	150	8156.71
Retainer Consultancy	42	577.72
Internal Testing	9	45.00
External Testing	11	55.00
CSR-Additional Funds (additional funds sanctioned during 2021-22 for the previously funded CSR projects)		1392.27
Additional Value (additional funds sanctioned during 2021-22 for the previously funded non-CSR projects)		1939.33
Total	609	31292.86

About 226 faculty members were actively involved in executing consultancy projects. The total sanctioned value of the ongoing consultancy projects in 2021-22 is ₹58,690.64 lakh.

6.2.4 New Faculty Scheme

The institute provides funds for new faculty members to initiate research in their area of specialisation at IIT Madras. This funding also helps them prepare and apply for sponsored projects proposals for external research grants and establish their research activities at IIT Madras. This scheme is operated as a project under the Centre for IC&SR. For a proposal, value up to ₹5 lakh submitted by each new faculty member will be recommended by the Dean, IC&SR to the Director for its approval. In 2021-22, proposals submitted by 17 new faculty members with the sanctioned value of ₹85 lakh were approved.

In case of proposals requiring special equipment, the institute supports the project with amount up to ₹30 lakh, on a case-by-case basis based on review. In 2021-22, 16 such projects proposals with the total sanctioned value of ₹470.65 lakh submitted by new faculty members were approved for funding under the New Faculty Seed Grants Scheme.

6.2.5. Industrial Associateship Scheme

Industrial Associateship Scheme facilitates industries to access IITM's Central Library resources with a nominal annual payment. It also provides an opportunity for industries to interact with faculty members for their R&D requirements. During the financial year 2021-22, 43 companies (nine large scale, 23 medium scale and 11 small scale) took membership under this scheme.

6.2.6. Other Programmes

ISRO-IITM Space Technology Cell joint projects: Under this association, Indian Space Research Organisation (ISRO) continues to fund research projects at the institute that is of interest to the organisation. In 2021-22, 14 new projects with a value of ₹366.72 lakh were initiated by faculty members. In total, there are 22 ongoing projects with a value of ₹600.09 lakh under the programme.

IGCAR-IITM Cell: In 2021-22, four new projects of ₹142.88 lakh were initiated under the programme. At present, the cell has eight ongoing projects of ₹271.90 lakh.

NIOT-IITM Cell: NIOT-IITM Cell was set up in IIT Madras in 2010-2011 to initiate National Institute of Ocean Technology (NIOT) sponsored research activities at IIT Madras. One previously sanctioned project with a value of ₹212.48 lakh is ongoing.

TCS-IITM Programme: TCS and IIT Madras signed an MoU on 6 October 2015 for five years to undertake research activities of common interests. Under the programme, few projects funded by TCS were completed in the institute and one previously funded project is ongoing. This MoU was recently renewed for further five years, up to 30 September 2025, to facilitate the continuation of research activities.

Technologies for social development: IIT Madras has ongoing activities for development and transfer of technologies of immediate relevance to society. These activities are undertaken through the following three schemes:

- Socially Relevant Projects
- Rural Technology Action Group (RuTAG)
- Centre for Social Innovation & Entrepreneurship (CSIE)

A write-up on the activities of the above projects is given in Annexure 1a, b and c.

6.2.7. Distinguished Visitors to the Centre

Delegations from many organisations visited IIT Madras for discussions on possible collaborative research work. In addition, during the year, few organisations held virtual meetings for research collaborations. Few such organisations are listed below:

- Dr Surendra Shah, University of Texas at Arlington
- GE India Tech
- Capgemini - SE
- Larsen & Toubro
- Samsung India

MoUs/Agreements signed

In 2021-22, about 457 MoUs/agreements for research collaborations were signed by IITM with industries and other organisations from India and abroad. Names of few such organisations are given below:

National organisations:

- Accenture Solutions Private Limited
- Advanced Weapons and Equipment Limited
- Ambuja Cements Limited
- Andhra Pradesh Centre for Financial System and Services
- Andhra Pradesh Maritime Infrastructure Development Corporation Limited
- Andhra Pradesh MedTech Zone Limited
- Apex Laboratories Private Limited
- Archaeological Survey of India
- Azad Engineering Private Limited
- BETA CAE Systems India Private Limited
- Bharat Electronics Limited
- Bharat Heavy Electricals Limited
- Biotechnology Industry Research Assistance Council
- Chennai Smart City Limited
- CMobile Telematics India Private Limited
- Confederation of Indian Industry
- Cube Highways and Transportation Assets Advisors Private Limited
- Danphone A/S
- DbyT Dynamics Mobility Solutions Private Limited
- DCM Shriram Limited
- Defence Research & Development Organisation
- Delphi-TVS Technologies Limited
- Director, Ports & Inland Water Transport, Government of Odisha
- Engineers India Limited
- Ford Motor Private Limited
- Foviatech Private Limited
- Garden Reach Shipbuilders and Engineers Reach Limited
- Garrison Engineer (NS) Kochi
- GE Oil and Gas India Private Limited
- Government Karur Medical College
- Harbin Institute of Technology
- Hella India Automotive Private Limited
- Hindustan Petroleum Corporation Limited
- Honeywell Technology Solutions Lab Private Limited
- IBM India Private Limited
- iGene Life Sciences Private Limited
- IITM Pravartak Technologies Foundation
- Indian Oil Corporation Limited
- Indian Port Association
- Indic Origins Private Limited dba Yume Labs
- Indira Gandhi Centre for Atomic Research
- Institute of Mental Health
- Intech Additive Solutions Private Limited
- Intel Corporation
- Jawaharlal Institute of Postgraduate Medical Education and Research
- Kantar Analytics Practice, a unit of Firefly Market Research India Private Limited
- Karle Infra Private Limited
- Karnataka State Pollution Control Board
- Kerala Khadi and Village Industries Board
- Kochi Metro Rail Limited
- L & T Infrastructure Limited
- Mahidol University
- Manali Petrochemicals Limited
- Matrimony.com Limited
- Medical Research Foundation, Sankara Nethralaya
- Monolith Research and Training Labs Private Limited
- National Institute of Mental Health and Neurosciences
- Nestle India Limited
- Nexhs Renewables Private Limited
- Partners for Law in Development
- Philips India Private Limited
- PI Industries
- Ports & Inland Water Transport, Odisha
- Quanfluence Private Limited
- Rasta Centre for Road Technology
- Rela Hospitals Private Limited
- Resileo Labs LLP
- Saint-Gobain India Private Limited
- Shell India Markets Private Limited
- Shira MedTech Private Limited
- SKF Engineering and Lubrication India Private Limited
- Sree Chitra Tirunal Institute for Medical Sciences and Technology
- State Project Directorate Samagra Shiksha, Tamil Nadu
- Sterlite Technologies Limited
- Super Auto Forge Private Limited
- Tamil Nadu Urban Infrastructure Financial Services Limited
- Tata Consultancy Services
- Tata Elxsi Limited
- Tata International Limited
- Tata Realty and Infrastructure Limited
- Tata Steel
- The Institute of Neurosciences Kolkata
- Tiruchirappalli City Corporation
- Tirunelveli Medical College
- Wipro GE Healthcare Private Limited
- XYMA Analytics
- ZF India Private Limited

International Organisations

- ABSG Consulting Inc.
- Ansys Inc.
- Applied Materials Inc
- Battelle Memorial Institute
- BNY Mellon
- Hollingswoth & Vose
- IBM Canada Limited
- Initiative für Neue Bildung e.V.
- Interuniversitair Micro-Electronica centrum vzw
- OOZE VoF
- Nikolaev Institute of Inorganic Chemistry SB RAS
- Orbit Australia Innovations Pty. Limited
- Research Corporation of the University of Hawaii
- Royal Institution for the Advancement of Learning McGill University
- Schneider Electric System USA Inc.
- SEID AS
- University of Bordeaux
- Synopsys International Limited
- Taiwan Semiconductor Manufacturing Company Limited
- University of New South Wales
- University of Sydney
- Zentech Incorporated
- MIMOS Berhad

6.2.8 Patents filed and granted details

As in the previous years, many intellectual property (IP) applications were filed by the institute in 2021-22 in the areas of science, engineering and technology. Details of these applications are given below:

IP Applications	Number of Applications Filed
Indian patents' applications filed	144
Indian copyrights, trademark and design applications filed	25
PCT and international patent applications filed	70
Total applications filed	239

Publication of patents: Approximately, 140 Indian patent applications and 32 international patent applications of the IITM's patent filings were published in 2021-2022.

Patents granted: In the financial year 2021-22, 148 Indian patents and eight international patents were granted to the institute for the applications filed previously. A brief write-up on IP filing, maintenance and technology commercialisation and related activities are given in .

Technology Transfer/Royalty: Many technologies/IPs are being developed in the institute and transferred to industry and other organisations. In 2021-22, ₹6.60 crore was received towards technology transfer; a list of some organisations from whom funds were received are given below.

- Gandhi Institute of Technology & Management
- Benchmark Electronic Systems Private Limited
- Chembiosens Private Limited
- Cyber Security Works Private Limited
- Deep Genomics Incorporated
- Detect Technologies Private Limited
- Indian Institute of Science
- Kapindra Precision Engineering Private Limited
- Kore Mool Limited
- Neomotion Assistive Solutions Private Limited
- Neurosynaptic Communications Private Limited
- Shri Ramdeobaba College of Engineering
- Rathi Aerospace Labs Private Limited
- Ricovr Healthcare Inc
- Tata Consultancy Services Limited
- Universidad De Los Andes - Departamento De Ingeniería Mecánica
- Wang, Wei-Chung
- Weaver Technologies Llp
- Zasti Inc

6.2.9. Publications

IIT Madras faculty members published about 2,925 publications in 2020. The publications include journal papers, review papers, conference proceedings, books and book chapters.

6.2.10. Research Fund

To promote research activities at IIT Madras, the Board of IC&SR decided to use its corpus to support several new initiatives. A part of the earnings of IC&SR from consultancy projects was invested in term deposits and the interests earned through them were used to support various schemes such as ERP, NFIG, R&D Award and IP Cell activities. From an initial amount of ₹50 crore, the corpus has been increased to ₹120 crore. The broad allocation for expenses for this financial year is as given below:

- **R&D Award:** 50% each from Institute Fund and Research Fund. Six awards of a total value of ₹205 lakh were awarded.
- **Exploratory research projects:** This initiative is to support projects from any faculty who has a “breakthrough” idea and wishes to initiate work without waiting for their proposal to be sanctioned by the funding agency. The scheme gives maximum of ₹10 lakh for 12 months.
- **New Faculty Initiation Grant:** This is a start-up grant up to maximum of ₹5 lakh. National and international travel is permitted for new faculty members under this scheme. In 2021-22, 17 projects for a total value of ₹85 lakh have been granted.
- **One team project of significance:** A proof of concept will be eligible for funding for a period of two years with an initial maximum budget of ₹200 lakh. The project will be selected through peer review members. No project was sanctioned for the year 2021-22.
- **Patenting and commercialisation activities by IP Cell:** A maximum amount of ₹50 lakh is earmarked per year.
- **Maintenance of capital equipment and operation of these facilities:** Initially, this is supported by IC&SR for a value of ₹25 lakh, which is to be used for hiring a technical person for maintaining and operating select central research facilities. Maintenance funds for capital equipment will require further steps on the modalities and will be considered soon. In 2021-22, 23 projects for a value of ₹87.02 lakh was sanctioned.
- **Support for sustaining research (SSR) during the pandemic:** The economic and social consequences of COVID-19 have resulted in reduced funding for research projects and delay in the release of committed grants, while making it necessary to prolong the project duration, and fund project staff and research scholars during the lockdown, as they would otherwise be left without any income. As a mitigation measure and to support sustaining research (SSR) during the pandemic, it was proposed to provide a few and limited grants from the IC&SR Research Fund

6.2.11. Positive Messaging and Outreach Program

IIT Madras is one of the few high-ranking academic institutions in India that are prompt, active and well connected on social media. Our Facebook page has over 2,18,920 likes and is extremely well updated with a response time of just a few hours and actively engaging over 865.3k people last year. IIT Madras’ tweets have 1.69M impressions every month on an average. We have note-worthy LinkedIn impressions of 16.14M. We are also ahead of the curve in our presence across other social media platforms such as Instagram and YouTube. We are concentrating more on short-form videos by involving faculty, students and others. A monthly e-newsletter is sent to all stakeholders of IITM.

Participation in the expos

a) Tamil Nadu State Council for Science and Technology, as part of Azadi Ka Amrit Mahotsav, conducted an event on the contribution of institution towards Science and Technology, R&D infrastructure, start-ups and

incubation facilities available in the institutions in Tamil Nadu state. Brief presentation was given by Director Prof. V. Kamakoti, Prof. Ravindra Gettu and Prof. Mohanasankar Sivaprakasam.

b) All IIT R&D Showcase event in New Delhi IITM nominated 20 innovations that can be projected to industry. Seven were shortlisted by the organising committee. Presentation and videos were made, and the materials were submitted to the organisers.

Common Instrument Facility

The Common Instrument Facility, with the following six instruments for research use of projects, was established in 2020-21 at the New Academic Complex of the institute. All the equipment mentioned below are functional and the use is facilitated upon registration through ERS portal, <https://ers.iitm.ac.in/webroot/home.php>. The use is charged nominally from project funds.

- Atomic Force Microscopy (AFM)
- Differential Scanning Calorimetry (DSC)
- Scanning Electron Microscopy with EDAX (SEM)
- Thermo Gravimetric Differential Thermal Analyser (TG-DTA)
- X-ray Diffraction (Powder) System (XRD)
- X-ray Fluorescence System (XRF)

Other information

Project information software, TULA has been enhanced with more capabilities for real-time reporting of project accounts. Now this has been extended to other sections.

software has also been upgraded and automated to keep track of impending deadlines and time-bound activities.

Rural Technology Action Group, IIT Madras

The major activities of RuTAG during the year 2021-22 are given below:

Integrated Pottery Development Project at Perumudivakkam, Thiruvallur



As part of Integrated Pottery Development project undertaken by RuTAG, IITM, a Common Facility Centre (CFC) was set up at Perumudivakkam to train potters and enable them to have access to improved tools and equipment. The facility was inaugurated on August 11, 2021, in the presence of the Tiruvallur District Collector, IOCL Executive Director, RuTAG Coordinator & staff, Tamil Nadu State Rural Livelihood Mission (TNSRLM) Project Officer and Perumudivakkam Panchayat President.

Kerala State Coir Machinery Manufacturing Company (KSCMMC) - Upgradation of automatic coir spinning machines was undertaken.



TNHDC Project on Fine Korai Grass Mat Weaving

Successfully completed the project on Establishment of CFC at Pathamadai Fine Korai Mat Weaving Handicraft.

Under funding of ₹47 lakh received from Tamil Nadu Handicrafts Development Corporation Limited by RuTAG and CSIE, IITM, RuTAG has established a Common Facility Centre with four units of fine mat-weaving electronic jacquard handloom in Pattamadai fine mat weavers' cooperative society, Tirunelveli, Tamil Nadu. Two units of fine mat-weaving electronic jacquard handloom developed by Dr S. Ganesan, RuTAG were installed at Veeravanallur in March 2020.



A CFC building was constructed in the society premises in which two additional looms were commissioned. Design and maintenance training programmes were conducted for the weavers during July-August 2021.



Development of Suitable EJM for Fine/Superfine Madurkathi Mat Handicraft and Korai Superfine Handicraft Towards Productivity and Design Range Enhancement

In ways of enabling technology development and implementation for Madurkathi handicraft, Dr Ganesan and Mr. Hisham, RuTAG staff visited Medinipur on 21 October 2021 and interacted with stakeholders to establish the roadmap for developing an electronic jacquard handloom for regional craft. R&D activities have been initiated by establishing two electronic jacquard handlooms at CFC Pathamadai, Tirunelveli district.



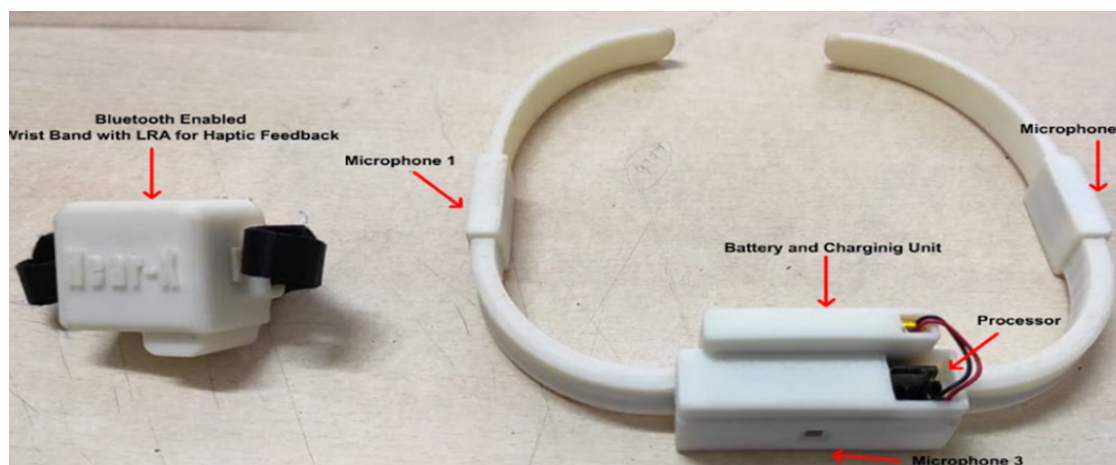
Mango Seed Decorticator - Trials

First round of Trials of the mango seed decorticator was held in IIT Madras in February 2022. This machine has been developed under the guidance of Prof. Shankar Krishnapillai, Department of Mechanical Engineering, IIT Madras.



Affordable and Wearable Assistive Device for Hearing-Impaired people - Final demonstration

A project titled, Affordable and Wearable Assistive Device for Hearing-Impaired People, to convert Audio into Visual and Haptic Feedback, has been completed by Mr Varun Durai S I (Senior Assistant), Department of Aerospace Engineering, IIT Madras, and Mr Sagaya Rajesh A (Senior Technician), Department of Mechanical Engineering, IIT Madras under the guidance of Prof. C. Balaji, Department of Mechanical Engineering, IIT Madras.



This project aims to develop a cost-effective wearable assistive device for hearing-impaired people to convert audio into visual and haptic feedback.

Vending Cart Project

A new project proposal formulation has been initiated for developing the retrofit solutions for the existing fruits and vegetables vending carts to improve the visibility and shelf life of the perishable product without compromising the stability and ergonomics of the cart. The project is led by Prof. Abhijit P Deshpande, Prof. G. Venkatarathnam, Prof. Rajiv Sharma and Prof. Abdus Samad from IIT Madras. The project is being funded by DST SCSP for a duration of 12 months.

The vending carts (a five-wheel cart, three-wheel cart and retrofit on existing carts) have been fabricated and tested in field trials.

Charcoal Kiln Project - Field Visit

The RuTAG team visited Virudhunagar-based NGO, ODAM to enable field visits to charcoal production areas. The survey relating to identification of existing production mechanisms, the scope of scaling up, as well as availability of the other weed species was conducted.

Paddy Thresher - Field trials

Kerala Khadi and Village Industries Board (KKVIB) - Master Plan

Kerala Khadi and Village Industries Board (KKVIB) had requested RuTAG's support in facilitating preparation of a 'Master plan for working of KKVIB for the next 10 years. In this connection, RuTAG had submitted a joint proposal with Professors Arunkumar, Saji Mathew and Prakash Sai from DOMs, IITM, to KKVIB. This proposal has been approved by their board. RuTAG has initiated the documentation process.

Visit to Rural Technology Centres

RuTAG team (Pradhap, Karthik, Vijayalakshmi, Abarna and Nalini) visited the Rural Technology Centres at Seethenchery and Kanakammachatram in Tiruvallur district on March 30, 2022. As part of this visit, we had interactions with local fabricators and farmers as well to collect problem statements relating to their technology needs.

6.3. Central Electronics Centre

6.3.1. Introduction

The Central Electronics Centre (CEC) was established in 1971 with the main objective of servicing and maintenance of the wide variety of sophisticated electronic equipment at the institute. A key attribute of this centre is a blend of an academic environment and an industry-like working atmosphere.

The centre is housed in a dust-free environment and has a team of qualified, experienced and talented staff members, trained in India and Germany in various aspects of electronic instrumentation, testing and calibration. The infrastructural facilities and equipment have been continually enhanced

over the years using GoI funds and successive Indo-German collaborative projects.

When the centre was established, in 1971, a critical need for training of service engineers for maintaining electronic equipment was foreseen, and an 18-month training programme, the first of its kind in the country, was started in the same year. Later, the period of the training programme was extended to 24 months. In view of the large demand for trained personnel both within the institute and outside, conducting such long-term training programmes has become one of the important activities of the centre.

The centre has diversified its activities and now offers the following services:

- Servicing and maintenance of electronic equipment or instruments
- Offering two-year training programmes for manpower development
- Conducting Electronics module of the workshop class for B.Tech students
- Calibration of electronic test and measuring instruments
- Calibration of temperature sensors
- Testing of
 - Lighting systems
 - Batteries
 - Environmental testing of electronic products
 - Safety testing of electronic products
 - EMC/EMI testing of electronic products
- Development of custom-built equipment
- Consultancy services to industries in the above-mentioned areas
- Servicing and maintenance of personal computers and printers

So far, the CEC has provided expertise and services in the above areas to more than 230 industries or organisations inside and outside the country.

As the centre has expanded its activities, most of the laboratories have been upgraded. In 2001, the CEC received the ISO 9001:2000 quality certification for having established quality systems for all the activities. Also, the centre received NABL accreditation in 2004 for testing and calibration laboratories in accordance with ISO/IEC 17025 standards. The ISO and NABL accreditations are actively maintained through adherence to the specified processes and procedures of the current version of the standards.

6.3.2. Activities

Servicing of electronic equipment

The Centre takes care of servicing and troubleshooting of all the electronic equipment available in the institute with or without circuit diagrams. The details of the number of jobs completed are given below:

Total Number of Jobs Completed	Notional Value (saved for the Institute)	Category (CSI)		
		Simple	Medium	Complex
165	9.1 Lakh	98.35%	98.8%	99%

Electro-technical calibration

This service includes the calibration of the electronic test and measuring instruments such as Digital MultiMeter, Power supplies, Oscilloscopes, Data Acquisition System, Temperature indicators, Power analysers, LCR meters, Decade resistance boxes, Decade capacitance boxes, etc. with international traceability under NABL accreditation. The following are the details of the number of jobs completed:

Total Number of Jobs Received	Notional Value (saved for the Institute)	CSI Index
81	1.65 Lakh	99%

Thermal calibration

This service includes calibration of temperature sensors such as Resistance Temperature Detectors, thermocouples, thermistors with or without indicators and furnaces with traceability to national or international standard with NABL accredited certificates. The following are the details of the number of jobs completed:

Total Number of Jobs Received	Notional Value Rs 250/point (saved for the Institute)	CSI Index
42 (more than 400 sensors and Furnace)	25.24 Lakh	99%

Testing of electrical and electronic testing

This service includes the testing of lighting systems, UPS, power supplies, batteries, safety, environmental, EMI/EMC testing of electronics products, as per the IS standards as applicable for the products with NABL-accredited certificates. The following are the details of number of jobs completed:

Total Number of Jobs Completed	Notional Value (saved for the Institute)	CSI Index
12	3.83 lakh	96.35%

Servicing of personal computers

The Centre takes care of servicing and troubleshooting of the personal computers and printers available in the institute. The details of the number of jobs completed are given below:

Total Number of Jobs Received	Notional Value (saved for the Institute)	CSI Index
430	4.30 lakh	98.7%

PA System Services

The PA System Services are provided by this Centre for almost all the institute functions or the functions organised by the students at IIT Madras. Due to COVID-19, the total number of jobs PA System Services rendered during the period is only 11.

Preventive maintenance of UPS

To reduce the downtime of UPS, the Centre is doing preventive maintenance service of the UPS at regular intervals. So far, it has completed the work for the following departments: Aerospace, Chemistry, Applied Mechanics and Biotechnology.

CRC Maintenance

The Centre supports the institute for installation of the AV systems for 40 hybrid classrooms.

Support to Research Scholars

- Design and fabrication of PWM circuit to drive CMT2890 LED lamp for Aerospace department students
- Design and fabrication of high frequency power amplifier to piezoelectric atomizer circuit for Aerospace department students
- Design and fabrication of LED driver circuit for Applied Mechanics department students
- Wiring of pressure transducers (15 nos) for Civil Engineering Department student
- Design and fabrication of Instrumentation Amplifier circuit for Engineering Design Department student
- Measurement of Earth resistance for Engineering Design department student
- Fabrication and programming of temperature and humidity monitoring system using Arduino for Mechanical department student
- Design and fabrication of MOSFET driver circuit to drive solenoid actuator for mechanical department student
- Design and fabrication of Laser trigger circuit to synchronise camera and laser for mechanical department student
- Design and fabrication of stepper motor control circuit to drive stepper motor for Physics department student
- Design and fabrication of Piezo control circuit for Physics department student
- Fabrication of Peristaltic pump driver for mechanical department student
- Soldering of SMD components in four PCBs for Rafter formula racing team
- Design and fabrication of Wave peddle monitoring system for Ocean Engineering department students
- Laser and camera synchronization system using Arduino for ocean department student

6.3.3. B.Tech Electronics Workshop

The Centre has been offering the Electronics module of the workshop (WS1302) for the B.Tech/Dual Degree (first year) students regularly. Due to COVID-19, this year, the Centre has handled them as part of 2019 and 2020 year students. The number of students attending the course is 717.

HRD Training Programmes attended by the CEC staff members

S.No.	Staff Member	Title	Institution	Period
1.	N. Karthiyayini	ISO 9001:2015 Lead Auditor Course	TUV	5-9 July 2021
2.	Dr K.Sulochana	NABL PTP Assessors course as per ISO/IEC 17043:2010 PT Provider Auditor course	NABL	21-25 February 2022

6.3.4. Design and Development Activities

Brief and specific details of the process/instruments/equipment/software designed and developed

- Design and development of wavemeter for measuring the ocean wave height for the Ocean Engineering department.
- Design and development of a smart street light monitoring of a rural village street lighting system for the Chennai District Collectorate. As part of this project, first a prototype has been developed and demonstrated at CEC. Now, two units have been installed in Padur and Pandeswaram panchayats in Tiruvallur on a trial basis.

New facilities added or major equipment procured

S. No.	Name of Equipment	Value (Rs. in lakh)
1	Pintek Probe HVP-10R for EMI/EMC	0.35
2	Pintek Probe-28HF High Voltage Probe for EMI/EMC	0.65
3	Current Probe (CLCE-400 with RFCables) for EMI/EMC	1.78
4	Desktop Computers	0.74

6.3.5 Research and Consultancy

Industrial consultancy projects (ongoing and new)

Description	Number of Jobs	Amount (Rs. in lakh)
Testing of electrical and electronics products, safety and environmental testing	30	41.3

Appreciation letters received from the departments

CEC has received good feedback from various departments for servicing sophisticated equipment, server, computers and printers in time.

6.4. P.G. Senapathy Centre for Computing Resources

6.4.1. Introduction

The Computer Centre at IIT Madras was established in 1973 to provide centralised computing resources and support to the academic initiatives of the institute. It has had professionally maintained facilities that have served the IIT Madras community, from the IBM System 370 in the 1970s and the Siemens system in the 1980s to the SGI, IBM power and Sun systems in the earlier part of this millennium and the

super-computers and communication and network services of today. Over the years, the computing and information technology requirements of IIT Madras community have increased. The Computer Centre's organisation has also evolved with the increase in requirements. In 2007, the infrastructure of the Centre was significantly upgraded through an endowment given by S. Gopalakrishnan in the name of his father P.G. Senapathy.

The activities of the Centre are organised under five verticals: 1. High-Performance Computing Environment (HPCE), 2. Networks, 3. E-Services, 4. Data Centre and 5. Workflow.



Each vertical is focused on continually improving its services to meet the needs of IIT Madras community. The Computer Centre has been ISO 9000 certified since 1999. The TUV has certified the Computer Centre as an ISO 9001: 2015 standard management system for a period of three years, from February 2017 to January 2020, after

conducting the final auditing as per TUV NORD CERT procedures. Currently, it maintains all its processes in conformance with the ISO 9001:2015 standards and is certified along with other units at the institute by TUV Nord. This report presents a background of each vertical and a summary of the annual activities.

6.4.2. High-Performance Computing Environment

The High-Performance Computing Environment (HPCE) group was established to cater to the ever-increasing demand for super-computing facilities from researchers at IIT Madras.

A new cluster has been added in the HPCE called Aqua. It is mainly based on a water-cooled system with 280 CPU nodes and 15 GPU nodes and 1PB parallel system, 200TB NAS file system of storage.

The following are some active research areas that use the Aqua cluster: aerospace engineering, atmospheric and ocean modeling, analysis of large structures, flows and combustion modeling, material sciences, social, ecological and physical network modeling, numerical weather prediction and data assimilation, molecular modeling, spectroscopy, and VLSI. This machine, which caters to the needs of the research community mostly uses parallel programming. The detailed system configuration is as below:

**Total Compute Power:**

- 11680 Cores; 30 GPU Accelerators
- 734 TFlops Rmax (1,106 TFlops Rpeak)

System Performance:

- CPU - 587 TFlops Rmax (896 TFlops Rpeak)
- GPU - 147 TFlops Rmax (210 TFlops Rpeak)

CPU Nodes/GPU Nodes: The CPU nodes are implemented in a HPE Apollo 2000 Gen10 based solution (2U chassis) with HPE Apollo XL170rGen10 servers. Each node is configured with: Dual Intel Xeon Gold 6248 20-core, 2.5 GHz processors 192GB, 2 TB SATA disk and single-port Mellanox HDR100 HCA per node. The GPU nodes are implemented in a HPE Apollo 2000 Gen10 based solution (2U chassis) with HPE Apollo XL190rGen10 servers. Each node is configured with Dual Intel Xeon Gold 6142 16-core, 2.6 GHz processors 192GB, 2 TB SATA disk, single-

port Mellanox HDR100 HCA and 2 x NVidia V100 32GB GPUs - PCIe per node.

Storage Configuration/Cooling System: 1 PetaByte PFS (HPE Lustre Storage) with minimum 25 GB/s write performance and 200 TB NAS storage. The air-cooled liquid chiller units fit with multiples of hermetically sealed SCROLL compressor with four chiller units 36 TR each, seven CRV units and two PAC units.

The HPCE group also maintains machines from various departments and centres. It supports users in improving code and organises training programmes related to the effective use of the facility. This group maintains all commercial software related licenses and implements the 80:20 policy for all commercial software procured by the computer center for HPCE users. Detailed information about HPCE, including the latest usage statistics and the software availability, is posted at the website www.hpce.iitm.ac.in.

6.4.3. E-Services: <https://eservices.iitm.ac.in>

The E-Services vertical focuses on services such as Web system configurations, e-mail, Web access, Web security, storage solutions, virtualization and Web services. Several new services were enhanced and added by the group. The services maintained and initiated by the group are listed here:

Mail services

1. IIT Madras (email.iitm.ac.in) Microsoft exchange 2013
1. Students (smail.iitm.ac.in)
2. Alumni (alumni.iitm.ac.in)
3. Retirees (retiree.iitm.ac.in)
4. Conferences (wmail.iitm.ac.in)

5. Projects (imail.iitm.ac.in)

Web services

1. Virtual hosting
2. Mailing list
3. Employee user web portal
4. Websites
5. Shared hosting
6. Moodle online learning platform
7. Posting to campus community portal
8. Online web portals for user registration
9. Online statistics of service usage

Security and monitoring services

1. Firewall tuning
2. Hack solution

3. Security gateway (spam appliances)
4. Web application firewall (WAF)
5. Log analytics
6. Digital certificate
7. IT Infrastructure monitoring (NAGIOS)
8. Antivirus

Storage solution

1. Backup and restore process
2. Disaster recovery
3. Server and desktop consolidation by virtualization (VMWARE)
4. Hyper converged infrastructure (HCI)

User management services

1. Active Directory Service (ADS)
2. Lightweight Directory Access Protocol (LDAP)

Development and deployment services

1. Convocations
2. Distinguished Alumnus Awards
3. User registration for IC&SR
4. HPCE Web-based user management
5. Faculty and staff portal
6. Web-based training
7. VTLS support (Library)
8. Support to students' elections
9. Support to JEE
10. Support to HSEE
11. Support to departments with Web services
12. Support to Office of Alumni Affairs
13. Support to Placement Office
14. Support for conferences
15. Support to ICSR
16. Support to Citrix academic

Other services

1. SMS gateway
2. Google API services
3. Intranet services
4. Project management support
5. Online ticketing system
6. Home portal for staff/faculty
7. Cloud services (own cloud)
8. Authenticated mail service
9. Local/global FTP
10. VDI (Virtual Desktop Infrastructure)
11. Resources booking system
12. Microsoft licensing
13. Request tracker
14. MS/PHD online exam through Moodle
15. English O-level exam through Moodle
16. Digital certificates
17. Open virtual desktop infrastructure
18. Google hangouts
19. Online portal registration links



A virtual machine is a software computer that, like a physical computer, runs an operating system and applications. An operating system installed on a virtual machine is called a guest operating system. The virtual machine gets a CPU, memory, video cards, access to storage and network connectivity from the host it runs on.



VMware server: Before virtualization



After virtualization



E-Services Server Area in Data Center

<https://eservices.iitm.ac.in>
Email Gateway: Sonic WALL
All incoming mails and outgoing mails go through
this appliance.

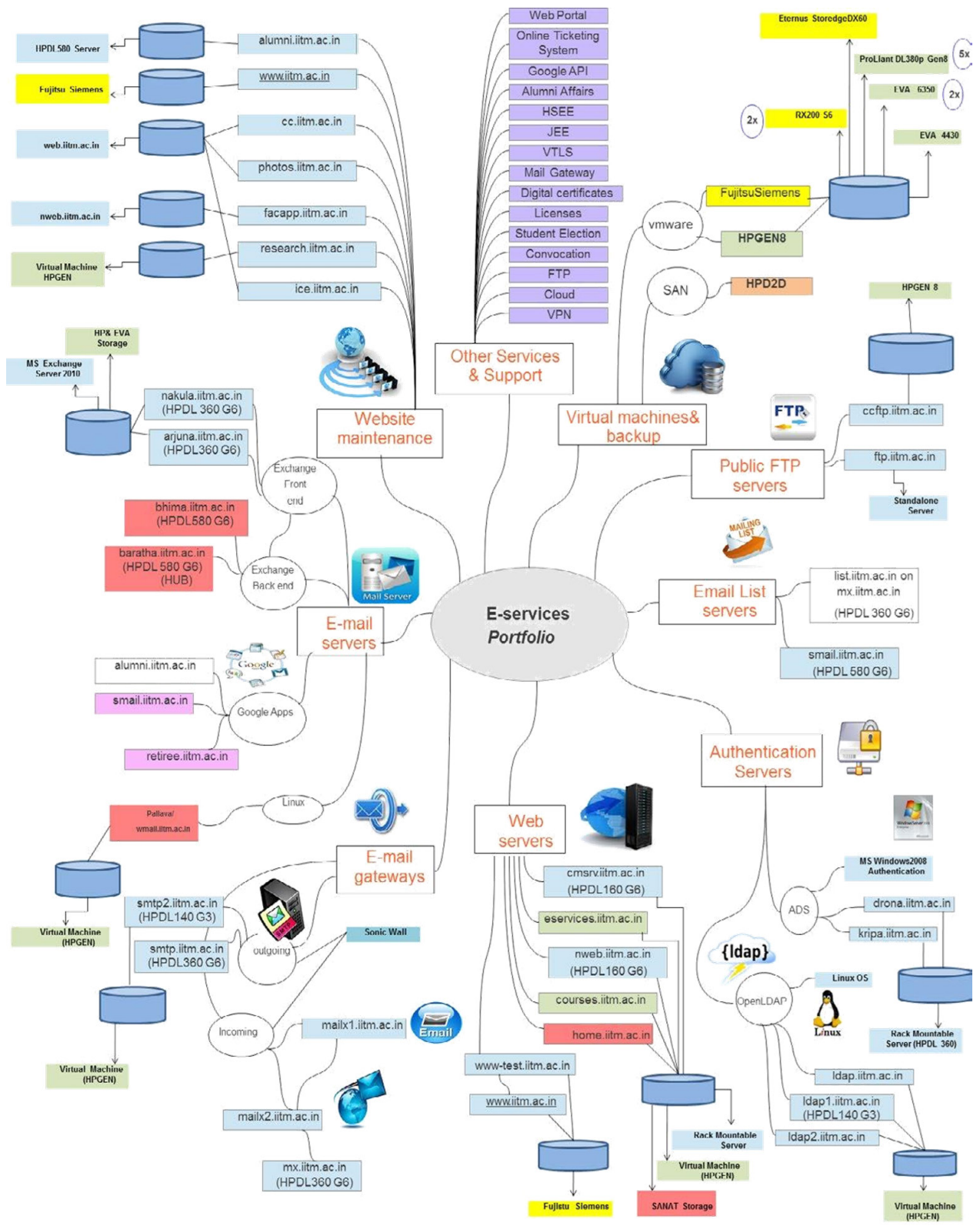


Web Application Firewall: WAF Fortinet 1000 series
Acts as the firewall for websites



E-Services portfolio

For services offered by E-Services and help, visit: <https://eservices.iitm.ac.in>.

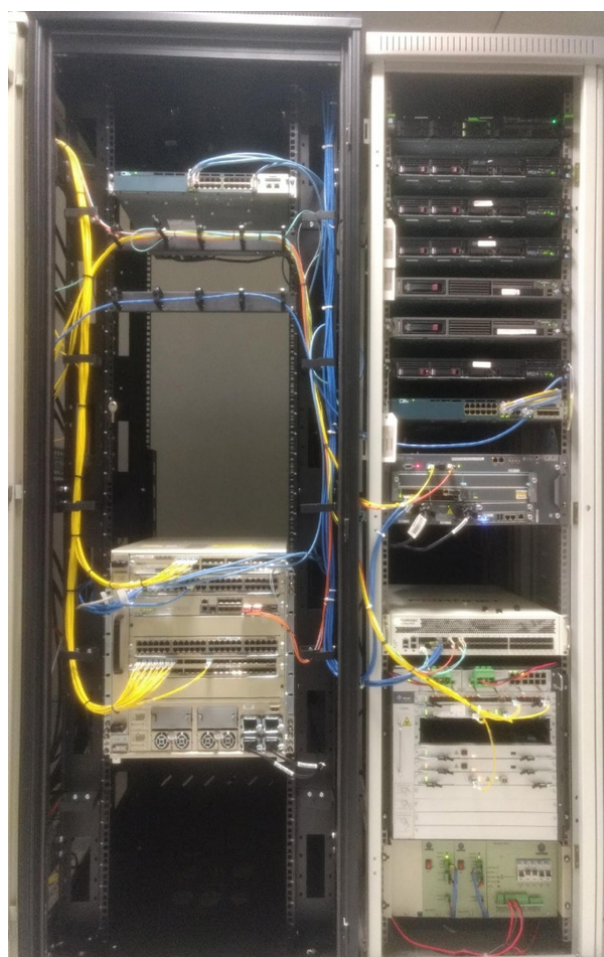


HPDL140 G3: Storage :250GB Core Processor : Intel Xeon (2300MHZ)	HPDL160 G6: Storage :450GB Core Processor :Intel(R)Xeon(R) (2000MHZ)	HPDL360 G6: Storage :146.7GB Core Processor : Intel(R) (2133MHZ)	HPDL580 G6: Storage :6296GB Core Processor : Intel Xeon(2133MHZ)	HPGENVMware: Servers -5 (HPD L380 G8) Storage :128GB RAM (6TB Internal) SAN Storage :2(30TB each) Backup Storage :1 (30 TB each) VMware Enterprise Plus 5.1	FUJITSU SIEMENS: Servers -2 (ORX200S6) Core processor : Intel Xeon E5506(2.13GHZ)[2x300GBSATA Drive) Storage :4TB VMEnterprise 4.1
---	---	---	---	--	--

6.4.4. Network

The campus computer network was established in 1994, connecting about 18 buildings in the Academic Zone, using telephone cables. The initial bandwidth was 64 kbps. Today, we have a fiber-backbone high-speed network connectivity of 10 Gbps for all the buildings in the Academic Zone. In addition, a backbone inter-connecting the three zones (Academic Zone, Hostel Zone and Residential Zone) is also operational. The total number of nodes in the campus is approximately 25,000. The network equipment in the Academic Zone was upgraded to provide 100/1000 Mbps connectivity to the nodes. All the buildings in the Academic Zone are provided with dual fiber connectivity. Facilitation for video conferencing, virtual classrooms, webcasting important events, EDUROAM and VPN are also provided under the network service. The network vertical also oversees the procurement of external network services as well as the design, installation and maintenance of the network structure, switches and cabling across the IIT Madras campus. A summary of the key activities of the Network Group for the year under consideration is as follows:

1. Implemented GPON in the Residential Zone.
2. Supported for conducting online examinations and online courses.
3. Supported for webcasting of important institute events



6.4.5. Data Centre

The function of the Data Centre is to ensure appropriate management of facilities so that all verticals of the Computer Centre function efficiently and without interruptions. These facilities include the

uninterrupted power supply, backup power supply (DG set), CCTV, climate control, access control, water leakage system, fire protection under BMS and office space maintenance. The Data Centre operates and maintains the following equipment:

Sl. No.	Description of Equipment	Capacity	Quantity
1.	Diesel generator set (Caterpillar) with 12 V/200 AH (Exide) - 2 Nos.	600 kVA	2 Nos.
2.	Synchronising panel for parallel operation	3 X 600 kVA	1 No.
3.	UPS (DB) with 12 V/200 AH (batteries) - 96 Nos	160 kVA	2 Nos.
4.	UPS (SOCOMEK) with 12 V/200 AH (batteries) - 60 Nos.	200kVA	2Nos
5.	UPS (SOCOMEK) with 12 V/150 AH (batteries) - 32 Nos.	80 kVA	1 No.
6.	UPS (Emerson) with 12 V/42 AH (batteries) - 34 Nos.	30 kVA	1 Nos.
7.	UPS (DELTA) with 12 V/65 AH (batteries) - 40 Nos.	30 kVA	1 Nos.
8.	UPS (SOCOMEK) with 12 V/200 AH (batteries) - 60 Nos.	20 kVA	1 No.
9.	UPS (DELTA) with 12 V/42 AH (batteries) - 32 Nos.	20 kVA	1 No.
10.	PRAC AC (Blue Star)	17 TR (60 kW)	7 Nos.
11.	PRAC AC (Blue Star)	13.5 TR (48 kW)	2 Nos.
12.	PAK AC (Blue Star)	11 TR	4 Nos.

13.	PAK AC (Blue Star)	5.5 TR	2 Nos.
14.	Ductable split AC (Blue Star)	8.75 TR	2 Nos.
15.	Ductable split AC (Blue Star)	5.5 TR	6 Nos.
16.	RO plant (Excel Water System)	250 LPH	1 No.
17.	Air-cooled type chiller (YORK)	36 TR	4 Nos.
18.	CRV Row Based (Vertiv)	11 TR	6 Nos.
19.	PAC (Vertiv)	10 TR	2 Nos.

New Building Management Systems

The Data Centre has upgraded the Building Management Systems with the latest technology as follows:

BMS

1. Enterprise Buildings Integrator (EBI) R430 server
2. CP IPC panel - 1 No. (with IPC controller - 1 No.)
3. CP SPC panel - 3 Nos. (with SPC controller - 8 Nos.)
4. Battery monitoring system for all UPS

Single Zone (FAAST)

5. VESDA panel for network area (fire alarm aspiration seeing technology)

Security system

- 6 CCTV Camera IP-based IR indoor/outdoor (Capture)-27 Nos.
- Sixteen-channel encoder - 2 Nos.

Fire system

- 7 Fire alarm system Intelligent photoelectric smoke detector - 84 Nos.
- Response indicator - 40 Nos.
- Intelligent heat detector - 2 Nos.
- Temperature sensor - 2 Nos.
- Manual pull station - 4 Nos.
- Hooter - 9 Nos.
- Isolator module - 3 Nos.

- 8 Fire fighting Gas release panel (Ravel) - 2 Nos.

The implementation of enterprise resource planning (ERP) software, or what is internally referred to as a Workflow, is done by the Workflow group at the Computer Centre. The group works with various sections in the institute to support system usage and capture changes in requirements involved in process development activities, maintaining reporting websites that collect data from Workflow and generating reports using new software tools. Online processes have a distinct advantage of transparency, accessibility and analytics. In the financial year 2020-21, we have made major development in enhancing the existing processes

Door access system

- 9 Access control TEMA server - 1 No.
- Biometric card reader - 4 Nos.
- Emergency push switch - 13 Nos.

PA system

10. Plena 480 W amplifier (Bosch)

Infrastructure Development

1. Virgo HPCE cluster and their associated connectivity equipment were removed from Server 2 area.
2. Department servers moved to Server 2 (Virgo) area.
3. 1 number, 36TR New chiller installed for AQUA cluster.
4. 200Ah batteries (60 numbers) replaced for 2*200 kVA ups systems.
5. 150Ah batteries (32 numbers) replaced for 1*80 kVA ups system.



Chiller Units

in all sections – Administration, Academics, ICSR and Main Stores and Accounts.

Processes such as ICICI payment gateway, NOC process creation, Examiner honorarium, Provisional certificate, Linear grade card for online MTech programme, grade card to storage, all faculty types' access to workflow etc., were introduced. All these processes have tracking system which is Task summary. Task summary screen has been enhanced. The reports are flexible and data can be searched with ease. Like optimised processes, there are SLAs (Service Level Agreements) implemented in various steps of the process to move them automatically

to avoid delay in completing the process and automatic email triggers for each process.

Enhancement to synopsis and thesis evaluation process was carried out. New A5 thesis process has been introduced for scholars.

Along with regular development and optimisation activities, a new portal for web-enabled programmes such as online MTech and EMBA has been created and a trial run carried out in this financial year.

This portal enabled the management to design the curriculum for new programmes in flexible periods instead of a rigid semester or quarter system.

Moodle support has been assigned for workflow team this financial year. As soon as the Student Electives Allocation Tool (SEAT) allocation for electives gets completed, the courses are moved to Workflow and then to Moodle. Similarly, immediately after the course add/drop week, the courses are updated in Moodle. All the Moodle service requests, managing the Moodle server and security of the same is taken care by the workflow team.

Like in the previous financial year, the data extracted from workflow have been analysed and utilised by administration to align our internal processes to support our vision for IIT Madras.

Faculty/Staff members and areas of work

S. No.	Name	Designation	Area of Focus
1	Prof. P. Sriram	Chairman	Overall coordination and planning
2.	Dr Kameswara Rao Anupindi	Faculty-in-Charge	High-Performance Computing Environment
3	Prof. N.S. Narayanaswamy	Faculty-in-Charge	E-Services
4	Prof. Rahul Ratnakar Marathe	Faculty-in-Charge	Workflow
5	Dr Nitin Chandrachoodan	Faculty-in-Charge	Networks
6	Banavath Baman	TO (Systems)	Training
7	S. Anand Kumar	TO (SS) Systems	Mail domains, mail gateways, server hardware, VMWARE, Web services, virtualization, support services
8	V. Selvaraju	TO (SS) Systems	Network design, servers, switches, campus network maintenance and administration
9	T.V. Subba Rao	Technical Superintendent (System)	Workflow—Administration Module
10	R. Thiruneelagandan	Technical Superintendent (System)	Planning, operations and maintenance of D.G. sets, UPS's, A/c's, BMS, furniture and all data center related equipment
11	P. Gayathri	Technical Superintendent (System)	High-performance computing, system software, installation of Open Source applications and commercial applications, user education development
12	M. Irudayaraj	JTS (System)	Web programming, Linux, E-Services
13	R. Madhanarasan	JTS (System)	Data Centre, BMS and ISO
14	E. Arun	JTS (System)	Workflow
15	P. Mahesh Mithreevan	Senior Technician (system)	Computer networks, servers, switches, campus network, maintenance

Apart from the permanent staff listed in the foregoing, there are Project Officers, Project Associates and Project Technicians assigned to each vertical in the Computer Centre to support the various activities of the Centre.

6.5 Central Facilities

6.5.1. Central Workshop Introduction

The Central Workshop (CWS) was established in the year 1959. Initially, the facility consisted of shops associated with three major manufacturing processes, i.e., metal cutting, metal joining and metal forming. Later, sections on other modern manufacturing processes and control systems were

introduced in workshop training. In 2011, Central Workshop facilities were modernised with CNC lathe, Vertical Machining Centre, advanced pneumatics and hydraulic trainers and 3D printers. In 2021, CNC wire EDM machine was added as facility to support research scholars' fabrication work. The CWS offers training to all first-year B. tech students through workshop courses WS1301, WS1302 and WS1303.

Facilities of Central Workshop

Presently, Central Workshop has facilities in different shops and sections. The list of shops and sections with their facilities are listed in the table below.

S. No.	Shop/Section/Lab	Facilities
1	Carpentry	Wood working with planing, circular saw cutting, turning, thickness reducing, polishing processes and hand-operated power tools
2	Fitting & Tool Room	Filing, drilling, tapping, jig boring, tool milling, engraving, marking, slotting, grinding and cutting
3	Machine Shop	Horizontal and vertical milling machines, lathes, planing machine, radial drilling machine, tool and cutter grinder, CNC lathes, CNC milling machines, universal milling machines and computer-aided manufacturing software
4	Gear Shop	Spur, helical and bevel gear cutting and gear inspection
5	Electrical Shop	Trainers for single-phase electrical circuits, three phase direct online and star-delta starter trainers
6	Instrument Shop	Calibration of pressure gauges up to 1000 bar and precision machines. Rapid prototyping machines (3D printers)
7	Welding Shop	Arc welding, gas welding, brazing, TIG welding, Plasma Arc cutting and arc welding simulator
8	Foundry Shop	Sand molding, melting and die casting machines
9	Smithy Shop	Open hearth furnace
10	Pneumatics and	Basic and advanced pneumatics trainers
	Hydraulics	Electro pneumatic trainer Basic and advanced hydraulic trainers
11	FRP	Manufacturing polymer reinforced composites by hand lay-up process
12	Plastics	Introduction to plastics, demonstration and production in hand-operated, semi-automatic injection and compression moulding of plastics
13	Instrumentation & Communication Lab	Introduction to basic communication systems. Exercises on optical fiber communication. Introduction to various kinds of transducers. Microprocessor-based control applications, example of stepper motor control and traffic light controller and PLC.

Training of students

The Central Workshop offered B.Tech/Dual Degree (first year) students of 2020-21 batch workshop courses WS1301, WS1302 and WS1030 (exclusively for the students of Engineering Design department).

The details of the students and training modules are given below.

Department	No. of Students	Training Modules
1. Electrical Engineering	155	Power Tools Machining process – Turning Machining process – Milling Foundry & Smithy Plastics & FRP Welding Electrical Electronics Pneumatics & Hydraulics Instrumentation & Communication
2. Engineering Physics	40	
3. Mechanical Engineering	207	
4. Metallurgical & Materials Engineering	66	
5. Aerospace Engineering	70	
6. Chemical Engineering	118	
7. Naval Architecture & Ocean Engineering	72	
8. Civil Engineering	124	
9. Biological Engineering	39	
10. Computer Science and Engineering	87	
11. Engineering Design	72	
Total	1050	

Fabrication works and other activities

- The CWS offers support for manufacturing experimental set-ups and their accessories to B.Tech./M.Tech. students and M.S./Ph.D scholars of the institute. During 2021-2022, 672 work orders were executed.
- The workshop offered workshop courses WS1301, WS1302 and WS1303 to 1,039 students of 2020-21 batch of B.Tech/Dual Degree.
- The workshop selected 30 trade, technical and graduate trainees with ITI, Diploma and B.E. qualification in January 2022.
- The CWS also procured three buses, two 25-seater and one 40-seater. The buses were handed over to bus transport for regular operation. The Auto Shop of the CWS maintains the institute buses.
- Central Workshop staff members actively participate in the product development of IIT Madras incubated start-up companies.

6.5.2 Central Glass Blowing Section

Established in 1972, the Central Glass Blowing Section (CGBS) is one of the important infrastructural facilities of Indian Institute of Technology Madras. The facility undertakes design and fabrication of sophisticated glass apparatus for research and development in various departments. It has a range of modern glass working equipment that has been largely procured from Germany under a collaborative programme.

The apparatus includes a horizontal-cum-vertical lathe, a universal forming lathe and a high-vacuum

system. The section is also well equipped with a good number of sophisticated burners, drilling and cutting machines, grinding and polishing equipment and such other tools necessary for fashioning varied glass apparatus. It has an adequate facility for quartz working and has developed a high level of expertise in this area. The sophisticated apparatus fabricated includes cryostats, spherical and cylindrical Dewar flasks, lugging probes, laser housing tubes with water, jackets, reactor tubes, vacuum tube collectors (for solar energy) and quartz ware.

From April 2021 to March 2022, the CGBS undertook 604 work orders from various departments.



International and Alumni Affairs

7.1. Alumni and Corporate Relations (A&CR)

Introduction

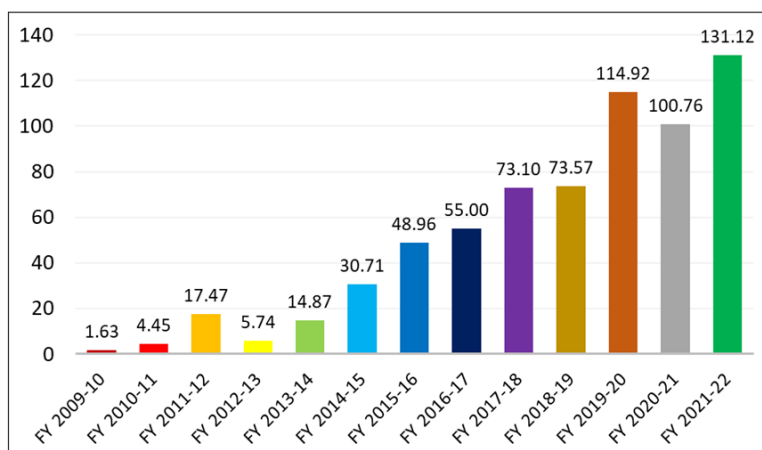
The Office of Alumni and Corporate Relations (A&CR) strives to support the institute's drive towards global excellence in education, research, relations with industry, innovation and entrepreneurship, sustainability and social impacts and infrastructure. The vision of the Office of A&CR is to enhance the global stature and create an impact by actively engaging with alumni and corporate network. The mission of this office is to build on the institute's

excellent relationship with alumni to increase engagement with academia/research labs, industry/business, entrepreneurs, and foundations to promote institute's external relations, and raise funds for the institute and its stakeholders: students, faculty and staff, and society.

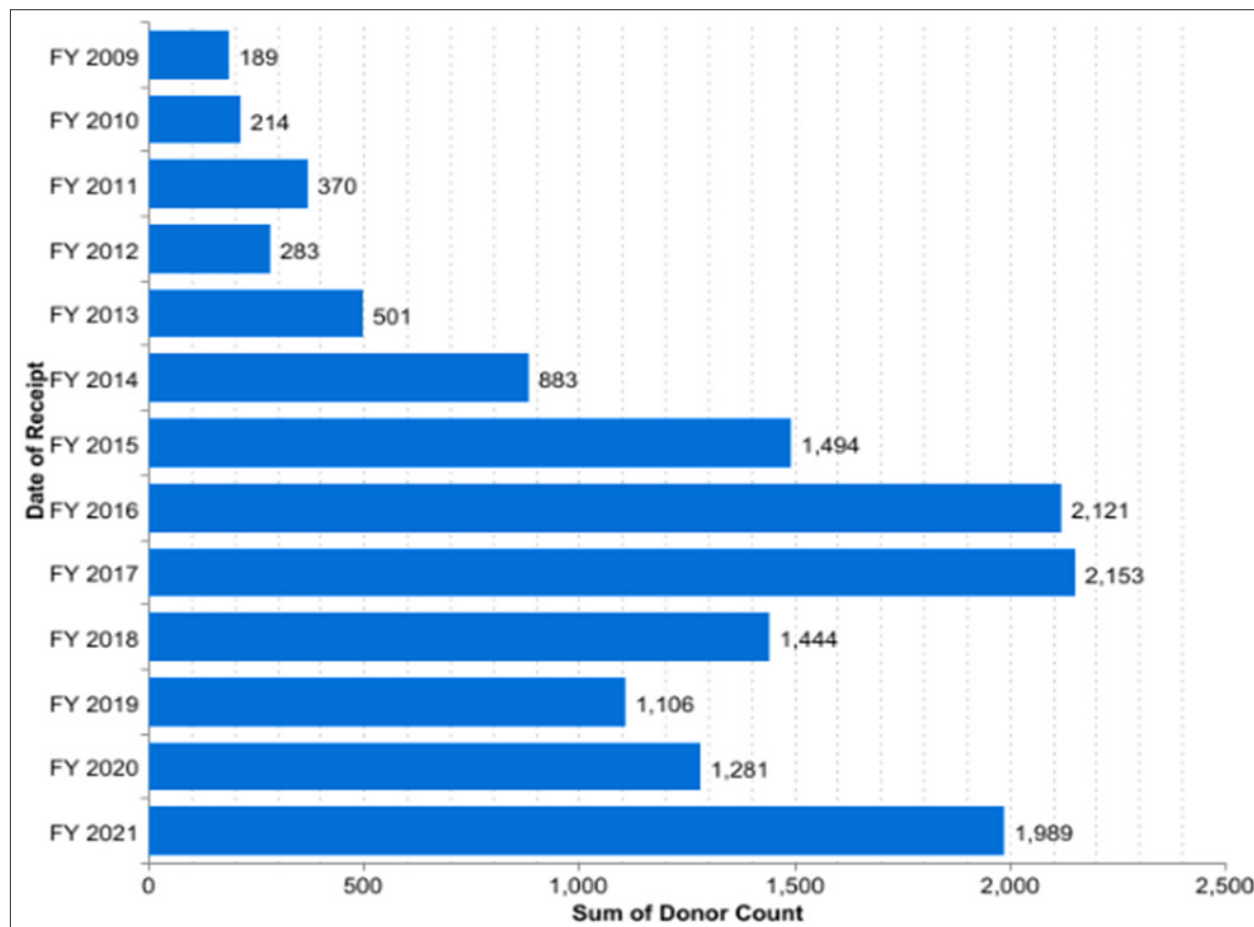
The Dean A&CR office and Office of Institutional Advancement raised ₹131.12 crore for various projects of the Institute in FY 2021-22, thanks to all the benevolent alumni, socially conscious corporates, and other well-wishers of the institution.

Statistics of Funds Received - FY 2021-22

Financial year-wise contribution (amount in crore of ₹)



Statistics of Funds Received - FY 2021-22



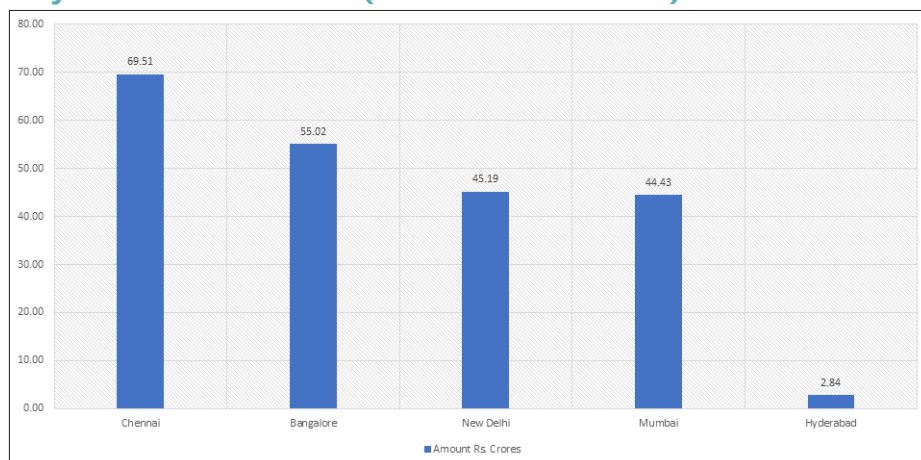
Major donations

S. No.	Client	Amount Received (₹ in crore)
1	Power Grid Corporation of India Limited	10.50
2	Siemens Limited	4.15
3	Robert Bosch Engineering and Business Solutions Private Limited	4.00
4	Texas Instruments India Private Limited	2.92
5	TTK Prestige Limited	2.91
6	L&T Technology Services Limited	2.70
7	ArcelorMittal Nippon Steel India Limited	2.52
8	EK Step Foundation	2.50
9	Tata Elxsi Limited	2.04
10	Larsen & Toubro Infotech Limited	1.69

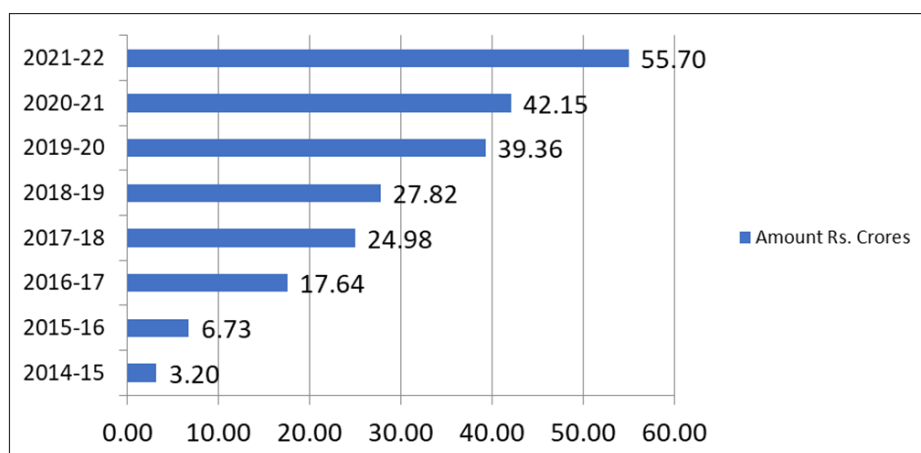
Corporate Social Responsibility

IIT Madras is working with industry to help fulfil CSR obligations. There are four ways that IITM is working with corporates on CSR: support for IITM incubators, support for socially relevant projects lead by IITM faculty, designing R&D programmes with industry, and support through scholarships for economically challenged IITM students

CSR 2014 to 2022 City-wise fund received (amount in crore of ₹)



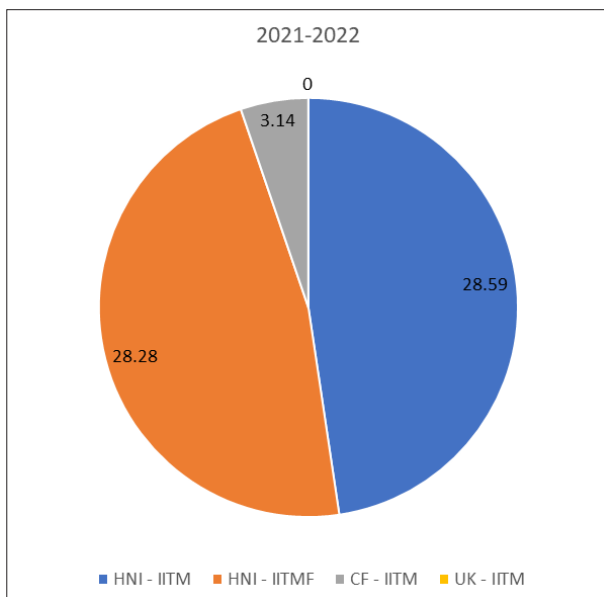
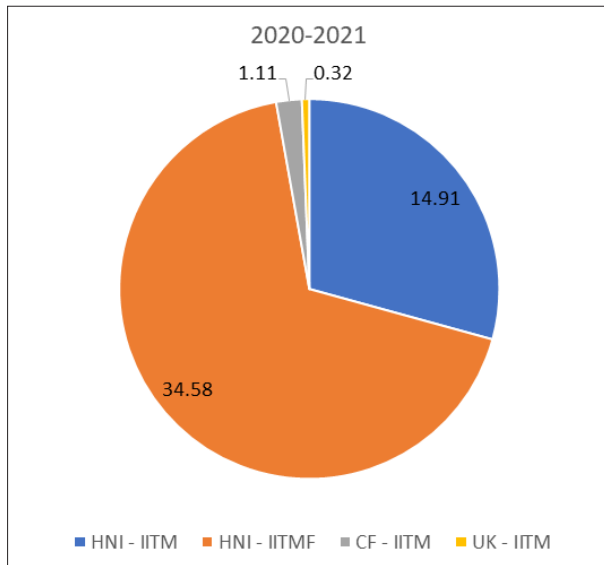
CSR 2014 to 2022 Financial year-wise funds received (amount in crore of ₹)



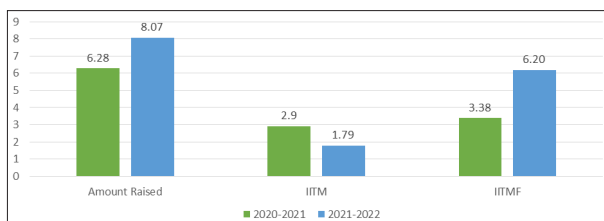
High net-worth individual

S. No.	Donor	Amount Received (In Crore of ₹)
1	Crypto Relief	7.55
2	Ministry of Road Transport and Highways (MoRTH)	7.00
3	Kris Gopalakrishnan	6.27
4	Ram Shriram	3.28
5	Prem Watsa	2.91
6	P. Balasubramanian	2.00
7	N. Lakshminarayanan	2.00
8	V. "Seenu" Srinivasan	1.18
9	Surendra P. Shah	1.17
10	Induprakas K	1.17

HNI Fund Flow | 2020-2021 and 2021-2022 (value in ₹ crore)



Retail | 2020-21 vs 2021-22 Amount raised in crore of ₹ in IITM and IITMF



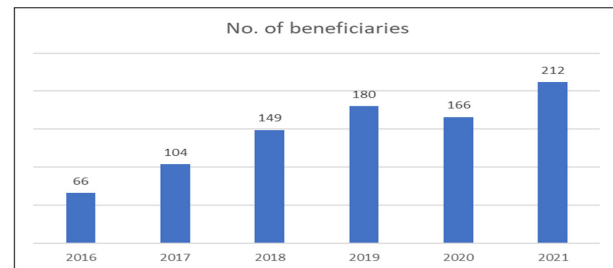
Scholarships Merit-Cum Means Scholarship

From 2016, the tuition fee has been revised to ₹2 lakh per annum. The Government Merit-Cum-Means Scholarship has been revised to two-third of ₹2 lakh (i.e., ₹1.33 lakh) for students with parental income of ₹1 lakh to ₹4.5 lakh. This leaves a sum of ₹66,667 to be borne by the student.

Objective of MCM

- To support B.Tech/Dual Degree students with parental income ₹1 lakh to ₹9 lakh per annum
- Students with lower parental income will be given higher priority
- Scholarship renewal is based on CGPA (above 5) and parental income range.

For the academic year 2021-2022, more than 170 students are being supported through this scholarship.



Donor-defined scholarships

There are more than 25 other scholarships, where the criteria are identified based on department, degree, parental income, merit, and so on. For the academic year 2021-2022, more than 120 students were supported through these scholarships.

Distinguished Alumni Awards 2022

The Distinguished Alumni Award (DAA) is the highest award given to its alumni by IIT Madras in recognition of achievements of exceptional merit and excellence. The DAs are awarded in recognition of outstanding achievements in the areas of entrepreneurship, leadership and management, academia, social and technological innovation, and service to humanity at large. The DAAs are presented annually by the institute since the inception of the awards in 1996.

The Office of the Alumni Relations receives nominations for the awards. The call for nominations is circulated by March of the relevant year. The selection is done by a committee appointed by the Director. The Selection Committee for the DAA has named the following as this year's recipients.



OFFICE OF ALUMNI & CORPORATE RELATIONS, IIT MADRAS
Distinguished Alumnus Awardees, 2022



Prof. Mini Shaji Thomas
1986/M.Tech/EE

Director
NIT Trichy
INDIA



Ms. Shuba Kumar
1994/B.Tech/MT

Managing Director
Natesan Synchrocones Pvt. Ltd.
INDIA



Prof. Rajan Varadarajan
1973/M.Tech/HS

Distinguished Professor
Texas A&M University
USA



Prof. Venkatraghavan Ganesan
1993/B.Tech/CH

Professor And Associate Chair
University Of Texas, Austin
USA



Prof. Subbarao Kambhampati
1963/B.Tech/EE

Professor
Arizona State University
USA



Prof. Madhav Marathe
1969/B.Tech/CS

Endowed Distinguished Professor
University Of Virginia
USA



Dr. Nagaraja Rao Harshadeep
1980/B.Tech/CE

Global Lead
World Bank
USA



Dr. Jayarao 'Bob' Balam
1980/B.Tech/ME

Chief Engineer, Mars Helicopter Project
Jet Propulsion Laboratory, NASA
USA



Dr. Shankar Doralswamy
1989/B.Tech/AE

Chief Scientist
CSIR- NIO
INDIA



Mr. Chakrapani. R. V
1984/B.Tech/CE & 1988/MS/CE

Managing Director
Aarvee Associates
INDIA



Mr. Anand Kripalu
1980/B.Tech/EE

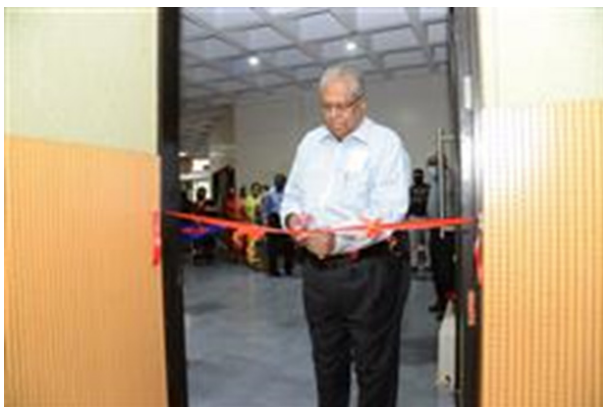
Managing Director & Global CEO
EPL Ltd.
INDIA

Events

A.M.M. Arunachalam Auditorium Inauguration Ceremony

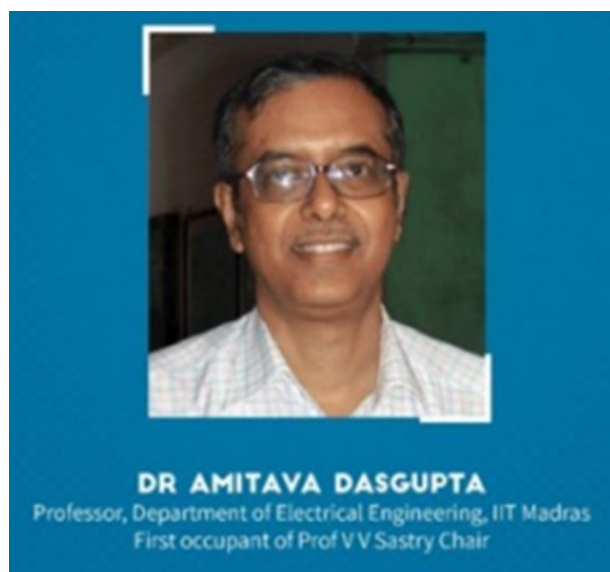
IIT Madras has always been very close to A.M.M. Arunachalam's heart and to the successive generations of his family. To commemorate this association, his son M.A. Alagappan along with the A.M.M. Foundation, has made a benevolent contribution towards naming an auditorium in the institute after A.M.M. Arunachalam.

The auditorium is a modern facility for hosting conferences, workshops and seminars for the benefit of students, researchers and faculty. A.M.M. Arunachalam Auditorium Inauguration Ceremony was held on 7 April 2021 at IC&SR Building, Hall III, IIT Madras. The auditorium was inaugurated by Shri M. A. Alagappan Chairman, AMM Foundation and Advisor, Murugappa Group.



V.V. Sastry Chair Launch

V.V. Sastry Chair Launch was held on 19 June 2021 virtually. IIT Madras has established a Chair in the name of Prof. V V Sastry to acknowledge his indelible contributions to the Department of Electrical Engineering and the institute in its formative years. The first occupant of the Prof V V Sastry Chair is Prof. Amitava DasGupta, Department of Electrical Engineering, IIT Madras. Prof. DasGupta has been a faculty member in the Department of Electrical Engineering, IIT Madras since 1993. As a DAAD Fellow, he has worked at the Institut für Hochfrequenztechnik, Germany. His research interests are in the areas of semiconductor device modelling and technology and MEMS. The Prof. V V Sastry Chair has been instituted by Col Tina and Dr Yashpal Sodhi, an alumnus of IIT Madras from class of 1970.



T.T. Jagannathan Auditorium - Inauguration Ceremony

T.T. Jagannathan Auditorium was inaugurated on 6 August 2021 by T.T. Jagannathan, Chairman of TTK Prestige, in the presence of Prof. Bhaskar Ramamurthi, Director, IIT Madras. Mr T. T. Jagannathan, who is a distinguished alumnus from the 1970 batch, contributed ₹10 crore to IIT Madras to establish an endowment, which will be used for further research. The interest accrued from the endowment will be used to support new research pursuits by IIT Madras students and faculty. In recognition of T.T. Jagannathan's achievements and to commemorate his contributions to the business world, IIT Madras honoured by naming the auditorium after him.

P.S. Rao Chair and P.K. Aravindan Chair Launch

IIT Madras has launched Professor P. S. Rao and Professor P. K. Aravindan Chairs to recognise the contributions of the esteemed professors, who have dedicated their lives to teaching and nurturing students. The chosen occupant for the Prof. P. S. Rao Chair is Prof. C. V. Murty and Prof. P. K. Aravindan Chair is Prof. K. Rajagopal. The contributions of Prof. P. S. Rao were truly immeasurable. Prof. P. K. Aravindan has inspired generations of students as well as research scholars, teaching a variety of courses

both at undergraduate and postgraduate levels in his tenure at IIT Madras.

P. S. Rao Chair and P. K. Aravindan Chair launches were held virtually on 9 August 2021.



Ministry of Road Transport and Highways signed MoU with IIT Madras



Indian Institute of Technology Madras is to collaborate with the Ministry of Road Transport and Highways (MoRTH), Government of India, on Pavement Engineering and Intelligent Transportation Systems. This includes research on novel pavement materials and technologies, hydrogen cell transportation, automatic vehicle classification, novel toll systems,

incident management systems, traveller information systems, FastTAG data analytics and traffic simulations besides transportation safety. Towards this, a 'MoRTH Chair' was created at IIT Madras, which focuses on R&D, teaching and training in traffic and highway engineering. The Chair Professor will act as a Strategic Advisor to MoRTH in Road Transport and Highways. The Chair professor will also interface with the Standard and Research (S&R) wing of MoRTH, facilitating need-based research in Traffic and Highway Engineering.

The MoU for setting up this Chair was signed during a virtual event on 17 August 2021 by Prof. Mahesh Panchagnula, Dean (Alumni and Corporate Relations) and Prof. Bhaskar Ramamurthi, Director, IIT Madras, as well as Mr Indresh Pandey, Director General (Road Development) and Mr Giridhar Aramane, Secretary, MoRTH, in the presence of Prof. Manu Santhanam, Head, Department of Civil Engineering, IIT Madras. MoRTH contributed ₹7 crore towards the Chair in Traffic and Highway Engineering.

Nita and SK "KG" Ganapathi Chair Inauguration

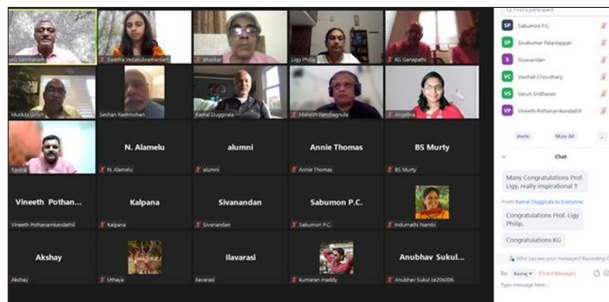
Dr KG Ganapathi received his Bachelor of Technology in Metallurgical Engineering from IIT Madras in 1985. Dr KG is a prolific inventor - his patents have formed the underpinning of all his entrepreneurial ventures. He has nearly 50 issued and pending patents in the fields of magnetic recording and storage, MEMS sensors and actuators, user input devices, thermal imaging, robotics, and supply chain digitization. He serves on the Founding Advisory Board of the prestigious Management, Entrepreneurship, and Technology (MET) Program at the University of California, Berkeley. He is an active investor, mentor and board member at various start-ups throughout Silicon Valley. KG and his wife Nita are active on the philanthropy front as well. They have contributed to numerous causes, including education and literacy, cultural and religious preservation. They were members of the Palo Alto Partners in Education (PiE) leadership circle or donors for over a decade until 2017. They are patron members of the Odisha Society of the Americans (OSA). They have also worked to uplift underprivileged and disadvantaged communities.

Prof. Ligy Philip is the First Chair Occupant of the Nita and KG Ganapathi Chair. Nita and SK "KG" Ganapathi Chair Inauguration was held on 5 September 2021.

Indian Institute of Technology Madras' Cauvery Hostel, the first-ever hostel to be constructed on the campus, has been renovated at a cost of ₹2.5 crore. The renovation was made possible with the generous support from Distinguished Alumnus Dr Krishna Chivukula (M.Tech. 1970 Batch), Founder and Chairman, INDO-MIM Private Limited.

The renovated hostel was inaugurated on 8 September 2021 in the presence of eminent dignitaries, including

Renovated Cauvery Hostel inauguration



Shri S. Shankar (1970 Batch), General Manager, INDO-MIM Private Limited, Prof. Bhaskar Ramamurthi, Director, IIT Madras, as well as other faculty members. Cauvery hostel was constructed in 1961 with a capacity to accommodate 216 students in single occupancy. In 2002, the hostel was enlarged to accommodate an additional 171 students. Since 2018, the rooms have been converted into double-occupancy rooms to accommodate around 750 students. It has now seen a face-lift with several facade improvements such as relaying of tiles and railings, shoe rack fixing, waterproofing, painting and fully renovated restrooms. Krishna Chivukula contributed ₹5.5 crore towards the institute's Keep it Flowing campaign for the renovation of three hostels: Cauvery (₹2.5 crore), Godavari (₹1.5 crore) and Jamuna (₹1.5 crore).



Subramonian Shankar Block - Inauguration Ceremony

IIT Madras has inaugurated a new building of the Computer Science Department. This step towards infrastructure expansion was possible after a donation of \$1.51 million by Mr Subramonian Shankar, Founder and President of AmZetta Technologies and an alumnus of the institute. The inauguration of the three-storey building took place on 17 September 2021.



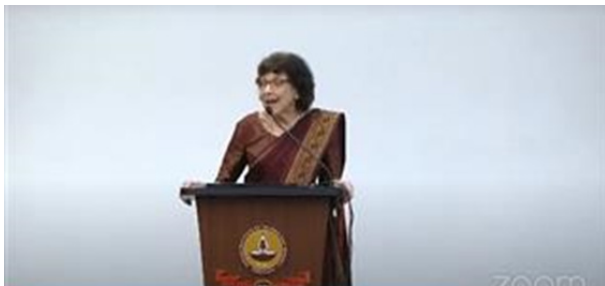
Surendra and Dorothee Shah Chair Launch

Indian Institute of Technology Madras launched the Surendra and Dorothee Shah Chair for furthering cutting-edge research in the field of civil engineering materials. This plays a significant role due to the immense amount of construction work undertaken every year in India, with the volumes and expenditures continually increasing.

Prof. Surendra P. Shah, one of the foremost global experts in engineering materials, particularly concrete and other cement-based construction, chose IIT Madras to set up the Institute Chair. He has led the development of new advanced materials, which have become world standards in these fields, and his work revolutionised the way modern concretes are used worldwide.

Prof. Surendra Shah currently serves as the Presidential Distinguished Professor, University of Texas, and Walter P. Murphy Emeritus Professor of Civil and Environmental Engineering, Northwestern University. Mrs Dorothee Shah is the founding President of the Indo-American Museum, now called the National Indo-American Museum, in Chicago.

Surendra and Dorothee Shah Chair launch event was held on 9 December 2021. Prof. Ramamurthy, Department of Civil Engineering is the First Chair Occupant of the Surendra and Dorothee Shah Chair.



'Explore and Grow—CSR Partnerships' in Mumbai

IIT Madras has been collaborating with various corporates and industries and is increasingly being recognised as the go-to partner for technology-driven social impact initiatives in the country. The institute conducted a roundtable meet, Explore and Grow-CSR Partnerships, in Mumbai on 16 December 2021. The roundtable session conducted by IIT Madras included engaging panel discussions by renowned expert faculty on socially relevant projects and impactful research, and the same was highly appreciated by the participants—all CSR decision makers from leading corporates. The institute has, thus far, raised around ₹200 crore for CSR projects from more than 140 leading corporates, implementing high-quality, technology-driven projects at a national level.

Prof K Ramesh’s Book Launch – Developments in Photoelasticity: A Renaissance

A book on photoelasticity by Prof. K. Ramesh of IIT Madras has been published by UK’s Institute of Physics. The book brings out the re-emergence of the subject and its diverse uses in various fields. The digital book, Developments in Photoelasticity – A Renaissance, is based on decades of research by the professor and his students at the institute.

The digital book was released on 14 February 2022 in a virtual event by Chief Guest Mr Krishna Mahesh, Managing Director, Sundaram Brake Linings Limited and Founder-CEO of Sundaram Medical Devices (P) Ltd, in the presence of Prof. V. Kamakoti, Director, IIT Madras, Prof. Mahesh Panchagnula, Dean, Alumni and Corporate Relations, IIT Madras, and other faculty members and staff of the institute.

Prof K Ramesh is the first occupant of the K Mahesh Institute Chair.

Mr Krishna Mahesh, MD, Sundaram Brake Linings Limited, has dedicated this Chair endowment in memory of his late father K Mahesh, an alumnus of the 1965 batch in the department of MME, IIT-Madras.



Venkataraman and Sita Srinivasan Chair Launch

IIT Madras has launched Venkataraman and Sita Srinivasan Chair on Innovation and New Product Development.

A sum of \$1,60,000 was endowed for this Chair Professorship by Prof. V. 'Seenu' Srinivasan, Adams Distinguished Professor of Management, Emeritus, Stanford University, U.S.A. The Venkataraman and Sita Srinivasan Chair was launched on 16 February 2022. Prof. G. Venkatarathnam of the Mechanical Engineering Department is the first occupant of the chair.



Women Leading IITM

Recognising the importance of women in society and the various challenges they have to often overcome, IIT Madras has started 'Women Leading IITM' (WLI) to recruit, secure, promote, nurture and support women. The programme will make grants each year to accelerate women technologists' careers as well as provide a supportive environment for women to thrive at IIT Madras.

The grants for the second year were announced on 8 March 2022 (International Women's Day). For the year 2022-23, 24 grantees have been chosen for the WLI grant to support their endeavours and spur their academic pursuits.





IITM Partners with Walmart Global Tech India

As a part of the collaboration, IITM students and Walmart Global Tech (WGT) associates will work together on research projects, facilitated by the Centre for Industrial Consultancy and Sponsored Research (IC&SR) at IITM.

IIT Madras has signed an MoU with WGT to accelerate research in new areas of technology while focusing on training programmes to upskill talents. This partnership will provide continuing education to Walmart associates and collaborate on CSR projects for their India operations.

A landmark partnership of IIT Madras with WGT has been forged to:

- Accelerate research in new areas of technology
- Provide Walmart associates with continuing education
- Collaborate on CSR projects for their India operations
- Provide opportunities for internship and recruitment to IITM students
- Work with IITM's incubated start-ups

The MoU was signed on 9 March 2022 in the presence of Dr Suresh Kumar, Global CTO and CDO, Walmart Inc., Prof. Mahesh Panchagnula, Dean-Alumni and Corporate Relations, IITM and Ms Judith Ravin, the U.S. Consul General in Chennai. IITM also received a CSR grant of ₹1.1 crore at the same event towards B.Sc. Online scholarships from Walmart Global Tech India.

The same evening, Dr Suresh Kumar, as an IITM alum (1987 B.Tech.), received his DAA award amidst his family members, took a walk down memory lane and engaged with IITM students at a memorable fireside chat.



IIT Madras and TCS partner to launch M.Tech in Industrial Artificial Intelligence

Indian Institute of Technology Madras has partnered with Tata Consultancy Services (TCS) to launch a web-enabled, user-oriented programme on Industrial AI that is targeted at upskilling employees in corporates in the applications of AI to industrial problems.

The 18-month course, designed in consultation with TCS, will be offered by IIT-Madras in a completely online live teaching mode through virtual classrooms. The first cohort of students for the programme will be from TCS.

The MoU was signed on 22 March 2022. The key outcomes IITM expects from the M. Tech in Industrial AI include upskilling of Indian workforce, improving the knowledge ecosystem that is critical for AI adoption and translating AI theory to practice.



IIT Madras and Renault Nissan collaborate to reduce accident fatalities in Chennai

Indian Institute of Technology Madras is collaborating with Renault Nissan Technology and Business Centre India Private Limited (RNTBCI) to reduce road accidents fatalities in Chennai and neighbouring districts through two projects. This initiative is aligned with the United Nations Sustainable Development Goal (SDG).

The Connected Intelligent Urban Transportation lab at IIT Madras will develop innovative, technology and data-driven solutions to improve road safety.

RNTBCI has contributed to IIT Madras as part of CSR. The MoU for the same was signed on 2 April 2022 by Prof. Mahesh Panchagnula, Dean (Alumni

and Corporate Relations), IIT Madras and Mr Debashis Neogi, Managing Director, Renault Nissan Technology and Business Centre India Private Limited (RNTBCI) in the presence of Mr Natarajasundaram Balasubramanian, Vice president, RNTBCI.



**A few initiatives by ACR Office
Shaastra magazine**

Shaastra, published by the Indian Institute of Technology Madras, is the first mass-circulation science and technology magazine from an Indian educational institution. The bimonthly magazine aims to bring a solution-driven perspective to developments in science and technology, both at home and overseas, as well as their impact on society. Supported by the 50,000 alumni of IIT Madras, Shaastra fills a long-felt need for a validated source for in-depth reporting and analyses on current research. Put together by a professional team of journalists, it is written in a form that is accessible and engaging to a general reader. It is intended to serve as a platform to enable informed conversations between industry, academia and policymakers



Volume 01 Issue 01 Jan-Feb 2022



Volume 01 Edition 03 Sep-Oct 2021



Volume 01 Edition 02 Jul-Aug 2021



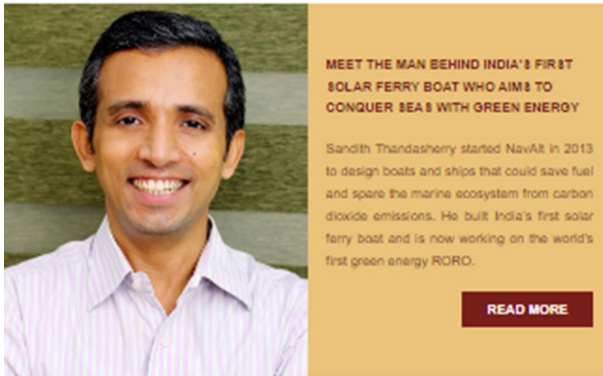
Volume 01 Edition 01 May-Jun 2021

Web link: <https://shaastramag.iitm.ac.in/>

IITM Newsletter

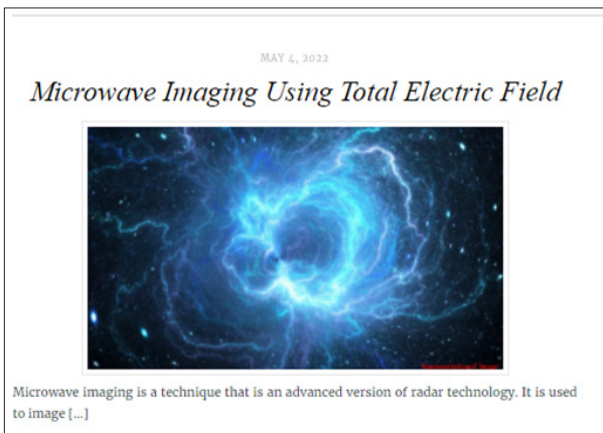
IITM Newsletter covers stories about IITM, alumni and faculty achievements, Tech Talk, and Rewards and Recognition. It was Initiated on 1 May 2020. To date, 106 newsletters have been circulated. Forums like IITM alumni, Board members, students, faculties and industry partners are the regular recipients of the newsletter. Weekly distribution of the newsletter to the above-mentioned forums are undertaken by the office of Alumni and Corporate Relations.





Tech Talk

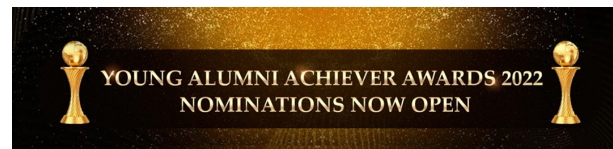
To present IITM's recent research and publications in a simple language to a larger audience is a keen effort made by the Alumni and Corporate Relations Office. Selected journal publications from IITM are published to make them accessible to alumni and others and are circulated through our social media handles. Every week, a new article is published.



Young Alumni Achiever Award

The Young Alumni Achiever Award (YAAA) felicitates the achievements of young alumni who have shown promise and early success in their professional journeys.

As well as encouraging awardees to achieve further excellence in their chosen careers, this recognition is designed to strengthen their relationship with their alma mater. It identifies individuals who can later contribute time, experience and resources towards the success of future graduates, through mentorships, industry and research collaboration, and other guidance.



A CSR coffee table book by IIT Madras

The Office of Alumni and Corporate Relations has created a unique coffee table book featuring distinctive CSR work done by the faculty members across various industries. The book highlights societal impact through case studies on 25 CSR projects. This book is being shared with eminent business leaders and stakeholders to blaze the social impact IITM has created.





Original Inspiration

STARTUPS AT ICOW

STARTUPS AT ICOW	SPECIALIZATIONS
Viggyal Technologies Pvt Ltd	Atmospheric water generators that extract water from the atmosphere through nanotechnology
InnoCI Water Technologies Pvt Ltd	Chemical-free method that retains more than 90% of the liquid in wastewater. Capable of removing 99.9% of bacteria in an affordable manner for treating domestic effluents, including toilets and urinals
HydroMaterials Pvt Ltd	A nano-material-based system for removing arsenic and iron from water at a cost of less than \$2 per gallon (litre). Requires no power to operate and maintenance cost is negligible
Solken Integrity Pvt Ltd	Digitizing water pipeline network for smart cities using intelligent enablement for solving water transportation leaks, accessibility and efficiency
GreenSmart Innovation & Marketing India (P) Ltd.	An environmental engineering company focused on providing technologies for water, energy and environmental management in commercial establishments through IoT based technologies
EyeH2o Aqua Solutions Pvt Ltd	A company focused on developing low-cost sensors for real-time water quality and flow monitoring with 0% initial connectivity

ICOW works with 50+ companies

The primary aim of ICOW is to evaluate and harness available technologies, research and develop new technologies to ensure affordable and sustainable clean water solutions to individuals, communities and industries.

Water Technology ICOW - International Centre for Clean Water

Way forward

- Research and innovative technology development to solve water issues
- Collaborate with organisations to clean water space and support their product development through rapid prototyping, analysis and certification
- Invest in a test stand and certify water treatment products like filters, membranes and consumables for manufacturers
- Develop and implement clean and eco-friendly drinking water solutions for schools, communities and public places
- Outreach programmes that bring together water experts from different domains
- Training programmes for upgradation of water quality analysis, water treatment plant operators and maintenance technicians
- Create a database for country's groundwater quality by deploying low-cost sensors
- Help develop 'Water 4.0' for the country
- Incentivise and acceleration of start-ups in water technology space

COOPERATE PARTNERS

H T Brack, HDFC, Aaram, GRUNDOS

Team members

Prof. Bhaskar Ramamurthi, Chairman, ICOW
 Prof. Ravindra Gattu, Head, Building Technology and Infrastructure Management Division and CSE Engineering Department
 Prof. Tijo Thomas, Associate Head, Dept of Applied Innovation Engineering and Manufacturing

Prof. T. Pradeep, Professor in Energy, Chemical and Materials Engineering, Department of Chemical Engineering
 Prof. Ligy Philip, Professor in Environmental and Water Resource Division and CSE Engineering Department
 Prof. Rajnish Kumar, Professor, Department of Manufacturing Engineering

“Water is finite. But this aspect of water is not appreciated. It is seen as a problem for someone else to solve, just as waste management once was. Water literacy is thus crucial for water management.”
 Prof. T. Pradeep, Professor in Energy, ICOW

“Water is extraordinarily important. It is good to see IIT efforts on all fronts and not only in generating next level of human resources and extraordinary transitional work.”
 Dr. Shalhar C. Manis, Director General, Council of Scientific and Industrial Research (CSIR)

“We wanted to support a landmark institution with the technical capabilities and innovation to think about and build critical water technologies, through a Centre of Excellence. We partnered with IITM to support Professor T. Pradeep's vision to establish the International Centre for Clean Water, a state-of-the-art research facility and entrepreneurship development centre that would not just develop affordable water technologies but also take them to market. We believe ICOW is poised to be a key player in developing, incubating and disseminating solutions for the current challenges of safe water for the country.”
 Ms. Zita Lakshmi, CEO, AT Fresh Solutions

“We have partnered with ICOW for a research study focused on developing a solar-alone solar powered membrane distillation unit for potable water production. It can help provide drinking water to communities living in areas with High TDS levels in groundwater, thereby making them self-reliant.”
 Mr. Apoorva Marikhandar, CEO, Avery Ltd, (India) India

Leadership lecture series

The Leadership lecture series was launched in the year 2011 by the Office of Alumni and Corporate Relations, IIT Madras. The series provides a forum for our students to interact with renowned guest speakers and draw inspiration from their stories and experiences. Over time, this series has featured highly accomplished industry leaders from diverse

backgrounds, inspiring future leaders and answering questions that only real-life experiences can answer. The audience are students across our UG/PG/Ph.D. programmes. The topics range from telling the story of a speaker's path to excellence, leadership, industry-specific leadership examples, or discussions of the various challenges the speakers have faced.

Leadership and Innovation in Clean Energy Transition

Shivkumar Kalyanaram
CTO, Energy & Mobility, Microsoft India

4 MARCH 2022

7PM ONWARDS

IIT MADRAS

Zoom LEADERSHIP LECTURE SERIES

Is computer science a social science?

Dr. Prabhakar Raghavan
Senior Vice President, Google

18 MARCH 2022

7PM ONWARDS

IIT MADRAS

Zoom LEADERSHIP LECTURE SERIES

7.2. Office of Global Engagement

Internationalisation

Internationalisation is inherent to the mission of IIT Madras and the Office of Global Engagement (OGE)—formally set up in 2007—is committed to realising this mission through a focused approach supported by three verticals. These verticals, as listed below, are aligned with the opportunities presented in an increasingly complex and challenging time for the higher education sector.

- International collaborations
- International academic programmes
- International conference secretariat

These verticals functioning in tandem with each other would serve IITM's overarching mission of delivering top-quality research, finest education and service to society through targeted, research-based product development.

International collaborations

The main activities of international collaborations are as follows:

- International delegation visits
- Network of international universities
- International mobility proposals
- Eminent speaker lecture series
- Proposing new ideas for "University Outreach Programs"

International delegation visits

In 2021-2022, five significant international delegation visits took place and IIT Madras and OGE-specific initiatives were discussed. Potentials for new research and academic collaborations were also proposed to the visiting delegations. The visits and the remarks can be seen below:

S. No.	Delegation	Remarks
1	University of Melbourne	Interested in Jointly Funded Bilateral Mobility (JFBM)
2	Tel Aviv University	Approved and ongoing JFBM
3	University of Exeter	Interested in joint-masters and I2MP
4	The Netherlands	Interested in JFBM
5	Australian National University	JFBM and Young International Faculty

Network of international universities

Currently, global collaborations' vertical is coordinating two important networks. The status and prospects are mentioned in the table below:

Network	Erasmus	Heritage
Status	Over 10 partner universities: facilitate students, semesters exchanges, faculty and administrative staff training	Over 18 partner universities: Leverages the academic tie-ups with IIT Madras
Milestone accomplished	Renewed inter-institutional agreements of the existing ones	Facilitated the SEC meeting
Scope of the network	Proposed new partners for cooperation	GC meeting scheduled for September 2022

International mobility proposals

The OGE currently offers two new initiatives for facilitating international mobility of faculty and bilateral exchange of students across partner universities.

- High-Risk-High-Rewards (HRHR)
- Jointly-Funded-Bilateral Mobility Program (JFBM)

Scheme	High-Risk-High-Reward	Jointly-Funded-Bilateral Mobility Program
Statistics	17 proposals received and processed under single blind approach and HRHR committee	Six proposals received and processed under JFBM committee
Results	Six selected for funding allocation	Two were selected and call for proposals announced
Learning outcomes	Increased global perception of IIT Madras via inviting international reviewers for interview Facilitates faculty and student mobility to world-renowned universities	Leverages the world-class research tie-ups of IIT Madras with international universities Scope for bilateral students' mobility

Eminent Speaker Lecture Series

To increase the global perception of IIT Madras, an Eminent Speaker Lecture Series was proposed under global collaborations. In this initiative, it is planned to have speakers to include Nobel laureates, world-class scientific celebrities, and known figures from the arts and sports background. The committee proposed a list of 29 such celebrities and pathway for each is currently under discussion.

Proposing new ideas for University Outreach Programs

Outreach of this initiative includes

- Conducting joint webinars, for example, IITM-UCL joint webinar on "Tomorrow's Home" Proposal
- Setting up a committee for proposal development for seeking funds from eight international organisations. Pathway for each is currently under discussion.
- For capacity-building initiatives for IIT Madras, collaborations with universities and Sri Lanka are currently underway.

More than 270 existing partner universities will be approached for further strengthening the academic tie-ups

- Currently, top QS-ranked universities are being approached in a case-by-case basis



International Academic Programmes

IIT Madras seeks to attract the best students from across the globe and offer them an excellent educational experience. We strive to provide innovatively taught courses unhindered by geography to meet this need. IITM has 19 joint doctoral, seven supervision and two master's programmes with globally renowned partner universities. The institute offers exchange opportunities in a wide range of courses and provides opportunities for internships through its exclusive programme, GRIESHMA in both online and physical formats. Twenty-two students enrolled in the online internship programme in 2021. The online exchange was also offered for the first time with a student from Spain enrolling.

The international admission processes were streamlined in keeping with the spirit of the National Education Policy 2020. This will enable a smoother admissions process for all foreign students. In addition, efforts are being made to automate the application process to facilitate processing of higher volumes.

Some of the key statistics and initiatives under of international academic programmes are as below:

- Over 300 applications to the M.Tech programme were received through the Indian Council for Cultural Relations; 17 students joined the programme in the July 2021 intake.
- IIT Madras welcomed its first two Ph.D. students from the Doctoral Fellowship in India for ASEAN (DIA), by the Ministry of Education, Government of India. The GE Office undertook various efforts to popularise its Ph.D. programmes during the application period.
- Nine International Interdisciplinary Master's Programs offering an M.Tech in emerging technology area and of relevance to the nation's development concerns will be on offer from July 2022. It is anticipated that these will lead to an increase in full-time foreign student enrolments.
- An international hostel built to global standards is currently under construction to cater to international students.
- A jointly sponsored programme to fund armed

officers to the M.Tech. and Ph.D. programmes is organised as an initiative to foster better relations between India and Bangladesh.

- IIT Madras partnered with the African-Asian Rural Development Organisation (AARDO) to provide scholarships to students in the M.S. Research programme in projects focusing on rural development.
- The International Immersion Experience programme will partially support up to 100 IITM graduate students going abroad on exchange programmes through a competitive proposal call. Students profit from interacting with international students and faculty to gain new insights and perspectives, while gaining self-confidence and becoming global brand ambassadors.
- A competitive scholarship was launched and five IITM Master's students in the final year were selected to travel on an exchange programme to a French partner institute. These institutes are part of the Fédération Gay Lussac network. This number will grow to a bilateral exchange of 20 students annually. It is envisaged that this will lead to an increase in collaborations among faculty and an offering of joint programmes.
- The team will travel to promote the Ph.D. programmes among countries with a demand for Quality Improvement Programmes (QIP) among their faculty. We aim to add quality Ph.D. students to our numbers, while building lasting relationships with universities abroad.
- Trips will also be made to highly ranked institutions in neighbouring countries to invite their best students for an IIT Madras experience and encourage applications to M.Tech programmes.
- Efforts will be made to increase the joint doctoral and master's programmes on offer by developing strategic partnerships with highly ranked institutions worldwide. Innovative models for delivery and programmes in cutting-edge areas will be an area of particular focus.

Events organised under International Academic Programmes

The student outbound wing of the global academics' team strives to maintain a steady flow of students from all departments going beyond the border and doing collaborative research and course work with our partner institutes or universities, which helps the students have exposure.

IIT Madras encourages all types of collaborations and exchange programmes with foreign universities. Study abroad programmes are typically intended for undergraduates and graduate students who would like to spend a semester abroad taking courses or project work. International exchanges propel students towards multi-faceted approaches to

learning. These experiences play a major role in their self-development and awareness leading to enhanced self-confidence and self-esteem. Such exposure also makes them more comfortable in 'foreign' environments.

Some significant events organised in the year 2021-2022 are listed below:

- More than 250 partner institutes have MoU with IIT Madras. We also have 19 joint doctoral programme partnerships with globally established institutes.
- We organise several events to publicise various programmes offered through our partner institutes and promote exchange, internship and summer school opportunities available to UG/PG and M.S./Ph.D. scholars.
- We organised Prakriya2022, a summit on "Khoj - Ph.D. and Beyond," to help Ph.D. scholars have collaborative work at a reputable foreign institute.



The poster of Prakriya2022, a research scholars' fest.

PRAKRIYA 2022: Research Scholars Fest

We also launched the International Immersion Experience (IIE) Travel Award, which financially supports Ph.D. scholars on their research collaboration in the host institute in a foreign location for up to ₹3,00,000 for three months.

The IIE programme aims to facilitate highly motivated students who work on cutting-edge research at IIT Madras to travel to a partner institution abroad. The IIE Travel Awards are committed to provide partial financial support to students who can benefit from international exchanges. This award aims to help our students to go beyond borders and increase their international research exposure. These visits will potentially improve the quality of the research outcome and the global standing of the institution.

We also organised an information webinar session on 20 September 2021 to popularise the award among scholars and faculties. The first cycle of application was received in December 2021. In the first tranche of applications, more than 70 scholars applied for the award, out of which 34 students were selected to avail the award. In the second cycle of the applications, out of the 40 applications, 20 scholars were selected to avail the award.

IIE Award Information Session 2021

We organise several events to publicise various programmes offered through our partner institutes and publicise exchange, internship and summer school opportunities available to UG/PG and M.S./Ph.D. scholars. In 2021-22, 68 students went for several options with our partner institutes abroad. To encourage student mobility, we organised an information session for students on 24 March 2022. We also organised an information session for semester exchange to make sure the students have clarity on the procedure to be carried out to take up the semester exchange in the first place. Almost 300 students registered for the session out of which more than 180 students attended the session.

International Immersion Experience (IIE) TRAVEL AWARDS

Awards upto **Rs. 3,00,000/-**

Additional travel grant of upto **Rs. 1,00,000/-**

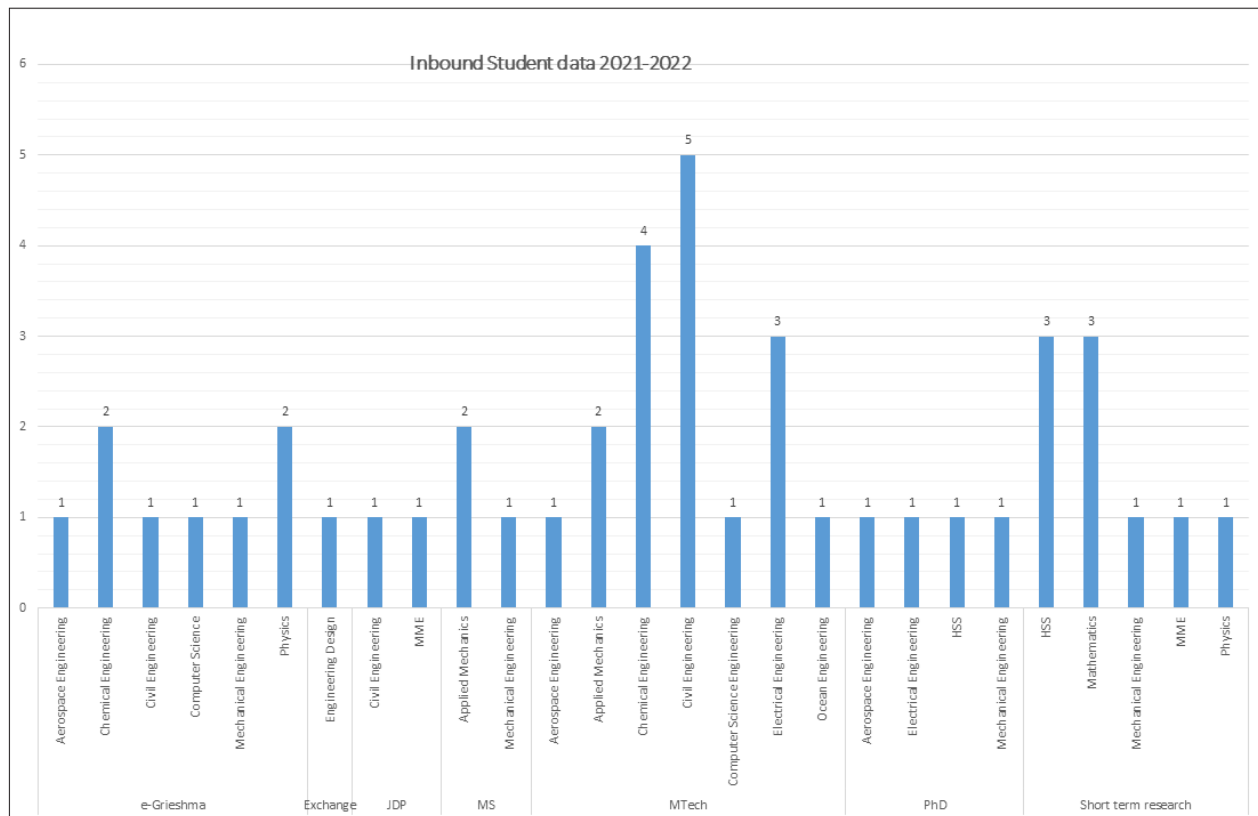
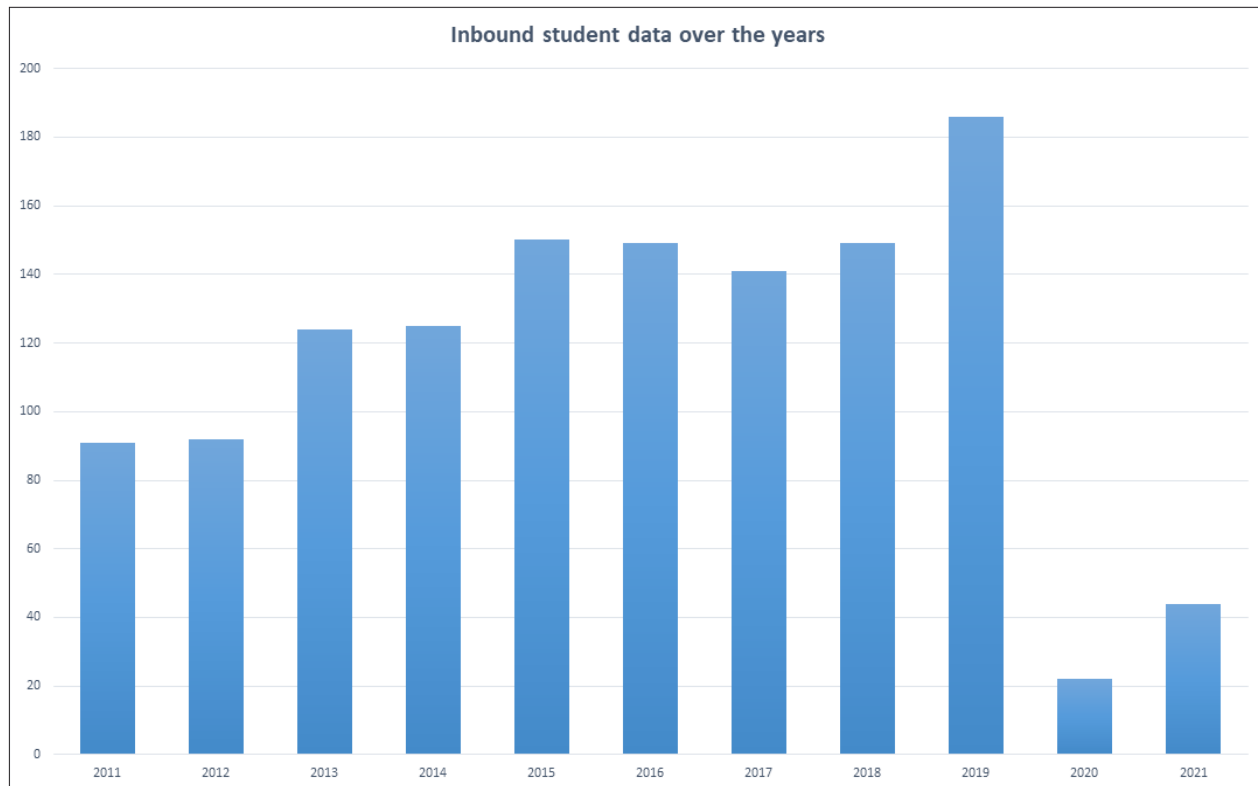
Information webinar Monday, 20 Sept 2021
6 pm - 7 pm

The Office of Global Engagement at IITM is delighted to launch the International Immersion Experience (IIE) Travel Awards exclusively to facilitate highly motivated Ph.D. students to travel to a partner institution abroad.

Register Now : ge.iitm.ac.in/iie/events/



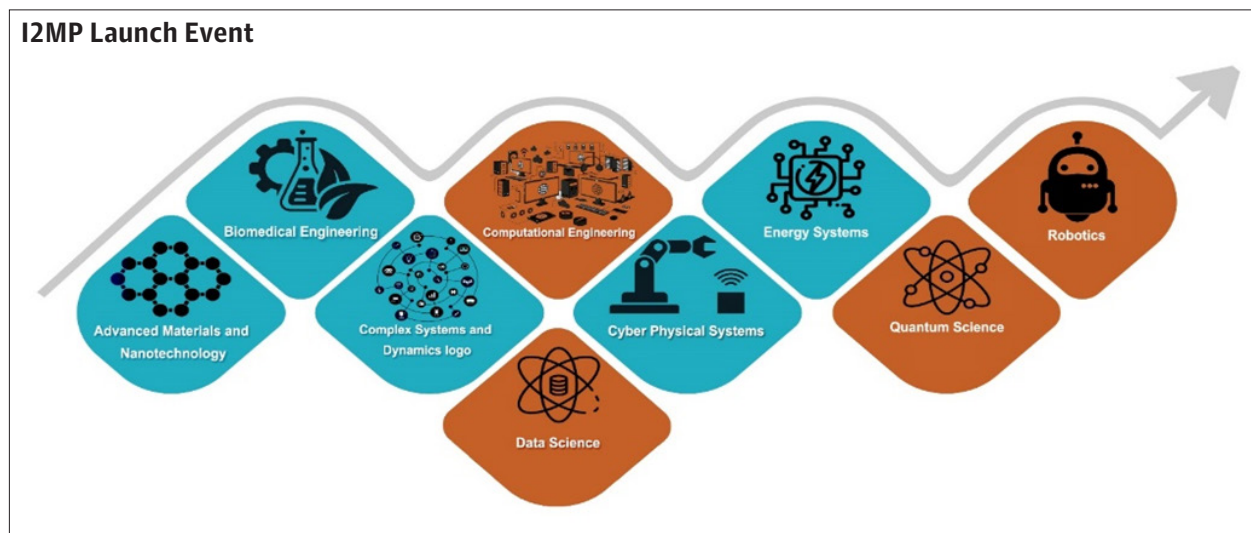
Semester exchange - Information Session 2022
2022 Inbound Data



I2MP (International Interdisciplinary Master's Program)

Nine International Interdisciplinary Master's Programs offering an M.Tech. in emerging technology areas and of relevance to the nation's development concerns will be on offer from July 2022. It is anticipated that these will lead to an increase in full-time foreign student enrolments.

I2MP Launch Event



An international hostel built to global standards is currently under construction to cater to international students.

A jointly sponsored programme for the defence personnel in M.Tech and Ph.D. programmes is organised as an initiative to foster better relations between India and Bangladesh.

IIT Madras and AARDO Scholarship

IIT Madras partnered with the African-Asian Rural Development Organisation (AARDO) to provide scholarships to students in the M.S. Research programme in projects focusing on rural development. Three students from African countries were enrolled in January 2022.

Facts and figures of International Immersion Experience

A competitive scholarship was launched and five IITM Master’s students in the final year were selected to travel on research exchange programmes to a French partner institute. These institutes are part of the Fédération Gay Lussac network. It is envisaged that this will lead to an increase in collaborations among faculty members and an offering of joint programmes at master’s and doctoral levels.

Thirty-nine students from IIT Madras travelled abroad for semester exchange opportunities at partner foreign institutions.

Travel was undertaken to promote IIT Madras’ international academic programmes among foreign countries with a demand for Ph.D. programmes amongst their faculty and to build lasting relationships

with foreign universities.

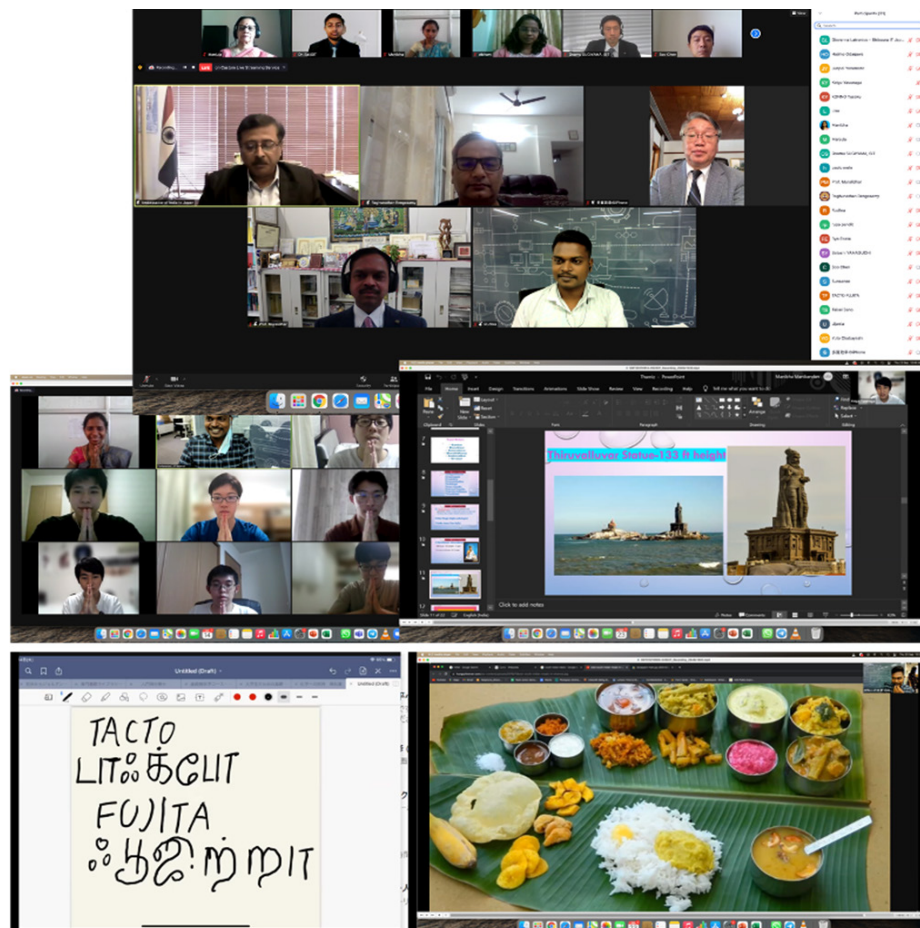
Foreign trips were also made to highly ranked institutions in Nepal, Sri Lanka and Bangladesh to invite their best students for an IIT Madras experience and encourage applications to M.Tech programmes.

A Cultural Immersion Programme was organised with eight students from Shibaura Institute of Technology, Japan, participating.

Efforts were made to increase the joint doctoral and master’s programmes by developing strategic partnerships with highly ranked institutions worldwide. Innovative models for delivery and programmes in cutting-edge areas were and will continue to be an area of special focus.

For the academic year 2021-2022, all these programmes were conducted through virtual mode due to the pandemic.

Institute/ Programme	Period	No. of Students	Courses Taught
Shibaura Institute of Technology, Japan	23 July-6 August 2021	8	English Know About India Basic Salutations of Tamil language Cultural and diplomatic relations between India and Japan
	14-25 March 2022	8	
GRIESHMA Internship Students	November 2021	6	Yoga Silambam Bharatnatyam



Memorandum of understanding or agreements signed with foreign universities:

- AT&S - TU Graz - IITM
- The Korean Foundation, Korea
- The Ohio State University, USA
- University College London, UK
- Universitat Polytechnica De Catalunya Barcelona, Spain
- Tampere University, Finland
- Bowling Green State University, USA
- University of Maryland, USA
- University de Pau et des Pays de l'Adour, France
- Clermont Auvergne Institute National Polytechnique (INP), France
- University of Leeds (Joint Supervision Agreement), UK
- University of Massachusetts Dartmouth (Joint Supervision Agreement), USA
- Memorial Sloan Kettering Cancer Centre, USA
- The University Paris-Sud 11, Orsay, France
- University of Birmingham, UK
- Politehnica University of Timisoara, Romania
- University of Belgrade, Serbia

IITM partners with more than 270 universities worldwide

List of partner institutes offering Joint Doctoral Programmes:

Australia

- Australian National University
- Deakin University
- Queensland University of Technology
- Curtin University
- University of Technology Sydney
- The University of Melbourne
- Swinburne University

Canada

- University of Alberta

Finland

- Aalto University

France

- École Centrale De Nantes
- University of Bordeaux

Germany

- RWTH Aachen
- University of Duisburg
- University of Passau

Singapore

- Nanyang Technical University
- National University of Singapore

Taiwan

- National Chiao Tung University
- National Tsing Hua University

USA

- Michigan State University
- List of partner institutes offering Joint Supervision Programmes:
- Kungl Tekniska Hogskolan (KTH), Sweden
 - Heidelberg University, Germany
 - University of Sydney, Australia
 - Deakin University, Australia
 - The University of Melbourne, Australia
 - Purdue University, USA
 - Nagaoka University of Technology, Japan
 - University of Leeds, UK

List of partner universities offering Joint Master's Programmes:

- National Tsing Hua University, Taiwan
- University of Passau, Germany

International Conference Secretariat

The secretariat is a part of the Office of Global Engagement and functions with these listed objectives:

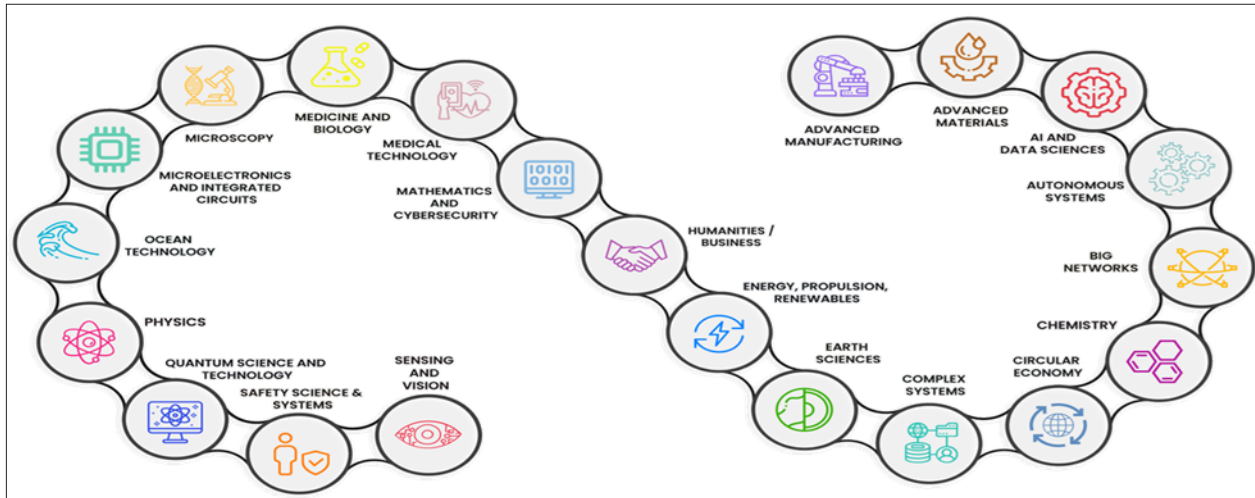
- Organising high-quality and high-impact conferences that bring together the leading voices from varied fields to a diverse audience
- Delivering 12 online conferences annually
- Offering flipped conference model
- Enabling flexible keynote lectures
- Moving conference formats to one of an extended discussion session with a maximum time limit
- Streamlining conference organisation and assisting faculty in organising webinars, workshops, symposia and conferences both nationally and internationally
- Making IITM known for its top-notch online conferences and lead to capacity building for Indians and the whole world
- At International Conference Secretariat, we have a Zoom webinar license to host up to 1,000 participants at a time. We helped many faculty members from various departments during the pandemic by hosting or conducting online workshops and seminars and symposiums through Zoom.

The following table shows the number of events and hours spent in hosting through Zoom in 2021-2022:

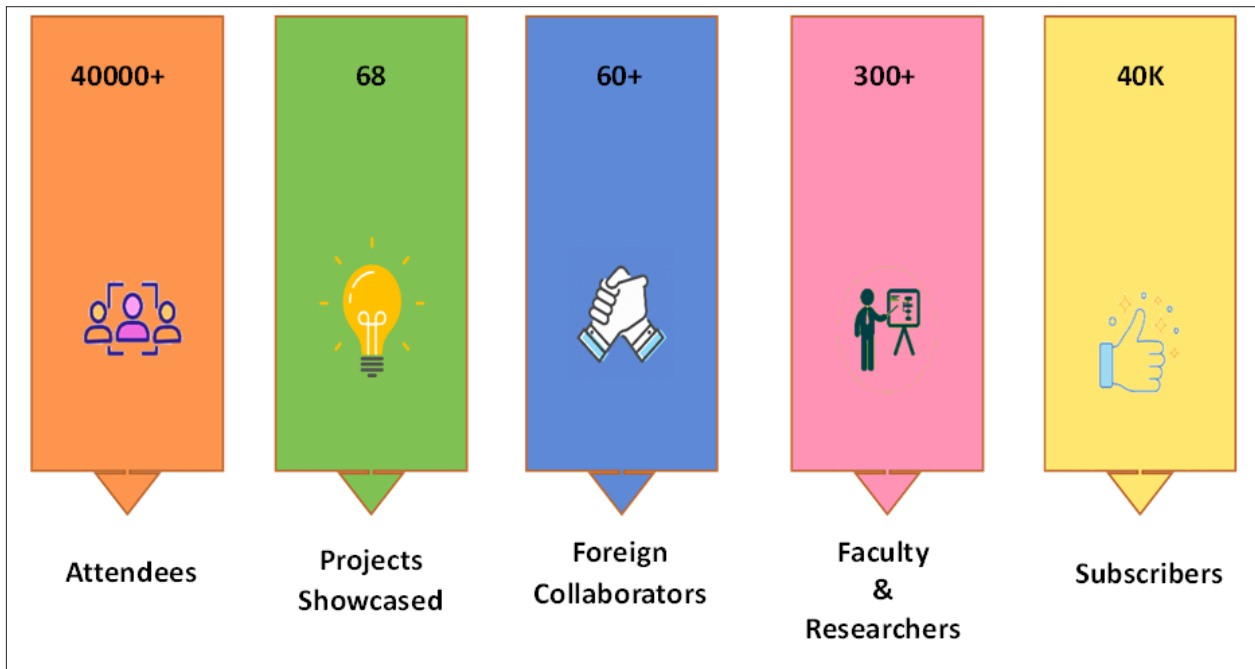
S.No.	Event	Hours
1	IoE 2.0 webinar series	40
2	Workshops	31
3	Conferences/Symposia	99
	Total	170

IRIS (IIT Madras Research Initiative Spotlight)

One of the milestones achieved through the International Conference Secretariat, IRIS was a series of 68 webinars conducted under IoE (Institute of Eminence) scheme between July and November 2022. The objective of these webinars was to showcase the research initiatives to various stakeholders.



Webinars conducted



IRIS Facts and Figures

SIDDHI

SIDDHI stands for Self-reliant India: Discussions and Dialogues for Humane Innovations. Mahatma Gandhi emphasised swaraj—self-reliance, self-sufficiency, social development, self-governance, and inclusive, equitable and sustainable development of all sections of India. SIDDHI is an initiative of the Office of Global Engagement, IIT Madras.

The Mission of SIDDHI

- Taking technology to the public by engaging with various stakeholders such as students, researchers, experts, government officials, civil society and social entrepreneurs
- Encouraging conversations on the role of technology for sustainable development
- Exploring ways of utilising technology for inclusive growth and expanding access to knowledge

- Creating a start-up ecosystem in rural areas and strengthening the rural supply chain
 - Analysing problems in technology diffusion and finding avenues to make technological interventions more responsive to the needs of the people
 - Applying technology as a tool of mitigation during pandemics such as COVID-19 and natural disasters
- In 2021-2022, about four webinars were conducted in the areas of energy, water, communications, and medical technology.

Siddhi Webinar Series - 2021-22

S.No.	Date	Topic	No. of Attendees	Speaker(s)/Panelist(s)	Moderator(s)
Event 19	13 August 2021	Clean Water: Challenges & Opportunities	1244	Prof. T. Pradeep, Institute Professor and Deepak Parekh Institute Chair Professor, IIT Madras	
Event 20	14 August 2021	India's Energy Needs and its Innovative Solutions	1048	Prof. Ashok Jhunjhunwala, Institute Professor, IIT Madras and President, IITM Research Park, IITM Incubation Cell and RTBI	Mr K Ananth Krishnan, Executive Vice President, and Chief Technology Officer, Tata Consultancy Services
Event 21	15 August 2021	India's 5Gi Standard: Manufacturing Ecosystem and Impact	745	Prof. Bhaskar Ramamurthi, Director, IIT Madras and Honorary Director, Centre of Excellence in Wireless Technology, IITM-Research Park	
Event 22	2 October 2021	India's Medical Device Sector, Its Technology Needs and How India's Technology Institutions Can Provide Innovative Solutions		Dr K. R. Balakrishnan, Cardio-thoracic Surgeon, Director, MGM Healthcare, Chennai Dr V. Mohan, Chairman and Chief Diabetologist, Dr Mohan's Diabetes Specialities Centre, Chennai Mr Nikhil Chandwadkar, Co-founder, Cartosense, Chennai Dr Taslimarif Saiyed, CEO and Director, C-Camp, Bengaluru	Prof. R. Krishna Kumar, Institute Professor, IIT Madras

E-training programme: The Role of Innovative Primary Health Care for Sustainable Development for AARDO

Like 2021, an e-training programme was conducted for Asian-African Rural Development Organization (AARDO) in 2022, on 22-25 March. The programme had 210 participants from about 16 AARDO member countries, ranging from students to medical professionals.

The prime objectives of the programme are:

- To discuss primary health care (PHC) situation in AARDO member countries with a focus on India
- To discuss the building of PHC capacity in diverse settings in India and especially in the context of the COVID-19 situation
- To elucidate the role of the public and private sector in PHC in India
- The role of artificial intelligence in PHC in India through Health and Wellness Centre
- To learn how Indian best practices could be adopted in AARDO member countries

The below table gives the details about the speakers and technologies taught during the training programme:

SIDDHI and AARDO Speakers

S.No.	Title	Speaker	Moderator
1	Primary Healthcare in Tamil Nadu	Dr Darez Ahamed, IAS, Mission Director, National Health Mission, Tamil Nadu	Prof. V. Muraleedharan, Professor, Department of HSS, IIT Madras
2	Digital and Technology Driven Health Initiatives	Mr Rajesh Singh, CEO; Dr Rajesh Khanna, Senior Director-Programs; and Dr Rakesh Kumar Srivastava, Senior Advisor-Innovations and Public Health, LEHSIWISH, New Delhi	Prof. V. Muraleedharan, Professor, Department of HSS, IIT Madras
3	Healthcare Database in India	Dr Amit Mishra, Consultant, Ministry of Public Health, Qatar	Dr Girija Vaidyanathan, IAS (Rtd.), Former, Chief Secretary, Government of Tamil Nadu, Professor of Practice, Department of HSS, IIT Madras
4	Healthcare for the Underprivileged	Dr Yogesh Jain, M.D., Paediatrician, Founding Member, Jan Swasthya Sahyog (People's Health Support Group), Bilaspur, Chhattisgarh	Prof. V. Muraleedharan, Professor, Department of HSS, IIT Madras



Destination South India Workshop

Destination South India was a virtual workshop hosted through the Conference Secretariat, in collaboration with the United States Consulate General in Chennai and the Chennai office of the US-India Educational Foundation (USIEF), for stakeholders of South Indian educational institutions, from 15-18 November 2021. The focus was to enable Indian educational institutions to increase the number of their US students. The workshop's four sessions covered administrative processes, guidelines on curriculum, and cultural pointers.

The virtual workshop was organised to promote south India as an educational destination of choice for students in the US and enable institutions to engage in capacity-building and preparation to meet these students' academic and extra-curricular needs.

The workshop was well attended by people from the international offices of colleges and NGOs. Attendees found the sessions and content relevant and were motivated to initiate or increase the number of US students in their institutions. The pointers and resources shared in the workshop were valuable guidelines that equipped them to carry this forward.



Central Library

The Central Library is equipped with all modern facilities. It has a rich collection of information resources in the form of CD-ROMs, online databases, e-journals, e-books, e-standards, e-patents, research support tools and printed material related to applied science, engineering, technology, humanities, management, social science and emerging subjects. The library holds 4,34,790 items, including 2,698 current journals catering to the information needs of 14,005 members and offers many value-added services through modern information-handling tools and techniques. The primary activities of the library between April 2021 and March 2022 are listed in this section.

8.1. Library Information Services: Statistics

Item	2020-21	2021-2022
Collections		
Books (General)	2,62,322	2,62,526
Books (Gratis)	7,859	16,254
Books (Hindi)	663	1,107
Books (Project)	1,666	1,666
Theses	8,808	8,406*
Book Bank	15,291	15,310
Current periodicals by subscription	2,563	2,698
Back volumes of periodicals	1,08,088	1,08,088
CD-ROMs	1,510	1,510
Audio/video cassettes	448	448
e-Books	12,819	16,777
Total	4,22,037	4,34,790

*Some documents were withdrawn

Membership

Staff	622	622
Faculty/SSO/SO/Emeritus Professor/Visiting Faculty/Adjunct Professor	602	621
Students	12,008	11,869
Retired Faculty/Officer	183	31

Alumni members	441	442
Corporate members	48	48
Special members	00	00
IAS members	316	316
Project coordinators	56	56
Total	14,276	14,005
Services: Circulation	2020-21	2021-2022
Number of books/journals issued	3,501	7,442
Number of books issued by Book Bank (GS)	704	21
Number of books issued by Book Bank (WS)	546	10
Overdue and other charges collected (₹)	2,49,716	1,46,944
Photocopy charges collected (₹)	-	-

Item	2020-2021	2021-2022
Project loans to faculty/departments/centres		
Books issued	68	148
Inter-library loan transactions		
Borrowed from other libraries	17	02
Loaned to other libraries	42	04
DDS/Reprint service		
Reprints received from other institutions (pages)	652	175
Reprints supplied to other institutions (pages)	351	1085
Smart Cards		
Cards generated/issued	677	3692
Expenditure in (lakhs of ₹)		
1. Purchase of books/eBooks (₹)	60.78 lakh	182.84 lakh
2. Subscriptions to journals and databases (₹)	2031.28 crore	2020.13 crore
New journals/databases added	00	2

8.2. ISO 9001:2015 Activities

The Central Library actively participated in ISO 9001:2015 activities and maintained quality-based library system services and procedures. The significant activities related to ISO 9001:2015 are listed below.

1. An Internal Audit ISO 9001:2015 was conducted on 3 August 2021.
2. An ISO Management review meeting (QSM-IITM) was held on 6 September 2021.
3. An Internal Audit ISO 9001:2015 was conducted on 11 January 2022.
4. An ISO Management review meeting (QSM-IITM) was held on 7 February 2022.

8.3. Major initiatives

The Central Library has taken various initiatives to improve the existing infrastructure, facilities, services and procurement of bookshelves to increase the collections to provide robust and dynamic support to the academic, research, development, continuing education and industrial interaction programmes and policies of the institute. Some of these initiatives are described in the following sections.

8.3.1. Online book recommendation system

The system, <https://books.iitm.ac.in> is implemented with the help of alumni. The server has been integrated with ADS/LDAP authentication. The faculty members log in with their ADS credentials; they must write the ISBN of the book in the form. It will search the book details with Google Books API and fetch the bibliographic information. The faculty member recommends the book for purchase. After that, the system will send an auto-generated email to the department LAC member. The LAC member will approve or reject the request; the library will initiate the book procurement after approval.

Books/eBooks Purchased Details (April 2021-March 2022)

Depts.	AER	APM	BT	CH	CY	CIE	CS	ED	EE	HSS	MGS	MAT	MEE	MME	OE	PH	Book Bank	eBooks	Children's Book	Hindi Books
No. of Request	120	18	78	29	126	69	3	7	21	516	4	30	169	27	31	108	146	10-Pkg	44	47
Purchased Books	58	10	35	16	126	44	2	1	8	130	4	20	29	11	6	138	146	3462	44	47

8.3.2. Online resources (e-journals, e-databases, e-books, patents and standards)

1. The IIT Madras gets online journals and databases access from 15 publishers through eShodhSindhu Ministry of Education consortium.
2. Access to the e-databases and e-journals of various publishers, including the following, was renewed: American Chemical Society, AGU, AIAA, AIP, American Mathematical Society, Blackwell, BMJ, De Gruyter, Elsevier, ICE, Indian Economy Database, IOP, ISI-Emerging Market, JSTOR, Journal Citations Report (JCR), MANEY, MathSciNet, Mendeley Institution Edition, NPG, One Petro, ORBIT Express, Oxford University Press, ProQuest: Dissertations and Theses (PQDT), PsycArticle, RSC-Gold, Sage, SIAM, Sage Research Methods Online (SRMO), SciFinder Scholar, Science (online subscription), Scopus, Taylor & Francis, Thomson Core Patents, Thomas Telford, Turnitin, UpToDate, Web of Science, Wiley, XLPAT-Novelty Checker and Springer Materials database.
3. The institute purchased e-books packages with perpetual access rights from AMS, Cambridge University Press, CRC, De Gruyter, Elsevier, Edward Elgar, Emerald, ICE, IOP (2018 collection), McGraw-Hill, Oxford University Press, Pearson, RSC, SAE, Wiley, World Scientific, ProQuest Ebrary and EBSCO, Morgan and Claypool eBook collection, McGraw Hill Business and HR collection, IET Digital Library (2015-19).
4. The e-Book subscription packages: ProQuest Academic complete subscription, EBSCO Engineering eBook collection, Knovel-Engineering Technical Reference Information, and Routledge Encyclopedia of Philosophy.
5. The ACS Symposium Series-eBooks (2018-21), AIP eBooks, IET Digital Library (2020-21), Emerald eBooks 2021, Nobel laureates' e-books and Scientific Writing and Professional Guides, Sage e-Vidya eBooks, SIAM e-books 500-plus SIAM e-books (1971-2021), Springer Engineering (2018-21), Wiley-IEEE eBooks (2014-21) eBooks were added.

8.3.3. e-ShodhSindhu consortium

The Ministry of Education (MoE), formerly Ministry of Human Resource Development (MHRD), has formed the eShodhSindhu consortium for higher education electronic resource merging three consortia initiatives, namely UGC-INFONET Digital Library Consortium, NLIST and INDEST-AICTE Consortium. The main objective of the new consortium for higher education e-resources is to provide access to qualitative electronic resources, including full-text, bibliographic and factual databases, to academic institutions at lower rates of subscription to universities, colleges and centrally funded technical institutions in India. IIT Madras had the access to 15 e-resources from eShodhSindhu for 2021.

E-Resources Usage Statistics (April 2021-March 2022)

Resource Name	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
ACM Digital Library	914	676	723	548	583	577	665	443	436	547	631	823	7566
American Institute of Physics	1562	3578	5539	6077	6088	7428	6720	6582	5269	856	934	1229	51862

American Society of Civil Engineers	576	672	937	1045	1312	984	1102	1259	496	985	1158	1683	12209
Annual Reviews	283	390	313	313	294	358	361	317	305	342	378	456	4110
APS	5842	2537	2902	3218	2911	2389	2872	3128	2568	2642	2498	2822	36329
ASME	812	167	1510	1127	1605	1431	774	1592	924	1486	1089	1146	13663
JSTOR	3358	3076	2576	1915	2003	3994	5931	5003	2788	3232	3220	4009	41105
MathSciNet	173	390	313	302	294	351	361	317	305	333	378	432	3949
Nature	4144	4802	4752	4531	4455	4511	4992	4291	4938	5002	4730	5585	56733
Oxford University Press	547	367	828	1087	1193	1256	1105	1197	1128	1125	1815	725	12373
Project Muse	141	106	108	93	125	165	220	226	71	64	70	84	1473
Springer Link	13491	11288	17771	13998	15040	22046	22824	20255	18772	23302	22610	28251	229648
Web of Science	3245	4432	4752	5656	4455	3627	4992	2321	2778	5764	4730	5234	51986

8.3.4. Extended working hours on Saturday and Sundays

The library extended the working hours on Saturday, Sunday and holidays from 9 am to 5.30 pm and up to 12 pm during examinations.

8.3.5. User awareness programme

The central library has organised the following user programme for the students/scholars/faculty of IIT Madras through online webinars of different publishers during the lockdown.

Programme	Organiser	Date
EMIS' database emerging markets research, data, and news-webinar	EMIS, Delhi	22 March 2022
Sustainability and digitalization roadmap for the chemical industry, an industry-academia conclave	Royal Society of Chemistry	1-2 February 2022
Scientific writing for authors - Dos and Don'ts	Clarivate Analytics	25 January 2022
Web of Science Training and Certification Program	Clarivate Analytics	17 January 2022
Demonstration of Turnitin Feedback Studio	Turnitin India	29 April 2021
ProQuest webinar on eBooks and Thesis and Dissertations	ProQuest	23 April 2021

8.3.6. Smart card facilities

The Central Library provides the smart card facility to institute students, faculty and staff members, and other members (IAS and corporate members, alumni and retired employees of the institute). A dual-side retransfer smart card printer is used. The library also has dependent cards for the dependents of institute employees.

Smart Cards Issued to Users (April 2021-March 2022)

Month	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Total
No. of Cards	54	7	50	88	153	458	468	230	324	780	590	490	3692

8.3.7. Weeding out the documents

The Central Library staff has identified the mutilated documents, multilingual donated books and highly damaged old bound volumes of abstracting and indexing. The 145th Library Advisory Committee recommended 6,995 documents for write-off. After obtaining the condemnation approval from the Director and Audit clearance, the Store and Purchase section may proceed to sell out the documents through e-auction.

8.3.8. Tracing of publications

Since the library users are not allowed inside the library during this COVID-19 pandemic period, users have been informed that they should send a request for the book(s) through email to the librarian. Then the book(s) were located by the library staff and issued to their library account. Then the books were handed over to users by following SOP procedures for COVID-19 pandemic.

8.3.9. Issue of online NDC

Since all the IITM students were off-campus and those who have completed the course are ready for Graduation. After receiving email requests, a no dues certificate was issued and sent through the mail. Similarly, NDC was also issued for the retired faculties and staff during this COVID-19 pandemic period. Those students who have borrowed books and could not come to campus to return the books due to the pandemic. They have sent the books through the parcel service, which were received by the central library and dues are being cleared and issued NDC.

Online NDC Issued (April 2021-March 2022)

SN	Users	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
1	Faculty	0	1	1	2	2	1	1	1	1	1	0	0	0	11
2	Staff	2	2	1	2	4	2	4	0	4	3	1	1	2	28
3	Students	72	53	59	95	88	101	50	150	316	54	64	62	56	1220

8.3.10. Scholars/Faculty profile

The library has set up a Scholars' Profile of the faculty members of IIT Madras with IRINS. It is a web-based Indian Research Information System Management (IRINS) service developed by the Information and Library Network (INFLIBNET) Centre in collaboration with the Central University of Punjab. <http://iitm.irins.org>

8.3.11. Remote access off-campus access facility for e-resources

The Central Library has set up <https://idp.iitm.ac.in>, a remote access off-campus facility with a single sign-on SHIBBOLETH authentication, in collaboration with INFLIBNET as well as individual publishers. The SHIBBOLETH open-source software server with INFED-INFLIBNET Access Management Federation was set up at IITM. More than 45 e-journals/eBooks/databases/standards resources enabled off-campus access through with LDAP login for the IITM user's faculty/scholars/students and staff.

Remote Access Usage Report (April 2021-March 2022)

Description	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Unique Users	675	723	802	591	867	776	1012	1267	1313	1412	1393	1209
Unique Publisher	37	36	41	38	40	39	45	47	48	48	48	45
Total Logins	1456	1812	3416	2745	3790	3156	4512	6167	6590	6924	7195	6944

8.4. Usage statistics of e-Journals and e-Books

The e-journals and e-Books usage statistics report can be downloaded from the publisher's website with an admin login.

E-Resources Usage Statistics (April 2021 - March 2022)

SN	Resource Name	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
1	ACS Package	73511	55374	70457	22447	24091	23253	23981	22321	35412	22638	24075	28848	426408
2	AIAA (5)	303	311	257	264	289	74	23	30	65	637	892	812	3957
3	AMS	84	50	21	25	12	41	6	39	42	24	28	12	384
4	CUP (S&T, HSS Package and JFM)	1183	1237	1071	2664	2769	1520	1625	1649	1182	2809	1622	1848	21179
5	Elsevier	99280	92395	97590	112163	106563	109381	114652	107246	92354	117796	115641	132180	1199651
6	Emerald	201	100	1176	1220	980	1460	1156	1107	985	1439	1754	1550	13128
7	ICE (10)	164	129	95	147	240	155	131	96	124	237	180	380	2078

8	IEEE/IEL	10070	8934	9751	9632	9404	9983	10160	10458	9985	12005	9977	12625	122984
9	IOP	5517	4384	5181	6241	6257	4630	4342	6189	6524	4302	4494	5202	63263
10	Nature Pub (16+1)	6978	5269	6536	6236	6012	590	564	533	651	3409	3233	3742	43753
11	OSA	168	1098	708	623	555	677	689	659	532	778	1854	993	9334
12	RSC Package	10168	10193	8570	11551	12244	11768	11279	12856	10842	10151	9535	11429	130586
13	Sage (13) & IMeche	1056	993	1212	1164	1491	1705	1425	1003	1534	836	702	830	13951
14	SIAM	71	82	113	88	115	111	110	135	89	132	148	209	1403
15	T&F	4878	4640	5499	5827	6307	6448	7012	5248	852	1100	871	1222	49904
16	Wiley (91)	12322	8679	9819	11590	12950	12756	13007	11164	12039	11127	16853	21204	153510

e-Books Usage Statistics (April 2021-March 2022)

SN	Publisher	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
1	AIAA	6	4	6	4	4	279	1	3	8	13	14	10	352
2	CUP	174	80	254	660	388	117	143	198	286	310	451	397	3458
3	ELSEVIER	582	655	862	764	1032	808	981	987	758	1611	571	1027	10638
4	EMERALD	6	2	7	36	13	14	13	9	8	43	4	8	163
5	ICE	15	5	26	6	50	21	19	18	15	2	52	24	253
6	IEEE WILEY	100	70	37	77	139	50	146	85	68	107	133	240	1252
7	IOP	104	90	143	82	47	66	126	112	97	55	51	86	1059
8	RSC	126	142	37	24	25	42	78	68	86	36	21	54	739
9	SPRINGER	4961	2395	659	506	659	768	713	716	475	739	628	852	14071
10	WILEY	163	155	162	226	306	345	235	258	206	207	228	230	2721

8.5. Automation

1. The e-books have been catalogued in the library WEBOPAC (<http://webopac.iitm.ac.in:8080/>)
2. The new library website has been designed and updated.
3. The new programme features have been added to the online book recommendation portal <https://books.iitm.ac.in>
4. The remote access <https://idp.iitm.ac.in> set up to enable off-campus access to e-resources
5. Data relating to 2,693 patrons' (students, faculty and staff members, alumni, IAS members) records were added to the Virtual-VTLS database.

8.6. Faculty and Their Activities

S. No.	Faculty Member	Qualifications	Major Areas of Specialisation
1.	Mahendra N. Jadhav, Librarian	M.Sc., M.L.I.Sc., M.Phil., Ph.D.	Library automation, digital library, open-source software, library portals, RFID, e-resources, scholars' profile, remote access, etc
2.	M. Anandamurugan, Deputy Librarian	M.L.I.Sc., M.Phil., Ph.D.	Book acquisition, technical processing, smart card, etc
3.	K. Saravanan, Assistant Librarian	M.L.I.Sc., M.Phil., Ph.D.	Library circulation, periodical and bound volumes, book bank and library maintenance

8.7. Short-term courses/workshops/seminars/symposia/conferences/meetings/training programmes attended by faculty and staff members at recognised academic institutions

S. No.	Faculty/Staff Member	Title	Institution	Dates
1.	Dr. Mahendra N. Jadhav	EMIS: Database Emerging, Markets Research, Data and News webinar	EMIS, Delhi	22 March 2022

2.	Dr Mahendra N. Jadhav	Library Purchase Committee meeting	IMU Chennai	3 March 2022
3.	Dr Mahendra N. Jadhav	Library Advisory Committee Meeting	B.S. Abdur Rahman Crescent Institute of Science and Technology, Chennai	21 February 2022
4.	Dr Mahendra N. Jadhav	Sustainability and Digitalization Roadmap for the Chemical Industry, an industry-academia conclave	Royal Society of Chemistry	1-2 February 2022
5.	Dr Mahendra N. Jadhav	Scientific Writing for Authors - Dos and Don'ts	Clarivate Analytics	25 January 2022
6.	Dr Mahendra N. Jadhav	Web of Science Training & Certification Program	Clarivate Analytics	17 January 2022
7.	Dr Mahendra N. Jadhav	NACLIN 2021: 24th National Convention on Knowledge, Library and Information Networking - Virtual, Online, Interactive Conference	DELNET, Delhi	6-8 December 2021
8.	Dr Mahendra N. Jadhav	Best Practices in Knowledge Management by Dr. Aditi Raoul	DELNET, Delhi	28 August 2021
9.	Dr Mahendra N. Jadhav	Demonstration of Turnitin Feedback Studio	Turnitin India	29 April 2021
10.	Dr Mahendra N. Jadhav	ProQuest webinar on eBooks and thesis and dissertations	ProQuest, USA	23 April 2022

8.8. Special lectures delivered by faculty members at other institutions

S.No.	Faculty Member	Topic of Lecture	Venue and Date
1.	Dr Mahendra N. Jadhav	Emerging Trends on Journals-Open Access Publishing	Digital Knowledge Discovery and Management in Libraries-organised by Anna University, 7 February 2022
2.	Dr Mahendra N. Jadhav	Emerging Trends on Journals Publishing-PLAN S-Transformative Arrangement and Model Agreements	LIS Academy Conference LISACON-2021, 6 February 2022, Visvesvaraya Technological University, Belagavi - 590 018
3.	Dr Mahendra N. Jadhav	Emerging Trends on Journals-Read and Published	UGC-HRD Centre-Department of Library and Information Science, Pondicherry University, 10 November 2021

8.9. Distinguished visitors

Due to the pandemic, no visitors were allowed in the library.

8.10. Children's Corner Library

We have purchased many books for the children's Corner Library.

8.11. LAC Recommendations

1. The 149th Library Advisory Committee, held on 25 January 2022, recommended continuing the renewal subscription of existing collections of journals and databases for the year 2022. All these e-resources are being made accessible to faculties and students for their academic teaching learning purpose through IP authentication on campus as well as remote access during the COVID-19 pandemic period.

2. The 150th Library Advisory Committee, held on 9 March 2022, recommended purchasing many e-book collections: AIP, Springer, IET, IOP, SIAM ACS, Emerald e-books, Nobel laureates and Wiley-IEEE e-books.

8.12. Plans

In future, the Central Library plans to:

1. Initiate the submission of the IITM Scholar's electronic thesis into Shodhganga, INFLIBNET Centre.
2. Initiate the creation of a database of bound volumes
3. Update project/permanent loan book database
4. Organise professional development lectures and other professional events
5. Weed out and write off mutilated, old, unused books and German books.
6. Condemn old, outdated computer hardware and furniture, etc.
7. Facilitate a 24-hour Reading Hall in the Central Library.
8. Issue online no dues certificate
9. Implement procurement/subscription process to books and journals through workflow



Students Amenities and Activities

9.1 Hostels

- Most of students reside in the hostels on campus. At present, there are 16 male and 5 female hostels for undergraduate and postgraduate students, and research scholars. A total of 7,785 rooms are available to accommodate more than 9,000 students. One female hostel with 294 rooms is also under construction.
- There are 10 dining halls that cater to the students in the hostels and a few day scholars. Of these dining halls, five are in Himalaya, three in Nilgiri and two in Vindhya buildings. All the dining halls are run by private caterers. Students are completely involved in deciding their menu with the help of nutritionists and culinary specialists and tending process in deciding catering agencies and pricing. A food court was introduced for a limited a la carte dining. The dining facility registration and allocation of messes to students is done online. The housekeeping services in the hostel are outsourced.
- Each hostel is administered by a Warden (a faculty member), Assistant Warden(s) (a research fellow or project staff member) and a Hostel council, consisting of student secretaries. Each hostel office is supported by the staff of the Office of Hostel Management (OHM), which is a centrally administered body and in charge of the overall functioning of the hostels.
- OHM takes care of online mess registration, mess accounts, biometric entry to hostels/dining facilities, temporary guest accommodation, online process of vacating rooms by students, students' (including day scholars, married research scholar's family) and staff members medical insurance, online bulk accommodation facility for conferences, short-term courses

and other events, Students' festivals: ticketing, merchandise.

- There are 100+ employees (permanent + contract) on roll. They are responsible to the OHM through t respective Wardens of the hostels. Details on the Council of Wardens, Chairperson and Hostel Management are available on the website: ccw.iitm.ac.in.

9.2 Institute Gymkhana

Institute Gymkhana takes care of different sports activities. The sports facilities available at the Gymkhana include volleyball courts, basketball courts, tennis courts, sports complex (table tennis, fitness centre, squash courts), badminton courts, and cricket, football and hockey . Cricket is mainly practiced at the IITM-Chemplast ground (K.S. Narayanan Centre for Cricketing Excellence). Memoranda of understanding have been signed with the Sanmar Group and Aspire Foundation for cricket and tennis games. Institute students, faculty and staff members use Gymkhana facilities through an online registration. Physical Training Instructors and Coaches on Contract for various games arrange coaching and sports activities round the year. Sports advisors overlook the functioning of the Gymkhana and its activities. Institute Gymkhana also arranges NSO classes for undergraduate students.

9.3. Advisor, Inclusive Education

Students with Disabilities (SwD) seeking admission in IIT Madras have been growing in number since 2016. The growing trend also offers an opportunity to fulfill the aspirations of the young citizens of our country. IIT Madras is committed to creating an accessible and inclusive learning environment consistent with Government guidelines. A distinct challenge posed

by the category of SwD students is that it is difficult to put them in one category, particularly with regards to learning preferences. The aim is to make a student with disability as independent as possible enabling reasonable participation in curricular, co-curricular and extra-curricular activities in the campus. This requires accessibility of learning resources, websites, IITM infrastructure such as hostel and academic blocks, transportation etc. The Faculty Advisor, Inclusive Education coordinates various services across units, namely Academic section, Library facility and office of dean of students (DoST office). Each student with disability received accommodation letter through a professional assessment. Such an accommodation letter keeps all the stakeholders such as Instructors, faculty advisors, DoST office, Heads of the departments, Hostel wardens, etc, informed about an SwD student's status and needs. Through the coordinated effort of the Faculty Advisor, more than 100 SwD are supported on the campus.

9.4 NCC

A total of 144 students (33 students of 2020 batch, 111 students of 2021 batch) enrolled in NCC during 2021-2022. Their training was conducted as per schedule. Further, a flight of SD (Senior Division) and SW (Senior Wing) cadets joined in the march past conducted in the campus on Independence Day (15 August 2021) and Republic Day (26 January 2022).

9.5 NSS

- More than 100 students enrolled in National Service Scheme (NSS) during 2021-2022. The NSS, IIT Madras is guided by a faculty advisor and organised into specific sub-groups of equal footing, working within the NSS Managerial Team. Some of these include Event Management, Project Administration, Finance, Design and Web Operations.
- The NSS activities in a year can be broadly classified into two categories—projects and events. We also carry out Winter Internships or as we call it, The Winterns. Projects are those initiatives which are oriented towards specific areas and goals. Every project team includes one or more Project Representatives, who ideate, design and execute the project and 15-20 volunteers who actively participate in the process under the guidance of the Project Representative. Events, on the other hand, require participation from all volunteers and include service, awareness and motivational activities. Winterns are camps organised by NSS during the winter vacation, in collaboration with service-oriented NGOs.
- The NSS activities for 2021-22 commenced with a common orientation session for all fresh students and the NSS selection test following

which, the new team of NSS volunteers was inducted.

- As a part of a social project, a collection drive was organised on the campus and the materials received were given to Goonj NGO and was ensured that it reaches the needy people. Entire campus community came together to donate their surplus clothes and other essentials.
- NSS collaborated with many new NGOs during the year, such as Bhumi, Teach for India, and Born to Win Foundation, contributing to the ever-growing pool of NGOs in the city we work with.
- A few students also engaged in Project Bharti to spread awareness about the use and benefits of Bharti script. Volunteers spread awareness about the script by developing interactive games involving the script, translating story books and other content into Bharti, teaching school students, etc. Additionally, a few students were engaged with the local Teach for India branch and went to teach students from a nearby school thrice a week.

9.6 Wellness Centre

- The Wellness Community Centre, IIT Madras vouches for the holistic wellbeing of the student community. Proactive, retroactive, professional, and career guidance facilities are available on the campus in different forms to ensure student empowerment.
- Wellness Community Centre encompasses Wellness Centre, MITr and Saathi teams.
- Wellness Centre, IITM, is the body of licensed mental health professionals. Students can walk in to discuss their concerns with the professionals. MITr is the retroactive body of students and faculty. MITr members offer emotional and other forms of support to students according to their needs. SAATHI is a proactive platform for self-growth and wellbeing of the students. The SAATHI team focuses on proactive measures that raise awareness in the campus about various pertinent issues and plan several informal gatherings, lectures, and sessions, open to all.
- Various events organised during 2021-2022 in online or offline modes are as follows:
 - (i) Saathi team arranged Students Summit on Wellness on 10 October 2021
 - (ii) Saathi team arranged ART therapy sessions on 3-9 October 2021
 - (iii) Mental Health Day Celebration on 18-20 October 2021
 - (iv) Barefoot Training was organised in November 2021
 - (v) Webinars on Emotional Wellbeing were organised in December 2021

- (vi) Digital Wellness Campaign was conducted in February 2022
- (vii) Saathi launched Academic Buddy Program in March 2022

9.7. Internships 2021-22

- Students bagged 785 offers with 200 offers coming on Day 1 of the internship season, the highest-ever on all fronts. This is a 27% and 43% increase year to year, respectively.
- The institute recorded the highest number of pre-placement offers (PPOs), with 231 offers made this year.
- The institute conducted Research Park Day for the first time, where Research Park companies visited campus, conducted webinars and recruited students for summer internships.

9.8. Placements 2021-22

- A record-breaking placement season with 1,420 offers – 44% higher than the previous year – was recorded.
- We saw a rise in the number of ₹1 crore-plus offers from 1 to 25 this year.
- We had 49 international offers from recruiters coming from the USA, the UK, Singapore, Hong Kong, the Netherlands, Japan and Taiwan.
- We successfully helped 21 specially-abled students to secure jobs through our placement process.

9.9. Career Development Cell

- The CDC conducted a Career Talk Series where leading industry experts came and spoke about the different sectors and fields they are from.
- Multiple sessions and webinars were conducted for students who are actively preparing for CAT, GATE, GRE, GMAT, TOEFL and IELTS.
- A seminar was conducted exclusively for IITM by ISB on the Young Leaders Program.

9.10. Finance Club

- The club introduced a pan-IIT business magazine with IIT BHU, Bombay, Kharagpur and Kanpur.
- October Bulletin: IITM's first-ever festival oriented towards enhancing the finance community and attracting recruiters in this domain with competitions, webinars and quizzes being conducted.
- The club conducted a real-time mock trading competition which gave the students experience of actual trading
- A social trading competition was conducted in collaboration with India's first social trading app, Trinkerr.
- The club collaborated with Finlatics and brought in programmes for students to explore the

following domains:

- Equity Research and Portfolio Management.
- Investment Banking Experience Program.

9.11. Case Club

- A series of videos were published on YouTube along the lines of demystifying management consulting.
- The IITM Product Casebook, a collection of eight cases asked in Product Management interviews for different product roles, and IITM Consulting Casebook, a collection of more than 50 cases asked in consult interviews, were made.
- An event to familiarise the freshers of IITM with initiatives of the club and what is in store for them in the upcoming year was held. The freshers also got the opportunity to interact with consultants from top management consulting firms.

9.12. Alumni relations

The institute successfully organised a global pan-IIT conference for 72 hours across five continents that brought together more than 30,000 alumni for discussions on various topics. The event, PiWOT, was conducted in collaboration with the PanIIT Alumni Association. The highlights of the event were:

- More than 20 sessions and mentorship initiatives with eminent, distinguished alumni of IITM to enhance student-alumni interactions
- Successful implementation of a higher-education alumni initiative helping over 50 final-year students connect with alumni of their dream universities and field of study
- Established Batch Engagement Project (BEP) for 2021 graduands and raised more than ₹40 lakh via BEP 2019
- Two on-ground alumni chapter meets in collaboration with IITMAA enabling local alumni
- Published yearbook and conducted Willkommen for the graduating batch of over 1,600

9.13. Corporate relations

- Second edition of Industry Conclave, an initiative to bridge the gap between industry and academia, was executed successfully with coverage from more than 15 media houses and 800 participants.
- Currently, executing a channel for smooth involvement of student projects as part of corporate social responsibility funding opportunities
- Established associations with more than five organisations such as Arctic Circle, ICICI Bank and Medibuddy.

9.14. Branding

- Digital Campus, a massive, one-of-a-kind

project was taken up to create a realistic digital version of the campus to enhance accessibility and presence. This project is divided into three phases (base and academic zone, hostel zone, residential zone).

- Expected timeline for the project is two-three years
- Branded IITM among aspiring students via the 'A Day at IITM' initiative, which brought in more than 9,000 attendees, rebranded mascot of IITM and ran two media campaigns and one social campaign, Reboot
- Wheel of Time was an Instagram campaign ran in association with Heritage Center, IIT Madras, where we post events from the past and how they are relevant in the history of IIT Madras.

9.15. Media

- Our institute's own media body, IITM TV garnered unprecedented viewership of 1M+ and 13M+ impressions across videos ranging from student interactions and creative cinematography to animations depicting different aspects of IITM
- Chennai36 covered more than 20 articles ranging from placements, internships, and institute life to articles with DAAs to showcase IITM with a wide spectrum. Each of the articles received more than 400 impressions with 8,500-plus cumulative impressions.

9.16. Global engagement

- International Youth Summit saw more than 200 participants and 9,000 impressions from across global universities in Africa, Asia/Southeast Asia, and Europe, from Malaysia to Côte d'Ivoire to Cameroon to Uzbekistan.
- An international semester exchange bluebook to better the accessibility of exchange opportunities for students at IITM was published.
- A pan-IIT international fair with involvement from multiple universities such as HEC Paris and London School of Business was conducted to talk about the opportunities for students, faculty and staff.
- Global Internship Program was established to bring in opportunities for students from IIT Madras to intern at global organisations and institutes. The initiative was passed by Senate and established in collaboration with the Academic Affairs Secretary.

9.17. Co-Curricular

a. Shaastra Juniors (24-26 September and 1-3 October 2021; online)

- Inaugural lecture: Shri S. Somanath, Learning Gamified competition, Behavioural Thinking Workshop.

- Shaastra Juniors Championship, events, competitions, workshops such as game-development and programming, among others.
- MiMU gloves tech-music show; Funzone with games; exhibition of tech-startups and Envisage projects.

b. Shaastra (13-16 January 2022; hybrid mode)

- Virtual platform Mavex: 3D model of Martian IITM with 360° view, navigation, games, mobile compatibility
- Spotlight: Dr. Stefan Hell, Dr Jane Goodall, Shri R. C. Lahoti, Ms. Carolina Marin, Dr Shashi Tharoor, and others
- Gaming Tech Summit and Mind Trials (Nudge-it pushed for behavioral solutions to societal problems)
- Unmute social campaign had awareness sessions on menstrual hygiene management and self-defense.
- Shaastra team donated ₹50,000 each to the United Orphanage for the Disabled, Coimbatore and Deepam Trust Chennai for Annadhanam, medical aid and education for needy.

c. Institute Technical Society (TechSoc)

- Roadmaps: First ever inter-department freshers' tech competition series; over 850 participants over nine events.
- Pre-Inter IIT Season: Four high-prep events based on programming, robotics, analytics and case study event; over 150 participants; 100-plus students were selected for the Inter IIT probables' pool.
- Other inter-hostel competitions such as Campus Innovation Challenge and Blockchain Hackathon
- Innovatus 2.0 - Digital Divide in Education: ideas were shared with IViLL to be implemented.
- Innovatus 3.0 - Tackling Individual Carbon Emissions: Teams sent to Centre for Innovation (CFI's) SIP and Nirmaan cohort.
- Inter IIT Tech Meet: Overall 7th rank, one gold, one silver, two bronze medals; five CFI projects presented at Engineer's Conclave, five papers presented at Student Academic Conference.

d. Centre for Innovation

- Summer School: Over 200 sessions and 1,200 participants, held online by the CFI clubs in July 2021.
- CLinsti app has been made for waste management and redressal of issues regarding cleanliness in IIT Madras.
- Chennai Water Logging Platform enables public to report waterlogging details and disaster preparedness.
- The CFI created a new website, several club sessions

- for the GSB and workshops during Shaastra.
- Electronics Club (in-house) Development Board 2.0: inbuilt IMU sensor and multiple new features.
- iBOT club's association with AIITRA, pan-India Robotics Workshops and Hackathon to be hosted by IITs.
- Ten ongoing industry collaboration projects with the Wildlife Institute of India, TMI Group and NASA, among others.
- Open House 2022 (13 March): Offline (Terrace Hall) + Metaverse (Gather Town); more than 3,000 attendees (offline), including 100-plus industrialists and alumni, and 60-plus media articles and news reports.
- Raftar Formula Racing: Got 2nd Place Overall at Formula Bharat's FSEV-2021 and won Overall in FB Virtuals; won the Best Battery Design and Best Powertrain Design awards; won the Engineering Design event.
- Avishkar Hyperloop: Awarded the Most Scalable Design Award at EHW 2021; among Top 5 in four categories; built a 500m long, 2m diameter vacuum tube at the IITM campus – a first of its kind by a student team.
- Abhiyaan: One of the only two Asian teams to clear round I of IGVC 2022 and reach the simulation round finale.
- Anveshak: Current rover, Dora - more robust, modular and stable; all set to participate in URC 2022.
- Abhyuday: First-ever rocketry team across IITs to qualify for Spaceport America Cup (USA, June 2022).
- iGEM: Gold Medal and the Best Computational Project at GOGEC-2021; Unique Idea Award in NBC 2022.
- Shows by Suhani Shah (mentalism) and Biswa Kalyan Rath (comedy); exclusive show for team by Rahul Dua.
- Virtual industry tours of Sirena Technologies, Yaskawa Robotics, Devic Earth and Ather Energy.
- Tech & Innovation Fair - webinars, panel discussion and finale; Junior Make-a-Thon finale.
- 66 events and workshops: Hackathons, problem-solving competitions, quizzes, Moot Court, paper-poster presentation, etc; workshops on Fusion360, MATLAB, Robotics, AI, RL, Cloud Computing, Arduino, IoT, etc.
- Data Science Symposium: Industry talks, keynotes by researchers, competitions, workshops, networking.
- Envisage: Virtual game-zone; show stall with techno-entertainment projects (for example, LED table, Kinect DJ).

e. E-Cell Activities

- Talks: Getting to Know Insti Founders, Ask Me Anything, and Inspirit Lecture series.

- Ideathon, Idea Validation Meetups; Startup Services Program (free services to early-stage IITM start-ups).
- Startup Series (idea to operational start-up); Pitch Perfect: B-plan pitching competition.
- Million Dollar MBA: introducing E-Cell to the MBA freshers of IITM and entrepreneurial avenues after MBA.
- Thinker to Tycoon: to inculcate entrepreneurial spirit amongst the research scholar community of IITM.
- Winter Intern fair: more than 55 start-ups and 200 offers; Team Up: about 30 start-ups, 18 projects, more than 80 student applications
- E-buddy: 11 mentors, 250 mentees; E-Merge: 1,350-plus members on the Discord community.
- Suspire - social campaign: five SDGs chosen, a workshop, case studies, NGO partner SankalpTaru, 505 trees planted
- Entrepreneurship Development Drive (EDD): helping student teams across colleges establish E-Cells
- Education-21: systematic entrepreneurship empowered 21st-century learning among school children

f. E-Summit (3-6 March 2022; hybrid mode)

- Entrepreneur Alumni Meetup, Inspirit (12 speakers), Masterclasses (11 speakers)
- Youth Conclave: Invaso, Boardroom, E-Auction, Stocks Are High, BizQuiz, E-lympics.
- Innovators' Conclave: Bootcamp, Unconference, Product Construct, Education-21.
- Startup Conclave: Elevate (start-ups' pitch to investors), Startup Showcase (exhibition), Expert Edge
- Offline board games, E-auctions, startup walk to IITM Research Park
- Entrepreneurship Insider - 6th edition was launched; The IITM Nexus book was launched at E-Summit.

g. Nirmaan

- Growth Hacking: Six-week interactive curriculum (workshops) to help early-stage start-ups scale up.
- Founders in Residence programme: Residence and financial assistance after graduation to IITM start-ups.
- 32 businesses currently being mentored by 25 academicians
- 160-plus applications on the internship portal for Nirmaan start-ups.
- Expanded social media outreach; ran Startup Sunday series on Instagram to hype success stories.

9.18. Cultural

a. Sangam

- The heart of the cultural scene, Sangam is the conglomeration of the literary and arts clubs of IIT Madras.
- In 2021-22, the clubs conducted a plethora of events – online in the odd semester and the on-ground in the even semester.
- Club Weekender was conducted in November following the incoming of the under-graduate batch of 2021, introducing freshers to the clubs and the plethora of events that they conduct.
- The Freshie Night, conducted in February 2022, provided a stage to showcase talents of the fresher batch.
- Sampravah, the cultural vernacular weekender, hosted a varied set of events in vernacular languages in March 2022, culminating at an Open Mic.
- Raagabop was conducted by the Music Club, featuring two well-known professional rock bands. The *Sangam* newsletter was launched, front lining all major events and initiatives the clubs undertook, successful participation at different cultural fests of our contingents and spotlighting the talent at IIT Madras.

b. LitSoc 2022

The event was launched in March and saw the hostel competing across 30 days, 15 events and three cups – Performing Arts, Creative Arts and Literary Arts. The overall championship was awarded to Saraswati hostel. Sangria was conducted in the last week of March, marking the end of the LitSoc season, and awards and medals were presented to all winners.

c. National Cultural Appreciation

- The National Cultural Appreciation (NCA) strives to provide great opportunities to students to hone their skill in a cultural activity of their choice or even learn an entirely new skill.
- The NCA gave the option of choosing between fine arts, choreography, guitar, keyboard and theater.
- Students were selected not only based on their skill level, but also their enthusiasm and inclination to learn so that students with no prior experience have a fair chance. The classes were completed by the end of the semester. In a credit system like NSS, students are given credits for the classes they attend, and the structure was changed to include year-end projects.

d. Contingent

- E-Sports League and the Quiz Contingent participated and placed in numerous online and on-ground fests, including those of Christ University and Ethiraj College. They were also placed overall 3rd in Nihilanth – the inter IIT-

IIM quiz league and a great success in Madras Minutiae.

- The Word Games Contingent won the Inter IIT Scrabble League
- The Writing Contingent members won multiple prizes in outside competitions under fests at IIM Kashipur and IIM Raipur.
- The Oratory Club launched the Inter-IIT Parliamentary Debate League with debates spanning across the year where the members of the Oratory Contingent won multiple debates. The Performance Poetry continent won various competitions at inter-college levels.

e. Saarang (hybrid mode)

- Saarang 2022, the annual cultural festival of IIT Madras was held successfully from 6-9 January 2022. The festival, which was organised by a student team, had an online edition this year. It saw participation of more than 7,500 views on the online shows. More than 9,000 students from across the country participated in more than 70 events. The Professional Shows had performances by Raghav Meattle, Corner Cafe Chronicles, Malavika Sundar and Palak Mucchal, along with six world fest acts by international artists. G.V. Prakash, Parvati Nair, G. Karthikeyan, Dhruv Sehgal and Aditi Ashok were some of the major attractions in the Spotlight lineup. The first ever edition of Saarang IndiaFest and AltFest were conducted. Ten companies sponsored ₹.12 lakhs for Saarang. Saarang team donated Rs 50,000 to the Minds Foundation India, Andhra Pradesh, toward mental wellness.

9.19. Hostel Affairs

a. Price revision

- Due to the pandemic, the food court vendors had been requesting price revision. Changes were suggested, reviewed and approved after due diligence.

b. Feedback

- Feedback to current eateries was collected and collated, to serve as basis for deciding which shops to tender for. Opinions were also collected for which types of shops or services were needed.

c. MMCC

1. Tenders

- New caterers were contacted and invited to bid. The evaluation criterion was carefully set and all the clauses in the tender document were carefully examined. A band-wise bid was invited to allow the caterer to charge different rates for different strengths of dining, given that messes usually operate on economies of scale.

2. Menu restructuring

- Menus of various IITs were consulted, and inputs from students were taken. An expert nutritionist was consulted to check the nutritional adequacy of the menu. She also provided feedback and suggestions as to what dishes can be included in the menu. These were incorporated into the menu as much as possible.

3. My Hostel App

- The hostel section of the InstiSpace app was developed to help smooth functioning of hostels and hostel councils. It can help the hostel council digitise the processing of bills and advances, increasing transparency. It will also help streamline hostel complaints and maintain inventory for the hostel (sports, social, books, music instruments, and others).

9.20. Students Legislative Council and its activities

- Twelve meetings were held with around 45 agenda points being discussed.
- SLC discussed several student issues and passed pertinent resolutions.
 - o SLC resolution: Calling back final-semester students to campus.
 - o SLC resolution: Strictness in implementation of COVID-19 rules on campus.
- SLC also passed a few additional guidelines on the selection procedure of core-level positions of the student-run teams. To increase transparency, all the final-level selection procedure rounds need to be recorded.
- SLC also discussed the mental wellness of students – what options are available to the student community to get their problems addressed and the same were publicised through email and WhatsApp groups, through legislators.
- SLC also had a discussion on the academic issues of students in the virtual mode.

9.21. Student Ethics and Constitution Commission

1. The Students Ethics and Constitution Commission (SECC)

- Conducted plethora of events, ranging from debates to quizzes, on various occasions
- Invited eminent speakers such as Chief Election Commissioner of India Mr Sushil Chandra and Vice Chancellor of National Law.
- During the Speaker Elections held on 21 April 2022, a block-chain approach was attempted successfully. SEC aspires to utilise block chain technology in the upcoming elections with modifications.

9.22. Sports

a. Infrastructural changes and new proposals

New Sports Complex

- The idea was pitched to the alumni through the ACR office; alumni of the 1981 batch are ready to sponsor
- A survey to understand the need of upgrading sports facilities was conducted

b. National Sports Organization programme for 2020 and 2021 batches

- 670 (500 boys and 170 girls) NSO second-year undergraduate students registered under NSO in the academic year 2021-22; coaches and experts from various sports federations and the Sports Development Authority of Tamil Nadu engaged to coach the NSO students in 20 different sports and games (both men and women)
- NSO selections conducted in a smooth manner keeping in mind all COVID-19 restrictions; NSO selections for 2021 batch were completed; this is the first time in the history of IITM sports, where two NSO selections were conducted within a year

c. Online to offline transition

- Re-opening of the sporting facilities
 - All the sporting facilities opened in a phased manner to make sure that all campus residents and students use them

Sports Organising Committee

- Vision and Mission
- Ensure that the activities conducted by the Sports Organising Committee (SOC) reach all the members of the General Student Body
- Establish strong inter-team communications and more transparency in the functioning of SOC teams
- Improve public awareness about SOC

Events

1. **Mobile Gaming Tournament:** Online cricket and football gaming tournament organised for GSB
2. **Sports Quiz:** Sports-themed quiz conducted in collaboration with the Quiz Club, Saarang
3. **Speakalympics:** A sports-themed debate conducted in collaboration with the Oratory Club
4. **Champions League Fantasy:** A football fantasy game conducted for the finals of the 2021 Champions League
5. **IITM Cubing Championship:** A classic Rubik's cube tournament for GSB
6. **Football Auction:** A classical auction tournament along with a presentation round for the final round
7. **Wimbledon gaming zone:** A virtual tournament for the official Wimbledon fantasy games
8. **Roland Garros Fantasy:** A virtual Roland Garros game prediction event
9. **Lectures**

- Hosted speakers
- Varun Kumar - World U19 No. 2 Badminton Player
- Harika Dronavalli - Chess Grandmaster, Arjuna Awardee, Padma Shri award and the winner of three bronze medals at the Women's World Chess Championships
- Fireside chat with Pranav Rawat
- Created a recent blog for SOC articles, published 14 articles
- Launched a podcast named Gymkhana Talkies; published three episodes
- Designed a new portal for merchandise sales of IITM Sports (in approval stages)
- Gymkhana Day events
- Passing the Baton
- Award ceremony for best sportsperson
- Merchandise sales for graduating contingent members

Team structure and changes

Changes:

1. Added a new team to SOC (Content Team); given the events that happen throughout the year, we felt a need to tell the story of these events and the sportspersons who participate in them. For this, we created a team of sports enthusiasts who are passionate about writing.
2. Created one additional position for WebOps, media and design teams after feedback to reduce the workload of cores by respective ex-cores of these teams.

Structure

- SOC Heads - two
- Events Team - two cores and eight coordinators
- FR Team - two cores and nine coordinators
- Webops Team - two cores and eight coordinators
- Design Team - two cores and eight coordinators
- Media Team - two cores and seven coordinators
- WebOps Team - two cores and eight coordinators
- Spons & PR Team - two cores and five coordinators
- Content - one core and five coordinators

Work done by each vertical

Events Team

- Mobile Gaming Tournament: An online cricket and football gaming tournament organised for GSB
- Sports Quiz: A sports-themed quiz conducted in collaboration with the Quiz Club
- Speakalypics: A sports-themed debate conducted in collaboration with the Oratory Club
- Champions League Fantasy: A football fantasy game conducted for the finals of the 2021 Champions League
- IITM Cubing Championship: A classic Rubik's cube tournament for GSB
- Football Auction: A classical auction tournament along with a presentation round for the final round.
- Wimbledon Gaming Zone: A virtual tournament for

the official Wimbledon fantasy games

Webops Team

- **IITM Sports**
- Updated teams' page
- **Sales Portal**
- Created a payment portal for merchandise sales
- **Agrata**
- Created multiple pages, including events, sponsorship and login and registration portal
- Further plans: Integrate payments for registration (KYC not filled)
- **Schroeter.com**
- Backend is ready for the website of inter-hostel contests.
- Working on the front end and integration of it with the backend.
- **Design Team:** All the poster designs and merchandise designs for the year
- **Media Team:** All the teasers and post-event lookback videos for the year
- **Content Team:**
- Created a new SOC blog, and published 14 articles
- Launched the Gymkhana Talkies, published three episodes
- Handled social media

Sponsorship and PR Team

Agrata-related sponsorship

- Paramount Dealz: The chess dealership company agreed to provide chess boards to winners (1st, 2nd, 3rd) in chess events.
- Chess.com: The chess platform agreed to provide platform and subscription in order of platinum, gold and silver (one month) to winners in chess events.

Pan IIT Cycling Event

- HYVE: Merchandising sponsor for the event (event ended)

General sponsorship

- GoPllay: collaboration for online events, where the sports social platform for recreational players and viewers sponsored the prizes
- Dass Bridge: collaboration for a platform to play bridge in return for promotion of the game
- Polka Pop: agreed to provide bottles for a running event for top performers

Sponsorship for December Trek

- Brek.club agreed to sponsor treks for the institute in the month of December 2021 in return for publicity and branding that Brek.club would receive from institute students and Adventure Club.

Saahas

- SAAHAS was a sports campaign with the tagline, Back At It. It was led by a vision to rebrand the sporting culture within the institute after a two-

- year-long pandemic break.
- SAAHAS had four events under its umbrella: a theme release, a 5K run, an Indian games event and the F1 race streaming.
- For SAAHAS, we were able to get three major sponsors with a cumulative sponsorship of ₹2 lakh. Decathlon, Netrin Technologies and Krispy Kreme sponsored this sports campaign.

Initiatives by Women's Reps

1. Danceout Workshop

Two dance workout sessions were organised in collaboration with IIT Madras' Choreo Club to promote fitness among the women in the institute. Around 100 members participated.

2. Danceout Challenge

A challenge was organised post the workshop where the participants were asked to submit their videos, which were a fusion of dance moves and fitness exercises.

3. Panel discussion

A panel discussion was organised with prominent personalities in the area of sports and fitness, so as to help women in the institute keep up and maintain their mental and physical health, especially during COVID-19 times.

4. Danceout Workshop – Offline

After receiving a huge response from the online session, the reps ideated on the offline session, which was conducted by renowned choreographer and dance director Mr Srinivasan, who has an experience of over 20 years.

5. Hapkido Session

- Over 50 participants showed up for the first-ever offline event that we conducted.
- Prof. T. M. Muruganandam (3rd Dan) conducted the session.

6. Initiatives by PG Rep

PG Leisure weekends were conducted for carom, football, TT, running and cycling

7. Achievements during the academic year

2021-22

Detailed achievements can be found here:

Athletics

2022

- Conducted the Institute Athletics Meet (open to all PG and UG students on campus), which saw a participation of 100-plus students
- Engaged close to 80 General Student Body members during regular practice sessions, both PG and UG
- Conducted NSO selections (both men and women)

- for 2021 batch among 120-plus participants
- Conducted NSO selections (both men and women) for 2020 batch among 150-plus participants

2021

- Conducted an online fundae session for the 2020 and 2021 batch (50-plus students)
- Curated an online fitness plan for the contingent members (more than 20)

Aquatics

2022

- Conducted Institute Aquatics Team Probables' Selection
- Conducted Waterpolo match with Alumni

2021

- Conducted fitness workout sessions with contingent members
- Badminton

2022

- IIT M Women's team placed third in Loyola's inter college tournament 2022. IIT M men's team had reached the quarter-finals in the same tournament.
- Conducted regular badminton practice in the evening and fitness sessions in the morning for the team probables (about 20 students)
- Conducted Institute Badminton Team Probables' Selection (over 20 students)
- Organised NSO selections for 2021 batch women's (over 65 students)
- Help conduct NSO classes for 2021 batch (over 30 students)
- Organised Freshie Schroeter (M & W) (over 30 students)
- Organised beginners' session (over 40 GSB participants) and club weekender (over 30 GSB participants)

2021

- Conducted online probables selection for 2021 batch (over 30 GSB) and selected students had online fitness programme (over 12 students)
- Organised live broadcasting of Olympics 2020 Badminton matches of PV Sindhu (over 350 GSB participants/audience)
- Held an online fundae session for 2020 batch

Basketball

2022

- Men's team conducted several beginner sessions with around 100 spanning over multiple days
- Conducted Interdepartmental league, which had 14 teams of 12 people each. Engaged the PG crowd by ensuring two players on each team were PG
- Women's team conducted beginner's session with a participation of over 40 students (both PG as well as UG)

- Participated (Men and Women) in the TNPESU Tournament (State-level competition)
- Engaged GSB (Women) participation (around 30 PG students and 10 UG students) for regular practice sessions

2021

- Conducted challenges activities (Ready to Dribble) for all the students (over 30 PG+UG Men and Women) in the online semester.
- Conducted an online quiz event for the freshies (over 50 men and women) in 2021.
- Online streaming of finals of basketball matches of Olympic 2021.
- Conducted online club weekender.

Chess

- Conducted beginner's session, 60-plus participants
- Conducted online freshie intro tourney, over 30 participants
- Team participation in quarantine chess tour (Inter IIT), reached semi-finals (came third among all IITs, NITs, BITS), more than 80 participants.
- Freshie interaction event, over 20 participants
- 2021: Interim Probables' selection: 100+ participants, finally 12 shortlisted (including four to five PGs)

Cricket

- Reached quarters in the Tamil Nadu Physical Education and Sports Academy
- Resumption and completion of the Madras Mavericks Fantasy Premier League 2021; more than 350 students participated)

Club Weekender

- Cricket Quiz
- Online Skribble competition
- Over 150 students participated

Online training and bonding sessions for Insti team probables - Technique+ Fitness + Diet + IPL Watch Along

- Online streams for different important matches (IPL, World Cup)

Mavericks IPL Auctions

- A dummy auction for students to experience the fun of it
- Level 1 - Treasure Hunt
- Level 2 - Auctions (Ran for continuous eight hours)
- More than 500 students participated

Gully Cricket League

- 60 Matches, 7,886 runs, 413 fours, 636 sixes
- Ran for about four weekends
- More than 850 students participated and 24,000 views on the CricHeroes app

Football

2022

- Conducted Fantasy Premier League, over 250 participants
- Conducted the Inter-Hostel Football Tournament, 14 hostels, 150 participants
- Conducted coaching sessions for the women's football team, more than 20 participants

2021

- Conducted Fantasy Premier League, more than 250 participants
- Created groups for each city to facilitate playing football
- Held online fundae session for 2020 batch

Hockey

2022

- Conducted a beginner session for new students, 20 students participated
- Conducted a Garibos tournament in which 60 students participated
- Participated in the TNPESU hockey tournament

Squash

2022

- Conducted beginners' session, more than 50 participants
- Ladder matches for 20 batch students

Table Tennis

2022

- Conducted NSO selections – men and women
- Conducted club weekender (100+ GSB)
- Reached semi-finals in Loyola Inter College Tournament (Men)
- League matches for all Institute probables (Men and Women)

2021

- Conducted multiple month-long workout sessions through a point system with contingent members and probables (33 members)

Tennis

2022

- Got silver in the LICET Tournament 2022
- Bronze in Loyola Tournament 2022 (Women)
- Beginners' session

Volleyball

2022

- Participated in TNPESU state-level tournament
- Conducted Beginners' session, over 150 participants
- Conducted Inter-Department League (IDL), 14 teams, over 168 participants

2021

- Fitness competition for freshies, around 20 people

- 'Get set go' fitness event

Bridge

- Conducted two beginners' sessions for 2021 batch, with a turnout of more than 25 in each session
- Conducted beginners' course in 2021 May-June, with a turnout of 16 students

Cycling

2021

- Conducted two seasons of Pedalstorm, reached around 300 students
- Organised and participated in the Pan-IIT Kickoffs, finished 2nd overall along with individual podium finishes in average speed and distance. The event had more than 300 registrations from around 20 IITs.

2022

- Participated in the Pan-IIT main event, finished 1st overall
- Conducted Pedalstorm, weekend cycling sessions and an event particularly for postgraduates, reached around 150 students
- Finished third in Spardha

Forrest Gumps/Running

2021-2022

- Conducted FitIndia freedom run 2021 with around 100 participants
- Organised Saahas 5K run challenge with more than 200 participants
- Organised PG leisure league – a running challenge for PG community

Frisbee Club

2021-2022

- Conducted beginners' session, turnout of over 50
- Conducted Inter Departmental League for frisbee, turnout of over 80, eight teams with at least 10 players each
- Conducted online game watching session, participation of 15
- Conducted frisbee quiz with prizes, participation of 15 or so
- Visited the South India Regionals for ultimate Frisbee with the team, girl players participated with BITS Hyderabad team.

Indoor Games

2022

- PG Leisure Weekend - Carrom and Foosball tournament with about 40 participants
- Insti Carrom Day - Doubles Carrom tournament with 200 individual registrations (UG + PG)

9.23. General Secretary

a. Wimaan

Wimaan is a newly formed entity under the SGS that is the realisation of the proposed Common Information Platform. A six-membered team was led to come up with a structure for the platform and develop appropriate moderation policies for the content that goes on the platform – to uphold objectivity.

b. SAATHI

The IITM Wellness Centre had multiple initiatives for the year along with the Mentorship Cell and Academic Buddy. Pan-IIT Wellness Summit brought all like-minded bodies from IITs together, the Random Acts of Kindness challenge promoted well-wishing, and Cat'ART'ic workshop series taught to deal with mental health via art, dance and music. In addition, Intra-City Meets were conducted and the PG mentorship programme was kicked-off, both being SGS initiatives.

c. EML (Extra Mural Lecture)

The team conducted a total of 11 lectures throughout the year covering a diverse set of personalities. Some key mentions are spiritual guru Sri Sri Ravi Shankar, Bharatnatyam exponent Mallika Sarabhai, the first differently abled woman to top UPSC IAS Ira Singhal, CEA Dr Krishnamurthy Subramanian, and vernacular lectures of Subodh Bhawe (Marathi), Arivu (Tamil), and Aman Dhattarwal (Hindi).

d. I. I-Vil: IIT-Village

IVil team did a great job reaching out to the rural areas through the online mode. Online Sankalp was conducted which included career guidance, science experiments, and so on. IgMiCo (Ignited Minds Conference) was conducted online with the participation of 52 school students from classes 8-10. TEL, a fully funded project that aims to create a web repository of educational content for school subjects in regional languages, was approved.

e. Disaster Management Committee

ECOFATE initiative was conducted to create awareness and preparedness for disasters surfacing internationally. Situation alerts were broadcasted among the campus residents and non-residents during the floods in Chennai 2021. The annual event, Chaupal of the NGO, Goonj – a long-time partner of the Disaster Management Committee – was accomplished this year with a motto of 'No Agenda Conversation'.

f. WebOps and MobOps team

The teams imparted key knowledge to the members and worked on projects of IITM Helps, Students portal redesign/rebuilding, Students sites migration, Students app database migration, Election inaugural page, redesigning Mechanical Department website, and the other requests.

9.24. Research Affairs

The Research Affairs' sphere consists of five teams: Career Development Cell Research, Research Connect, Research Scholar's Day, RAS Executive and MS Ph.D. Placement.

a. Scholar's Matters

- Alumni funds were raised and provided to scholars whose funding has ended.
- Many research-related tools for literature survey, writing and research methodology were shared with scholars.
- Write In - Silent Hours for Thesis and Paper was launched to encourage students to involve in group writing sessions.

b. Events

- Research Scholars Day Events: 10th annual fest with more sponsors and activities. Significant

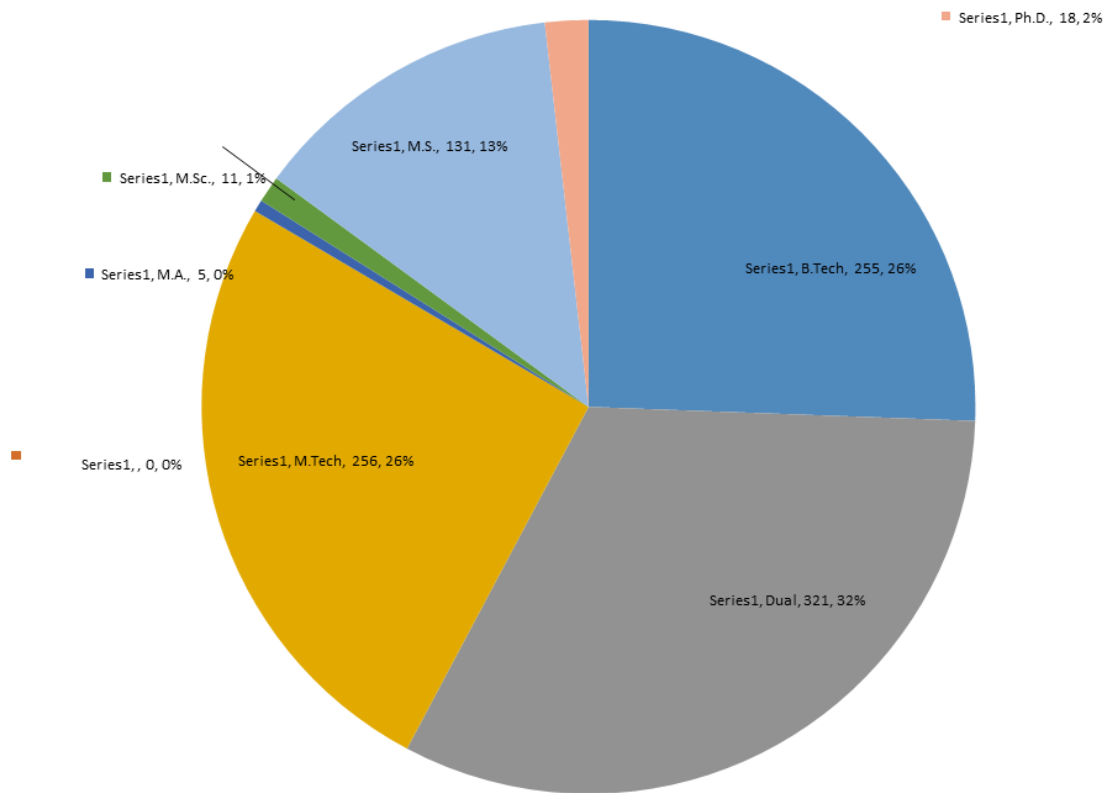
rebranding was done for the event that was held for a month. The news about RSD was published in more than 20 sites.

- Financial Freedom Events for scholars to plan their financial aspects with the given stipend
- Speed Mentoring series to match students with experts for a guidance session
- Workshops on important tools such as MATLAB, ANSYS, 3D printing, Quantum NLP by field experts
- Career guidance sessions targeted for graduate students
- Knowledge-sharing session on all important topics related to Ph.D. life
- Student engagement sessions for scholars to have a platform to share their knowledge with their peers

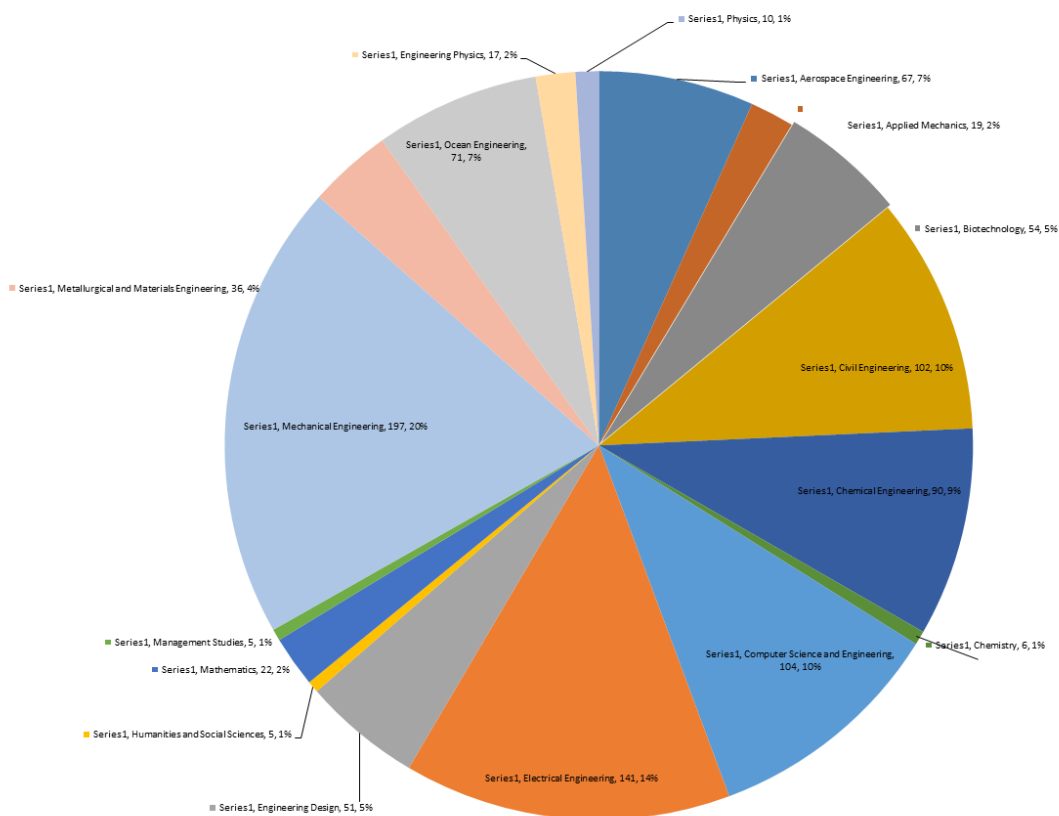
9.25. Details on faculty advisors for various students related activities are available on the website: dost.iitm.ac.in.

During the year, 1,177 students or scholars were placed in various organisations (excluding MBA).

Scholars/Students placed course wise



Scholars/Students Placed Department-wise





Financial Assistance to Students

Financial assistance in the form of scholarships and fellowships are given to meritorious students who are pursuing engineering, technology and science education at the institute. The details of scholarships and fellowships sanctioned to the students of different programmes during 2021-22 are given in this section.

SC/ST/PWD students admitted in all programmes are exempted from paying tuition fee irrespective of their parental income.

11.1 Assistance to B.Tech/Dual Degree students

The details of scholarships being awarded through national scholarship portal are given below.

Table 11.1 (a)

S.No	Scholarships	Number of Students
1.	Ministry of Tribal Affairs, Government of India (National Fellowship Scheme for Higher Education of ST Students)	Renewal: 56 Fresh sanction: Not yet sanctioned
2.	Ministry of Social Justice, Government of India (Top-class Education Scheme for SC Students)	Renewal: 39 Fresh sanction: 12

MCM and SC/ST scholarships

- Students with parental income less than ₹1 lakh are given tuition fee waiver.
- Students admitted to B.Tech/Dual Degree programmes and whose parental income is less than ₹4.5 lakh were sanctioned MCM scholarship (₹1,000 per month). During the period, 336 students were benefitted under the scheme (Table 11.1 (b)).
- Students whose parental income is between ₹1 lakh and ₹4.5 lakh are required to pay only ₹33,333 per semester with a tuition fee waiver of ₹66,666 per semester (i.e., one third of the tuition fee of ₹1 lakh). These students are given reimbursement of the tuition fee paid by them, i.e., ₹66,666 per year, by the A&CR office through various donors. During 2021-22, 150 students benefitted from such alumni-funded scholarships.
- The SC/ST students and with parental income less than ₹4.5 lakh were given free messing, pocket allowance of ₹250 per month and exemption from the payment hostel seat rent. As on 31 March 2022, 71 students were benefitted under this (Table 11.1 (b)).

Table 11.1 (b)

Batch	MCM Scholarship	SC/ST Scholarship
2021	42	-
2020	100	10
2019	88	35
2018	106	26
Total	336	71

Top 7 per cent of the General category students admitted to B.Tech/DD programme are eligible for Notional Prize of ₹1,000 (one time) and a Certificate of Merit based on their rank in JEE (Advanced) and parents' income exceeding ₹4.5 lakh. In July 2020, 407 General category students were admitted to B.Tech/DD and 29 students were eligible for Notional Prize.

Alumni-funded scholarships are available to highest scoring students based on their academic performances, as proposed by the sponsoring alumni.

11.2 Other scholarships

Scholarships were sanctioned by NCERT, Government of India and state governments to meritorious students pursuing B.Tech programme in IIT Madras.

Tamil Nadu Scholarship (B.Tech/DD/M.Tech)

Scholarship - 2021	Total Number of Students
Tamil Nadu Scholarship by Directorate of Backward Class/Directorate of Most Backward Class	46

State Government Scholarship obtained by B.Tech/DD students

Scholarship - 2021	Batch/Total Number of Students						Total
	2021	2020	2019	2018	2017	2016	
NCERT	19	24	17	8	8	4	80

11.3 M.Tech

Students who joined M.Tech programme through GATE were awarded Half-Time Teaching Assistantship (HTTA) at ₹12,400 per month. During the period under report, 479 fresh assistantships and 1,197 renewed assistantships were given. The discipline-wise details of HTTA are given below.

Number of HTTA awarded to M.Tech

S. No.	Discipline	Fresh -2021 Batch	Renewal - 2021 Batch	Renewal - 2020 batch	
		I Semester	January-May 2022	July-November 2021	January-May 2022
1	Aerospace Engineering	15	14	13	9
2	Applied Mechanics	35	28	13	8
3	Biotechnology - Clinical Engineering and Bioprocess	12	12	24	21
4	Chemical Engineering	35	30	41	33
5	Civil Engineering	60	54	51	45

6	Computer Science and Engineering	69	69	58	57
8	Electrical Engineering	75	58	54	42
9	Mathematics - Industrial Maths and Scientific Computing	22	22	19	17
10	Mechanical Engineering	81	73	81	65
11	Metallurgical and Materials Engineering	27	25	19	15
12	Ocean Engineering + Petroleum Engineering	39	35	36	33
13	Physics - Functional Materials and Nanotechnology	9	5	11	7
Total		479	425	420	352

Number of HTTA awarded to Dual Degree (5th Year)

The 2017 batch students who joined M.Tech programme under Dual Degree were awarded HTTA at ₹12,400 per month from 1 August 2021 onwards based on their obtaining valid GATE score or on securing CGPA of 8.0 or above. During the period under review, 332 students were awarded fresh assistantships from August to December 2021, and 334 assistantships were renewed at the rate of ₹12,400 p.m. from 1 January-30 May 2022. The department-wise details are given below.

S. No.	Discipline	2017 Batch	
		Fresh (Ninth Semester) July-November 2021	Renewal (Tenth Semester) January-May 2022
1	Aerospace Engineering	19	19
2	Biotechnology	46	47
3	Chemical Engineering	22	22
4	Civil Engineering	32	32
5	Computer Science and Engineering	12	11
6	Electrical Engineering	62	62
7	Engineering Design	31	33
8	Mechanical Engineering	72	72
9	Metallurgical and Materials Engineering	12	12
10	Naval Architecture and Ocean Engineering	15	15
11	Physics	9	9
Total		332	334

Number of HTTA awarded to M.A.

The 2017 Batch students of MA programme under five years' intergrated degree were awarded HTTA of ₹12,400 per month from 1 July 2021 based on their obtaining valid GATE score or on securing CGPA of 8.0 or above. In 2021-2022, 66 students were benifitted.

Stream	Fresh (July-November 2021)	Renewal (January-May 2022)
Development Studies	19	19
English Studies	14	14
Total	33	33

11.4 M.Sc.

Students admitted to M.Sc programme were sanctioned ₹1,000 p.m. under Merit Scholarship as per rule. Exemption from payment of tuition fee was also given to students. During the period under report, 115 students were benefitted. The department-wise details are given below:

Number of Merit Scholarship and Freeship Awarded

S. No.	Course	Merit Scholarship		Freeship (Tuition Fee Waiver)		50% Freeship (50% Tuition Fee Waiver)	
		1st Year	2nd Year	1st Year	2nd Year	1st Year	2nd Year
1.	Chemistry	18	14	10	6	-	2
2.	Mathematics	12	10	5	4	1	2
3.	Physics	12	8	5	4	-	2
Total		42	32	20	14	1	6

11.5 M.A.

Institute Merit Scholarship: Twenty-five per cent of the students admitted to M.A. programme and whose parental income is less than ₹4.5 lakh were sanctioned Merit Scholarship (i.e., exempted from payment of tuition fee of ₹3,000 per semester and ₹1,000 per month).

The SC/ST students admitted to M.A. programme with parental income less than ₹4.5 lakh were sanctioned the concession of free messing plus pocket allowance of ₹250 per month and exemption from payment of tuition fees and hostel seat rent. The batch-wise details of the number of students benefitted are given below.

Batch	Merit Scholarship
2021	Under process
2020	8
2019	1
2018	2
2017	1
Total	12

Institute free studentship scholarships for M.A. programme are available to students, which comprises exemption from payment of tuition fees.

11.6 M.S.

The scholars admitted to M.S. programme through GATE are given Half-Time Research Assistantship (HTRA) of ₹12,400 per month for two years and later extended to third year on the recommendation of General Test Committee (GTC). During the period under report, 491 scholars received these assistantships of which 183 were fresh scholars. The department-wise details of the assistantships awarded and renewed are given below.

Number of HTRA Awarded

S. No.	Discipline	Fresh	Renewal	Total
1	Aerospace Engineering	17	31	48
2	Applied Mechanics	18	32	50
3	Biotechnology	6	7	13
4	Chemical Engineering	39	12	51
5	Civil Engineering	13	29	42

6	Computer Science and Engineering	10	26	36
7	Engineering Design	8	16	24
8	Electrical Engineering	36	55	91
9	Management Studies	10	14	24
10	Mechanical Engineering	38	58	96
11	Metallurgical and Materials Engineering	8	15	23
12	Ocean Engineering	10	13	23
Total		183	308	491

11.7 Ph.D.

The scholars admitted to Ph.D. full time programme in engineering are sanctioned HTRA of ₹31,000 per month for first two years and ₹35,000 per month for next three years. During the period under report, 1,476 scholars obtained assistantships of which 302 were fresh scholars. The department-wise details of the assistantships awarded and renewed are given below.

Number of HTRA Awarded

S. No.	Discipline	Fresh	Renewal	Total
1	Aerospace Engineering	13	61	74
2	Applied Mechanics	24	101	125
3	Biotechnology	18	72	90
4	Chemical Engineering	19	70	89
5	Chemistry	19	71	90
6	Civil Engineering	39	115	154
7	Computer Science and Engineering	14	27	41
8	Engineering Design	13	32	45
9	Electrical Engineering	27	131	158
10	Humanities and Social Sciences	18	46	64
11	Management Studies	8	52	60
12	Mathematics	6	40	46
13	Mechanical Engineering	38	116	154
14	Metallurgical and Materials Engineering	17	62	79
15	Ocean Engineering	16	49	65
16	Physics	13	129	142
Total		302	1174	1476

A fellowship deemed to be equivalent to Institute Pre-Doctoral Fellowship (except contingency) will be awarded for a maximum period of six months from the date of submission of final synopsis with thesis for regular Ph.D. scholars who have submitted thesis within four and a half years and for direct/upgraded regular Ph.D. scholars within five years. They will pursue the work as defined for Institute Pre-Doctoral Fellow. During the year under report, 50 Ph.D. scholars were sanctioned Pre-Doctoral Fellowship.

11.8 (a) Financial Assistance to Research Scholars for International Conferences

This institute is encouraging research scholars to present papers in international conferences for which they are given financial assistance. The financial assistance provided to M.S. and Ph.D. scholars is up to the limit of ₹1,50,000, including registration fee.

11.8 (b) National conference/seminar/symposium/workshop/visit to other laboratories, etc. within India

Research scholars are given the following financial assistance for presentation of papers in national conferences in India:

Claim	Eligibility
Registration fees	As per actuals, with the recommendation by Doctoral Committee/GTC
Travel	II Tier AC Train fare
Local Travel (at Chennai and at the place of conference)	Four trips for the duration of the conference by auto/taxi/bus at actuals, subject to an upper limit of ₹500 per trip
Lodging	Hostel/Guest House/Hotel for conference days plus one day each prior to and after the conference days at actuals, subject to a ceiling of ₹1,000 per day
Per diem	₹500 per day for conference days plus one day each prior to and after the conference days
Poster charges	Maximum amount of ₹1,500 per poster (with bill)



Weaker Section and Foreign National Students

12.1. B.Tech and Dual Degree Programme

As per the Government of India (GoI) orders, 27 per cent, 15 per cent and 7.5 per cent of seats are reserved for OBC, SC and ST students, respectively, in the B.Tech. and Dual Degree programme. These students are admitted through the Joint Entrance Examination (Advanced) with a relaxation. These

students have to get only 60 per cent of the marks obtained by the last student of the General category to get qualified for admission. During counselling prior to admission, an advisor will explain to each student the requirements of different branches. This helps the students to choose a suitable branch based on their capability and interest.

Economically Weaker Sections

As per GoI orders, for General category students under economically weaker sections (EWS), reservation of 10 per cent under all programmes was followed for the academic year 2021-22.

The following are the details of the number of SC/ST students admitted to B.Tech programme through JEE (Advanced) 2021-22 and Preparatory Course during 2020-21:

Total Sanctioned Intake	Sanctioned Intake			No. Joined Through							
	SC	ST	EWS	Programme	JEE			Preparatory Course			
					SC	ST	EWS	SC PD	ST	GE & EWS PD	OBC
B.Tech - 970	130	67	87	B.Tech	140	67	93	3	5	3	4
Dual Degree - 181	28	13	17	Dual Degree	26	4	20	-	8	-	1

SC/ST students admitted against reservation are given the following benefits:

- Tuition fee waiver
- Free lodging and messing (basic menu only) and pocket allowance of ₹250 per month, provided their parents' income is ₹4,50,000 net per annum or less
- A Book Bank as part of Central Library is maintained for the benefit of the SC/ST students. The students are issued 12 tickets for taking books from the Book Bank. Books are issued for a semester.
- Help in getting placement. Wherever possible, industries are requested to conduct separate interviews for SC/ST students and the requirements for these students are lower than those for the General category.

12.2. Preparatory Course for Admission to B.Tech/Dual Degree Programme

A preparatory course of one academic year was initiated by the Ministry of Human Resource Development, Government of India, exclusively for SC/ST/PwD students. Selection for this course is made from the Joint Entrance Examination (Advanced) list of SC/ST/PwD students who did not qualify for admission. Upon successfully completing the preparatory course at the IIT, they would be eligible to join the B.Tech/Dual Degree programme and will not require to write the JEE (Advanced) again. Following are the details of admission in July 2021: (IIT Madras, IIT Hyderabad, IIT Tirupathi, IIT Palakkad)

Offer issued for Preparatory Course				
SC PD	ST	OBC PD	GE PD	EWS PD
2	14	2	10	3

In July 2021, 29 preparatory course students of 2020-21 batch were offered admission to B.Tech/Dual Degree Programme as they had successfully completed the preparatory course.

12.3. M.Tech programme

Seats are reserved for SC, ST and EWS candidates as per the Government of India orders. They are admitted through GATE by a separate merit list. Following are the details of the admission in July 2021:

Offer Issued			No. Joined (HTTA)		
SC	ST	EWS	SC	ST	EWS
83	42	55	82	41	53

12.4. M.Sc programme

Admission was made to the M.Sc. programme through JAM entrance examinations only. Twenty-five SC and 13 ST students were admitted in M.Sc. These students were given tuition fee waiver.

M.Tech and M.Sc. students admitted against reservation are given the following benefits:

- Book Bank facility with 12 library tickets. Books are issued for a semester.
- Both public sector and private sector industries were requested to recruit SC and ST students.
- Other special steps were also taken to enhance the recruitment of this category of students.
- Scholarship is given to these students as per Government of India norms.

12.5. Admission of Foreign National Students and Indian National Residing Abroad

At the end of March 2022, 41 foreign nationals were on the rolls of the institute. The programme and country-wise details are given below:

Country	I Year	II Year	III Year	IV Year	V Year	Total
Foreign National Students						
Dual Degree						
South Korea					1	1
M.Tech.						
Afghanistan	1	1				19
Bangladesh	2		1			
Indonesia	1					
Nepal	7	1				
Nigeria	1					

Sudan	2					
Syria	2					
Ph.D.						
Afghanistan		2				15
Australia	2	1				
Canada		1				
Ethopia		3			1	
France		1				
Malaysia	1					
Nepal		1			1	
Vietnam	1					
M.S.						
Ghana	1					
Kenya	2					6
Saudi Arabia		3				

In addition, IIT Madras Alumni Association provides financial assistance to students under IITMAANA Travel grant programme to assist IITM students to visit USA and present their papers at nationally recognised technical conferences. The grant covers airline ticket charges and visa fees, but excludes payment of conference registration fees.



Campus Amenities

13.1 Engineering Unit

The Engineering Unit (EU) is entrusted with the responsibility of construction, maintenance of buildings and operations and maintenance services of the institute. The works are carried out through contract by calling tenders and quotations in a transparent manner.

For maintaining the quality in construction of buildings, the advice of faculty members, who are experts in their respective areas, is sought. To complete the projects in time, the EU holds review meetings with the stakeholders periodically. The EU has also introduced new materials and technologies in construction and maintenance activities.

I. Major Works Completed

S.No.	Description of Work	Value (₹ in lakh)
Executed by Engineering Unit, IITM		
1.	Integration of In and Out Gate	
1.1	Construction of new Out gate, widening of existing In gate road, construction of brick pitched drain, raising the In Gate road level, development of parking facility, creation of new traffic island, bus shelter, cycle/pedestrian pathway, security cabin, etc., complete (Civil Works)	643.41
1.2	Providing boom barrier RFID/UHF reader, bio-metric sensor, etc. (Automation Works)	57.27
2.	Re-carpeting of major roads at IIT Madras	353.08
3.	Creation of gathering space above campus café Building	
3.1	Replacing the existing flooring, construction of new toilet block, etc (Civil Works)	118.48
3.2.	Design, supply and installation of tensile structure roofing for terrace portion at campus café building in IIT Madras	78.87
4.	Repair and renovation of basement floor at Central Library	145.15
5.	Creation of emergency staircase at OED, replacing of AC cement sheet with cement fiber sheets in Chemical Engineering workshop bay, development of parking facility at Velachery Gate	65.67

6.	Design, supply and installation of tensile structure roofing for terrace portion at Dean Student Office Building in IITM	17.40
7.	Repair and renovation of toilets, including repair or retrofitting the gallery above toilets at Open Air Theater - Phase-I	306.23
8.	Renovation of toilets and replacing the damaged sunshades in Electrical Science Block and Mechanical Science Block	201.10
9.	Face-lifting works in Building Science Block and Humanities Science Block—providing and fixing GRC panel to the corridor openings and GI pipe to the louvers in BSB and HSB Block at IIT Madras	104.42
10.	Construction of new substation with transformer yard by demolishing the existing substation to facilitate the construction of road and fire sump for the work: construction of Electrical Science Block-II (ESB-II) Ground + 6 floors at IIT Madras	60.97
11.	Construction of annex building (G+3 floors) to existing computer science building at IIT Madras (third floor only under Ministry of Education fund)	591.00
12.	Facelifting of Cauvery hostel	450.00
13.	Internal and external painting of Sindhu, Tamiraparani, Mahanadhi and Pampa hostels	174.01
14.	Renovation of toilets in SAC Building at IIT Madras	45.92
15.	Repair works in Cauvery Hostel at IIT Madras	19.11
16.	Constructing emergency escape staircase in Cauvery and Krishna hostels	23.26
17.	Facelifting of guest room (84 nos) at Taramani Guest House (TGH) in IIT Madras	173.53
18.	Painting of Cauvery hostel	47.57
19.	Addition and alteration of DI-type quarters (D1-25 to D1-72, i.e., 45 units, at IITM) SH: Phase II: D1-49 to D1-72 (24 units)	455.49
20.	Providing internal illumination for the new dining facility at the terrace of campus café inside IITM premises	8.90
21.	Providing street lighting for the modified Adyar In/Out gate inside IITM premises	11.91
22.	Provision of Fan Coil Units and allied chilled water lines to First Floor of Administrative Building in IIT Madras	40.17
23.	Conversion and enhancing the capacity of main panels, conversion into modular switch boards in students' rooms in Brahmaputra, Godavari, Narmada, Sarasvati and Tapti hostels in IIT Madras	185.45
24.	Providing and installing machine-room-less lift for Bose-Einstein Guest House in IIT Madras	13.01
25.	Design, supply, installation, testing and commissioning of outdoor type video wall at Gajendra Circle, NAC-1 and IC&SR in IIT Madras	63.49
26.	Installation of video wall near In & Out gate	15.00
Executed by Engineering Unit under Higher Education Financing Agency (HEFA)		
1.	Construction of annex building (G+3 floors) to existing Computer Science building at IIT Madras (up to G+2 floors only under HEFA fund)	2180.00
2.	Construction of Electrical Sciences Block-II (ESB-II) Ground+6 floors at IIT Madras	1691.30
3.	Construction of 64 G1-type quarters for married research scholars at IIT Madras	2205.00
4.	Upgradation of existing sewerage system at IITM campus	3453.00
5.	Construction of new girls' hostel (G+8) by replacing rear wing of Sarayu Hostel at IIT Madras	3227.00
6.	Construction of Annex building (G+3) to existing Computer Science building at IIT Madras (SH: Provision of 2 x 20 passengers lifts)	39.90

7.	Construction of Electrical Science Block-II (ESB-II) Ground+6 floors at IIT Madras (SH: Provision of 2 x 16 passengers lift)	34.00
8.	Construction of new G1-type quarters at IIT Madras (SH: Provision of 1 x 13 passengers lift + 1 x 8 passenger lift)	33.50
Executed by CPWD under HEFA		
1.	Construction of new boys' hostel (1,200 nos) by replacing existing Mandakini Hostel	14675.00
Executed by CPWD and funded by the Ministry of Ports, Shipping and Waterways		
1.	Construction of Port Centre building	2700.00

II. Major works in progress

S.No.	Description of Work	Value (₹ in lakh)
Executed by Engineering Unit, IITM		
1.	Painting of Institute and Hostel Zone buildings	129.57
2.	Waterproofing works and others related civil repair works in Academic Zone buildings at IIT Madras for the year 2020-21	83.71
3.	Revamping works at OAT (Open Air Theater), modifying existing gallery, entrance ramp, bowl and stage area, etc.	145.00
4.	Special civil repair works in Sarayu and Krishna hostels at IIT Madras	134.12
5.	Providing construction of passenger lift well at Himalaya and Vindhya Mess and few Workshop Buildings in IITM	83.97
6.	Face-lifting of corridors and minor external repair works in Taramani Guest House (TGH), IIT Madras	54.53
7.	Face-lifting of corridors and minor external repair works in Ganga hostel at IIT Madras	143.91
8.	Addition and alteration of E1-type quarters (E1-23, E1-24 and E1-25), 36 units along with special repair works and terrace waterproofing works at IIT Madras	389.98
9.	Providing LED light fitting and internal electrification work at Heritage Centre inside IITM Madras campus	13.04
10.	Electrification of smart or hybrid classroom in different academic buildings inside IITM premises	122.47
11.	Replacement of the existing main fuse type pillar boxes into kiosk type MCCB panels in all Zone at IIT Madras premises	115.00
12.	Replacement of existing 48 V DC LED light fittings and ceiling fans into 1Φ AC LED light fittings and BLDC fans in NAC-1 at IITM campus	67.37
Executed by Engineering Unit under IoE		
1.	Providing rising main and busbar trunking in ESB and MSB Building inside IITM premises	180.36
2.	Providing rising main and busbar trunking in SF of Chemistry Building and BSB Building	136.88
3.	Providing rising main and busbar trunking in HSB Building inside IITM premises	190.93
Executed by Engineering Unit under HEFA		
1.	Upgradation of the water supply system at IIT Madras campus	2862.92

2.	Providing 500 kVA transformer and allied HT/LT works at G1-type quarters	60.00
3.	Upgradation of the water supply system at IIT Madras (SH: Provision of SCADA system)	110.00
4.	Construction of a new girls' hostel (G+8) by replacing the rear wing of Sarayu Hostel at IIT Madras (SH: Provision of 3 x 13 passengers' lift)	64.74

Executed by CPWD under HEFA

1.	Construction of New Academic Complex-II at IIT Madras	18770.00
2.	Construction of Academic Research Block (G+2 Floors) with food court at IIT Madras Discovery Campus at Thaiyur 'B' Village, Chengalpattu district	3441.00
3.	Construction of utility and common services at IIT Madras Discovery Campus at Thaiyur 'B' Village, Chengalpattu district	1466.00

Executed by Engineering Unit under fund from "OH-35 towards infrastructure development due to implementation of EWS reservation"

1.	Augmentation of facilities at CFI lab by completing the existing structure in Central Workshop at IIT Madras	1179.79
----	--	---------

Executed by CPWD under fund from "OH-35 towards infrastructure development due to implementation of EWS reservation"

1.	Construction of Hostel Block (G+4 Floors) at IIT Madras Discovery Campus at Thaiyur 'B' Village, Chengalpattu district	1877.00
2.	Construction of utility and common services at IIT Madras Discovery Campus at Thaiyur 'B' Village, Chengalpattu district	741.00

III. Major works in progress

S.No.	Description of Work	Value (₹ in lakh)
Execution by Engineering Unit, IITM		
1.	Waterproofing works and other related civil repair works in Academic Zone buildings at IIT Madras for the year 2022-23	100.00
2.	Recarpeting of minor roads at IIT Madras	757.00
3.	Construction of additional floor above the front wing, creation of new staircase, lift shaft and toilets by dismantling the existing toilet and CMO room, facelifting of existing facilities at IITM Institute Hospital building, replacing the existing flooring and wall tiles, construction of new block at terrace, toilet block, staircase, lift shaft, etc	280.00
4.	Proposed CRYO lab building at IIT Madras	524.00
5.	Construction of a building for centralised chilled water air-centralised system with substation G+1 at three locations near MML Lab, Computer Centre and ESB Building by demolishing the existing sub-stations (2 nos.) and cycle stand (1 no.) in IIT Madras campus	538.95
6.	Construction of a new compound wall, raising the height of the existing compound wall and demolition of the existing compound wall along Sardar Patel Road near main gate of IIT Madras campus	40.00
7.	Face-lifting of Saraswathi hostel	315.00
8.	Face-lifting of Godavari hostel	316.00
9.	Face-lifting of Jamuna hostel	307.00

10.	Construction of indoor multi-game sports facility above the existing tennis court and wall practice area in the campus	1861.00
11.	Provision of centralised chilled water air-conditioning system in IIT Madras	10235.00
12.	Addition and alteration of MOH-type quarters (MOH-1 to MOH-24) 24 units at IITM	505.00
13.	Upgradation of domestic water supply pipeline system and installation of ultrasonic water meters in the Residential Zone of IIT Madras	298.54
14.	Augmentation of the facilities at Centre for Innovation (CFI) lab by completely replacing the existing structure in Central Workshop at IIT Madras (SH: Provision of HVAC system)	244.16
15.	Construction of CFI Ground+2 floors + terrace at IIT Madras (SH: Provision of 1 x 16 passengers' lift)	18.05
16.	Provision of 1 x 13 passengers lift to Himalaya Mess, 1 x 13 passenger lift to Vindhya Mess and 1 x 8 passenger lifts to 7 Bay workshop in IIT Madras	54.60
17.	Proposed construction of new building (basement+G+6 floors) by demolishing TDCE and R&AC Building at IIT Madras	11362.00
18.	Construction of new building (B+G+5 floors) for Outreach Centre at IIT Madras land in Kanagam village	10480.00
19.	Construction of Research Visitors' Guest House (G+8 floors) by replacing the existing maintenance office building and student facility building at IIT Madras	7570.00

13.2. Housing facilities

The campus of IIT Madras has 545 faculty quarters, 434 staff quarters and 286 students' quarters for accommodation. There are 137 servant quarters in the campus as well.

13.3. Horticulture

The horticulture unit is functioning under the EU. It maintains 56,702 sqm of lawns (39,358 sqm of lawns at various locations and 17,344 sqm of turf in stadiums and play fields). In addition, hedges and garden elsewhere in the campus are maintained. No chemical pesticide sprays are advocated anywhere within the campus (only Azadirachtin 10,000 ppm sprays are used, when necessary, to control pests beyond Economic Threshold Level or ETL), and vermicompost is used as the sole nutritional supplement.

The lawn turf in Manohar C. Wasta Stadium has been raised organically with local grass species. The green patches serve as a niche location for both cervid species (blackbuck and spotted deer) that regularly visit the areas for food.

The horticulture section also takes care of providing water troughs at 75 locations for the institute's cervid population. The water containers are cleaned and refilled daily. These containers also feed a whole lot of smaller fauna within the campus such as bonnet macaque, squirrels and birds.

Miyawaki gardens have been developed adjacent to the newly constructed Mandakini hostel and NAC-1 building to improve the green cover in a considerably

shorter time. Nearly 250 tree saplings have been planted and maintained with tree guards. The watering of lawns and garden area is carried out with treated sewage water through a dedicated pipeline network.

New lawns and gardens were developed at In & Out gate, Mandakini hostel and Computer Science Block-II.

13.4. Public health

The horticulture section takes care of mosquito-breeding grounds and control of larval and adult mosquitoes by spraying larvicide and fumigation. It also takes care of termite control in the campus.

Solid waste management is being carried out as per Tamil Nadu Solid Waste Management Rules 2016. Wastes are getting source segregated, collected door-to-door, and recycled/disposed after secondary segregation.

Biomedical waste and e-waste are getting disposed through TNPCB authorised agency.

Hazardous waste are getting disposed through Tamil Nadu Waste Management Ltd (TNWML).

13.5. Telephone facilities: PBX telephone system

The campus telephone facility has been extended to the office and residential quarters of faculty members and laboratories of various departments, and miscellaneous services from HiPath 4000 ISDN PBX system with 5000-line capacity interfaced with BSNL through ISDN PRA lines. There are

20 remote telephone systems housed at various buildings in Academic, Hostel and Residential Zones connected to the main PBX system via optical fiber link. The complaints of campus telephone lines are attended within two hours from the time of receipt or registration. Online campus telephone directory is available on the institute website under tab - Directory <https://www.iitm.ac.in/directory>

13.6. Local body approval

Chennai Metropolitan Development Authority (CMDA) has approved 21 buildings in the campus. Plans for other buildings constructed and under construction in the campus have been submitted to the CMDA and are under approval.

13.7. Central Supplies Unit

The Central Supplies Unit functions under the administration of a warden. The unit procures milk from Tamil Nadu Cooperative Milk Producers' Federation (TCMPF) and supplies to hostels. It procures major items from wholesale suppliers through Provision Selection Committee and Provision Purchase Committee, and supplies them to hostels, thus, economising the mess expenses. Branded cosmetics and eatables from wholesale dealers are other items procured and made available to students through Students Amenities Centres at reduced prices.

13.8. Hospital

The Institute Hospital is a 25-bedded ISO 9001-2015 certified hospital. It extends primary medical, basic surgical and preventive health services to the staff and their dependents and students. The hospital is managed by a team of well-trained and dedicated doctors, nurses and paramedical staff. Specialist doctors visit on specific days and time to manage patients who require more than primary-level care. The hospital working hours are
Weekday: 08.15 am- 05.45 pm
Saturday: 08.15 am - 1.00 pm
Saturday: 1.00 pm onwards: Emergency care
Sunday and Government holidays: Emergency care

Staff

High-quality ethical care is given to all users by a

dedicated team of hospital staff, which include

- 1) Regular doctors - 11
- 2) Visiting consultants - 22
- 3) Nurses - 14
- 4) Nursing Assistants (female) - 6
- 5) Nursing Assistants (male) - 3
- 6) Reception/MRD - 3
- 7) X-ray/U/S/ECG Technician - 2
- 8) Hospital Office - 2
- 9) Office attenders - 2
- 10) Hospital storekeeper - 1
- 11) Consultant (Finance) - 1

Facilities available

- 1) Pharmacy - Outsourced to Keps
- 2) Clinical lab - Outsourced to Lister Metropolis
- 3) Physiotherapy - Outsourced to M/s. Indus Therapeutic Solutions (temporarily closed due to COVID-19)

In-house facilities

- 1) ECG
- 2) X-ray Unit
- 3) Well-equipped labour room with a baby warmer
- 4) Operation theater (since the pandemic began, the theater is not in use)
- 5) In-patient wards

Academic activities

Doctors, nurses and staff participated in various medical webinars and conferences via Google Meet and Zoom.

Preventive activities

- Circulars against prevalent diseases (dengue, typhoid, etc.) and healthy practices for prevention of diseases was sent to students and staff.
- Regular screening for chronic diseases against diabetes or hypertension for staff or dependents above 40 years and those.
- Monthly vaccination for children is done once or twice a month.
- Adult vaccination against preventable diseases (typhoid, chicken pox, pneumococcal, etc) is regularly advised with informed consent.
- Antenatal care is done through regular OPD for the ease and convenience of patients.

OPD Census

Annual Census of Hospital for the Year 2021-2022												
2021-2022	O.P.	Emergency	In patient in	In Patient	Surgery	Surgery - Minor+ Procedure	Total	Dental	X-ray	ECG	USG	Physio
	Day	Cases	Casualty	(In ward)	Major							
	8am - 6pm	6 pm-8 am	Admission									
April 2021	3109	185	305	16	-	12+29	41	-	165	56	-	-
May 2021	2048	125	278	16	-	4+3	7	-	72	40	-	-

June 2021	2223	203	223	7	-	0+14	14	-	116	48	-	-
July 2021	2514	233	236	10	-	1+32	15	-	187	86	-	-
August 2021	3428	279	357	34	-	6+11	17	-	211	65	-	-
September 2021	4018	227	416	16	-	12+11	33	-	263	101	-	-
October 2021	4130	281	493	15	-	8+18	26	-	252	85	-	-
November 2021	3811	319	599	18	-	12+18	30	-	222	73	-	-
December 2021	3955	303	294	19	-	17+20	37	-	285	68	-	-
January 2022	3893	288	438	10	-	8+25	33	-	226	67	-	-
February 2022	4050	303	162	6	-	16+41	57	-	236	83	-	-
March 2022	5617	486	258	35	-	13+77	90	-	348	80	-	-

Grand total: 46,028 patients for the year 2021-2022

- Specific hospital services were open only to emergency services.
- Doctors and staff were posted on rotation to manage the emergencies 24×7.
- Regular repeat medicines were issued through email request. It was streamlined as per the need.
- Strict hand hygiene and masking was insisted in the hospital premises.
- Protocol for fever management was written with the help of Apollo
- PPE protocols were written and adequate supplies were stocked.

General precautions

- Posters or pamphlets on safety measures were displayed and given to all departments.
- Announcements was made through a mail highlighting the safety protocols (importance of face mask, hand hygiene and physical distancing) and what to do in the event of medical problems.
- Staff and students were advised to undertake only urgent essential travel.

Special activities

Due to the pandemic and lockdown, special medical activities were undertaken.

- An email request for repeat medicines for those with chronic diseases was permitted. Medications were counter checked with patient records and medicines were packed in the pharmacy to be collected by the users.
- A separate area for consulting patients with fever was built. Extra precautions were taken in fever outpatient section, so that spread of infection is minimised.
- Those who were tested positive among students were isolated in guest house and monitored by hospital staff.
During the third wave many students were infected. Hence, a separate hostel was identified to isolate the positive students. This was monitored by the institute staff and outsourced health team.
- Staff or dependents who were tested positive was isolated in their homes and monitored via telephone and necessary instructions were given and medications were sent home. This was coordinated with the help of Chennai Corporation doctor or nurse.
- Vaccination (Covishield and Covaxin) against COVID-19 was actively encouraged and promoted among eligible beneficiaries. Vaccines were procured from Greater Chennai Corporation and administered in institute hospital.

COVID-19 Vaccination

2021-2022	Fever OPD		No. of Covid Vaccinations Done		Covid Vaccination Doses			Total OPD	
	Covid Positive	Non-Covid		Covaxin	Covishield	Covishield			Booster doses
		Dengue	Typhoid			1doses	2doses		
April 2021	143	6	4	450	468			-	168

May 2021	141	9	1	-	510	219	291	-	164
June 2021	94	5	-	-	251	69	182	-	84
July 2021	15	12	-	-	205	2	203	-	96
August 2021	5	41	-	-	320	53	267	-	168
September 2021	7	21	-	-	132	-	132	-	210
October 2021	11	14	-	-	-	-	-	-	286
November 2021	4	8	3	-	-	-	-	-	473
December 2021	28	14	9	-	-	-	-	CS/CX	208
January 2022	607	6	1	-	-	-	-	188/17	543
February 2022	59	4	-	-	-	-	7	122/116	135
March 2022	7	11	19	-	-	-	2	25/0	208
Total	1121	151	37	450	2534	343	1075	335/133	

13.9. Guest House

The institute has two guest houses within the campus: the Bose-Einstein Guest House near the Administrative Building and Taramani Guest House (TGH) in the Hostel Zone. The Bose-Einstein Guest House has 18 air-conditioned suites. Each room has a telephone, fridge and TV. VIPs, institute guests and invited guests are usually accommodated here. TGH has 83 rooms, of which 18 are suites and 65 are air-conditioned rooms. The guest house provides boarding and lodging facilities for institute guests and visitors, newly appointed faculty members, staff members, delegates and participants attending conferences, seminars, symposia and workshops.

13.10. Bank

The State Bank of India has a branch and two ATMs on campus. Canara Bank also has a branch and an ATM facility within the institute. In addition, ICICI Bank has installed an ATM in the Hostel Zone.

13.11. Post office and telecom centre

There is a post office on campus to cater to the needs of the campus community. A 24-hour telecom centre caters to the needs of the employees, students and residents.

13.12. Schools

Vana Vani Matriculation Higher Secondary School (VVMHSS), administered by the IIT Madras

Educational Trust, and a Kendriya Vidyalaya (KV) function on campus. VVMHSS offers courses from LKG to class 12 and the KV offers courses from class 1 to 12.

13.13. Open-Air Theatre

The Open-Air Theatre (OAT) is used by the Film Club to screen films during weekends. It is also used for other functions of the institute and schools.

Major works proposed are renovation of toilets, re-laying the flooring in gallery, providing PwD-friendly ramps to access the bowl and toilets, providing and laying polished concrete in bowl area, re-laying of flooring in access road on emergency and VIP gate, among others





Works executed

The existing toilets are completely renovated with all new amenities and the provision for PwD-friendly toilets has been incorporated. The overall seating capacities in gallery and bowl have been increased by adding two more steps in gallery. The seating capacity at gallery is now 4,500 against the original capacity of 4000, while the seating capacity at bowl area is 700 against the urinal capacity of 600. PwD Access ramps have been provided to bowl, gallery, stage, green room and toilets. Separate covered rooms have been created for eatery and storage facilities.

13.14. Student Activities Centre

This building is used by students for indoor games. Important functions such as convocations and orientation programmes for freshers are also conducted here.

13.15. Cafeteria

There are two canteens, the IIT Staff Canteen and the IRTC restaurant, on campus to cater to the needs of employees and students.

13.16. Crèche

A crèche is functioning on the campus for the benefit of the staff and working women. There were about 157 children in the crèche during the period under report.

13.17. Transport services

The institute has 12 Lynx buses that provide transport facilities to the staff, students and residents of the campus. Transport facilities are also available for official work.

13.18. Security Section

The Security Section of Indian Institute of Technology is an important constituent of the organisation, as it is vested with the task of ensuring the security of men and materials on the campus. The section is also responsible for the maintenance of peace and ensuring harmonious coexistence of campus residents. As a part of support service, it is on call of the campus residents for various emergencies and contingencies, which may adversely affect the normal life on the campus.

The security policy of IIT Madras is that the core security functions and core areas will be manned by the IIT's own security personnel, and the allied security functions and areas will be outsourced and coordinated by the institute personnel. Similarly, the institute has been progressively introducing greater automation.

This section mainly focuses on the following areas:

- The key responsibilities of the Security Section are to protect institute property and coordinate with the law enforcement agencies.
- Regulating men and materials through all the gates.
- Traffic management
- Patrolling
- Maintenance of fire equipment and fire prevention. Periodical checking or testing of fire equipment.
- Conducting training on fire safety to students, staff, faculty and school children.
- Conducting fire and evacuation drill at high-rise buildings.

Regulating men and materials

The Security Section is vested with the task of ensuring the security of men and materials on the campus by a streamlined way of regulating the movements by issuing passes for vehicles and ID cards for contractors and their workers. The material gate pass system is in place to allow the materials after verifying the specimen signatures. In addition, a token system is in place at certain gates.

Traffic management

The Security Section is vested with the task of ensuring proper traffic management since the campus has been housed with two schools and Tech Kids Day care. The section manages the traffic by diverting vehicles and ensuring speed limits using scientific gadgets to control accidents in the campus. There were no major accidents in the campus.

Gajendra Circle

There is round-the-clock monitoring with specialised umbrella in the Gajendra Circle Point to restrict over-speed, regulate food delivery vehicles such as Swiggy, Zomato and Dunzo, from Residential Zone to Academic and Hostel Zones.

Patrolling

To have an effective patrolling, the entire IITM campus has been divided in three zones: Institute Zone, Residential Zone and Hostel Zone. In addition, the perimeter wall patrolling is also being carried out by foot and vehicles to check the physical condition of the wall and any security breach.

Maintenance of fire equipment and fire prevention

Periodical servicing of fire equipment installed in the buildings is carried out with the objective of keeping readiness all the time to control any fire incidents. There are about 1,500 fire extinguishers of different types and capacities installed in the campus in addition to fixed fire protection system, i.e., sprinklers, wet risers and down comers in addition to yard hydrants, fire detection and alarm system in the multi-storied building, sophisticated and computer centres, etc. Monthly checking of these system is also carried out for their effective use and records with this effect is also maintained with security section.

Security cover for under-care quarters

The Security Section provides security cover to the vacant quarters. During the year under report, there were 32 under-care quarters guarded when the licensees were away from the campus due to various reasons.

Conducting training on fire safety and evacuation drill

During the period under the report, the Security Section has conducted training programme round the year particularly for the students, departmental staffs and faculty to create awareness about the use fire safety equipment in case of fire. For 1,682 students, around 314 Security Staff members have been trained in the year. An evacuation drill for hostel students staying in multi-storied buildings was carried out with the assistance of local fire brigades and students' disaster management cell of the institute.

Fire Training Programme for IIT Security Staff

A fire safety training programme was conducted for the outsourcing security staff, BSNP, SIS and CISS on monthly basis.

Familiarisation training programme for new fire extinguishers

The training programme was conducted for the familiarisation on the use of new fire extinguishers for the security staff (demonstration, operating methods and hands-on practice).

Servicing and maintenance of fire extinguishers



Operation of ABC and CO2 fire extinguishers

We checked and inspected all the fire extinguishers deployed in our campus with institute security and outsourced fire guards due to the absence (during lockdown) of respective AMC vendors.

Testing of fire alarm and detection system

Fire detection and alarm (FDA) system, installed in various buildings was tested jointly with Engineering Unit (EU) and found in order.

Seminar and in-house training programme for security personnel

During the period under report, the institute security personnel attended the workshops and in-house training programme. The details are as follows:

S. No.	Date	Training	No of Persons Attended
1	3 April 2021	Lift car safety and rescue methods	26
2	1 February 2022	CCTV monitoring and handling procedures	12
3	2 March 2022	Professional Development Training Batch I (In-house)	18
4	4 March 2022	Professional Development Training Batch II (In-house)	21



In-house training in DOMS

Independence Day celebrations

The 75th Independence Day was celebrated on 15 August 2021 at Administrative Building. The ceremonial parade was commanded by Chief Security Officer Shri N. Elumalai. As part of the celebration, two platoons of the institute and outsourced security personnel participated in the parade. The Piping Ceremony was also conducted. The promoted security personnel were awarded stars.



Adyar Main Gate integration and automation

Integration and automation of Adyar In/Out gate was formally inaugurated by Prof. Bhaskar Ramamurthi, Director of IIT Madras, on 26 August 2021.

Separate entry for visitors and IITM pass holders

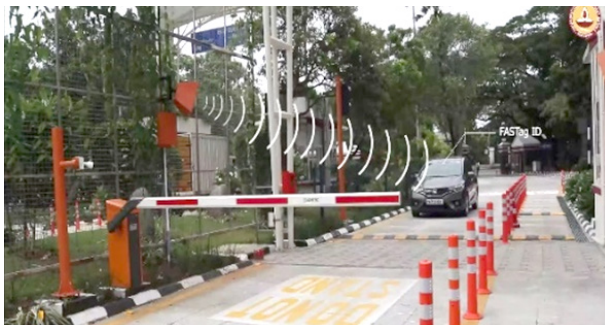
Visitors Entry	IITM Pass Holders
Pedestrians	Bikes
Cyclists	Auto/Car/Truck/bus
Bikes	
Auto/Car/Truck/bus	



Adyar Main Gate In/Out



QR Code Pass



IITM gate pass holders will now have their entry pass integrated into their FASTag ID

Selection procedures for the private security agencies

Thirteen private security agencies were selected and called for the selection process. Eight agencies attended the process, and three agencies were selected and awarded the contract. On January 20, 2022, the new security agencies took over the duty on their respective allocated zones.

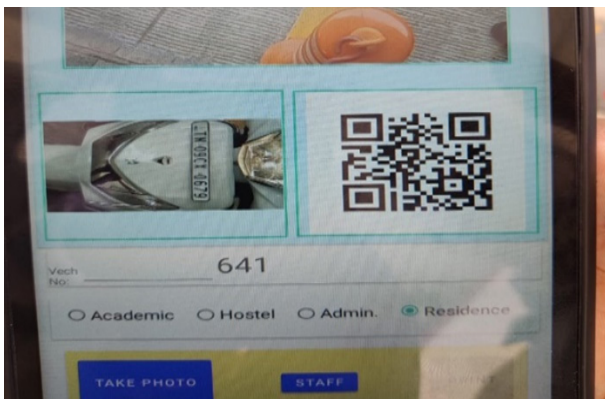


Vehicle loop detector for instant and automated access



The 73rd Republic Day was celebrated at IIT Madras

73rd Republic Day was celebrated in the institute on 26 January 2022 at the Administration Building. Five contingents participated in the ceremonial parade, including Vana Vani School band team. The Best Parade Contingent award and individual turnout from each contingent were suitably awarded. The ceremonial parade was commanded by Chief Security Officer Shri N. Elumalai.



QR Code Generator Tab

Installation of surveillance cameras and monitoring system

The security section periodically checks the cameras installed at all the gates, and academic, hostel and residential areas to monitor the movement of men and materials.

S.No.	Location	No of Cameras
1	Academic Zone	847
2	Residential Zone	98
3	Hostel Zone	266
4	SFC Zone	162
Total no of cameras		1373

Apart from constant Monitoring of gate cameras at the security control, the link for departments and hostels/SFC has been provided to monitor the departments and hostels in security control room. During the period we have installed more than 10 cameras at the Entry/Exit gates, Gajendra circle, Industry-Academic bridge, Research Park gate, Mandakini gate apart from reinforcing the surveillance cameras at Main gate, Velachery gate and Tharamani gate.

Bimonthly checking of all surveillance cameras installed in the campus is being done updating the records.

Perimeter surveillance

An improvised watch tower has been set up to keep vigil on perimeter wall. Security guards have been deployed round the clock with wireless sets. The guards are constantly monitor lakes 1 and 2 and perimeter wall and forested areas. Using drones, videos were captured with high-definition cameras, covering the densely forested areas, perimeter wall and lake areas.

Visitor's Pass

S.No.	Gates	April 2021-March 2022
1	In Gate	444453
2	Velachery Gate	204764
3	Taramani Gate	232253
4	Mandakini Gate	90683
Total		972153

Procurement of gadgets

The institute procured three new speed gun monitors to prevent over-speeding of vehicles and accident on campus. Four fire suits or protective clothing for attending the fire calls were also procured. The set

contains a fire suit, protective clothing for fireman with gloves, boots, and helmets with suitable face shield made out of material capable of reflecting the heat, providing safety to the fire fighter. Three body worn cameras were also procured.



Speed gun, fire suit and camera

Pass section

The colour codes of various online generated passes for the year 2019-2020.



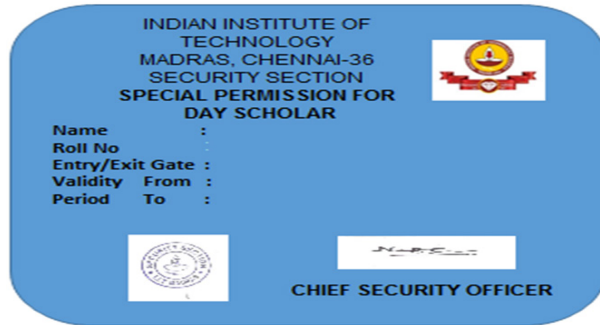
School Vehicle Pass



Project Staff Pass



Alumni Pass



Day Scholar Entry Pass

Cycle token to students

The institute arranged a cycle token counter at Saraswathi Hostel, where the bicycle sales camp was set up. Security personnel were deployed from 28-30 December 2021. Approximately 600 cycle tokens were issued.

The overall amount collected by the pass section of Security Section for the financial year April 2021 to March 2022 was ₹7,24,581.

Other activities

The students who are selected for internship or projects of industries, particularly of security-sensitive jobs in various organisations, are given police clearance certificate from the local police stations with the help of Security Section. The section controls and organises the traffic during events such as marathon and cycling race. The section provides security to various VIPs during their visit for the national and international conferences and functions held at the IIT Madras campus. The section provides security cover during the Gate and JEE examinations as well, among others.



Finance and Account

The financial year of the institute corresponds with that of the Government of India (1 April to 31 March of the following year). The accounts of the institute are annually audited by Office of the Principal Director of Audit (Central), Chennai on behalf of the Comptroller & Auditor General of India.

The 92nd Finance Committee of the institute, in its meeting held on December 3, 2021, recommended revised estimates of ₹673.70 crore (gross) for the year 2021-22 and budget estimates of ₹910 crore (gross) for the year 2022-23 under revenue

expenditure head. The committee also recommended a revised estimate of ₹50 crore for the year 2021-22 and budget estimates of ₹77 crore for the year 2022-23 under the capital expenditure. The same were approved by the Board of Governors of the institute in their 251st meeting, held on December 3, 2021.

The following is a summary of the revised estimates for 2021-22 and budget estimates for 2022-23 under the revenue expenditure and capital expenditure as approved by the Board of Governors of the institute in their 251st meeting held on December 3, 2021.

(Figures in crores of ₹)

Item	Budget Estimate 2021-22	Revised Estimate 2021-22	Budget Estimate 2022-23
Grant under OH-36 and OH31			
Institute income projected	88.00	77.00	84.00
Grant projected for salary (OH-36)	366.00	297.00	360.00
Grant projected for pension and pensionary benefits (OH-31)	132.00	108.00	132.00
Grant for scholarships (OH-31)	130.00	105.00	128.00
Grant for non-salary component (OH-31)	282.00	163.70	290.00
Grant expected under OH-36 and OH-31	910.00	673.70	910.00
Grant under OH-35			
Grant projected for asset creation	75.00	50.00	77.00
Grant expected under OH-35	75.00	50.00	77.00

Audit

The annual accounts of the institute for the year 2020-21 were audited by Office of the Principal Director of Audit (Central), Chennai during July-August 2021, and a certified copy of the Annual

accounts with the audit report was sent to the Ministry of Education (MoE) after the Annual accounts were duly adopted by the Board of Governors of this institute on December 3, 2021 to enable the MoE to arrange for placing the same before both the Houses of Parliament during the winter session.

Summary of provisional revenue and capital grant utilisation for 2021-22

Item	Amount (Figures in crores of ₹)
Grant under OH-35	
Opening balance	-1.05
Grant received under OH-35	256.23
Total funds available under OH-35	255.18
Expenditure under OH-35	
Building and electrical installation	104.74
Academic equipment	118.02
Equipment for specialised centre	
Infrastructure (furniture/computers, etc.)	8.07
Periodicals/journals/books for library	22.60
Total expenditure under OH-35	253.43
Grant under OH-31 and OH-36	
Opening balance	60.99
Grant received under OH-31 and OH-36	646.85
Institute Income (After adjusting HEFA principal repayment of ₹54.30 crore)	32.23
Total funds available under OH-31 and OH-36	740.07
Expenditure under OH-31 and OH-36	
Salary and related items (OH-36)	265.32
Pension and other terminal benefits (OH-31)	115.32
Scholarship payments (OH-31)	95.81
Non-salary, non-pension items (OH-31)	187.57
(Other components)	
Total Expenditure under OH-31 and OH-36	664.02

As on 31 March 2022, the balance of the corpus fund was ₹431.27 crore and institute endowment account was ₹172.20 crore.



Publications

Chapters published in books

1. Baire, B., Gardas, R., Gandhi, S. 2021. Cycloaddition reactions in ionic liquids for the synthesis of biologically relevant heterocycles. *Green Synthetic Approaches for Biologically Relevant Heterocycles: Volume 1: Advanced Synthetic Techniques*, pp 249-295. doi: 10.1016/B978-0-12-820586-0.00006-6
2. Tulo, S.K., Ramu, P., Swaminathan, R. 2021. An automated approach to differentiate drug resistant tuberculosis in chest X-ray images using projection profiling and mediastinal features. *Public Health and Informatics: Proceedings of MIE 2021*, pp 512-513. doi: 10.3233/SHTI210220
3. Lourdusamy, J.B., Czarzasta, R. 2021. India and foreign language teaching: Enhancing A2K through m-learning. *Mobile Technology and Social Transformations: Access to Knowledge in Global Contexts*, pp 17-28. doi: 10.4324/9781003089575-2
4. Tang, W.-S., Benjamin, S. 2021. Land as situated spatio-histories: A dialogue with global urbanism. *Global Urbanism: Knowledge, Power and the City*, pp 284-290. doi: 10.4324/9780429259593-37
5. Karah, H. 2021. The metanarrative of blindness in India: Special education and assumed knowledge cultures. *Metanarratives of Disability: Culture, Assumed Authority, and the Normative Social Order*, pp 30-44
6. Krishnan, R., Phan, P.Y., Kaur, A., Paul, S.K. 2021. Blockchain and allied technologies for food supply chain risk mitigation in global value chains. *The Routledge Companion to Global Value Chains: Reinterpreting and Reimagining Megatrends in the World Economy*, pp 105-122
7. Hasan, D., Kamalanabhan, T.J. 2021. Use of emotional intelligence in human resource management in healthcare organizations for competitive advantage: A systematic literature review. *Management and Marketing for Improved Competitiveness and Performance in the Healthcare Sector*, pp 80-114. doi: 10.4018/978-1-7998-7263-4.ch005
8. Battula, R.K., Ramasamy, E., Bhyrappa, P., Sudakar, C., Veerappan, G. 2021. Oxide free materials for perovskite solar cells. *Oxide Free Nanomaterials for Energy Storage and Conversion Applications*, pp 287-306. doi: 10.1016/B978-0-12-823936-0.00001-2
9. Veeranki, Y.R., Ganapathy, N., Swaminathan, R. 2021. Non-parametric classifiers based emotion classification using electrodermal activity and modified Hjorth features. *Public Health and Informatics: Proceedings of MIE 2021*, pp 163-167. doi: 10.3233/SHTI210141
10. Govindarajan, S., Swaminathan, R. 2021. Performance of SURF and SIFT keypoints for the automated differentiation of abnormality in chest radiographs. *Public Health and Informatics: Proceedings of MIE 2021*, pp 510-511. doi: 10.3233/SHTI210219
11. Selvaraju, V., Karthick, P.A., Swaminathan, R. 2021. Analysis of frequency bands of uterine electromyography signals for the detection of preterm birth. *Public Health and Informatics: Proceedings of MIE 2021*, pp 283-287. doi: 10.3233/SHTI210165
12. Matthew, S., Kumar, A., Subramanian, R. 2021. India and the pain of the last mile: Human-to-human ICT interface for the poor and the marginalized. *Mobile Technology and Social Transformations: Access to Knowledge in Global Contexts*, pp 29-41. doi: 10.4324/9781003089575-3

13. Kalyanaraman, V., Kumar, M.V.A., Nithyadharan, M. 2021. Behavior, analysis, and design of light gauge steel members. *Analysis and Design of Plated Structures: Volume 1: Stability*, pp 497-538. doi: 10.1016/B978-0-12-823570-6.00002-1
14. Ravichandran, S., Verma, G. 2021. Advanced biotechnology-based therapeutics. *Translational Biotechnology: A Journey from Laboratory to Clinics*, pp 53-77. doi: 10.1016/B978-0-12-821972-0.00009-5
15. Kumar, H., Ganapathy, N., Puthankattil, S.D., Swaminathan, R. 2021. Emotion recognition in EEG signals using decision fusion based electrode selection. *Public Health and Informatics: Proceedings of MIE 2021*, pp 153-157. doi: 10.3233/SHTI210139
16. Padman, R., Krishnan, R., Agarwal, R. 2021. Integration of ICT systems and processes: Supply chain, process management and patient safety with data analytics to enhance healthcare delivery. *The Routledge Companion to Global Value Chains: Reinterpreting and Reimagining Megatrends in the World Economy*, pp 91-104
17. Makaram, N., Arjunan, S.P., Kumar, D., Swaminathan, R. 2021. Spatial intensity map of HDEMG based classification of muscle fatigue. *Public Health and Informatics: Proceedings of MIE 2021*, pp 508-509. doi: 10.3233/SHTI210218
18. Shiva, J., Makaram, N., Karthick, P.A., Swaminathan, R. 2021. Emotion recognition using spectral feature from facial electromyography signals for human-machine interface. *Public Health and Informatics: Proceedings of MIE 2021*, pp 486-487. doi: 10.3233/SHTI210207
19. Shaji, S., Ganapathy, N., Swaminathan, R. 2021. Differentiation of Alzheimer conditions in MR brain images using a single inception module network. *Public Health and Informatics: Proceedings of MIE 2021*, pp 158-162. doi: 10.3233/SHTI210140
7. Vaisakh, S., Muruganandam, T.M. 2021. *Lecture Notes in Mechanical Engineering*, pp 349-356. doi: 10.1007/978-981-15-5039-3_20. ISSN-21954356
8. Bhavya, S., Mahesh, U., Velmurugan, R., Sarathi, R. 2021. *Lecture Notes in Mechanical Engineering*, pp 761-769. doi: 10.1007/978-981-15-7711-6_75. ISSN-21954356
9. Prasad, G.K., Kumar, A. 2021. *Lecture Notes in Mechanical Engineering*, pp 717-732. doi: 10.1007/978-981-15-5996-9_57. ISSN-21954356
10. Srivastav, V., Sabarilal, S., Kumar, A. 2021. *Lecture Notes in Mechanical Engineering*, pp 929-939. doi: 10.1007/978-981-15-5996-9_71. ISSN-21954356
11. Kallakunta, K.P.V.A.S.N., Sathiyavageeswaran, S., Chakravarthy, S.R. 2021. *Lecture Notes in Mechanical Engineering*, pp 365-372. doi: 10.1007/978-981-16-0698-4_39. ISSN-21954356
12. Akhare, D., Nandyala, H.P., Kumar, A., Jayachandran, T. 2021. *Lecture Notes in Mechanical Engineering*, pp 427-447. doi: 10.1007/978-981-15-5039-3_26. ISSN-21954356
13. Ramachandra, K., Bhardwaj, S., Sriram, R. 2021. *Lecture Notes in Mechanical Engineering*, pp 693-700. doi: 10.1007/978-981-16-0698-4_76. ISSN-21954356
14. Shah, C.L., Majumdar, D., Sarkar, S. 2021. *Lecture Notes in Mechanical Engineering*, pp 259-270. doi: 10.1007/978-981-15-8315-5_23. ISSN-21954356
15. Bose, C., Chatterjee, R., Gupta, S., Sarkar, S. 2021. *Lecture Notes in Mechanical Engineering*, pp 453-463. doi: 10.1007/978-981-15-8315-5_38. ISSN-21954356
16. Majumdar, D., Bose, C., Sarkar, S. 2021. *Lecture Notes in Mechanical Engineering*, pp 271-281. doi: 10.1007/978-981-15-8315-5_24. ISSN-21954356
17. Baraiya, N.A., Chakravarthy, S.R. 2021. *Lecture Notes in Mechanical Engineering*, pp 901-908. doi: 10.1007/978-981-16-0159-0_80. ISSN-21954356

Chapters published in book series

1. Chinnapandi, M., Katiyar, A., Nandi, T., Velmurugan, R. 2021. *Lecture Notes in Mechanical Engineering*, pp 749-759. doi: 10.1007/978-981-15-7711-6_74. ISSN-21954356
2. Janakiram, S., Muruganandam, T.M. 2021. *Lecture Notes in Mechanical Engineering*, pp 449-464. doi: 10.1007/978-981-15-5039-3_27. ISSN-21954356
3. Pinto, R.S., Gagana, S., Sree Renganathan, T., Hamid Ansari, S.M.D., Muruganandam, T.M. 2021. *Lecture Notes in Mechanical Engineering*, pp 697-705. doi: 10.1007/978-981-15-5996-9_55. ISSN-21954356
4. Aswathy, M.S., Sarkar, S. 2021. *Lecture Notes in Mechanical Engineering*, pp 521-527. doi: 10.1007/978-981-15-5862-7_42. ISSN-21954356
5. Baraiya, N.A., Chakravarthy, S.R. 2021. *Lecture Notes in Mechanical Engineering*, pp 891-900. doi: 10.1007/978-981-16-0159-0_79. ISSN-21954356
6. Vaisakh, S., Muruganandam, T.M. 2021. *Lecture Notes in Mechanical Engineering* Vol. 53, pp 177-184. doi: 10.1007/978-981-15-9601-8_12. ISSN-21954356
18. Kumar, P., Mahesh, S. 2021. *Lecture Notes in Mechanical Engineering*, pp 721-727. doi: 10.1007/978-981-15-7711-6_71. ISSN-21954356
19. Majumdar, D., Bose, C., Dhareshwar, P., Sarkar, S. 2021. *Lecture Notes in Mechanical Engineering*, pp 509-519. doi: 10.1007/978-981-15-5862-7_41. ISSN-21954356
20. Sundar, R., Ghorpade, A., Jith, J., Gupta, S., Sarkar, S. 2021. *Lecture Notes in Mechanical Engineering*, pp 249-258. doi: 10.1007/978-981-15-8315-5_22. ISSN-21954356
21. Shrivastava, P., Ram, D., Muruganandam, T.M. 2021. *Lecture Notes in Mechanical Engineering*, pp 707-715. doi: 10.1007/978-981-15-5996-9_56. ISSN-21954356
22. Udatha, P., Sekhar, A.S., Velmurugan, R. 2021. *Lecture Notes in Mechanical Engineering*, pp 51-63. doi: 10.1007/978-981-15-5701-9_5. ISSN-21954356
23. Akash, B., Thomas, S., Muruganandam, T.M. 2021. *Lecture Notes in Mechanical Engineering*, pp 337-348. doi: 10.1007/978-981-15-5039-3_19. ISSN-21954356
24. Bose, C., Gupta, S., Sarkar, S. 2021. *Notes on Numerical Fluid Mechanics and Multidisciplinary Design* Vol. 147,

- pp 135-148. doi: 10.1007/978-3-030-55594-8_14. ISSN-16122909
25. Shahab, M.A., Srinivasan, B., Srinivasan, R. 2021. *Computer Aided Chemical Engineering* Vol. 50, pp 1307-1312. doi: 10.1016/B978-0-323-88506-5.50201-1. ISSN-15707946
26. Bose, C., Gupta, S., Sarkar, S. 2021. *Notes on Numerical Fluid Mechanics and Multidisciplinary Design* Vol. 147, pp 135-148. doi: 10.1007/978-3-030-55594-8_14. ISSN-16122909
27. Nagesh, A.K., Ghosh, P. 2021. *RILEM Bookseries* Vol. 32, pp 69-77. doi: 10.1007/978-3-030-76547-7_7. ISSN-22110844
28. Mukherjee, A., Mundwaik, A., Ali, S.F., Arockiarajan, A. 2021. *Lecture Notes in Mechanical Engineering*, pp 587-596. doi: 10.1007/978-981-15-8315-5_50. ISSN-21954356
29. Ray, R.K., Manivannan, M. 2021. *Advances in Intelligent Systems and Computing* Vol. 1378, pp 463-470. doi: 10.1007/978-3-030-74009-2_59. ISSN-21945357
30. Manohar Teja, K., Narasimhamurthy, V.D. 2021. *Lecture Notes in Mechanical Engineering*, pp 241-246. doi: 10.1007/978-981-15-5183-3_26. ISSN-21954356
31. De Manabendra, M., Mathur, J.S., Vengadesan, S. 2021. *Lecture Notes in Mechanical Engineering* Vol. 53, pp 197-210. doi: 10.1007/978-981-15-9601-8_14. ISSN-21954356
32. Banerjee, S.S., Arunachalaksi, A., Swaminathan, R. 2021. *Lecture Notes in Mechanical Engineering*, pp 109-119. doi: 10.1007/978-981-15-8315-5_10. ISSN-21954356
33. Shevkar, P.P., Mohanan, S.K., Puthenveetil, B.A. 2021. *Lecture Notes in Mechanical Engineering*, pp 69-77. doi: 10.1007/978-981-15-5183-3_8. ISSN-21954356
34. Hussain, R., Kumar, B.G., Prakash, K.A. 2021. *Lecture Notes in Mechanical Engineering*, pp 213-221. doi: 10.1007/978-981-16-0698-4_23. ISSN-21954356
35. Bhattacharyya, S., Ali, S.F. 2021. *Lecture Notes in Mechanical Engineering*, pp 563-571. doi: 10.1007/978-981-15-8315-5_48. ISSN-21954356
36. Bose, C., Chatterjee, R., Gupta, S., Sarkar, S. 2021. *Lecture Notes in Mechanical Engineering*, pp 453-463. doi: 10.1007/978-981-15-8315-5_38. ISSN-21954356
37. Jakkala, S.G., Vengadesan, S. 2021. *Lecture Notes in Mechanical Engineering*, pp 639-646. doi: 10.1007/978-981-16-0698-4_70. ISSN-21954356
38. Pant, A., Puthenveetil, B.A. 2021. *Lecture Notes in Mechanical Engineering*, pp 25-32. doi: 10.1007/978-981-15-5183-3_3. ISSN-21954356
39. Hari, L.M., Jero, S.E., Venugopal, G., Ramakrishnan, S. 2021. *Lecture Notes in Mechanical Engineering*, pp 99-108. doi: 10.1007/978-981-15-8315-5_9. ISSN-21954356
40. Saha, S., Purushotham, T., Prakash, K.A. 2021. *Lecture Notes in Mechanical Engineering*, pp 87-97. doi: 10.1007/978-981-15-8315-5_8. ISSN-21954356
41. Kumar, R., Gupta, S., Ali, S.F. 2021. *Lecture Notes in Mechanical Engineering*, pp 21-33. doi: 10.1007/978-981-15-5862-7_3. ISSN-21954356
42. Sundar, R., Ghorpade, A., Jith, J., Gupta, S., Sarkar, S. 2021. *Lecture Notes in Mechanical Engineering*, pp 249-258. doi: 10.1007/978-981-15-8315-5_22. ISSN-21954356
43. Vasanth Kumar, G., Mukherjee, R. 2021. *Lecture Notes in Mechanical Engineering*, pp 247-255. doi: 10.1007/978-981-15-5183-3_27. ISSN-21954356
44. Bhattacharya, P., Raman, K., Tangirala, A.K. 2021. *Methods in Molecular Biology* Vol. 2189, pp 133-155. doi: 10.1007/978-1-0716-0822-7_11. ISSN-10643745
45. Perumal, G., Doble, M. 2021. *Springer Series in Biomaterials Science and Engineering* Vol. 16, pp 317-334. doi: 10.1007/978-981-33-6252-9_12. ISSN-21950644
46. Joy, S.P., Krishnan, C. 2021. *Methods in Molecular Biology* Vol. 2290, pp 115-127. doi: 10.1007/978-1-0716-1323-8_8. ISSN-10643745
47. Amal Jude Ashwin, F., Chakravarthy, V.S., Koppurapu, S.K. 2021. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* Vol. 12848, pp 425-434. doi: 10.1007/978-3-030-83527-9_36. ISSN-03029743
48. Shahab, M.A., Srinivasan, B., Srinivasan, R. 2021. *Computer Aided Chemical Engineering* Vol. 50, pp 1307-1312. doi: 10.1016/B978-0-323-88506-5.50201-1. ISSN-15707946
49. Bhattacharya, P., Raman, K., Tangirala, A.K. 2021. *Methods in Molecular Biology* Vol. 2189, pp 133-155. doi: 10.1007/978-1-0716-0822-7_11. ISSN-10643745
50. Ramanan, S.V., Srinivasan, R. 2021. *Computer Aided Chemical Engineering* Vol. 50, pp 1787-1793. doi: 10.1016/B978-0-323-88506-5.50277-1. ISSN-15707946
51. Sukanya, G., Suresh, R., Rengaswamy, R. 2021. *Computer Aided Chemical Engineering* Vol. 50, pp 487-492. doi: 10.1016/B978-0-323-88506-5.50077-2. ISSN-15707946
52. Das, I., Ramkumar, V., Gardas, R.L. 2021. *Green Energy and Technology*, pp 123-140. doi: 10.1007/978-981-16-0029-6_9. ISSN-18653529
53. Ramakrishnan, G.A., Srinivasan, K.K., Mondal, A., Bhat, C.R. 2021. *Transportation Research Record* Vol. 2675, Issue 7, pp 377-391. doi: 10.1177/03611981211017908. ISSN-03611981
54. Llano-Torre, A., Cavalaro, S.H.P., Kompatscher, M., et al. 2021. *RILEM State-of-the-Art Reports* Vol. 34, pp 47-117. doi: 10.1007/978-3-030-72736-9_5. ISSN-2213204X
55. Bhadaniya, P., Reja, V.K., Varghese, K. 2021. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* Vol. 12667, pp 389-403. doi: 10.1007/978-3-030-68787-8_29. ISSN-03029743
56. Padmaraj, D., Arnepalli, D.N. 2021. *Lecture Notes in Civil Engineering* Vol. 88, pp 483-491. doi: 10.1007/978-981-15-6237-2_40. ISSN-23662557
57. Gedela, R., Karpurapu, R. 2021. *Lecture Notes in Civil*

- Engineering* Vol. 86, pp 715-726. doi: 10.1007/978-981-15-6233-4_51. ISSN-23662557
- 58.Sagadevan, R., Rao, B.N. 2021. *Lecture Notes in Civil Engineering* Vol. 94, pp 85-97. doi: 10.1007/978-981-15-7222-7_8. ISSN-23662557
- 59.Dhanya, J., Jayalakshmi, S., Raghukanth, S.T.G. 2021. *Lecture Notes in Civil Engineering* Vol. 103, pp 351-365. doi: 10.1007/978-981-15-8138-0_28. ISSN-23662557
- 60.Devapriya, A.S., Thyagaraj, T. 2021. *Lecture Notes in Civil Engineering* Vol. 134, pp 75-84. doi: 10.1007/978-981-33-6370-0_7. ISSN-23662557
- 61.Shanmuga Priya, R., Thyagaraj, T. 2021. *Lecture Notes in Civil Engineering* Vol. 159, pp 137-147. doi: 10.1007/978-981-16-2260-1_13. ISSN-23662557
- 62.Sagadevan, R. and Rao, B.N. 2021. *Advances in Structural Technologies*, pp 233-247. doi: 10.1007/978-981-15-5235-9_18. ISSN-23662557
- 63.Joseph, M., Banerjee, S. 2021. *Lecture Notes in Civil Engineering* Vol. 86, pp 181-193. doi: 10.1007/978-981-15-6233-4_13. ISSN-23662557
- 64.Kesavan, P., Menon, A. 2021. *Lecture Notes in Civil Engineering* Vol. 103, pp 413-429. doi: 10.1007/978-981-15-8138-0_32. ISSN-23662557
- 65.Geevar, I., Adrija, D., Menon, D., Meher Prasad, A. 2021. *Springer Science and Business Media Deutschland GmbH* Vol. 83, p 14-Jan. doi: 10.1007/978-981-15-5644-9_1. ISSN-23662557
- 66.Madhusudhan, B.R., Boominathan, A., Banerjee, S. 2021. *Lecture Notes in Civil Engineering* Vol. 119, pp 23-34. doi: 10.1007/978-981-33-4001-5_3. ISSN-23662557
- 67.Dhanya, J.S., Boominathan, A., Banerjee, S. 2021. *Lecture Notes in Civil Engineering* Vol. 144, pp 139-146. doi: 10.1007/978-981-16-0077-7_14. ISSN-23662557
- 68.Prabavathy, S., Rajagopal, K., Kumar Pitchumani, N. 2021. *Lecture Notes in Civil Engineering* Vol. 137, pp 427-436. doi: 10.1007/978-981-33-6466-0_39. ISSN-23662557
- 69.Jayapal, J., Rajagopal, K. 2021. *Lecture Notes in Civil Engineering* Vol. 137, pp 447-459. doi: 10.1007/978-981-33-6466-0_41. ISSN-23662557
- 70.Prabavathy, S., Rajagopal, K., Pitchumani, K. 2021. *Lecture Notes in Civil Engineering* Vol. 126, pp 833-840. doi: 10.1007/978-3-030-64518-2_99. ISSN-23662557
- 71.Suresh Kumar, R., Kaushik Rao, B.N., Velusamy, K. 2021. *Lecture Notes in Mechanical Engineering*, pp 143-151. doi: 10.1007/978-981-15-4779-9_12. ISSN-21954356
- 72.Majumder, A., Roy, R., Banerjee, S., Mukherjee, S., Biswas, S.K. 2021. *Lecture Notes in Civil Engineering* Vol. 137, pp 285-296. doi: 10.1007/978-981-33-6466-0_27. ISSN-23662557
- 73.Stephen, S.J., Gettu, R. 2021. *RILEM Bookseries* Vol. 30, pp 770-775. doi: 10.1007/978-3-030-58482-5_68. ISSN-22110844
- 74.Kalathil, S.T., Murugesan, M.R., Chandra, V. 2021. *Lecture Notes in Civil Engineering* Vol. 115, pp 209-216. doi: 10.1007/978-981-15-9805-0_17. ISSN-23662557
- 75.Manohar, S., Santhanam, M. 2021. *RILEM Bookseries* Vol. 29, p 19-Sep. doi: 10.1007/978-3-030-51485-3_2. ISSN-22110844
- 76.Chavda, J.T., Dodagoudar, G.R. 2021. *Lecture Notes in Civil Engineering* Vol. 133, pp 273-283. doi: 10.1007/978-981-33-6346-5_24. ISSN-23662557
- 77.Boominathan, A., Dhanya, J.S., Silpa, P.J. 2021. *Lecture Notes in Civil Engineering* Vol. 125, pp 205-212. doi: 10.1007/978-3-030-64514-4_14. ISSN-23662557
- 78.Venkatesh, B., Thyagaraj, T. 2021. *Lecture Notes in Civil Engineering* Vol. 118, pp 179-186. doi: 10.1007/978-981-15-9988-0_17. ISSN-23662557
- 79.Agrawal, S., Goldwasser, S., Mossel, S. 2021. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* Vol. 12826, pp 641-670. doi: 10.1007/978-3-030-84245-1_22. ISSN-03029743
- 80.Agrawal, S., Goyal, R., Tomida, J. 2021. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* Vol. 12828, pp 208-238. doi: 10.1007/978-3-030-84259-8_8. ISSN-03029743
- 81.Kaurav, S., Ganesan, D., P, D., Chakraborti, S. 2021. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* Vol. 12877, pp 110-124. doi: 10.1007/978-3-030-86957-1_8. ISSN-03029743
- 82.Datta, S., Tawari, A., Vasudev, Y. 2021. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* Vol. 12730, pp 56-77. doi: 10.1007/978-3-030-79416-3_4. ISSN-03029743
- 83.Sharma, A., Jayakumar, J., Sankaran, N., Mitra, P.P., Chakraborti, S., Sreenivasa Kumar, P. 2021. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* Vol. 12960, pp 235-244. doi: 10.1007/978-3-030-86993-9_22. ISSN-03029743
- 84.Agrawal, S., Ishai, Y., Rosen, A., et al. 2021. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* Vol. 12826, pp 124-154. doi: 10.1007/978-3-030-84245-1_5. ISSN-03029743
- 85.Agrawal, S., Maitra, M., Vempati, N.S., Yamada, S. 2021. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* Vol. 12828, pp 239-269. doi: 10.1007/978-3-030-84259-8_9. ISSN-03029743
- 86.Chelladurai, J., Santhiappan, S., Ravindran, B. 2021. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* Vol. 12712, pp 225-237. doi: 10.1007/978-3-030-75762-5_19. ISSN-03029743

- 87.Srinivasan, A., Narayanaswamy, N.S. 2021. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* Vol. 12601, pp 247-258. doi: 10.1007/978-3-030-67899-9_19. ISSN-03029743
- 88.Manoharan, A., Ramesh, R., Ravindran, B. 2021. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* Vol. 12458, pp 509-524. doi: 10.1007/978-3-030-67661-2_30. ISSN-03029743
- 89.Padhiyar, S., Sivaramakrishnan, K.C. 2021. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* Vol. 12548, pp 127-144. doi: 10.1007/978-3-030-67438-0_8. ISSN-03029743
- 90.Ghosal, P., Rao, B.V.R. 2021. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* Vol. 12730, pp 147-169. doi: 10.1007/978-3-030-79416-3_9. ISSN-03029743
- 91.Subramanian, R., Ganesan, D., P, D., Chakraborti, S. 2021. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* Vol. 12877, pp 201-215. doi: 10.1007/978-3-030-86957-1_14. ISSN-03029743
- 92.Kulkarni, M.S., Sarma, J., Sundaresan, J. 2021. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* Vol. 12638, pp 29-40. doi: 10.1007/978-3-030-68195-1_3. ISSN-03029743
- 93.Agrawal, S., Goyal, R., Tomida, J. 2021. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* Vol. 13043, pp 224-255. doi: 10.1007/978-3-030-90453-1_8. ISSN-03029743
- 94.Bhattacharya, E. 2021. *SpringerBriefs in Materials*, pp 21-53. doi: 10.1007/978-3-030-92714-1_3. ISSN-21921091
- 95.Bhattacharya, E. 2021. *SpringerBriefs in Materials*, pp 105-107. doi: 10.1007/978-3-030-92714-1_6. ISSN-21921091
- 96.Nimisha, T.M., Rajagopalan, A.N. 2021. *Advances in Computer Vision and Pattern Recognition*, pp 119-136. doi: 10.1007/978-3-030-74697-1_6. ISSN-21916586
- 97.Bhattacharya, E. 2021. *SpringerBriefs in Materials*, p 19-Nov. doi: 10.1007/978-3-030-92714-1_2. ISSN-21921091
- 98.Bhattacharya, E. 2021. *SpringerBriefs in Materials*, pp 77-103. doi: 10.1007/978-3-030-92714-1_5. ISSN-21921091
- 99.Bhattacharya, E. 2021. *SpringerBriefs in Materials*, pp 55-76. doi: 10.1007/978-3-030-92714-1_4. ISSN-21921091
- 100.Bhattacharya, E. 2021. *SpringerBriefs in Materials*, p 10-Jan. doi: 10.1007/978-3-030-92714-1_1. ISSN-21921091
- 101.Aniruddhan, S. 2021. *Lecture Notes in Electrical Engineering* Vol. 719, pp 89-116. doi: 10.1007/978-981-15-9865-4_6. ISSN-18761100
- 102.Ranjan, A., George, B., Mukhopadhyay, S.C. 2021. *Smart Sensors, Measurement and Instrumentation* Vol. 36, pp 23-34. doi: 10.1007/978-3-030-62684-6_2. ISSN-21948402
- 103.Raju, J.C., Gayatri, K.S., Ram, K., Rangasami, R., Ramachandran, R., Sivaprakasam, M. 2021. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* Vol. 12966, pp 327-336. doi: 10.1007/978-3-030-87589-3_34. ISSN-03029743
- 104.Bhavya, S., Mahesh, U., Velmurugan, R., Sarathi, R. 2021. *Lecture Notes in Mechanical Engineering*, pp 761-769. doi: 10.1007/978-981-15-7711-6_75. ISSN-21954356
- 105.Barik, T.K., Maity, G.C., Gupta, P., Mohan, L., Santra, T.S. 2021. *Springer Series in Biomaterials Science and Engineering* Vol. 16, p 27-Jan. doi: 10.1007/978-981-33-6252-9_1. ISSN-21950644
- 106.Shinde, A.S., Shinde, P.S., Santra, T.S. 2021. *Springer Series in Biomaterials Science and Engineering* Vol. 16, pp 253-296. doi: 10.1007/978-981-33-6252-9_10. ISSN-21950644
- 107.Keerthiga, G., Gupta, P., Santra, T.S. 2021. *Springer Series in Biomaterials Science and Engineering* Vol. 16, pp 211-252. doi: 10.1007/978-981-33-6252-9_9. ISSN-21950644
- 108.Rao, B.C. 2021. *Contributions to Management Science*, pp 83-94. doi: 10.1007/978-3-030-67119-8_4. ISSN-14311941
- 109.Illath, K., Wankhar, S., Mohan, L., Nagai, M., Santra, T.S. 2021. *Springer Series in Biomaterials Science and Engineering* Vol. 16, pp 29-81. doi: 10.1007/978-981-33-6252-9_2. ISSN-21950644
- 110.Nagar, D., Ramu, P., Deb, K. 2021. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* Vol. 12654, pp 645-655. doi: 10.1007/978-3-030-72062-9_51. ISSN-03029743
- 111.Anand, V.K., Grampurohit, S., Krishnamurthi, G., et al. 2021. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* Vol. 12659, pp 310-319. doi: 10.1007/978-3-030-72087-2_27. ISSN-03029743
- 112.Sivasankaran, S.K., Balasubramanian, V. 2021. *Lecture Notes in Networks and Systems* Vol. 221, pp 825-833. doi: 10.1007/978-3-030-74608-7_101. ISSN-23673370
- 113.Ashtekar, V., Bandyopadhyay, S. 2021. *Lecture Notes in Mechanical Engineering*, pp 843-859. doi: 10.1007/978-981-15-4477-4_60. ISSN-21954356
- 114.Pakkathillam, J.K., Nair, N.M., Swaminathan, P., Arunachalam, K. 2021. *Lecture Notes in Mechanical Engineering*, pp 219-228. doi: 10.1007/978-981-16-0186-6_22. ISSN-21954356
- 115.Natarajan, P., Balukkannu, A., Balasubramanian, V. 2021. *Lecture Notes in Networks and Systems* Vol. 222, pp 136-142. doi: 10.1007/978-3-030-74611-7_19. ISSN-23673370

116. Parameswaran, S., Ramesh, A., Balasubramanian, V. 2021. *Lecture Notes in Networks and Systems* Vol. 221, pp 784-791. doi: 10.1007/978-3-030-74608-7_96. ISSN-23673370
117. Sivasankaran, S.K., Balasubramanian, V. 2021. *Lecture Notes in Networks and Systems* Vol. 221, pp 814-824. doi: 10.1007/978-3-030-74608-7_100. ISSN-23673370
118. Ghanakota, K.C., Ramanujam, S., Arunachalam, K. 2021. *Lecture Notes in Mechanical Engineering*, pp 261-269. doi: 10.1007/978-981-16-0186-6_26. ISSN-21954356
119. Yadam, Y.R., Ramanujam, S., Arunachalam, K. 2021. *Lecture Notes in Mechanical Engineering*, pp 203-210. doi: 10.1007/978-981-16-0186-6_20. ISSN-21954356
120. Srinath, Balasubramanian, V. 2021. *Lecture Notes in Networks and Systems* Vol. 222, pp 802-811. doi: 10.1007/978-3-030-74611-7_109. ISSN-23673370
121. Jayaraman, R., Solomon, J.S., Sridhar, N., Krishnamurthy, C.V., Arunachalam, K. 2021. *Lecture Notes in Mechanical Engineering*, pp 239-248. doi: 10.1007/978-981-16-0186-6_24. ISSN-21954356
122. Prasad, P.K., Bandyopadhyay, S. 2021. *Lecture Notes in Mechanical Engineering*, pp 69-85. doi: 10.1007/978-981-15-4477-4_6. ISSN-21954356
123. Natarajan, P., Balukkannu, A., Balasubramanian, V. 2021. *Lecture Notes in Networks and Systems* Vol. 221, pp 766-777. doi: 10.1007/978-3-030-74608-7_94. ISSN-23673370
124. Jos, B.C., Rajendran, C., Ziegler, H. 2021. *International Series in Operations Research and Management Science* Vol. 304, pp 165-184. doi: 10.1007/978-3-030-69265-0_6. ISSN-08848289
125. Shenoi, V.V., Dath, T.N.S., Rajendran, C. 2021. *International Series in Operations Research and Management Science* Vol. 304, pp 107-145. doi: 10.1007/978-3-030-69265-0_4. ISSN-08848289
126. Hansuwa, S., Mohan, U., Ganesan, V.K. 2021. *IFIP Advances in Information and Communication Technology* Vol. 633, pp 705-713. doi: 10.1007/978-3-030-85910-7_74. ISSN-18684238
127. Katiyar, S.K., Chand, A.K.B. 2021. *Advances in Intelligent Systems and Computing* Vol. 1170, pp 205-215. doi: 10.1007/978-981-15-5411-7_16. ISSN-21945357
128. Chand, A.K.B., Reddy, K.M. 2021. *Advances in Intelligent Systems and Computing* Vol. 1170, pp 253-267. doi: 10.1007/978-981-15-5411-7_20. ISSN-21945357
129. Mishra, K.K., Dubey, S. 2021. *Communications in Computer and Information Science* Vol. 1345, pp 79-90. doi: 10.1007/978-981-16-4772-7_6. ISSN-18650929
130. Jha, S., Chand, A.K.B. 2021. *Advances in Intelligent Systems and Computing* Vol. 1170, pp 229-241. doi: 10.1007/978-981-15-5411-7_18. ISSN-21945357
131. May, A., Nowakowski, J., Sarkar, S. 2021. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* Vol. 13090, pp 99-129. doi: 10.1007/978-3-030-92062-3_4. ISSN-03029743
132. Liu, F., Sarkar, S., Meier, W., Isobe, T. 2021. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* Vol. 13090, pp 214-240. doi: 10.1007/978-3-030-92062-3_8. ISSN-03029743
133. Adak, D., Manzini, G., Natarajan, S. 2021. *SEMA SIMAI Springer Series* Vol. 27, pp 259-297. doi: 10.1007/978-3-030-69363-3_7. ISSN-21993041
134. Kashyap, V., Ramkumar, P. 2021. *Lecture Notes in Mechanical Engineering*, pp 185-192. doi: 10.1007/978-981-15-7711-6_20. ISSN-21954356
135. Durgam, S., Venkateshan, S., Sundararajan, T., Nandgaonkar, M., Sawarkar, P.D., Durgam, A. 2021. *Lecture Notes in Mechanical Engineering*, pp 59-65. doi: 10.1007/978-981-15-3639-7_8. ISSN-21954356
136. Korade, A.T., Rakshit, S. 2021. *Lecture Notes in Mechanical Engineering*, pp 149-156. doi: 10.1007/978-981-15-5862-7_13. ISSN-21954356
137. Jayakrishnan, S., Koodalil, D., Suresh, N., Balasubramanian, K. 2021. *Lecture Notes in Mechanical Engineering*, pp 307-315. doi: 10.1007/978-981-16-0186-6_30. ISSN-21954356
138. Buchaiah, S., Shakya, P. 2021. *Lecture Notes in Mechanical Engineering*, pp 341-350. doi: 10.1007/978-981-15-5701-9_28. ISSN-21954356
139. Periyanan, S., Balasubramanian, K. 2021. *Lecture Notes in Mechanical Engineering*, pp 97-105. doi: 10.1007/978-981-16-0186-6_10. ISSN-21954356
140. Patil, S., Sahu, S. 2021. *Lecture Notes in Mechanical Engineering*, pp 671-680. doi: 10.1007/978-981-15-5996-9_53. ISSN-21954356
141. Rajesh, R., Manivannan, P.V. 2021. *Lecture Notes in Mechanical Engineering*, pp 369-379. doi: 10.1007/978-981-15-9853-1_31. ISSN-21954356
142. Kumar, P., Tiwari, S. 2021. *Lecture Notes in Mechanical Engineering*, pp 275-284. doi: 10.1007/978-981-16-0698-4_30. ISSN-21954356
143. Dinachandra, M., Durga Rao, S.S., Sethuraman, R. 2021. *Lecture Notes in Mechanical Engineering*, pp 543-554. doi: 10.1007/978-981-15-5862-7_44. ISSN-21954356
144. Syed Akbar Ali, M.S., Rajagopal, P. 2021. *Lecture Notes in Mechanical Engineering*, pp 381-394. doi: 10.1007/978-981-16-0186-6_36. ISSN-21954356
145. Saraswat, A., Prajapati, A.K., Bhattacharyay, R., Chaudhuri, P., Gedupudi, S. 2021. *Lecture Notes in Mechanical Engineering*, pp 555-566. doi: 10.1007/978-981-15-9678-0_48. ISSN-21954356
146. Prakash, R.V., Maharana, M. 2021. *Smart Innovation, Systems and Technologies*, 223: 693-704. doi: 10.1007/978-981-16-0084-5_57. ISSN-21903018
147. Vijjapu, R., Tiwari, S. 2021. *Lecture Notes in Mechanical Engineering*, pp 435-443. doi: 10.1007/978-981-16-0698-

4_47. ISSN-21954356

148.Pathak, M., Gautam, M., Rakshit, S. 2021. *Lecture Notes in Mechanical Engineering*, pp 239-253. doi: 10.1007/978-981-15-4477-4_17. ISSN-21954356

149.Raghavendran, R., Meena, A., Amirthalingam, M. 2021. *Materials Science Forum*, 1016: 1199-1204. doi: 10.4028/www.scientific.net/MSF.1016.1199. ISSN-02555476

150.Manoj Kumar, Mallikarjuna, J.M. 2021. *Lecture Notes in Mechanical Engineering*, pp 85-97. doi: 10.1007/978-981-15-5996-9_7. ISSN-21954356

151.Anand Kumar, S., Dumpala, R., Uday Venkat Kiran, K., Gnanamoorthy, R. 2021. *Lecture Notes in Mechanical Engineering*, pp 629-636. doi: 10.1007/978-981-15-3639-7_75. ISSN-21954356

152.Joseph Winston, S., Manivannan, P.V. 2021. *Lecture Notes in Mechanical Engineering*, pp 541-549. doi: 10.1007/978-981-15-9853-1_45. ISSN-21954356

153.Saini, R.S.T., Kumar, H., Chandramohan, S., Srinivasan, S. 2021. *Lecture Notes in Mechanical Engineering*, pp 465-474. doi: 10.1007/978-981-15-8315-5_39. ISSN-21954356

154.Singh, A., Prasad, B.V.S.S.S. 2021. *Lecture Notes in Mechanical Engineering*, pp 117-126. doi: 10.1007/978-981-15-7711-6_12. ISSN-21954356

155.Prabakaran, A., Sarkar, A. 2021. *Lecture Notes in Mechanical Engineering* Vol. 58, pp 433-439. doi: 10.1007/978-981-15-8049-9_27. ISSN-21954356

156.Parmar, A., Ramkumar, P., Shankar, K. 2021. *Lecture Notes in Mechanical Engineering*, pp 367-376. doi: 10.1007/978-981-15-7711-6_38. ISSN-21954356

157.Shet, V.V., Sekhar, A.S., Prasad, B.V.S.S.S. 2021. *Lecture Notes in Mechanical Engineering*, pp 227-236. doi: 10.1007/978-981-15-5701-9_19. ISSN-21954356

158.Jayakrishnan, R., Tiwari, S. 2021. *Lecture Notes in Mechanical Engineering*, pp 255-262. doi: 10.1007/978-981-16-0698-4_28. ISSN-21954356

159.Antony Jacob, A., Ravichandran, S., Upadhyay, V., Rajagopal, P., Balasubramaniam, K. 2021. *Lecture Notes in Mechanical Engineering*, pp 133-143. doi: 10.1007/978-981-16-0186-6_14. ISSN-21954356

160.Ashokkumar, R., Sankaran, S., Sundararajan, T. 2021. *Lecture Notes in Mechanical Engineering*, pp 647-655. doi: 10.1007/978-981-16-0698-4_71. ISSN-21954356

161.Joseph Shibu, K., Shankar, K., Kanna Babu, C., Degaonkar, G.K. 2021. *Lecture Notes in Mechanical Engineering*, pp 141-153. doi: 10.1007/978-981-15-5701-9_12. ISSN-21954356

162.Venkatraman, R., Sankaran, S., Ramakrishna, V.V., Das, D., Sundararajan, T. 2021. *Lecture Notes in Mechanical Engineering*, pp 407-415. doi: 10.1007/978-981-16-0698-4_44. ISSN-21954356

163.Changela, K., Hariharan, K., Digavalli, R.K. 2021. *Lecture Notes in Mechanical Engineering*, pp 111-121. doi: 10.1007/978-981-15-9117-4_9. ISSN-21954356

164.Nehrujee, A., Guguloth, S., Reethajanetsurekha, Selvaraj, S., Srinivasan, S., Balasubramanian, S. 2021. *Lecture Notes in Mechanical Engineering*, pp 773-788. doi: 10.1007/978-981-15-4477-4_55. ISSN-21954356

165.Kumar, K.E.S., Rakshit, S. 2021. *Lecture Notes in Mechanical Engineering*, pp 85-93. doi: 10.1007/978-981-15-5862-7_8. ISSN-21954356

166.Toshniwal, S.S., Prakash, R.V. 2021. *Lecture Notes in Mechanical Engineering*, pp 361-369. doi: 10.1007/978-981-15-3639-7_42. ISSN-21954356

167.Sankar, B., Manjunath, P., Hemanth Kumar, A., Brijeshkumar, S., Sekhar, A.S., Jana, S. 2021. *Lecture Notes in Mechanical Engineering*, pp 527-538. doi: 10.1007/978-981-15-5039-3_32. ISSN-21954356

168.Pakkathillam, J.K., Nair, N.M., Swaminathan, P., Arunachalam, K. 2021. *Lecture Notes in Mechanical Engineering*, pp 219-228. doi: 10.1007/978-981-16-0186-6_22. ISSN-21954356

169.Sivaji, K., Phanikumar, G. 2021. *Materials Science Forum* Vol. 1016, pp 666-671. doi: 10.4028/www.scientific.net/MSF.1016.666. ISSN-02555476

170.Raghavendran, R., Meena, A., Amirthalingam, M. 2021. *Materials Science Forum* Vol. 1016, pp 1199-1204. doi: 10.4028/www.scientific.net/MSF.1016.1199. ISSN-02555476

171.Swaminathan, G., Sampath, V. 2021. *Materials Science Forum* Vol. 1016, pp 1538-1543. doi: 10.4028/www.scientific.net/MSF.1016.1538. ISSN-02555476

172.Sundar, V. 2021. *Advanced Series on Ocean Engineering* Vol. 52, pp 1-362. ISSN-1793074X

173.Faruqi, A.H., Siddique, M.H., Samad, A., Anwer, S.F. 2021. *Trends in Mathematics*, pp 279-292. doi: 10.1007/978-3-030-68281-1_21. ISSN-22970215

174.Bhawangirkar, D.R., Nair, V.C., Sangwai, J.S. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 405-411. doi: 10.1007/978-981-15-8506-7_34. ISSN-23662557

175.Vijayasankar, V., Samad, A. 2021. *Lecture Notes in Mechanical Engineering*, pp 991-1001. doi: 10.1007/978-981-15-4745-4_86. ISSN-21954356

176.Pandey, G., Sangwai, J.S. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 321-327. doi: 10.1007/978-981-15-8506-7_26. ISSN-23662557

177.Kumar, K., Das, T.K., Srikanth, R., Samad, A. 2021. *Lecture Notes in Mechanical Engineering*, pp 953-962. doi: 10.1007/978-981-15-4745-4_83. ISSN-21954356

178.Sukanya, R., Sundar, V., Sannasiraj, S.A. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 15-26. doi: 10.1007/978-981-15-8506-7_2. ISSN-23662557

179.Tiwari, K., Krishnankutty, P. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 343-354. doi: 10.1007/978-981-15-8506-7_28. ISSN-23662557

180.Joshi, K., Saha, N. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 371-384. doi: 10.1007/978-981-15-8506-7_31. ISSN-23662557

- 181.Sundaravadivelu, R., Ramana Murthy, M.V., Satya Kiran Raju, A., et al. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 281-292. doi: 10.1007/978-981-15-8506-7_23. ISSN-23662557
- 182.Jacob, J., Bhattacharyya, S.K. 2021. *Lecture Notes in Mechanical Engineering*, pp 657-665. doi: 10.1007/978-981-16-0698-4_72. ISSN-21954356
- 183.Seetharaman, G.R., Sangwai, J.S. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 413-418. doi: 10.1007/978-981-15-8506-7_35. ISSN-23662557
- 184.Sundaravadivelu, R., Sannasiraj, S.A., Sakthivel, S., Kalpana, R. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 329-341. doi: 10.1007/978-981-15-8506-7_27. ISSN-23662557
- 185.Sundaravadivelu, R., Rajendran, V., Balasubramanian, K., Kreesa Kumaran, S. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 293-308. doi: 10.1007/978-981-15-8506-7_24. ISSN-23662557
- 186.Saichenthur, N., Murali, K., Sundar, V. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 185-199. doi: 10.1007/978-981-15-8506-7_15. ISSN-23662557
- 187.Sundaravadivelu, R., Sakthivel, S., Maheswari, S., Madhumathy, S.M., Sherlin Prem Nishold, S. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 171-183. doi: 10.1007/978-981-15-8506-7_14. ISSN-23662557
- 188.Varghese, F.A., Samad, A. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 501-510. doi: 10.1007/978-981-15-8506-7_43. ISSN-23662557
- 189.PavanKumar, S., Sundar, V., Sannasiraj, S.A. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 451-463. doi: 10.1007/978-981-15-8506-7_39. ISSN-23662557
- 190.Gurusamy, S., Kumar, D. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 133-145. doi: 10.1007/978-981-15-8506-7_11. ISSN-23662557
- 191.Govindasamy, V.K., Alagan Chella, M., Sannasiraj, S.A., Panneer Selvam, R. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 257-267. doi: 10.1007/978-981-15-8506-7_21. ISSN-23662557
- 192.Vineesh, P., Sriram, V., Hildebrandt, A. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 147-156. doi: 10.1007/978-981-15-8506-7_12. ISSN-23662557
- 193.Maiti, D.K., Sundar, V., Sannasiraj, S.A. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 65-77. doi: 10.1007/978-981-15-8506-7_6. ISSN-23662557
- 194.Mohanadhas, B., Suresh Kumar, G. 2021. *Lecture Notes in Civil Engineering* Vol. 79, pp 25-35. doi: 10.1007/978-981-15-5101-7_3. ISSN-23662557
- 195.Prabu Kumar, V., Sundaravadivelu, R., Murali, K. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 481-492. doi: 10.1007/978-981-15-8506-7_41. ISSN-23662557
- 196.Solomon, K., Kumar, D. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 121-131. doi: 10.1007/978-981-15-8506-7_10. ISSN-23662557
- 197.Uma, G., Sannasiraj, S.A. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 355-360. doi: 10.1007/978-981-15-8506-7_29. ISSN-23662557
- 198.Gurusamy, S., Kumar, D. 2021. *Lecture Notes in Mechanical Engineering*, pp 567-580. doi: 10.1007/978-981-15-5862-7_46. ISSN-21954356
- 199.Kumar, S., Vijayakumar, R. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 511-527. doi: 10.1007/978-981-15-8506-7_44. ISSN-23662557
- 200.Jadhav, R.M., Pandey, G., Balasubramanian, N., Sangwai, J.S. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 419-424. doi: 10.1007/978-981-15-8506-7_36. ISSN-23662557
- 201.Rajendran, S., Ameer Hassan, A.S. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 493-500. doi: 10.1007/978-981-15-8506-7_42. ISSN-23662557
- 202.Sundaravadivelu, R., Sakthivel, S., Jayachandran, K., Balakrishnan, C., Roja, K.S. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 41-51. doi: 10.1007/978-981-15-8506-7_4. ISSN-23662557
- 203.Sundaravadivelu, R., Sakthivel, S., Suresh, P.K. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 233-240. doi: 10.1007/978-981-15-8506-7_19. ISSN-23662557
- 204.Hemanth Kumar, Y., Vijayakumar, R. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 529-540. doi: 10.1007/978-981-15-8506-7_45. ISSN-23662557
- 205.Madhan Kumar, P., Halder, P., Samad, A. 2021. *Lecture Notes in Mechanical Engineering*, pp 1027-1040. doi: 10.1007/978-981-15-4745-4_89. ISSN-21954356
- 206.Sasikala, N., Sannasiraj, S.A., Manasseh, R. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 385-394. doi: 10.1007/978-981-15-8506-7_32. ISSN-23662557
- 207.Varghese, V.A., Saha, N. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 53-64. doi: 10.1007/978-981-15-8506-7_5. ISSN-23662557
- 208.Sundaravadivelu, R., Ranasinghe, D.P.L., Islam, A., Jayarajan, G., Priyanka, S. 2021. *Lecture Notes in Civil Engineering* Vol. 106, p 13-Jan. doi: 10.1007/978-981-15-8506-7_1. ISSN-23662557
- 209.Sundaravadivelu, R., Sakthivel, S., Balaji, H. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 465-479. doi: 10.1007/978-981-15-8506-7_40. ISSN-23662557
- 210.Devasena, T., Francis, A.P., Ramaprabhu, S. 2021. *Reviews of Environmental Contamination and Toxicology* Vol. 259, pp 51-76. doi: 10.1007/398_2021_78. ISSN-01795953
- 211.Jayaraman, R., Solomon, J.S., Sridhar, N., Krishnamurthy, C.V., Arunachalam, K. 2021. *Lecture Notes in Mechanical Engineering*, pp 239-248. doi: 10.1007/978-981-16-0186-6_24. ISSN-21954356
- 212.Wani, A., Joshi, I., Khandve, S., Wagh, V., Joshi, R. 2021. *Communications in Computer and Information Science* Vol. 1402, pp 153-163. doi: 10.1007/978-3-030-73696-5_15. ISSN-18650929
- 213.Stevanovic, A., Shayeb, S.A., Patra, S.S. 2021.

- Transportation Research Record* Vol. 2675 (Issue 9), pp 690-702. doi: 10.1177/03611981211004181. ISSN-03611981
214. Krishnan, G.S., Sowmya Kamath, S., Sugumaran, V. 2021. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* Vol. 12801, pp 255-263. doi: 10.1007/978-3-030-80599-9_23. ISSN-03029743
215. Das, S.D., Basak, A., Dutta, S. 2021. *Communications in Computer and Information Science* Vol. 1402: 164-176. doi: 10.1007/978-3-030-73696-5_16. ISSN-18650929
216. Jammi, A., Sanjeevi, A.J. 2021. *Lecture Notes in Civil Engineering book series* Vol. 77: pp 19-42. doi: 10.1007/978-981-15-5195-6_2. ISSN-23662557
217. Mondal, S., Thomas, N. 2021. *Green Energy and Technology*, pp 287-322. doi: 10.1007/978-981-15-5667-8_12. ISSN-18653529
218. Mishra, S., Majumdar, R., Kothiyal, A., Pande, P., Warriem, J.M. 2021. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* Vol. 12749, pp 267-272. doi: 10.1007/978-3-030-78270-2_48. ISSN-03029743
219. Kumari, S., Aravindakshan, S., Jain, U., Srinivasa Chakravarthy, V. 2021. *Advances in Intelligent Systems and Computing* Vol. 1189, pp 173-181. doi: 10.1007/978-981-15-6067-5_20. ISSN-21945357
220. Kumari, S., Aravindakshan, S., Srinivasa Chakravarthy, V. 2021. *Advances in Intelligent Systems and Computing* Vol. 1165, pp 983-993. doi: 10.1007/978-981-15-5113-0_83. ISSN-21945357
221. Mercy Latha, A., Nirmala Devi, A.S., Kaimal, H., Pesala, B. 2021. *Lecture Notes in Mechanical Engineering*, pp 107-116. doi: 10.1007/978-981-16-0186-6_11. ISSN-21954356
222. Das, M. 2021. *Lecture Notes in Mechanical Engineering*, pp 77-85. doi: 10.1007/978-981-16-2347-9_7. ISSN-21954356
223. Prabhakar, A., Srinivasan, S., Krishnan, G.S., Kamath, S.S. 2021. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* Vol. 13147, pp 197-210. doi: 10.1007/978-3-030-93620-4_15. ISSN-03029743
224. Banerjee, S., Balamurugan, V., Krishna Kumar, R. 2021. *Lecture Notes in Mechanical Engineering*, pp 411-428. doi: 10.1007/978-981-15-5862-7_34. ISSN-21954356
225. Suresh, N., Puliyakote, S., Balasubramanian, K. 2021. *Lecture Notes in Mechanical Engineering*, pp 41-49. doi: 10.1007/978-981-16-0186-6_5. ISSN-21954356
226. Prasad, S.R., Sekhar, A.S. 2021. *Lecture Notes in Mechanical Engineering*, pp 433-443. doi: 10.1007/978-981-15-5701-9_35. ISSN-21954356
227. Srineesh, V.K., Murali, K. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 27-39. doi: 10.1007/978-981-15-8506-7_3. ISSN-23662557
228. Singhal, S.P., Sridevi, M., Sathya Narayanan, N., Shankar Raman, M.J. 2021. *Lecture Notes in Electrical Engineering* Vol. 668, pp 1269-1279. doi: 10.1007/978-981-15-5341-7_96. ISSN-18761100
229. Bonagiri, D., Amirthalingam, V., Vallabhaneni, S. 2021. *Lecture Notes in Civil Engineering* Vol. 94, pp 47-57. doi: 10.1007/978-981-15-7222-7_5. ISSN-23662557
230. Ashwin Kumar, N., Suresh Anand, B.S., Krishnamurthy, G. 2021. *Springer Series in Biomaterials Science and Engineering* Vol. 16, pp 335-403. doi: 10.1007/978-981-33-6252-9_13. ISSN-21950644
231. Roy, A., Sarma, J. 2021. *Trends in Mathematics* Vol. 14, pp 675-681. doi: 10.1007/978-3-030-83823-2_108. ISSN-22970215
232. Perepu, S.K., Balaji, B.S., Tanneru, H.K., Kathari, S., Pinnamaraju, V.S. 2021. *Advances in Intelligent Systems and Computing* Vol. 1364, pp 613-624. doi: 10.1007/978-3-030-73103-8_43. ISSN-21945357
233. Ramaswami, V., Arjunan, R. 2021. *Smart Innovation, Systems and Technologies* Vol. 222, pp 733-744. doi: 10.1007/978-981-16-0119-4_59. ISSN-21903018
234. Jaya Chandran, S.R., Murali, K., Jalihal, P., Sajjan, A. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 241-256. doi: 10.1007/978-981-15-8506-7_20. ISSN-23662557
235. Chaudhari, M., Kulkarni, I., Damodaran, M. 2021. *Lecture Notes in Mechanical Engineering*, pp 313-322. doi: 10.1007/978-981-15-5183-3_34. ISSN-21954356
236. Joshi, S., Kadam, Y., Ranade, S. 2021. *Lecture Notes in Mechanical Engineering*, pp 223-230. doi: 10.1007/978-981-16-0698-4_24. ISSN-21954356
237. Harsha, K., Nagendra, S.M.S., Deka, P.C. 2021. *Trends in Civil Engineering and Challenges for Sustainability* Vol. 99, pp 543-559. doi: 10.1007/978-981-15-6828-2_40. ISSN-23662557
238. Melles, G., Lodewyckx, S., Sukumar, H.T. 2021. *World Sustainability Series*, pp 311-330. doi: 10.1007/978-3-030-69284-1_16. ISSN-21997373
239. Kumar, V., Srinivasan, B. 2021. *Communications in Computer and Information Science* Vol. 1345, p 44644. doi: 10.1007/978-981-16-4772-7_1. ISSN-18650929
240. Danish, D.R., Murali, K. 2021. *Lecture Notes in Civil Engineering* Vol. 106, pp 157-170. doi: 10.1007/978-981-15-8506-7_13. ISSN-23662557
241. Sambamoorthy, R., Mandalapu, J., Peruru, S.S., Jain, B., Altman, E. 2021. *Lecture Notes of the Institute for Computer Sciences, Social-Informatics and Telecommunications Engineering, LNICST* Vol. 404, pp 144-153. doi: 10.1007/978-3-030-92511-6_9. ISSN-18678211
242. Reyaz Ahmad Vali, M., Faruque Ali, S. 2021. *Lecture Notes in Mechanical Engineering*, pp 573-585. doi: 10.1007/978-981-15-8315-5_49. ISSN-21954356
243. Chowdhury, S.R., Mukherjee, A., Raman, S., et al. 2021. *Advances in Intelligent Systems and Computing* Vol. 1255, pp 785-794. doi: 10.1007/978-981-15-7834-2_73. ISSN-21945357
244. Mali, P.R., Sankar, B., Nayak, G., Jana, S., Sekhar, A.S.

2021. *Lecture Notes in Mechanical Engineering*, pp 481-491. doi: 10.1007/978-981-15-5701-9_39. ISSN-21954356
245. Shevkar, P.P., Moharana, M.K. 2021. *Lecture Notes in Mechanical Engineering*, pp 59-67. doi: 10.1007/978-981-15-5183-3_7. ISSN-21954356
246. Rajaram, R., Mathiyarasu, J. 2021. *RSC Detection Science*, Issue 21, p 44587. doi: 10.1039/9781839163364-00001. ISSN-20523068
247. Chelliah, R., Khan, I., Oh, D.H., et al. 2021. *Nanotechnology in the Life Sciences*, pp 425-447. doi: 10.1007/978-3-030-84262-8_15. ISSN-25238027
248. Sujith Kumar, S., Vigneswaran, C., Srinivasa Chakravarthy, V. 2021. *Lecture Notes in Electrical Engineering* Vol. 749, pp 165-174. doi: 10.1007/978-981-16-0289-4_13. ISSN-18761100
249. Jenardhanan, P., Panneerselvam, M., Mathur, P.P. 2021. *Advances in Experimental Medicine and Biology* Vol. 1288, pp 205-214. doi: 10.1007/978-3-030-77779-1_10. ISSN-00652598
250. Devasena, T., Francis, A.P., Ramaprabhu, S. 2021. *Reviews of Environmental Contamination and Toxicology* Vol. 259, pp 51-76. doi: 10.1007/398_2021_78. ISSN-01795953

Papers presented in conferences

1. Beals, N., Govindarajan, B. 2021. Trim strategies for over-actuated vehicle configurations during conceptual design. *AIAA Aviation and Aeronautics Forum and Exposition, AIAA Aviation Forum 2021*. doi: 10.2514/6.2021-2460
2. Shankar, A., Rao, V.N. 2021. Entropically damped artificial compressibility solver using higher order finite difference schemes on curvilinear and deforming meshes. *AIAA Scitech 2021 Forum*: 12-Jan
3. Kushwaha, A., Kasthuri, P., Pawar, S.A., Sujith, R.I., Chterev, I., Boxx, I. 2021. Dynamical characterization of thermoacoustic oscillations in a hydrogen-enriched partially premixed swirl-stabilized methane/air combustor. *Proceedings of the ASME Turbo Expo 3*. doi: 10.1115/GT2021-60011
4. Dinkar, K.R., Ghosh, S. 2021. Indicator probabilistic acceleration velocity obstacles for dynamic collision avoidance in uncertain environments. *AIAA Scitech 2021 Forum*: 18-Jan
5. Anand Bharadwaj, S., Baskaran, S.P., Ghosh, S., Narayanaswamy, V. 2021. Numerical investigation of passive flow control using permeable and wavy walls in oblique shock-wave/boundary-layer interaction. *AIAA Scitech 2021 Forum*: 14-Jan
6. Sharma, A., Sinha, N.K. 2021. Effects of the steering and repulsive potential interaction on uav swarm formation equilibrium. *2021 7th Indian Control Conference, ICC 2021 – Proceedings*, pp 21-26. doi: 10.1109/ICC54714.2021.9703153
7. Modi, B., Ghosh, S. 2021. Hybrid RANS/LES of supersonic turbulent boundary layer using compact interpolation method. *AIAA Scitech 2021 Forum*: 12-Jan
8. Suma, H., Pankaj, P., Chakravarthy, S.R., Srinivasan, B. 2021. Predicting onset of combustion instability in gas turbines using fiber bragg grating pressure sensors. *Springer Proceedings in Physics* 258: 161-164. doi: 10.1007/978-981-15-9259-1_35. ISSN-09308989
9. Rangan, K., Ghosh, S. 2021. 2D Immersed boundary solver for compressible laminar flows. *AIAA Aviation and Aeronautics Forum and Exposition, AIAA Aviation Forum 2021*. doi: 10.2514/6.2021-2729
10. Chakraborty, K., Chakravarthy, S.R. 2021. Optimization of fuel nozzle diameter in a novel cross flow lean direct injection burner. *Proceedings of the ASME Turbo Expo 3*. doi: 10.1115/GT2021-59009
11. Thirunavukkarasu, P., Ghosh, S. 2021. Numerical simulation of viscous effects on high enthalpy flow over a double-wedge geometry. *AIAA Scitech 2021 Forum*: 12-Jan
12. Pavithran, I., Unni, V.R., Kurths, J., et al. 2021. Predicting the amplitude of thermoacoustic instability using universal scaling behaviour. *Proceedings of the ASME Turbo Expo 3*. doi: 10.1115/GT2021-60074
13. Muruganandam, T.M., Son, E.E., Gadzhiev, M.K., Vetchinin, S.P. 2021. Modeling of destructive interaction of hot jet and solid plate. *Journal of Physics: Conference Series* 1787 (1). doi: 10.1088/1742-6596/1787/1/012062. ISSN-17426588
14. Shincy, V.S., Ghosh, S. 2021. A novel sliding mode-based guidance for soft landing of a spacecraft on an asteroid. *AIAA Scitech 2021 Forum 1*: 13-Jan
15. Sandhu, J.P.S., Ghosh, S. 2021. Dynamical systems analysis of a zero-equation transition model for sensitivity to initial conditions. *AIAA Aviation and Aeronautics Forum and Exposition, AIAA Aviation Forum 2021*. doi: 10.2514/6.2021-2724
16. Govindarajan, B., Sridharan, A. 2021. Hybrid powertrain systems for hybrid VTOL aircraft. *AIAA Aviation and Aeronautics Forum and Exposition, AIAA Aviation Forum 2021*. doi: 10.2514/6.2021-3221
17. Easwara Prasad, G.L., Keerthi Gowda, B.S., Velmurugan, R. 2021. Experimental study on compressive strength of copper slag replaced cement concrete. *Conference Proceedings of the Society for Experimental Mechanics Series*, pp 81-87. doi: 10.1007/978-3-030-59868-6_12. ISSN-21915644
18. Zinage, V., Ghosh, S. 2021. Fast and efficient motion planning using directional sampling-based generalized shape expansion. *AIAA Scitech 2021 Forum*: 15-Jan
19. Modi, B., Ghosh, S. 2021. Dns/les of supersonic turbulent boundary layer using compact interpolation method. *AIAA Scitech 2021 Forum*: 13-Jan
20. Haridas, A., Vadlamani, N.R. 2021. Modelling wall-pressure spectra in turbulent boundary layers using neural networks. *Proceedings of ASME 2021 Gas Turbine India Conference, GTINDIA 2021*. doi: 10.1115/GTINDIA2021-76301

21. Vayyeti, A., Thittai, A.K. 2021. Euclidian-weighted non-linear beamformer for conventional focused beam ultrasound imaging systems. *Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS*, pp 3684-3687. doi: 10.1109/EMBC46164.2021.9630076. ISSN-1557170X
22. Vayyeti, A., Thittai, A.K. 2021. A novel spatio-temporal DMAS (ST-DMAS) beamforming for sparse synthetic aperture ultrasound imaging: Initial results. *IEEE International Ultrasonics Symposium, IUS*. doi: 10.1109/IUS52206.2021.9593327. ISSN-19485719
23. Vayyeti, A., Thittai, A.K. 2021. A novel adaptively-weighted non-linear beamformer for conventional focused beam ultrasound imaging systems: Initial results. *IEEE International Ultrasonics Symposium, IUS*. doi: 10.1109/IUS52206.2021.9593596. ISSN-19485719
24. Moganaradjou, Y., Phukan, A.A., Vengadesan, S., Chatterjee, D. 2021. Numerical investigation of the effect of leakage flow on cavitation in centrifugal pump. *Journal of Physics: Conference Series* 1909 (1). doi: 10.1088/1742-6596/1909/1/012016. ISSN-17426588
25. Vasanth Kumar, G., Mukherjee, R. 2021. Study of separation of three-dimensional boundary layer using critical point theory. *AIAA Scitech 2021 Forum*: 12-Jan
26. Agarwal, D., Srivastava, P., Martin-Del-Campo, S., Natarajan, B., Srinivasan, B. 2021. Addressing uncertainties within active learning for industrial IoT. *7th IEEE World Forum on Internet of Things, WF-IoT 2021*: 557-562. doi: 10.1109/WF-IoT51360.2021.9595397
27. Mukherjee, A., Sridhar, S., Ali, S.F., Arockiarajan, A. 2021. Modeling of the snap-through of a hybrid bistable laminate by a magnetic force field. *Proceedings of SPIE - The International Society for Optical Engineering* 11588. doi: 10.1117/12.2583054. ISSN-0277786X
28. Anila Satheesh, B., Thittai, A.K. 2021. Ultrasound-to-Ultrasound deformable image registration for pseudo-CT simulation for brachytherapy treatment planning: A preliminary study on tissue-mimicking phantom. *IEEE Region 10 Annual International Conference, Proceedings/TENCON 2021*: 901-904. doi: 10.1109/TENCON54134.2021.9707348. ISSN-21593442
29. Chandramoorthi, S.S., Kuniyil Ajith Singh, M., Thittai, A.K. 2021. Image quality enhancement for LED-based photoacoustic imaging. *Progress in Biomedical Optics and Imaging - Proceedings of SPIE* 11642. doi: 10.1117/12.2579159. ISSN-16057422
30. Chandramoorthi, S., Ramkumar, A., Thittai, A.K. 2021. Novel POES method for raw RF signal recovery in sparse synthetic aperture ultrasound acquisition: preliminary performance analysis. *IEEE International Ultrasonics Symposium, IUS*. doi: 10.1109/IUS52206.2021.9593759. ISSN-19485719
31. Shukla, R., Routray, P.K., Tiwari, K., Lavalley, S.M., Manivannan, M. 2021. Monofilament whisker-based mobile robot navigation. *2021 IEEE World Haptics Conference, WHC 2021*. doi: 10.1109/WHC49131.2021.9517235
32. Anand, R., Thittai, A.K. 2021. Compressed Sensing framework for limited-element compounded diverging waves: Initial results. *IEEE International Ultrasonics Symposium, IUS*. doi: 10.1109/IUS52206.2021.9593730. ISSN-19485719
33. Philip, N.T., Patnaik, B.S.V., Sudhir, B.J. 2021. Numerical investigation of model fusiform aneurysms: Influence of maximum diameter to height ratio. *World Congress in Computational Mechanics and ECCOMAS Congress* 400. doi: 10.23967/wccm-eccomas.2020.230. ISSN-26966999
34. Shahab, M.A., Srinivasan, B., Srinivasan, R. 2021. Analysis of control room operators' competence using cognitive engineering approaches to improve process safety. *2021 International Conference on Maintenance and Intelligent Asset Management, ICMIAM 2021*. doi: 10.1109/ICMIAM54662.2021.9715179
35. Sasikumar, S., Ramesh, K. 2021. Deep learning approach to evaluate fracture parameters from photoelastic images. *ASME International Mechanical Engineering Congress and Exposition, Proceedings (IMECE) 12*. doi: 10.1115/IMECE2021-73114
36. Anila Satheesh, B., Arvind, S., Thittai, A.K., et al. 2021. Pseudo-CT image synthesis from ultrasound images for potential use in Brachytherapy treatment planning - initial results. *IEEE Region 10 Annual International Conference, Proceedings/TENCON 2021*: 897-900. doi: 10.1109/TENCON54134.2021.9707390. ISSN-21593442
37. Rajavelu, H., Vasa, N.J., Seshadri, S. 2021. Determination of ash content in coal using laser-induced breakdown spectroscopy with multivariate analysis. *Springer Proceedings in Physics* 258: 399-402. doi: 10.1007/978-981-15-9259-1_91. ISSN-09308989
38. Sompur, V., Thondiyath, A., Skm, V. 2021. Design and development of a bio-inspired novel 3-fingered gripper platform. *ACM International Conference Proceeding Series*. doi: 10.1145/3478586.3478613
39. Roy, A., Mukherjee, R. 2021. Time series behaviour of laminar separation bubble at low Reynolds number. *AIAA Scitech 2021 Forum*: 11-Jan
40. John, P., Vasa, N.J., Sujatha, N. 2021. Optical fiber based dual wavelength spectral domain low coherence interferometry for biomedical applications. *Springer Proceedings in Physics* 258: 553-556. doi: 10.1007/978-981-15-9259-1_127. ISSN-09308989
41. D. Subudhi, R. K. Venkatesan, K. Devi and M. Manivan. 2021. Finger induced auto thermogenesis. *2021 IEEE 3rd Eurasia Conference on Biomedical Engineering, Healthcare and Sustainability ECBIOS*, pp 33-37. doi: 10.1109/ECBIOS51820.2021.9510184
42. Saloni Jain, Sujatha Naraya Unni. 2021. Estimation of intralipid 20 dilutions using machine learning enabled diffuse reflectance spectroscopy. *Technical Digest Series Optica Publishing Group, 2021*. doi: Article number JW7A.96
43. Chakraborty, S., Govindarajan, S.K., Gummadi, S.N. 2021. Numerical investigation on low salinity augmented microbial flooding LSAMf within a sandstone core for

- enhanced oil recovery under nonisothermal and fluctuating pH conditions. *Proceedings - SPE Annual Technical Conference and Exhibition 2021*. doi: 10.2118/206098-MS. ISSN-26386712
- 44.Prem Kumar S. R., Sanjay M., S., Kumar Anand, V., Senapati, S., Murali, A. 2021. InuAid chest x-rays AI product: Respiratory diseases detection using artificial intelligence to significantly improve productivity and quality of diagnosis. *ACM International Conference Proceeding Series*. doi: 10.1145/3486001.3486242
- 45.Sharma, S., Lakshminarayanan, S., Karimi, I.A., Srinivasan, R. 2021. Convergent cross-mapping based fault detection and diagnosis for non-linear dynamic systems. *2021 60th Annual Conference of the Society of Instrument and Control Engineers of Japan, SICE 2021*, pp 299-304
- 46.Shahab, M.A., Srinivasan, B., Srinivasan, R. 2021. Analysis of control room operators' competence using cognitive engineering approaches to improve process safety. *2021 International Conference on Maintenance and Intelligent Asset Management, ICMIAM 2021*. doi: 10.1109/ICMIAM54662.2021.9715179
- 47.Maurya, D., Tangirala, A.K., Narasimhan, S. 2021. ARX Model identification using generalized spectral decomposition. *IFAC-PapersOnLine* 54 (9): 690-695. doi: 10.1016/j.ifacol.2021.06.169. ISSN-24058963
- 48.Shaji, H.E., Vanajakshi, L., Tangirala, A.K. 2021. Effects of clustering feature vectors on bus travel time prediction: A case study. *2021 International Conference on COMMunication Systems and NETWORKS, COMSNETS 2021*, pp 741-746. doi: 10.1109/COMSNETS51098.2021.9352855
- 49.Nithya, S., Tangirala, A.K. 2021. Multivariable causal analysis of nonlinear dynamical systems using convergent cross mapping. *2021 7th Indian Control Conference, ICC 2021 - Proceedings*, pp 436-441. doi: 10.1109/ICC54714.2021.9703137
- 50.Reja, V.K., Bhadaniya, P., Varghese, K., Ha, Q. 2021. Vision-based progress monitoring of building structures using point-intensity approach. *Proceedings of the International Symposium on Automation and Robotics in Construction 2021*: 349-356. ISSN-24135844
- 51.Chaturvedi, S., Ashok, A., Chilukuri, B.R. 2021. Traffic state estimation using DSRC-enabled probe vehicles. *2021 International Conference on COMMunication Systems and NETWORKS, COMSNETS 2021*, pp 715-722. doi: 10.1109/COMSNETS51098.2021.9352843
- 52.Gopinath, V.R.B., Mohan, S., Kangadharan, G., Kit, A.C., Varadarajan, P. 2021. Intelligent model for reservoir operation through data mining-a case study. *Journal of Physics: Conference Series* 2040 (1). doi: 10.1088/1742-6596/2040/1/012032. ISSN-17426588
- 53.Krishnamoorthi, S., Raphael, B. 2021. A case based reasoning approach for selecting appropriate construction automation method. *Proceedings of the International Symposium on Automation and Robotics in Construction 2021*: 880-885. ISSN-24135844
- 54.Gundapuneni, V., Mahalingam, A. 2021. Quantity estimation of executed works using image analytics. *Proceedings of the International Symposium on Automation and Robotics in Construction 2021*: 357-364. ISSN-24135844
- 55.Sircar, S., Maji, V.B. 2021. XFEM simulation for hydraulic fracture propagation in saturated porous medium. *55th U.S. Rock Mechanics / Geomechanics Symposium 2021 Volume 4*
- 56.Azneb, A.S., Banerjee, S., Robinson, R.G. 2021. Tensile strength of cement treated clay. *IOP Conference Series: Earth and Environmental Science* 727 (1). doi: 10.1088/1755-1315/727/1/012005. ISSN-17551307
- 57.Devapriya, A.S., Thyagaraj, T. 2021. Swell-shrink and hydraulic behaviour of compacted red soil-bentonite mixture. *IOP Conference Series: Earth and Environmental Science* 727 (1). doi: 10.1088/1755-1315/727/1/012011. ISSN-17551307
- 58.Shaji, H.E., Vanajakshi, L., Tangirala, A.K. 2021. Effects of clustering feature vectors on bus travel time prediction: A case study. *2021 International Conference on COMMunication Systems and NETWORKS, COMSNETS 2021*, pp 741-746. doi: 10.1109/COMSNETS51098.2021.9352855
- 59.Selvaraj, R., Vasa, N.J., Shiva Nagendra, S.M. 2021. Photoacoustic sensor using a broad spectrum source for vehicle exhaust measurements. *Springer Proceedings in Physics* 258: 311-313. doi: 10.1007/978-981-15-9259-1_70. ISSN-09308989
- 60.Choudhary, V., Philip, L. 2021. Interpretation of the risk associated with emerging contaminants in the aquatic systems for BRICS nations. *World Environmental and Water Resources Congress 2021: Planning a Resilient Future along America's Freshwaters - Selected Papers from the World Environmental and Water Resources Congress 2021*, pp 628-643. doi: 10.1061/9780784483466.057
- 61.Nath, D., Reja, V.K., Varghese, K. 2021. A framework to measure collaboration in a construction project. *World Construction Symposium*: 13-Feb. doi: 10.31705/WCS.2021.1. ISSN-23620935
- 62.Joseph, M., Banerjee, S. 2021. Seismic response of mechanically stabilised earth retaining wall. *IOP Conference Series: Earth and Environmental Science* 727 (1). doi: 10.1088/1755-1315/727/1/012017. ISSN-17551307
- 63.Lahiri, A., Pratapa, P.P. 2021. Inhomogeneous folding modes in infinite lattices of rigid triangulated Miura-ori. *Proceedings of the ASME Design Engineering Technical Conference* 8. doi: 10.1115/DETC2021-68532
- 64.Chandran, S., Thiruchelva, S.R., Mohan, S., Sundaram, G., Karthikeyan, K.G., Veluswamy, K. 2021. Risk assessment of heavy metal accumulation in soil and plant system irrigated with municipal wastewater. *American Society of Agricultural and Biological Engineers Annual International Meeting, ASABE 2021* 4: 2386-2392. doi: 10.13031/aim.202101008
- 65.Anilkumar, P.M., Rao, B.N., Haldar, A., Scheffler, S., Rolfes, R., Jansen, E.L. 2021. Numerical studies on the dynamic characteristics of series-connected multistable laminates. *Proceedings of ASME 2021 Conference on Smart Materials,*

- Adaptive Structures and Intelligent Systems, SMASIS 2021.* doi: 10.1115/SMASIS2021-68073
- 66.Maiti, N., Chilukuri, B.R. 2021. Traffic signal control for an isolated intersection using reinforcement learning. *2021 International Conference on COMMunication Systems and NETWORKS, COMSNETS 2021*, pp 629-633. doi: 10.1109/COMSNETS51098.2021.9352834
- 67.Nayak, N., Anantha Selvan, M., Subramanian, L. 2021. Improved characterization of elastic flexural and shear buckling strengths of I-sections. *Proceedings of the Annual Stability Conference Structural Stability Research Council 2021, SSRC 2021*
- 68.Thellakula, V., Reja, V.K., Varghese, K. 2021. A web-based GIS tool for progress monitoring of linear construction projects. *Proceedings of the International Symposium on Automation and Robotics in Construction 2021:* 33-40. ISSN-24135844
- 69.Kothandaraman, D., Nambiar, A., Mittal, A. 2021. Domain adaptive knowledge distillation for driving scene semantic segmentation. *Proceedings - 2021 IEEE Winter Conference on Applications of Computer Vision Workshops, WACVW 2021:* 134-143. doi: 10.1109/WACVW52041.2021.00019
- 70.Babu Narayanan Koonampilli, J., Vutukuru, M., Kamath, R.R., et al. 2021. Demonstration of 5G core software system in India's indigenous 5G test bed. *2021 International Conference on COMMunication Systems and NETWORKS, COMSNETS 2021*, pp 101-103. doi: 10.1109/COMSNETS51098.2021.9352841
- 71.Sivaramakrishnan, K.C., Dolan, S., White, L., Kelly, T., Jaffer, S., Madhavapeddy, A. 2021. Retrofitting effect handlers onto OCaml. *Proceedings of the ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI)*, pp 206-221. doi: 10.1145/3453483.3454039
- 72.Dutta, S., Shah, N.A., Mittal, A. 2021. Efficient space-time video super resolution using low-resolution flow and mask upsampling. *IEEE Computer Society Conference on Computer Vision and Pattern Recognition Workshops*, pp 314-323. doi: 10.1109/CVPRW53098.2021.00041. ISSN-21607508
- 73.Babar, S., Das, S. 2021. Where to Look?: Mining complementary image regions for weakly supervised object localization. *Proceedings - 2021 IEEE Winter Conference on Applications of Computer Vision, WACV 2021*, pp 1009-1018. doi: 10.1109/WACV48630.2021.00105
- 74.Venugopal, A., Bondi, E., Kamarthi, H., Dholakia, K., Ravindran, B., Tambe, M. 2021. Reinforcement learning for unified allocation and patrolling in signaling games with uncertainty. *Proceedings of the International Joint Conference on Autonomous Agents and Multiagent Systems, AAMAS 3:* 1341-1349. ISSN-15488403
- 75.Nasre, M., Nimbhorkar, P., Ranjan, K., Sarkar, A. 2021. Popular matchings in the hospital-residents problem with two-sided lower quotas. *Leibniz International Proceedings in Informatics, LIPIcs 213.* doi: 10.4230/LIPIcs.FSTTCS.2021.30. ISSN-18688969
- 76.Augustine, J., Kothapalli, K., Pandurangan, G. 2021. Efficient distributed algorithms in the k-machine model via PRAM simulations. *Proceedings - 2021 IEEE 35th International Parallel and Distributed Processing Symposium, IPDPS 2021*, pp 223-232. doi: 10.1109/IPDPS49936.2021.00031
- 77.Thiruvassagam, P.K., Chakraborty, A., Murthy, C.S.R. 2021. Latency-aware and survivable mapping of VNFs in 5G network edge cloud. *2021 17th International Conference on the Design of Reliable Communication Networks, DRCN 2021.* doi: 10.1109/DRCN51631.2021.9477372
- 78.Sheth, D.Y., Rajkumar, A. 2021. PARWiS: Winner determination from active pairwise comparisons under a shoestring budget. *Proceedings - IEEE International Conference on Data Mining, ICDM 2021:* 569-578. doi: 10.1109/ICDM51629.2021.00068. ISSN-15504786
- 79.Augustine, J., Molla, A.R., Pandurangan, G. 2021. Byzantine agreement and leader election: From classical to the modern. *Proceedings of the Annual ACM Symposium on Principles of Distributed Computing*, pp 569-571. doi: 10.1145/3465084.3467484
- 80.Gupta, S., Keshari, A., Das, S. 2021. G3AN++: Exploring wide GANs with complementary feature learning for video generation. *ACM International Conference Proceeding Series.* doi: 10.1145/3490035.3490282
- 81.Verma, V.K., Mishra, A., Pandey, A., Murthy, H.A., Rai, P. 2021. Towards zero-shot learning with fewer seen class examples. *Proceedings - 2021 IEEE Winter Conference on Applications of Computer Vision, WACV 2021*, pp 2240-2250. doi: 10.1109/WACV48630.2021.00229
- 82.Shah, A., Rajkumar, A. 2021. Sequential ski rental problem. *Proceedings of the International Joint Conference on Autonomous Agents and Multiagent Systems, AAMAS 2:* 1161-1169. ISSN-15488403
- 83.Saphal, R., Ravindran, B., Mudigere, D., Avancha, S., Kaul, B. 2021. SEERL: Sample efficient ensemble reinforcement learning. *Proceedings of the International Joint Conference on Autonomous Agents and Multiagent Systems, AAMAS 2:* 1088-1096. ISSN-15488403
- 84.Kamath, R., Sivalingam, K.M. 2021. Machine learning based flow classification in DCNs using P4 switches. *Proceedings - International Conference on Computer Communications and Networks, ICCCN 2021.* doi: 10.1109/ICCCN52240.2021.9522272. ISSN-10952055
- 85.Haak, A., Meier, A., Prakash, O., Raghavendra Rao, B.V. 2021. Parameterised counting in logspace. *Leibniz International Proceedings in Informatics, LIPIcs 187.* doi: 10.4230/LIPIcs.STACS.2021.40. ISSN-18688969
- 86.Rahmani, K., Nagar, K., Delaware, B., Jagannathan, S. 2021. Repairing serializability bugs in distributed database programs via automated schema refactoring. *Proceedings of the ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI)*, pp 32-47. doi: 10.1145/3453483.3454028
- 87.Archana, T., Deepika, V., Arjun Kumar, A., Ramachandran, M., Sivalingam, K.M., Babu Narayanan Koonampilli, J. 2021. CygNet MaSoN: Analytics and machine learning

- enabled management system for 5G networks. *2021 International Conference on COMMunication Systems and NETWORKS, COMSNETS 2021*, pp 94-96. doi: 10.1109/COMSNETS51098.2021.9352830
- 88.Sankar, G.S., Louis, A., Nasre, M., Nimbhorkar, P. 2021. Matchings with group fairness constraints: Online and offline algorithms. *IJCAI International Joint Conference on Artificial Intelligence*, pp 377-383. ISSN-10450823
- 89.Mondal, S., Nasre, R. 2021. Summary of Hansie: Hybrid and consensus regression test prioritization. *Proceedings - 2021 IEEE 14th International Conference on Software Testing, Verification and Validation, ICST 2021*, pp 278-280. doi: 10.1109/ICST49551.2021.00038
- 90.Kumar, M.G., Kuriakose, J., Murthy, H.A., et al. 2021. Dual script E2E framework for multilingual and code-switching ASR. *Proceedings of the Annual Conference of the International Speech Communication Association, INTERSPEECH 1*: 381-385. doi: 10.21437/Interspeech.2021-978. ISSN-2308457X
- 91.Kokel, H., Manoharan, A., Natarajan, S., Ravindran, B., Tadepalli, P. 2021. RePREL: Integrating relational planning and reinforcement learning for effective abstraction. *Proceedings International Conference on Automated Planning and Scheduling, ICAPS 2021*: 533-541. ISSN-23340835
- 92.Choudhary, K., Cohen, A., Narayanaswamy, N.S., Peleg, D., Vijayaragunathan, R. 2021. Budgeted dominating sets in uncertain graphs. *Leibniz International Proceedings in Informatics, LIPIcs 2021*. doi: 10.4230/LIPIcs.MFCS.2021.32. ISSN-18688969
- 93.Bhat, S.G., Nagar, K. 2021. Brief announcement: Automating and mechanising cutoff proofs for parameterized verification of distributed protocols. *Leibniz International Proceedings in Informatics, LIPIcs 2021*. doi: 10.4230/LIPIcs.DISC.2021.48. ISSN-18688969
- 94.Mukherjee, B., Prakash, A., Murthy, H.A. 2021. Analysis of conversational speech with application to voice adaptation. *2021 IEEE Automatic Speech Recognition and Understanding Workshop, ASRU 2021 - Proceedings*, pp 765-772. doi: 10.1109/ASRU51503.2021.9688146
- 95.Visweswariah, K., Tripathi, Beethika, Khapra, Mitesh M. and Ravindran, B. 2021. A joint training framework for open world knowledge graph embeddings. *In AKBC 35*: 290-298
- 96.Govind S. Sankar and Ad Louis and Meghana Nasre and Prajakta Nimbhorkar. 2021. Matchings with group fairness constraints online and offline algorithms. *In Proceedings of the Thirtieth International Joint Conference on Artificial Intelligence, IJCAI 2021*, Virtual Event Montreal, Canada, 19-27 August 2021, Zhi Hua Zhou, ed., pp 377-383. doi: 10.24963/ijcai.2021/53.
- 97.Suin, M., Rajagopalan, A.N. 2021. Gated spatio-temporal attention-guided video deblurring. *Proceedings of the IEEE Computer Society Conference on Computer Vision and Pattern Recognition*, pp 7798-7807. doi: 10.1109/CVPR46437.2021.00771. ISSN-10636919
- 98.Natarajan, S., Derosa, M., Joseph, J., Shah, M.I., Karthik, S. 2021. Aptamer based lateral flow assays for rapid and sensitive detection of CKD marker Cystatin C. *2021 IEEE International Symposium on Medical Measurements and Applications, MeMeA 2021 - Conference Proceedings*. doi: 10.1109/MeMeA52024.2021.9478684
- 99.Narayanan Kn, B., Nair, D.R., Dasgupta, A. 2021. Extraction of D31 piezoelectric coefficient of AlN thin film. *Proceedings of the IEEE International Conference on Micro Electro Mechanical Systems (MEMS) 2021*: 623-625. doi: 10.1109/MEMS51782.2021.9375172. ISSN-10846999
- 100.Mukhopadhyay, S., Sinha, A. 2021. Online caching with optimal switching regret. *IEEE International Symposium on Information Theory - Proceedings 2021*: 1546-1551. doi: 10.1109/ISIT45174.2021.9517925. ISSN-21578095
- 101.Prasad, B.H.P., Green Rosh, K.S., Lokesh, R.B., Mitra, K., Chowdhury, S. 2021. V-DESIRR: Very fast deep embedded single image reflection removal. *Proceedings of the IEEE International Conference on Computer Vision*, pp 2370-2379. doi: 10.1109/ICCV48922.2021.00239. ISSN-15505499
- 102.Mulay, S., Ram, K., Murugesan, B., Sivaprakasam, M. 2021. Style transfer based coronary artery segmentation in x-ray angiogram. *Proceedings of the IEEE International Conference on Computer Vision 2021*: 3386-3394. doi: 10.1109/ICCVW54120.2021.00378. ISSN-15505499
- 103.Shetty, V.M., Umesh, S. 2021. Exploring the use of common label set to improve speech recognition of low resource Indian languages. *ICASSP, IEEE International Conference on Acoustics, Speech and Signal Processing - Proceedings 2021*: 7228-7232. doi: 10.1109/ICASSP39728.2021.9414961. ISSN-15206149
- 104.Rachavarapu, K.K., Aakanksha| Sundaresha, V., Rajagopalan, A.N. 2021. Localize to binauralize: Audio spatialization from visual sound source localization. *Proceedings of the IEEE International Conference on Computer Vision*, pp 1910-1919. doi: 10.1109/ICCV48922.2021.00194. ISSN-15505499
- 105.Agarwal, A., Jagadeeswar, T., Kanakambaran, S., Shrivastava, M., Srinivasan, B. 2021. Acoustic emission-based leakage detection system using coherent optical time domain reflectometry (COTDR). *Springer Proceedings in Physics 258*: 353-356. doi: 10.1007/978-981-15-9259-1_80. ISSN-09308989
- 106.Chakraborty, S., Nair, S.V., Hatua, K. 2021. Effect of v angle variation and strengthening rib on performance characteristics of IPMSM motor for electric vehicles. *ICPEE 2021 - 2021 1st International Conference on Power Electronics and Energy*. doi: 10.1109/ICPEE50452.2021.9358664
- 107.Yadav, R., Venkatasubramani, L.N., David Koilpillai, R., Venkitesh, D. 2021. Modified widely linear filter for simultaneous multi-impairment compensation. *2021 Conference on Lasers and Electro-Optics, CLEO 2021 - Proceedings*
- 108.Sreeraj, S.J., Singh, K., Srinivasan, B., Christopher, S., Venkitesh, D. 2021. Simulation of a wideband frequency measurement system using parallel photonic sub-Nyquist sampling and binary deduction. *Asia Communications and Photonics Conference, ACP 2021*. ISSN-2162108X

109. Amizhtan, S.K., Thangabalan, B., Sarathi, R. 2021. Understanding the flow electrification of synthetic ester fluid adopting spinning disc method. *Proceedings of the IEEE International Conference on Properties and Applications of Dielectric Materials 2021*: 270-273. doi: 10.1109/ICPADM49635.2021.9493859
110. Maiti, S., Ramachandran, H. 2021. A 3D Kinetic Distribution that yields observed plasma density in the inner Van Allen belt. *Springer Proceedings in Physics* 261: 1075-1080. doi: 10.1007/978-981-33-4408-2_158. ISSN-09308989
111. Nabeel, P.M., Kiran, R.V., Manoj, R., Abhidev, V.V., Sivaprakasam, M., Joseph, J. 2021. High-framerate A-mode ultrasound for vascular structural assessments: In-vivo validation in a porcine model. *Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS*, pp 5602-5605. doi: 10.1109/EMBC46164.2021.9629738. ISSN-1557170X
112. Kiran, R.V., Nabeel, P.M., Shah, M.I., Sivaprakasam, M., Joseph, J. 2021. Gaussian-mixture modelling of A-mode radiofrequency scans for the measurement of arterial wall thickness. *Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS*, pp 5598-5601. doi: 10.1109/EMBC46164.2021.9631078. ISSN-1557170X
113. Praveen, A.N., Swarup, K.S., Srivastava, S. 2021. Communication latency calculation in complex IEC 61850 based substation. *ICPS 2021 - 9th IEEE International Conference on Power Systems: Developments towards Inclusive Growth for Sustainable and Resilient Grid*. doi: 10.1109/ICPS52420.2021.9670391
114. Yerragadda, G., Dharmavarapu, R., Juodkasis, S., Bhattacharya, S. 2021. Design and optimized fabrication techniques for highly-efficient dielectric meta-optical Airy beam generators. *Proceedings of SPIE - The International Society for Optical Engineering* 11695. doi: 10.1117/12.2575900. ISSN-0277786X
115. Babu, M.S., Naresh, C., Jayaganthan, R., Imai, T., Sarathi, R. 2021. Investigating surface condition of corona aged epoxy-Al nanocomposites by adopting wavelet transform. *Proceedings of the IEEE International Conference on Properties and Applications of Dielectric Materials 2021*: 198-201. doi: 10.1109/ICPADM49635.2021.9493906
116. Lavanya, L., Swarup, K.S. 2021. Estimation of inertia in power systems using law of conservation of energy. *ICPS 2021 - 9th IEEE International Conference on Power Systems: Developments towards Inclusive Growth for Sustainable and Resilient Grid*. doi: 10.1109/ICPS52420.2021.9670371
117. Chatterjee, D., Konyukhov, A., Sysoliatin, A., Venkitesh, D. 2021. Phase-sensitive amplification in a dispersion oscillating fiber with two pumps. *Asia Communications and Photonics Conference, ACP 2021*. ISSN-2162108X
118. Solanki, H.M., Sarvepalli, P.K. 2021. Correcting erasures with topological subsystem color codes. *2020 IEEE Information Theory Workshop, ITW 2020*. doi: 10.1109/ITW46852.2021.9457583
119. Mohamed Tanveejul, A.P.S., Vishakh Maheswar, R., Vikraman, A., Dhinesh, R.D., Preejith, S.P., Sivaprakasam, M. 2021. Shot-wise heart rate variability analysis on cricket players. *SeGAH 2021 - 2021 IEEE 9th International Conference on Serious Games and Applications for Health*. doi: 10.1109/SEGAH52098.2021.9551861
120. Neelmani, N., Suematsu, H., Sarathi, R., Tanaka, T. 2021. Effect of the interphase and agglomeration on the tensile properties of epoxy/alumina nanocomposites. *Proceedings of the IEEE International Conference on Properties and Applications of Dielectric Materials 2021*: 262-265. doi: 10.1109/ICPADM49635.2021.9493897
121. Guddanti, S., Khan, Q.A. 2021. A high efficiency fast transient zero output ripple buck converter using split PWM controller with inductor mismatch compensation. *Proceedings - IEEE International Symposium on Circuits and Systems 2021*. doi: 10.1109/ISCAS51556.2021.9401311. ISSN-02714310
122. Basu, R., Mishra, M.K. 2021. Multiport AC-DC-AC interfacing converter for microgrid applications. *ICPS 2021 - 9th IEEE International Conference on Power Systems: Developments towards Inclusive Growth for Sustainable and Resilient Grid*. doi: 10.1109/ICPS52420.2021.9670420
123. Sreeraj, S.J., Venkitesh, D., Koilpillai, R.D., Nirmalathas, A. 2021. Analog optical generation and transport for 5G millimeter wave systems. *2021 IEEE Photonics Conference, IPC 2021 - Proceedings*. doi: 10.1109/IPC48725.2021.9593090
124. Mahidhar, G.D.P., Kumar, B.A., Sarathi, R., Taylor, N., Edin, H., Desai, B.M.A. 2021. Understanding of Incipient discharges in Transformer Insulation by reconstruction of Digital Twins for the discharges using Generative Adversarial Networks. *2021 Electrical Insulation Conference, EIC 2021*, pp 631-634. doi: 10.1109/EIC49891.2021.9612289
125. Yadav, R., Venkatasubramani, L.N., Koilpillai, R.D., Venkitesh, D. 2021. Modified widely linear filter for simultaneous multi-impairment compensation. *Optics InfoBase Conference Papers*
126. Jose, R., Kalaimani, R.K. 2021. Optimization of sensor placement for broadband Newtonian noise cancellation in GW detectors. *2021 25th International Conference on System Theory, Control and Computing, ICSTCC 2021 - Proceedings*, pp 132-137. doi: 10.1109/ICSTCC52150.2021.9607303
127. Shanbhag, A., Sruthi, M.P., Medjdoub, F., Chakravorty, A., Dasgupta, N., Dasgupta, A. 2021. Optimized buffer stack with carbon-doping for performance improvement of GaN HEMTs. *2021 IEEE BiCMOS and Compound Semiconductor Integrated Circuits and Technology Symposium, BCICTS 2021*. doi: 10.1109/BCICTS50416.2021.9682203
128. Mishra, S., Salaun, L., Chen, C.S., Giridhar, K. 2021. Analysis of downlink connectivity in NB-IoT networks employing NOMA with imperfect SIC. *2021 Joint European Conference on Networks and Communications and 6G Summit, EuCNC/6G Summit 2021*, pp 520-525. doi: 10.1109/EuCNC/6GSummit51104.2021.9482531
129. Naveen, J., Amizhtan, S.K., Danikas, M.G., Imai, T., Sarathi, R. 2021. Effect of gamma-ray irradiation on the electrical and mechanical properties of epoxy/TiO nanocomposite.

- Proceedings of the IEEE International Conference on Properties and Applications of Dielectric Materials* 2021: 266-269. doi: 10.1109/ICPADM49635.2021.9493940
- 130.Kiran, R.V., Nabeel, P.M., Manoj, R., Shah, M.I., Sivaprakasam, M., Joseph, J. 2021. Phantom assessment of an image-free ultrasound technology for online local pulse wave velocity measurement. *Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS*, pp 5610-5613. doi: 10.1109/EMBC46164.2021.9630499. ISSN-1557170X
- 131.Sharma, S., Goswami, A., Ghosh, J., Venkataraman, V., Das, B.K. 2021. Telecom-band wavelength conversion in air-clad silicon waveguides. *Springer Proceedings in Physics* 258: 267-270. doi: 10.1007/978-981-15-9259-1_61. ISSN-09308989
- 132.Swaminathan, N., Lakshminarasamma, N., Cao, Y. 2021. DCM and CCM operation of buck-boost full-bridge DC-DC converter. *Conference Proceedings - IEEE Applied Power Electronics Conference and Exposition – APEC*, pp 292-297. doi: 10.1109/APEC42165.2021.9487340
- 133.Thangabalan, B., Naveen, J., Danikas, M.G., Sarathi, R. 2021. Analysis of surface potential decay and charge trap characteristics of water diffused silicone rubber nanocomposites. *Proceedings of the IEEE International Conference on Properties and Applications of Dielectric Materials* 2021: 282-285. doi: 10.1109/ICPADM49635.2021.9494001
- 134.Purohit, K., Suin, M., Rajagopalan, A.N., Boddeti, V.N. 2021. Spatially-adaptive image restoration using distortion-guided networks. *Proceedings of the IEEE International Conference on Computer Vision*, pp 2289-2299. doi: 10.1109/ICCV48922.2021.00231. ISSN-15505499
- 135.Vinod, P., Babu, M.S., Sarathi, R., Vasa, N.J., Kornhuber, S. 2021. Impact of sunlight and stand-off distance on detection of pollution deposit on silicone rubber insulators adopting remote LIBS. *2021 IEEE PES/IAS PowerAfrica, PowerAfrica* 2021. doi: 10.1109/PowerAfrica52236.2021.9543292
- 136.Lamba, M., Mitra, K. 2021. Restoring extremely dark images in real time. *Proceedings of the IEEE Computer Society Conference on Computer Vision and Pattern Recognition*, pp 3486-3496. doi: 10.1109/CVPR46437.2021.00349. ISSN-10636919
- 137.Basak, D., Sruti, S., Giridhar, K. 2021. Comparing precoded MC-CDMA and OTFS for high-speed V2X communications. *IEEE Vehicular Technology Conference* 2021. doi: 10.1109/VTC2021-Fall52928.2021.9625357. ISSN-15502252
- 138.Prasanth, P.P., Sasikumar, N., Venkitesh, D., Srinivasan, B. 2021. Simulating fast dynamics in distributed acoustic sensing using finite difference time domain method. *2021 Conference on Lasers and Electro-Optics, CLEO 2021 - Proceedings*
- 139.Singh, K., Koilpillai, R.D., Venkitesh, D. 2021. Modal decomposition of a three-mode graded index fiber based on stochastic parallel gradient descent (SPGD) algorithm. *Springer Proceedings in Physics* 258: 201-205. doi: 10.1007/978-981-15-9259-1_45. ISSN-09308989
- 140.Francis, F., Manivasakan, R. 2021. Noise evolution and analysis of long repeated/regenerated IMDD links. *2021 IEEE 11th Annual Computing and Communication Workshop and Conference, CCWC 2021*, pp 1588-1593. doi: 10.1109/CCWC51732.2021.9375991
- 141.Sharma, A., Babu, M.S., Kumar, A.V., Sarathi, R., Subramanian, V. 2021. Impact of defect functionalization and thickness variation on EMI shielding efficiency of epoxy-MWCNT nanocomposites. *ICPS 2021 - 9th IEEE International Conference on Power Systems: Developments towards Inclusive Growth for Sustainable and Resilient Grid*. doi: 10.1109/ICPS52420.2021.9670144
- 142.Prajosh, K., Khankhoje, U.K., Ferranti, F. 2021. Fault diagnosis by a novel compressed sensing technique in a phased array with cosine squared element patterns. *15th European Conference on Antennas and Propagation, EuCAP 2021*. doi: 10.23919/EuCAP51087.2021.9411111
- 143.Sruthi, M.P., Shanbhag, A., Chakravorty, A., Dasgupta, N., Dasgupta, A. 2021. Physics based compact model for drain current in fin-shaped GaN MIS-HEMTs. *2021 IEEE BiCMOS and Compound Semiconductor Integrated Circuits and Technology Symposium, BCICTS 2021*. doi: 10.1109/BCICTS50416.2021.9682482
- 144.Krishna, M., Sobhanan, A., Venkitesh, D. 2021. Numerical studies on the estimation of carrier lifetime of SOAs from gain-recovery time measurements. *Proceedings of SPIE - The International Society for Optical Engineering* 11682. doi: 10.1117/12.2582760. ISSN-0277786X
- 145.Vijayakumar, B., Viraraghavan, J. 2021. An area-efficient word-line pitch-aligned 8T SRAM compatible digital-to-analog converter. *Proceedings - IEEE International Symposium on Circuits and Systems* 2021. doi: 10.1109/ISCAS51556.2021.9401131. ISSN-02714310
- 146.Nabeel, P.M., Raj Kiran, V., Joseph, J., et al. 2021. An image-free ultrasound device for simultaneous measurement of local and regional arterial stiffness Indices. *2021 IEEE International Symposium on Medical Measurements and Applications, MeMeA 2021 - Conference Proceedings*. doi: 10.1109/MeMeA52024.2021.9478737
- 147.Manoj, R., Raj Kiran, V., Nabeel, P.M., Sivaprakasam, M., Joseph, J. 2021. Evaluation of nonlinear wave separation method to assess reflection transit time: A virtual patient study. *Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS*, pp 5551-5554. doi: 10.1109/EMBC46164.2021.9630464. ISSN-1557170X
- 148.Sathyamoorthy, R., Srinivasan, B., Sivasubramanian, A., Chitra, K. 2021. Investigation of rare earth elements for solar pumped fiber amplifier. *Springer Proceedings in Physics* 258: 759-762. doi: 10.1007/978-981-15-9259-1_175. ISSN-09308989
- 149.Naresh, C., Vinod, P., Jayaganthan, R., Kornhuber, S., Sarathi, R. 2021. Classification of salt fog aged silicone rubber micro nanocomposites through PCA assisted LIBS. *Proceedings of the IEEE International Conference on Properties and Applications of Dielectric Materials* 2021: 254-257. doi: 10.1109/ICPADM49635.2021.9493934

150. Hariharan, R., Mishra, M.K. 2021. An improved synchronverter control for DERs under grid voltage variations. *Proceedings of 2021 IEEE 2nd International Conference on Smart Technologies for Power, Energy and Control, STPEC 2021*. doi: 10.1109/STPEC52385.2021.9718650
151. Abdulrahuman, A., Chakrabarti, K.S., Raina, G. 2021. Stability, convergence and bifurcation of a reduced Boissonade-De Kepper model with delayed feedback. *IFAC-PapersOnLine* 54 (18): 76-83. doi: 10.1016/j.ifacol.2021.11.119. ISSN-24058963
152. Jhunjhunwala, A., Jha, K.K., Sando, A. 2021. Some steps for India to move towards 100% renewable energy. *2021 IEEE Conference on Norbert Wiener in the 21st Century: Being Human in a Global Village, 21CW 2021*. doi: 10.1109/21CW48944.2021.9532526
153. Suin, M., Purohit, K., Rajagopalan, A.N. 2021. Distillation-guided image inpainting. *Proceedings of the IEEE International Conference on Computer Vision*, pp 2461-2470. doi: 10.1109/ICCV48922.2021.00248. ISSN-15505499
154. Manoj, R., Raj Kiran, V., Nabeel, P.M., Sivaprakasam, M., Joseph, J. 2021. Separation of forward-backward waves in the arterial system using Multi-Gaussian Approach from single pulse waveform. *Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS*, pp 5547-5550. doi: 10.1109/EMBC46164.2021.9630358. ISSN-1557170X
155. Manoj, R., Raj Kiran, V., Nabeel, P.M., Sivaprakasam, M., Joseph, J. 2021. Multi-Gaussian Model for estimating stiffness surrogate using arterial diameter waveform. *2021 IEEE International Symposium on Medical Measurements and Applications, MeMeA 2021 - Conference Proceedings*. doi: 10.1109/MeMeA52024.2021.9478600
156. Ramaiah, S., Lakshminarasamma, N., Mishra, M.K. 2021. An improved deadbeat direct power control for grid connected inverter system. *Proceedings of the 2021 IEEE 12th International Symposium on Power Electronics for Distributed Generation Systems, PEDG 2021*. doi: 10.1109/PEDG51384.2021.9494243
157. Ramanathan, C., Venkatesh, C.R., Giridhar, K. 2021. Mitigating blockage of transmission and reception due to rotor blades in air-to-air data link using single-carrier block modulation. *Proceedings - IEEE Military Communications Conference MILCOM 2021*: 868-873. doi: 10.1109/MILCOM52596.2021.9653002
158. Dhiman, S., Vasudevan, K. 2021. Optimal design of battery charging converters based on energy efficiency. *Proceedings of the Energy Conversion Congress and Exposition - Asia, ECCE Asia 2021*: 1039-1044. doi: 10.1109/ECCE-Asia49820.2021.9479355
159. Shaw, G.K., Prabhakar, A. 2021. Four wave mixing with frequency combs in a highly non-linear fiber. *2021 IEEE Photonics Conference, IPC 2021 - Proceedings*. doi: 10.1109/IPC48725.2021.9592876
160. Patel, A., Chowdhry, Z., Prabhakar, A., Bhallamudi, V.P. 2021. Assembling a diamond MASER. *2021 IEEE Research and Applications of Photonics in Defense Conference, RAPID 2021*. doi: 10.1109/RAPID51799.2021.9521433
161. Dani, V., Ramaiyan, V., Jalihal, D. 2021. Covert communication over asynchronous channels with timing advantage. *2021 IEEE Information Theory Workshop, ITW 2021 - Proceedings*. doi: 10.1109/ITW48936.2021.9611511
162. Venkatasubramani, L.N., Yadav, R., David Koilpillai, R., Venkitesh, D. 2021. IQ Skew tolerance study of modified widely linear filter in 400 Gbps PM-16QAM System. *2021 Photonics North, PN 2021*. doi: 10.1109/PN52152.2021.9597944
163. Amritha, R., Divya, B., Ramaiyan, V. 2021. Wi-Fi coverage in Indian homes. *2021 International Conference on Communication Systems and NETWORKS, COMSNETS 2021*: 334-341. doi: 10.1109/COMSNETS51098.2021.9352832
164. Manvi, B., Bhikkaji, B., Mahindrakar, A.D. 2021. Simultaneous beamforming and trajectory tracking in a multi-agent formation. *2021 29th Mediterranean Conference on Control and Automation, MED 2021*, pp 1114-1119. doi: 10.1109/MED51440.2021.9480277
165. Poojary, P., Moharir, S., Jagannathan, K. 2021. A coupon collector based approximation for LRU cache hits under Zipf requests. *2021 19th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks, WiOpt 2021*. doi: 10.23919/WiOpt52861.2021.9589882
166. Sruti, S., Deepti, C., Giridhar, K. 2021. Non-parametric and geometric multi-target data association for distributed MIMO radars. *Proceedings - IEEE Military Communications Conference MILCOM 2021*: 601-606. doi: 10.1109/MILCOM52596.2021.9652943
167. Venkatasubramani, L.N., Lin, Y., Venkitesh, D., et al. 2021. Pilot-free Bayesian Filter for phase noise correction of 64QAM CO-OFDM superchannel. *Asia Communications and Photonics Conference, ACP 2021*. doi: 10.1364/ACPC.2021.T3B.8. ISSN-2162108X
168. Raj Kiran, V., Nabeel, P.M., Sivaprakasam, M., Joseph, J. 2021. Phantom evaluation of a time warping based automated arterial wall recognition and tracking method. *2021 IEEE International Symposium on Medical Measurements and Applications, MeMeA 2021 - Conference Proceedings*. doi: 10.1109/MeMeA52024.2021.9478692
169. Nagaraju, G., Sarathi, R. 2021. The effect of voltage polarity reversal on space charge behavior of epoxy MgO nanocomposites. *2021 Electrical Insulation Conference, EIC 2021*, pp 317-320. doi: 10.1109/EIC49891.2021.9612383
170. Gokhale, A., Valli, S.M., Kalaimani, R., Pasumarthy, R. 2021. Optimizing controllability metrics for target controllability. *2021 7th Indian Control Conference, ICC 2021 - Proceedings*, pp 141-146. doi: 10.1109/ICC54714.2021.9703184
171. Arathy, R., Nabeel, P.M., Raj Kiran, V., Abhidev, V.V., Sivaprakasam, M., Joseph, J. 2021. Evaluation of vascular pulse contour indices over the physiological blood pressure ranges in an anesthetized porcine model. *Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS*, pp 5594-5597. doi: 10.1109/EMBC46164.2021.9630980. ISSN-1557170X

172. Subramaniam, C.N.S., Dixit, A., Mishra, K., Venkitesh, D., Srinivasan, B. 2021. Experimental demonstration of underwater optical communication using PPM modulated 532 nm DPSS laser. *Springer Proceedings in Physics* 258: 141-144. doi: 10.1007/978-981-15-9259-1_31. ISSN-09308989
173. Antony Raj, A., Vaishali, B., Vagish, D., Sricharan, V., SP, Preejith, Sivaprakasam, M. 2021. Statistical analysis of mental stress during oral presentation. *2021 IEEE International Symposium on Medical Measurements and Applications, MeMeA 2021 - Conference Proceedings*. doi: 10.1109/MeMeA52024.2021.9478721
174. Dixit, A., Sooraj, M.S., Linslal, C.L., Padmanabhan, A., Venkitesh, D., Srinivasan, B. 2021. Experimental validation of free-space coherent beam combining simulations for filled aperture configuration. *Optics InfoBase Conference Papers*
175. Prasanth, P.P., Sasikumar, N., Venkitesh, D., Srinivasan, B. 2021. Simulating fast dynamics in distributed acoustic sensing using finite difference time domain method. *Optics InfoBase Conference Papers*
176. Mandalapu, J., Jagannathan, K. 2021. The capacity of photonic erasure channels with detector dead times. *2021 National Conference on Communications, NCC 2021*. doi: 10.1109/NCC52529.2021.9530152
177. Mukherjee, U., Halder, T., Kannan, A., Ghosh, S., Pavan, S. 2021. A 28.5 μ W all-analog voice-activity detector. *Proceedings - IEEE International Symposium on Circuits and Systems 2021*. doi: 10.1109/ISCAS51556.2021.9401504. ISSN-02714310
178. Chithrabhanu, A., Vasudevan, K. 2021. Current sharing function based torque ripple reduction strategy for switched reluctance motor drives. *Proceedings of the Energy Conversion Congress and Exposition - Asia, ECCE Asia 2021*, pp 2381-2386. doi: 10.1109/ECCE-Asia49820.2021.9479354
179. Sarkar, S., Khade, R.P., Dasgupta, N., Dasgupta, A. 2021. A simple technique to estimate surface traps from DC transfer characteristics of GaN-based HEMT. *2021 IEEE BICMOS and Compound Semiconductor Integrated Circuits and Technology Symposium, BCICTS 2021*. doi: 10.1109/BCICTS50416.2021.9682496
180. Senthooor, K., Sarvepalli, P.K. 2021. Universal communication efficient quantum threshold secret sharing schemes. *2020 IEEE Information Theory Workshop, ITW 2020*. doi: 10.1109/ITW46852.2021.9457576
181. Vinod, P., Babu, M.S., Sarathi, R., Kornhuber, S. 2021. Classification of polluted silicone rubber micro nanocomposites based on ESDD using ANN. *ICPS 2021 - 9th IEEE International Conference on Power Systems: Developments towards Inclusive Growth for Sustainable and Resilient Grid*. doi: 10.1109/ICPS52420.2021.9670252
182. Umasankar, G., Shah, P.S., Chandrachoodan, N., Prabhakar, A. 2021. Benchmarking the poor man's Ising machine. *LEOS Summer Topical Meeting 2021*. doi: 10.1109/SUM48717.2021.9505840. ISSN-10994742
183. Singh, V., Masal, A.A., Klutto Milleth, J., Ramamurthi, B. 2021. High precision positioning using multi-cell massive MIMO system for 5G and beyond. *IEEE International Symposium on Personal, Indoor and Mobile Radio Communications, PIMRC 2021*: 1234-1240. doi: 10.1109/PIMRC50174.2021.9569480
184. Santra, A., Khan, Q.A. 2021. A high gain, low offset time-based operational amplifier for capacitive loads with 36MHz UGB and 70 μ A quiescent current. *Midwest Symposium on Circuits and Systems 2021*: 432-436. doi: 10.1109/MWSCAS47672.2021.9531892. ISSN-15483746
185. Dhanasekaran, S., Miryala, V.K., Hatua, K. 2021. Adaptive digital technique assisted hard switching fault detection for SiC MOSFETs. *IEEE Workshop on Wide Bandgap Power Devices and Applications in Asia, WiPDA Asia 2021*, pp 338-343. doi: 10.1109/WiPDAAsia51810.2021.9656023
186. Aruni, J., Titus, J., Hatua, K. 2021. Design of a DSP-based control platform for real-time simulation of power electronic systems. *Proceedings of 2021 IEEE 2nd International Conference on Smart Technologies for Power, Energy and Control, STPEC 2021*. doi: 10.1109/STPEC52385.2021.9718761
187. Babu, M.S., Sarathi, R., Imai, T. 2021. Influence of corona ageing on electrical and mechanical behaviour of epoxy micro-nanocomposites. *2021 3rd International Conference on High Voltage Engineering and Power Systems, ICHVEPS 2021*, pp 065-068. doi: 10.1109/ICHVEPS53178.2021.9601115
188. Mampilly, A.V., Bhashyam, S. 2021. Greedy successive relaying for the multicarrier diamond relay channel. *2021 National Conference on Communications, NCC 2021*. doi: 10.1109/NCC52529.2021.9530140
189. Suchita, Swain, S., Srinivasan, B., Venkitesh, D. 2021. Demonstration of mode dependent stimulated Brillouin Scattering in graded-index few mode fibers. *Springer Proceedings in Physics* 258: 219-222. doi: 10.1007/978-981-15-9259-1_49. ISSN-09308989
190. Ramesh, V., Natarajan, V., Prabhakar, A. 2021. Solving the two-way number-partitioning problem using a spatial-photonic Ising machine. *LEOS Summer Topical Meeting 2021*. doi: 10.1109/SUM48717.2021.9505909. ISSN-10994742
191. Bhat, C., Sastry, K., Solimene, R., Khankhoje, U.K. 2021. Electromagnetic field prediction - Scattered and total field approaches. *15th European Conference on Antennas and Propagation, EuCAP 2021*. doi: 10.23919/EuCAP51087.2021.9411219
192. Shedligeri, P., Anupama, S., Mitra, K. 2021. A unified framework for compressive video recovery from coded exposure techniques. *Proceedings - 2021 IEEE Winter Conference on Applications of Computer Vision, WACV 2021*, pp 1599-1608. doi: 10.1109/WACV48630.2021.00164
193. Nishitha, R., Amalan, S., Sivaprakasam, M., et al. 2021. Image quality assessment for endoscopy applications. *2021 IEEE International Symposium on Medical Measurements and Applications, MeMeA 2021 - Conference Proceedings*. doi: 10.1109/MeMeA52024.2021.9478603

194. Sameer Babu, T.P., Abhith, B., Koilpillai, R.D. 2021. Impact of Doppler on narrowband and wideband waveforms. *International Symposium on Ocean Electronics, SYMPOL 2021*. doi: 10.1109/SYMPOL53555.2021.9689429. ISSN-23265558
195. Visalakshi, V., Khare, S., Moheimani, S.O.R., Bhikkaji, B. 2021. Design of positive position feedback controllers for collocated systems. *Proceedings of the American Control Conference 2021*: 4791-4796. doi: 10.23919/ACC50511.2021.9482878. ISSN-07431619
196. Hariharan, R., Mishra, M.K. 2021. Analysis of synchronverter control with virtual impedance during grid voltage variations. *Proceedings of 2021 IEEE 2nd International Conference on Smart Technologies for Power, Energy and Control, STPEC 2021*. doi: 10.1109/STPEC52385.2021.9718633
197. Madhu Mithra, K.K., Ramanarayanan, S., Ram, K., Sivaprakasam, M. 2021. Reference-based texture transfer for single image super-resolution of magnetic resonance images. *Proceedings - International Symposium on Biomedical Imaging 2021*: 579-583. doi: 10.1109/ISBI48211.2021.9433961. ISSN-19457928
198. Verginadis, D., Danikas, M.G., Yin, Y., Abd Ghani, A.B., Sarathi, R. 2021. Comparison of flashover voltages and surface discharges of epoxy resin with montmorillonite nanofillers and XLPE samples with SiO and AlO nanoparticles. *Proceedings of the IEEE International Conference on Properties and Applications of Dielectric Materials 2021*: 206-209. doi: 10.1109/ICPADM49635.2021.9493926
199. Kadam, M., Kumar, A., Aniruddhan, S. 2021. A 4-bit bidirectional phase shifter for 3GHz S-band applications. *Midwest Symposium on Circuits and Systems 2021*: 745-748. doi: 10.1109/MWSCAS47672.2021.9531727. ISSN-15483746
200. Vinod, P., Babu, M.S., Danikas, M.G., Imai, T., Sarathi, R. 2021. Impact of gamma irradiation on surface potential and thermo-mechanical properties of epoxy micro-nanocomposites. *Proceedings of the IEEE International Conference on Properties and Applications of Dielectric Materials 2021*: 286-289. doi: 10.1109/ICPADM49635.2021.9493972
201. Babu, M.S., Sarathi, R., Imai, T. 2021. Understanding ageing condition of epoxy micro nanocomposites using space charge characteristics and by adopting PCA and ANN analysis. *2021 Electrical Insulation Conference, EIC 2021*, pp 433-436. doi: 10.1109/EIC49891.2021.9612331
202. Dixit, A., Sooraj, M.S., Linslal, C.L., Padmanabhan, A., Venkitesh, D., Srinivasan, B. 2021. Experimental validation of free-space coherent beam combining simulations for filled aperture configuration. *2021 Conference on Lasers and Electro-Optics, CLEO 2021 - Proceedings*
203. Chitnis, A., Chauhan, R., Kaur, D., Khan, Q. 2021. A 0.75-5V, 15.8 nA with 1.8 μ s delay supply voltage supervisor using adaptively biased comparator and sample hold technique for IoT. *Proceedings of the Custom Integrated Circuits Conference 2021*. doi: 10.1109/CICC51472.2021.9431550. ISSN-08865930
204. Rekha Yadav, Lakshmi Naraya Venkatasubramani, R. David Koilpillai, Deepa Venkitesh, 2021. Modified widely linear filter for simultaneous multi impairment compensation. *Conference on Lasers and Electro Optics CLEO*. doi: 10.1364/CLEO_SI.2021.SF2D.3.
205. G Shishir, Romil Sonigra, Nambi Seshadri, R. David Koilpillai. 2021. Hybrid ARQ protocol for next generation Wi Fi systems. *2021 International Conference on COMMunication Systems NETWORKS COMSNETS*, pp 342-350. doi: 10.1109/COMSNETS51098.2021.9352833.
206. Shende, A.D., Patra, B., Prasad, P.K., Bandyopadhyay, S. 2021. Analytical determination of the longest cylinder free of gain-type singularities inside the workspace of a 3-RPS spatial manipulator. *Springer Proceedings in Advanced Robotics 15*: 277-284. doi: 10.1007/978-3-030-50975-0_34. ISSN-25111256
207. Gaurkar, P.V., Challa, A., Ramakrushnan, K., Subramanian, S.C., Vivekanandan, G., Sivaram, S. 2021. Model predictive control of wheel slip towards antilock brake system using convex optimization. *2021 International Conference on COMMunication Systems and NETWORKS, COMSNETS 2021*, pp 644-649. doi: 10.1109/COMSNETS51098.2021.9352848
208. Devika, K.B., Subramanian, S.C. 2021. Fuel economy and string stability: A dynamics based study on heavy road vehicle platoons. *2021 International Conference on COMMunication Systems and NETWORKS, COMSNETS 2021*, pp 747-752. doi: 10.1109/COMSNETS51098.2021.9352831
209. Sridharan, S., Jha, K.K., Subramanian, S.C. 2021. Power-flow in two and three-wheeled road electric vehicles: challenges and opportunities. *2021 International Conference on COMMunication Systems and NETWORKS, COMSNETS 2021*, pp 759-763. doi: 10.1109/COMSNETS51098.2021.9352836
210. Babu, M.S., Naresh, C., Jayaganthan, R., Imai, T., Sarathi, R. 2021. Investigating surface condition of corona aged epoxy-al nanocomposites by adopting wavelet transform. *Proceedings of the IEEE International Conference on Properties and Applications of Dielectric Materials 2021*: 198-201. doi: 10.1109/ICPADM49635.2021.9493906
211. Vinod, P., Babu, M.S., Sarathi, R., Vasa, N.J., Kornhuber, S. 2021. Impact of sunlight and stand-off distance on detection of pollution deposit on silicone rubber insulators adopting remote LIBS. *2021 IEEE PES/IAS PowerAfrica, PowerAfrica 2021*. doi: 10.1109/PowerAfrica52236.2021.9543292
212. Devika, K.B., Subramanian, S.C. 2021. Sliding mode-based time-headway dynamics for heavy road vehicle platoon control. *2021 7th Indian Control Conference, ICC 2021 - Proceedings*, pp 265-270. doi: 10.1109/ICC54714.2021.9703151
213. Kumar, V., Subramanian, S.C., Rajamani, R. 2021. On using a Low-density flash lidar for tracking closely spaced road vehicles. *IEEE/ASME International Conference on Advanced Intelligent Mechatronics, AIM 2021*: 661-666. doi: 10.1109/AIM46487.2021.9517548
214. Thomas, D., Surendran, S., Vasa, N.J. 2021. Biomolecule characterization using laser induced breakdown spectroscopy. *Springer Proceedings in Physics 258*: 441-

443. doi: 10.1007/978-981-15-9259-1_101. ISSN-09308989
- 215.Devika, K.B., Bera, A., Yellapantula, V.R.S., Behera, A., Liu, Y., Subramanian, S.C. 2021. Driver distraction recognition-driven collision avoidance algorithm for active vehicle safety. *IEEE Conference on Intelligent Transportation Systems, Proceedings, ITSC 2021*: 237-243. doi: 10.1109/ITSC48978.2021.9564648
- 216.Illath, K., Kar, S., Wankhar, S., Nagai, M., Tseng, F.-G., Santra, T.S. 2021. Gold-polystyrene core-shell hybrid nanoparticles mediated highly efficient intracellular delivery using light pulses. *Proceedings of the IEEE International Conference on Micro Electro Mechanical Systems (MEMS) 2021*: 502-505. doi: 10.1109/MEMS51782.2021.9375300. ISSN-10846999
- 217.Saxena, S., Rajendran, C., Sanjeevi, V., Shahabudeen, P. 2021. Optimization of solid waste management in a metropolitan city. *Materials Today: Proceedings* 46: 8231-8238. doi: 10.1016/j.matpr.2021.03.219. ISSN-22147853
- 218.Ranjith Kumar, R., Ganesh, L.S., Rajendran, C. 2021. An entropy based approach to 5S maturity. *Materials Today: Proceedings* 46: 8103-8110. doi: 10.1016/j.matpr.2021.03.048. ISSN-22147853
- 219.Karthiyayini, N., Rajendran, C. 2021. An approach for benchmarking service excellence in accredited services of Indian calibration and testing laboratories. *Materials Today: Proceedings* 46: 8218-8225. doi: 10.1016/j.matpr.2021.03.216. ISSN-22147853
- 220.Foucaud, F., Mishra, S., Narayanan, N., Naserasr, R., Valicov, P. 2021. Cliques in exact distance powers of graphs of given maximum degree. *Procedia Computer Science* 195: 427-436. doi: 10.1016/j.procs.2021.11.052. ISSN-18770509
- 221.Nanthini, R., Prasad, B.V.S.S.S., Sanyasiraju, Y.V.S.S. 2021. Effect of Bezier control points on blade pressure distribution. *AIP Conference Proceedings* 2316. doi: 10.1063/5.0036481. ISSN-0094243X
- 222.Pradeep, V., Krishnasamy, A. 2021. Effect of injection parameters on the premixed charge compression ignition combustion in a small-bore light duty diesel engine - a CFD study. *SAE Technical Papers - (2021)*. doi: 10.4271/2021-01-1174. ISSN-01487191
- 223.Pal, A., Rakshit, S. 2021. Isogeometric shape optimization for design dependent loads. *Proceedings of the ASME Design Engineering Technical Conference 2*. doi: 10.1115/DETC2021-70224
- 224.Dillard, L., Nandigana, V., Gore, J.P. 2021. Artificial intelligence application in combustion modeling. *AIAA Scitech 2021 Forum*: 12-Jan
- 225.Goswami, K., Samuel, G.L. 2021. Support vector machine regression for predicting dimensional features of die-sinking electrical discharge machined components. *Procedia CIRP* 99: 508-513. doi: 10.1016/j.procir.2021.03.109. ISSN-22128271
- 226.Vellandi, V., Krishnasamy, A., Ramesh, A. 2021. Transient emission characteristics of a light duty commercial vehicle powered by a low compression ratio diesel engine. *SAE Technical Papers - (2021)*. doi: 10.4271/2021-01-1181. ISSN-01487191
- 227.Tripathy, S., Mithun Babu, M., Kanupriya, M., Mittal, M. 2021. A machine learning based numerical approach for valve seating velocity control in an electromagnetic camless system. *Proceedings of ASME 2021 Internal Combustion Engine Division Fall Technical Conference, ICEF 2021*. doi: 10.1115/ICEF2021-67594
- 228.Suraj, C.K., Krishnasamy, A. 2021. Effects of oxidation upon long-term storage of Karanja biodiesel on the combustion and emission characteristics of a heavy-duty truck diesel engine. *SAE Technical Papers - (2021)*. doi: 10.4271/2021-01-1200. ISSN-01487191
- 229.Kumar, K., Chaudhari, V., Sahu, S., Devi, R.G. 2021. Investigation on flat-fan spray characterization in high-speed air coflow for gas turbine online water washing application. *Proceedings of ASME 2021 Gas Turbine India Conference, GTINDIA 2021*. doi: 10.1115/GTINDIA2021-76062
- 230.Sreeraj, S.J., Singh, K., Srinivasan, B., Christopher, S., Venkitesh, D. 2021. Simulation of a wideband frequency measurement system using parallel photonic sub-Nyquist sampling and binary deduction. *Asia Communications and Photonics Conference, ACP 2021*. ISSN-2162108X
- 231.Borade, J.S., Padmanabhan, C. 2021. Vibro-acoustic studies on Thanjavur Veena. *"Advances in Acoustics, Noise and Vibration - 2021" Proceedings of the 27th International Congress on Sound and Vibration, ICSV 2021*
- 232.Gowrishankar, S., Krishnasamy, A., Pradeep Bhasker, J. 2021. Experimental investigations on the effects of water injection in a light-duty diesel engine operated with biodiesel fuel. *SAE Technical Papers - Issue 2021*. doi: 10.4271/2021-01-1207. ISSN-01487191
- 233.Paliwal, V., Babu, N.R. 2021. Prediction of stability boundaries in milling by considering the variation of dynamic parameters and specific cutting force coefficients. *Procedia CIRP* 99: 183-188. doi: 10.1016/j.procir.2021.03.026. ISSN-22128271
- 234.Rajaguru, J., Arunachalam, N. 2021. Effect of ultrasonic vibration on the performance of deep hole drilling process. *Procedia Manufacturing* 53: 260-267. doi: 10.1016/j.promfg.2021.06.029. ISSN-23519789
- 235.Keshav, M., Sujatha, C. 2021. Study on effective estimation of parameters of the Herschel-Bulkley fluid model for magnetorheological fluid. *Proceedings of ASME 2021 Conference on Smart Materials, Adaptive Structures and Intelligent Systems, SMASIS 2021*. doi: 10.1115/SMASIS2021-68206
- 236.Sadham Usean, R., Prasad, B.V.S.S.S., Dhabade, M., Kurvinkop, A., Tatiparthi, V. 2021. Design of duct passages for an air turbine starter test rig. *Proceedings of ASME 2021 Gas Turbine India Conference, GTINDIA 2021*. doi: 10.1115/GTINDIA2021-76152
- 237.Anish, R., Shankar, K. 2021. Parametric identification of nonlinear structures using particle swarm optimization based on power flow balance criteria. *Springer Proceedings in Mathematics and Statistics* 364: 249-257. doi: 10.1007/978-3-030-77314-4_20. ISSN-21941009

238. Prasad, K., Hariharan, K., Banerjee, D. 2021. Experimental and modeling studies on the stress relaxation behaviour of Ti-6Al-4V alloy. *Proceedings of ASME 2021 Gas Turbine India Conference, GTINDIA 2021*. doi: 10.1115/GTINDIA2021-75873
239. Mulay, S., Paliwal, V., Babu, N.R. 2021. Analytical approach to predict the bend angle of sheet formed by multiple laser scans. *Procedia CIRP* 99: 272-277. doi: 10.1016/j.procir.2021.03.040. ISSN-22128271
240. Panbarasu, K., Ranganath, V.R., Prakash, R.V. 2021. An experimental study on impact behavior of quasi-isotropic CFRP laminates. *Materials Today: Proceedings* 44: 289-293. doi: 10.1016/j.matpr.2020.09.467. ISSN-22147853
241. Gupta, S.K., Krishnasamy, A. 2021. Evaporation characteristics of fuels for low temperature combustion engine applications. *SAE Technical Papers – Issue 2021*. doi: 10.4271/2021-01-1210. ISSN-01487191
242. Sreenath, A.M., Prakash, R.V. 2021. Numerical simulation of the effect of bonded patch repair on the internal stress distribution. *ASME International Mechanical Engineering Congress and Exposition, Proceedings (IMECE)* 4. doi: 10.1115/IMECE2021-71302
243. Mittal, M., Mithun Babu, M., Kanupriya, M. 2021. Application of particle swarm optimization technique in seating velocity control of electromagnetic valve actuator. *2021 9th International Conference on Control, Mechatronics and Automation, ICCMA 2021*: 177-181. doi: 10.1109/ICCMA54375.2021.9646223
244. Prasanth, P.P., Sasikumar, N., Venkitesh, D., Srinivasan, B. 2021. Simulating Fast Dynamics in Distributed Acoustic Sensing Using Finite Difference Time Domain Method. *2021 Conference on Lasers and Electro-Optics, CLEO 2021 - Proceedings*
245. Venkata Krishna, K., Paul Manelil, N., Maiya, M.P. 2021. Geometrical optimization of longitudinal cooling fins for metal hydride based hydrogen storage reactors. *Proceedings of 2nd IEEE International Conference on Computational Intelligence and Knowledge Economy, ICCIKE 2021*: 535-540. doi: 10.1109/ICCIKE51210.2021.9410738
246. Anish, R., Shankar, K. 2021. Identification of nonlinear joint interface parameters using instantaneous power flow balance approach. *Springer Proceedings in Mathematics and Statistics* 363: 183-191. doi: 10.1007/978-3-030-77310-6_16. ISSN-21941009
247. Sathyamoorthy, R., Srinivasan, B., Sivasubramanian, A., Chitra, K. 2021. Investigation of rare earth elements for solar pumped fiber amplifier. *Springer Proceedings in Physics* 258: 759-762. doi: 10.1007/978-981-15-9259-1_175. ISSN-09308989
248. Bhaduri, S., Mallikarjuna, J.M. 2021. Effect of fuel injection mode on performance and emission characteristics of a spark-ignition engine - a computational fluid dynamics analysis. *SAE Technical Papers - (2021)*. doi: 10.4271/2021-01-5065. ISSN-01487191
249. Prabhu, T.V., Manivannan, P.V., Roy, D., Yathishkumar 2021. A robust tactile sensor matrix for intelligent grasping of objects using robotic grippers. *2021 International Symposium of Asian Control Association on Intelligent Robotics and Industrial Automation, IRIA 2021*: 400-405. doi: 10.1109/IRIA53009.2021.9588669
250. Fultariya, J., Raja, N., Balasubramaniam, K. 2021. Online monitoring of electric power box using waveguide sensors. *Proceedings of 2021 48th Annual Review of Progress in Quantitative Nondestructive Evaluation, QNDE 2021*
251. Dhanalakota, P., Mahapatra, P.S., Pattamatta, A. 2021. Effect of subcooling on pool boiling heat transfer over minichannel surfaces. *ASME International Mechanical Engineering Congress and Exposition, Proceedings (IMECE)* 11. doi: 10.1115/IMECE2021-73455
252. Ali, M.S.S.A., Pavlovic, M., Rajagopal, P. 2021. Estimation of internal surface roughness of additively manufactured components under complex conditions using artificial intelligence and measurements of ultrasonic backscatter. *Proceedings of 2021 48th Annual Review of Progress in Quantitative Nondestructive Evaluation, QNDE 2021*
253. Vignesh, R., Arunachalam, N. 2021. Design and development of spiral grooved grinding wheel and their influence on the performance of vertical surface grinding process. *Procedia Manufacturing* 53: 251-259. doi: 10.1016/j.promfg.2021.06.028. ISSN-23519789
254. Sankar, V., Balasubramaniam, K., Ramaprabhu, S. 2021. Invasive species prosopis juliflora derived carbon biomass/SnO₂ based hazardous NO₂ gas sensor. *Proceedings of IEEE Sensors 2021*. doi: 10.1109/SENSOR547087.2021.9639717. ISSN-19300395
- 255.264. Shrivastava, A., Karthikeyan, M., Rajagopal, P. 2021. Modelling and motion control of an underactuated autonomous underwater vehicle. *2021 6th Asia-Pacific Conference on Intelligent Robot Systems, ACIRS 2021*: 62-68. doi: 10.1109/ACIRS52449.2021.9519334
256. Khan, A., Balasubramaniam, K. 2021. Development of a convolutional neural network assisted fiber optics based passive structural health monitoring system. *Proceedings of 2021 48th Annual Review of Progress in Quantitative Nondestructive Evaluation, QNDE 2021*
257. Patari, S., Mahapatra, P.S. 2021. A point of care sensor for milk adulteration detection. *Proceedings of IEEE Sensors 2021*. doi: 10.1109/SENSOR547087.2021.9639690. ISSN-19300395
258. Prakash, R.V., Viswanath, V. 2021. Effect of moisture absorption on the tensile and flexural properties of glass fiber reinforced composite materials. *ASME International Mechanical Engineering Congress and Exposition, Proceedings (IMECE)* 3. doi: 10.1115/IMECE2021-69865
259. Manelil, N.P., Siddharth, K.S., Tiwari, S. 2021. Comparison of Lattice Boltzmann and Finite Volume method for flow past sphere. *Proceedings of 2nd IEEE International Conference on Computational Intelligence and Knowledge Economy, ICCIKE 2021*: 112-117. doi: 10.1109/ICCIKE51210.2021.9410800
260. Negi, P.S., Koodalil, D., Balasubramaniam, K. 2021. Evaluation of adhesive interface properties in honeycomb

- sandwich structure using guided waves. *Proceedings of 2021 48th Annual Review of Progress in Quantitative Nondestructive Evaluation, QNDE 2021*
- 261.Prasanth, P.P., Sasikumar, N., Venkitesh, D., Srinivasan, B. 2021. Simulating fast dynamics in distributed acoustic sensing using finite difference time domain method. *Optics InfoBase Conference Papers*
- 262.Nemade, P., Krishnasamy, A. 2021. Experimental investigation on reactivity controlled compression ignition with oxygenated alternative fuel blends to reduce unburned hydrocarbon emissions. *SAE Technical Papers - (2021)*. doi: 10.4271/2021-01-1203. ISSN-01487191
- 263.Narayana, P.S.R., Prakash, R.V., Gunti, S., Raghu, K. 2021. Equivalent Energy Absorption (EEA) - a methodology for improved automotive crash & safety design. *ASME International Mechanical Engineering Congress and Exposition, Proceedings (IMECE) 13*. doi: 10.1115/IMECE2021-70137
- 264.Akula, R., Balaji, C. 2021. Effect of PCM fill ratio and heat sink orientation on the thermal management of transient power spikes in electronics. *Journal of Physics: Conference Series 2116 (1)*. doi: 10.1088/1742-6596/2116/1/012077. ISSN-17426588
- 265.Paresi, P.R., Arunachalam, N., Lou, Y., Yoon, J.W. 2021. Machinability studies of AA2024-T351 alloy with uncoated carbide tool. *Materials Today: Proceedings 44*: 1058-1064. doi: 10.1016/j.matpr.2020.11.179. ISSN-22147853
- 266.Rishikesan, V., Chaturvedi, B., Arunachalam, N. 2021. Characterisation of drilling-induced damage in GFRP Honeycomb Sandwich Composites using Acoustic Emission. *Procedia Manufacturing 53*: 664-672. doi: 10.1016/j.promfg.2021.06.066. ISSN-23519789
- 267.Kaja, S.M., Srinivasan, K., Alapati, J.K.K. 2021. Experimental study of wavy edge serrations on flat rotor blades. *Proceedings of INTER-NOISE 2021 - 2021 International Congress and Exposition of Noise Control Engineering*. doi: 10.3397/IN-2021-1970
- 268.Jaiswal, A.K., Mahapatra, P.S., Prasad, B.V.S.S.S. 2021. Conjugate heat transfer from a microchannel embedded impingement cum film cooled-flat plate. *Journal of Physics: Conference Series 2116 (1)*. doi: 10.1088/1742-6596/2116/1/012051. ISSN-17426588
- 269.Chaurasiya, R., Krishnasamy, A. 2021. Homogeneous charge with direct multi-pulse injection - a promising high efficiency and clean combustion strategy for diesel engines. *SAE Technical Papers - (2021)*. doi: 10.4271/2021-01-1156. ISSN-01487191
- 270.Hithendra, K., Prakash, R.V. 2021. A study of stress intensity factors in lozenge pattern of joints. *ASME International Mechanical Engineering Congress and Exposition, Proceedings (IMECE) 3*. doi: 10.1115/IMECE2021-70138
- 271.Suchita, Swain, S., Srinivasan, B., Venkitesh, D. 2021. Demonstration of mode dependent stimulated Brillouin Scattering in graded-index few mode fibers. *Springer Proceedings in Physics 258*: 219-222. doi: 10.1007/978-981-15-9259-1_49. ISSN-09308989
- 272.Aravind, T., Boominathasellarajan, S., Arunachalam, N. 2021. Fabrication of micro-channels on polymethyl methacrylate (PMMA) plates by thermal softening process using nichrome wire: Tool design and surface property evaluation. *Procedia Manufacturing 53*: 182-188. doi: 10.1016/j.promfg.2021.06.088. ISSN-23519789
- 273.Mayilvaganam, K., Shrivastava, A., Rajagopal, P. 2021. An A* based path planning approach for autonomous vehicles. *ACM International Conference Proceeding Series*. doi: 10.1145/3478586.3478589
- 274.Niveditha, P., Prasad, B.V.S.S.S. 2021. Computational study of influence by rotating vaneless diffuser on the performance of centrifugal compressor. *AIP Conference Proceedings 2316*. doi: 10.1063/5.0036459. ISSN-0094243X
- 275.Kumar, P., Ali, M.S.S.A., Rajagopal, P. 2021. Studies on novel hyperlens concept for ultrasonic non destructive evaluation. *Proceedings of 2021 48th Annual Review of Progress in Quantitative Nondestructive Evaluation, QNDE 2021*
- 276.Vellandi, V., Krishnasamy, A., Ramesh, A. 2021. Fuel injection strategies for improving performance and reducing emissions of a low compression ratio diesel engine. *SAE Technical Papers - (2021)*. doi: 10.4271/2021-01-1166. ISSN-01487191
- 277.Singh, D., Arunachalam, N., Srinivasu, D.S. 2021. A novel iterative-based field search technique for roundness evaluation. *Procedia Manufacturing 53*: 268-275. doi: 10.1016/j.promfg.2021.06.030. ISSN-23519789
- 278.Sathyanath, R., Kalpathy, S.K. 2021. Morphological features and dewetting behaviour of thin polymer films coated on porous substrates. *Materials Today: Proceedings 44*: 2939-2944. doi: 10.1016/j.matpr.2021.01.929. ISSN-22147853
- 279.Ravichandran, S., Durai, R.D., Narayanan, V.H.B., et al. 2021. Preparation of aluminium oxide nanoparticles using green synthesis. *NANOCON Conference Proceedings - International Conference on Nanomaterials*, pp 337-343. doi: 10.37904/nanocon.2021.4362. ISSN-2694930X
- 280.Singha, P., Yadav, S., Mohanty, S.R., Shukla, A.K. 2021. Numerical study of heat transfer for microwave-assisted reduction of hematite. *AISTech - Iron and Steel Technology Conference Proceedings 2021*: 158-167. doi: 10.33313/382/015. ISSN-15516997
- 281.Shantharama, Kalpathy, S.K. 2021. Electrocapillary effect in liquid films with an electrically charged interface. *Materials Today: Proceedings 44*: 3006-3011. doi: 10.1016/j.matpr.2021.02.406. ISSN-22147853
- 282.Saincher, S., Gongalla, J.W., Vineesh, P., Sriram, V. 2021. Experimental and FNPT-RANS investigations into gap-excitation and vortex dynamics in a rectangular moonpool interacting with focused waves. *Proceedings of the International Conference on Offshore Mechanics and Arctic Engineering - OMAE 6*. doi: 10.1115/OMAEE2021-61842
- 283.Vyshnavi, P., Venkatesan, N., Samad, A., Avital, E.J. 2021. Tidal current energy for Indian Coastal lines – a state

- art of review. *Journal of Physics: Conference Series* 1716 (1). doi: 10.1088/1742-6596/1716/1/012008. ISSN-17426588
284. Renugadevi, A., Nallayarasu, S., Karunanithi, S. 2021. Evaluation of residual life of existing offshore platforms in Western Offshore, India. *Proceedings of the International Conference on Offshore Mechanics and Arctic Engineering - OMAE 2*. doi: 10.1115/OMAE2021-62714
285. Akshaya, T.R., Govindarajan, S.K., Murali, K. 2021. Development of oil spill weathering model for a comparative study and its application in a real-time spill. *Oceans Conference Record (IEEE) 2021-*. doi: 10.23919/OCEANS44145.2021.9706120. ISSN-01977385
286. Kashyap, S., Saha, N., Abhinav, K.A. 2021. Non-linear response analysis of jacket supported offshore wind turbine under seismic loads using Hilbert-Huang transform. *Proceedings of the International Conference on Offshore Mechanics and Arctic Engineering - OMAE 9*. doi: 10.1115/OMAE2021-67597
287. Narasimman, S., Sannasiraj, S.A., Manasseh, R. 2021. SPH Modeling of extreme wave overtopping on a fixed deck. *Oceans Conference Record (IEEE) 2021*. doi: 10.23919/OCEANS44145.2021.9705982. ISSN-01977385
288. Krishna, G.C.S., Nallayarasu, S. 2021. Parametric evaluation of Stress Concentration Factor (SCF) at brace - Chord intersection of a ring stiffened tubular joint. *Proceedings of the International Conference on Offshore Mechanics and Arctic Engineering - OMAE 6*. doi: 10.1115/OMAE2021-62704
289. Zinage, S., Somayajula, A. 2021. Deep reinforcement learning based controller for active heave compensation. *IFAC-PapersOnLine* 54 (16): 161-167. doi: 10.1016/j.ifacol.2021.10.088. ISSN-24058963
290. Lokesh, N., Nallayarasu, S., Karunanithi, S. 2021. Estimation of probability of fatigue failure on tubular joints. *Proceedings of the International Conference on Offshore Mechanics and Arctic Engineering - OMAE 2*. doi: 10.1115/OMAE2021-62724
291. Jothinathan, S., Kumar, D. 2021. RMS control of response of jacket structure using tuned liquid column ball gas damper under random ocean waves. *Proceedings of the International Conference on Offshore Mechanics and Arctic Engineering - OMAE 2*. doi: 10.1115/OMAE2021-62740
292. Jothinathan, S., Kumar, D. 2021. Stochastic response control of 2D jacket structure using MR damper. *Oceans Conference Record (IEEE) 2021*. doi: 10.23919/OCEANS44145.2021.9705766. ISSN-01977385
293. Radhakrishnan, S., Nallayarasu, S. 2021. Parametric evaluation of forces due to a passing ship on a moored ship using CFD simulation. *Proceedings of the International Conference on Offshore Mechanics and Arctic Engineering - OMAE 8*. doi: 10.1115/OMAE2021-62555
294. Hithaish, D., Samad, A., Takao, M. 2021. A concept of cascading of a fluidic diode for an OWC wave energy converter. *Proceedings of the European Wave and Tidal Energy Conference*, pp 1917-1917-7. ISSN-27066932
295. Hegde, P., Nallayarasu, S. 2021. Hydrodynamic response of buoy form spar with heave plate near free surface. *Proceedings of the International Conference on Offshore Mechanics and Arctic Engineering - OMAE 8*. doi: 10.1115/OMAE2021-62387
296. Kathyayani, N., Samad, A. 2021. Optimizing power output of a wave energy converter by employing superposed hydrodynamic model. *ASME International Mechanical Engineering Congress and Exposition, Proceedings (IMECE) 8*. doi: 10.1115/IMECE2021-70980
297. Ranjith, B., Madhan Kumar, P., Takao, M., Samad, A. 2021. High-performance ocean energy harvesting turbine design - a strategy of compound leaning. *Journal of Physics: Conference Series* 1909 (1). doi: 10.1088/1742-6596/1909/1/012055. ISSN-17426588
298. Kumar, A., Das, T.K., Samad, A. 2021. Experimental study of Wells turbine with multiparameter modification for wave energy conversion. *Oceans Conference Record (IEEE) 2021*. doi: 10.23919/OCEANS44145.2021.9705898. ISSN-01977385
299. Vyshnavi, P., Samad, A., Venkatesan, N., Avital, E.J. 2021. A review on the energy prospects of Indian remote islands and preliminary assessment of marine current energy potential. *Journal of Physics: Conference Series* 1716 (1). doi: 10.1088/1742-6596/1716/1/012007. ISSN-17426588
300. Nandakumar, K., Ravikumar, S., Samad, A. 2021. Development of a nonlinear model for a latch-controlled point absorber system. *Proceedings of the European Wave and Tidal Energy Conference: 1886-1886-10*. ISSN-27066932
301. Devi, K., Sharma, S., Nair, R. 2021. Evaluating spatial variability of subsurface carbon stock and free-phase gas using ground-penetrating radar and direct measurements in coastal landforms of South-West Indian peatlands. *Journal of Physics: Conference Series* 2141 (1). doi: 10.1088/1742-6596/2141/1/012011. ISSN-17426588
302. Dubey, A.C., Gajapathy, R., Rajendran, S. 2021. An experimental and numerical investigation on the autopilot design of a KVLCC2 tanker. *Oceans Conference Record (IEEE) 2021*. doi: 10.23919/OCEANS44145.2021.9705853. ISSN-01977385
303. Sadees, P., Kumar, P.M., Samad, A. 2021. Effect of microcylinder and d-cylinder at the leading edge of a wells turbine harvesting wave energy. *Proceedings of the ASME Turbo Expo 2*. doi: 10.1115/GT2021-59897
304. Kumar, S., Vaippully, R., Roy, B. 2021. Generation of active motion from optically trapped upconverting nanoparticles. *Proceedings of SPIE - The International Society for Optical Engineering* 11798. doi: 10.1117/12.2592101. ISSN-0277786X
305. Dey, S., Khatun, N., Roy, S.C. 2021. Enhanced photoelectrochemical performance of CeO₂ functionalized TiO₂ nanotube arrays with Ag coating. *AIP Conference Proceedings* 2369. doi: 10.1063/5.0060970. ISSN-0094243X
306. Gayathri, R., Suchand Sandeep, C.S., Vijayan, C., Murukeshan, V.M. 2021. Wide-field microscopic structural

- imaging of biological tissues using random laser. *Progress in Biomedical Optics and Imaging - Proceedings of SPIE* 11922. doi: 10.1117/12.2615682. ISSN-16057422
- 307.Mohapatra, A., Rao, M.S.R., Jaiswal, M. 2021. Thermal expansion coefficient of multilayer graphene with rotational stacking faults. *AIP Conference Proceedings* 2408. doi: 10.1063/5.0072954. ISSN-0094243X
- 308.Rebin, K.R., Libby, J.F., Indumathi, D., Mohan, L.S. 2021. Effect of event-by-event reconstruction and low event statistics on the sensitivity of oscillation parameters in the INO-ICAL detector. *Springer Proceedings in Physics* 261: 475-480. doi: 10.1007/978-981-33-4408-2_66. ISSN-09308989
- 309.Gayathri, R., Sandeep, C.S.S., Ahmad, K., Vijayan, C., Murukeshan, V.M. 2021. Non-contact, artefact-free corneal imaging using random laser. *Optics InfoBase Conference Papers*
- 310.Gummaluri, V.S., Radhakrishnan, G., Vijayan, C., Matham, M.V. 2021. Spectral variations in a bioinspired random laser. *2021 IEEE Photonics Conference, IPC 2021 - Proceedings*. doi: 10.1109/IPC48725.2021.9592866
- 311.Resmi, P.K., Libby, J.F., Trabelsi, K. 2021. Measurement of CKM angle ϕ_3 using $B^{\pm} \rightarrow D(K_S^0 \pi^+ \pi^0) K^{\pm}$ decays at Belle. *Springer Proceedings in Physics* 261: 123-131. doi: 10.1007/978-981-33-4408-2_18. ISSN-09308989
- 312.Sugumar, R., Armstrong, C., Krishnan, S., et al. 2021. Design of activation based detection scheme for pulsed gamma ray emission from intense laser plasmas. *AIP Conference Proceedings* 2352. doi: 10.1063/5.0052363. ISSN-0094243X
- 313.Khatun, N., Dey, S., Roy, S.C. 2021. Improved photoelectrochemical performance of ultra thin $g\text{-C}_3\text{N}_4$ nanosheet: A comparative study from bulk to nanoscale. *AIP Conference Proceedings* 2369. doi: 10.1063/5.0060945. ISSN-0094243X
- 314.Jin, Y., Adamczyk, K., Dash, N., et al. 2021. The Belle II diamond detector for radiation monitoring and beam abort. *Proceedings of Science* 390. ISSN-18248039
- 315.Lokesh, M., Vaippully, R., Roy, B. 2021. Generation of pitch rotational torque wrench using two-beam optical tweezers on a birefringent particle. *Proceedings of SPIE - The International Society for Optical Engineering* 11798. doi: 10.1117/12.2592081. ISSN-0277786X
- 316.Patel, A., Chowdhry, Z., Prabhakar, A., Bhallamudi, V.P. 2021. Assembling a diamond MASER. *2021 IEEE Research and Applications of Photonics in Defense Conference, RAPID 2021*. doi: 10.1109/RAPID51799.2021.9521433
- 317.Kaliyar, A.B., Behera, P.K., Mohanty, G.B., Gaur, V. 2021. Study of charmless decays $B^{\pm} \rightarrow K_S^0 K_S^0 h^{\pm}$ ($h = K, \pi$) at Belle. *Springer Proceedings in Physics* 261: 09-Jan. doi: 10.1007/978-981-33-4408-2_1. ISSN-09308989
- 318.Gayathri, R., Suchand Sandeep, C.S., Vijayan, C., Murukeshan, V.M. 2021. Wide-field microscopic structural imaging of biological tissues using random laser. *Optics InfoBase Conference Papers*
- 319.Sadasivan, J., Krishnan, S.R., Dontabhaktuni, J. 2021. Resonance characteristics of sub-wavelength high-refractive index dielectric metasurfaces as a function of lattice constant. *Proceedings of SPIE - The International Society for Optical Engineering* 11795. doi: 10.1117/12.2599580. ISSN-0277786X
- 320.Sikdar, A.K., Behera, P.K. 2021. Charge threshold study of a glass RPC in avalanche mode. *Springer Proceedings in Physics* 261: 841-846. doi: 10.1007/978-981-33-4408-2_117. ISSN-09308989
- 321.Gayathri, R., Gummaluri, V.S., Vijayan, C., Murukeshan, V.M. 2021. Plasmonic nano-urchins as efficient scatterers: A comparative study using electromagnetic simulation. *Optics InfoBase Conference Papers*
- 322.Chacko, A., Indumathi, D., Libby, J.F., Behera, P.K. 2021. Study of atmospheric neutrino oscillation parameters at the INO-ICAL detector using $\nu_e + N \rightarrow e + X$ events. *Springer Proceedings in Physics* 261: 445-451. doi: 10.1007/978-981-33-4408-2_62. ISSN-09308989
- 323.Bacher, S., Adamczyk, K., G. de Marino, et al. 2021. The Belle II silicon vertex detector: performance and running experience. *Proceedings of Science* 390. ISSN-18248039
- 324.El Helou, M., Zhou, R., Ch., et al. 2021. NTIRE 2021 depth guided image relighting challenge. *IEEE Computer Society Conference on Computer Vision and Pattern Recognition Workshops*, pp 566-577. doi: 10.1109/CVPRW53098.2021.00069. ISSN-21607508
- 325.Agrawal, A., Kanesh, L., Panolan, F., Ramanujan, M.S., Saurabh, S. 2021. An FPT algorithm for elimination distance to bounded degree graphs. *Leibniz International Proceedings in Informatics, LIPIcs* 187. doi: 10.4230/LIPIcs.STACS.2021.5. ISSN-18688969
- 326.Padmavathi, G., Sarada, B.N., Shanmuganathan, S.P., Krishnamurthy, R., Padmini, B.V. 2021. Investigation of HVOF processed carbide based coating on AISI-4340. *AIP Conference Proceedings*, 2317. doi: 10.1063/5.0036544. ISSN-0094243X
- 327.Joshi, R., Karnavat, R., Jirapur, K., Joshi, R. 2021. Evaluation of deep learning models for hostility detection in Hindi text. *2021 6th International Conference for Convergence in Technology, I2CT 2021*. doi: 10.1109/I2CT51068.2021.9418073
- 328.Sajan, M., Sampatirao, H., Balasubramanian, R., Nagumothu, R. 2021. Plasma electrolytic oxidation of AZ31 magnesium alloy diffusion bonded with aluminium. *Materials Today: Proceedings* 46: 972-976. doi: 10.1016/j.matpr.2021.01.117. ISSN-22147853
- 329.Shubham, K., Venkatesh, G., Sachdev, R., Akshi, Jayagopi, D.B., Srinivasaraghavan, G. 2021. Learning a deep reinforcement learning policy over the latent space of a pre-trained GAN for semantic age manipulation. *Proceedings of the International Joint Conference on Neural Networks* 2021. doi: 10.1109/IJCNN52387.2021.9533685
- 330.Selvam, S., Ganesan, V., Kumar, P. 2021. FuSeConv: Fully separable convolutions for fast inference on systolic arrays. *Proceedings -Design, Automation and Test in Europe, DATE*

- 2021: 651-656. doi: 10.23919/DATE51398.2021.9473985. ISSN-15301591
- 331.Satish, H., MacHireddy, R.R. 2021. Computational study of SCN5A L812Q gene mutation in epicardial cells. *Proceedings - 2020 IEEE EMBS Conference on Biomedical Engineering and Sciences, IECBES 2020*, pp 46-50. doi: 10.1109/IECBES48179.2021.9398756
- 332.Jayaganthan, S., Guvvala, N., Ramanujam, S. 2021. Identification and classification of incipient discharges in GIS adopting machine learning techniques. *Proceedings of the IEEE International Conference on Properties and Applications of Dielectric Materials 2021*: 306-309. doi: 10.1109/ICPADM49635.2021.9493864
- 333.Mahesh Balan, U., Gandhi, M., Rammohan, S. 2021. Predicting unplanned hospital readmissions using patient level data. *Proceedings of the Annual Hawaii International Conference on System Sciences 2020*: 3436-3444. ISSN-15301605
- 334.Rai, R., Kumar, G., Dagar, S., Somashekar, V., Mboreha, C.A., Modi, P. 2021. Numerical simulation of ballistic impact on aluminium 5083-H116 plate with Johnson cook plasticity model. *Materials Today: Proceedings 46*: 10619-10627. doi: 10.1016/j.matpr.2021.01.373. ISSN-22147853
- 335.Razak, S.N.A., Shafiq, N., Ismail, F.I., et al. 2021. Fire performance of fly ash-based geopolymer concrete: Effect of burning temperature. *IOP Conference Series: Earth and Environmental Science 945* (1). doi: 10.1088/1755-1315/945/1/012062. ISSN-17551307
- 336.Husna, N., Farhan, S.A., Ismail, I.F., et al. 2021. Effect of granular silica aerogel as filler on tensile and flexural strengths and moduli of stone-wool-fibre-reinforced composite as rigid board roof insulation material. *IOP Conference Series: Earth and Environmental Science 945* (1). doi: 10.1088/1755-1315/945/1/012061. ISSN-17551307
- 337.Bharati, K., Palani, M. 2021. A scalable block-proportional fair scheduling scheme for multi-carrier transmission systems. *2021 International Conference on COMmunication Systems and NETworkS, COMSNETS 2021*: 197-201. doi: 10.1109/COMSNETS51098.2021.9352824
- 338.Gupta, V., Ganesan, V., Panda, B. 2021. Seclusive cache hierarchy for mitigating cross-core cache and coherence directory attacks. *Proceedings -Design, Automation and Test in Europe, DATE 2021*: 637-640. doi: 10.23919/DATE51398.2021.9474168. ISSN-15301591
- 339.Sharma, R.K., Sellamuthu, H., Jency, A. 2021. Perturbed trojan dynamics in the solar system. *Advances in the Astronautical Sciences 175*: 3599-3618. ISSN-00653438
- 340.Prashant, P., Ponkshe, K., Garg, C., Pendse, I., Muley, P. 2021. Crop yield prediction of Indian districts using deep learning. *Proceedings of the IEEE International Conference Image Information Processing 2021*: 250-255. doi: 10.1109/ICIIP53038.2021.9702573. ISSN-2640074X
- 341.Mondal, B., Karuppaswamy, A.B. 2021. An analytical approach to parameter selection for SOGI-based fourth-order quadrature signal generators. *Proceedings of the Energy Conversion Congress and Exposition - Asia, ECCE Asia 2021*: 2363-2368. doi: 10.1109/ECCE-Asia49820.2021.9479349
- 342.Kumari, N., Chakraborty, A. 2021. A numerical study of flow around different hydrofoil systems in presence of the free surface. *Proceedings of ASME 2021 Gas Turbine India Conference, GTINDIA 2021*. doi: 10.1115/GTINDIA2021-75821
- 343.Makaram, H., Swaminathan, R. 2021. Influence of bone quality and pedicle screw design on the fixation strength during axial pull-out test: A 2D axisymmetric FE study. *Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS*, pp 4924-4927. doi: 10.1109/EMBC46164.2021.9629484. ISSN-1557170X
- 344.Ghosh, S., Kedarisetty, S., Ghosh, D., Mohanta, D.K. 2021. Failure scenarios of power system protection. *2021 5th International Conference on System Reliability and Safety, ICSRS 2021*: 44566. doi: 10.1109/ICSRS53853.2021.9660710
- 345.Singh, V. 2021. A finite difference frequency domain based full vectorial modesolver with non uniform mesh and arbitrary anisotropy. *2021 International Applied Computational Electromagnetics Society Symposium, ACES 2021*. doi: 10.1109/ACES53325.2021.00171
- 346.Nagarkar, A., Srinivas, S. 2021. An optimized rotor design of synchronous reluctance motor for improved torque characteristics. *2021 International Aegean Conference on Electrical Machines and Power Electronics, ACEMP 2021 and 2021 International Conference on Optimization of Electrical and Electronic Equipment, OPTIM 2021*, pp 107-114. doi: 10.1109/OPTIM-ACEMP50812.2021.9590009
- 347.Maski, P., Thondiyath, A. 2021. Plant disease detection using advanced deep learning algorithms: A case study of papaya ring spot disease. *2021 6th International Conference on Image, Vision and Computing, ICIVC 2021*, pp 49-54. doi: 10.1109/ICIVC52351.2021.9526944
- 348.Suriyanarayanan, R., Murugappan, K., Vasana, A. 2021. Intelligent dynamic replanning for reduced airport operations. *IEEE Conference on Intelligent Transportation Systems, Proceedings, ITSC 2021*: 355-360. doi: 10.1109/ITSC48978.2021.9564858
- 349.Garimella, A., Amarnath, A., Rathlavath, K.K., Yalla, A.P., Anandhavelu, N., Chhaya, N., Srinivasan, B.V. 2021. He is very intelligent, she is very beautiful? On mitigating social biases in language modelling and generation. *Findings of the Association for Computational Linguistics: ACL-IJCNLP 2021*, pp 4534-4545
- 350.Mohankumar, A.K., Begwani, N., Singh, A. 2021. Diversity driven query rewriting in search Advertising. *Proceedings of the ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*, pp 3423-3431. doi: 10.1145/3447548.3467202
- 351.Thirumalavenkatesh, M., Thushara, V.T. 2021. Influence of reclaimed asphalt pavement (RAP) aggregate fraction on the determination of active binder content. *Airfield and Highway Pavements 2021: Pavement Materials and Sustainability - Selected Papers from the International Airfield and Highway Pavements Conference 2021*, pp 147-

154. doi: 10.1061/9780784483510.014
352. Ghosh, S., Siddhardha, K. 2021. Mission specific quadrotor reliability analysis framework. *International Conference on Electrical, Computer, Communications and Mechatronics Engineering, ICECCME 2021*. doi: 10.1109/ICECCME52200.2021.9590999
353. Kulkarni, Y., Sayf Hussain, Z., Ramamritham, K., Somu, N. 2021. EnsembleNTLDetect: An intelligent framework for electricity theft detection in smart grid. *IEEE International Conference on Data Mining Workshops, ICDMW 2021*: 527-536. doi: 10.1109/ICDMW53433.2021.00070. ISSN-23759232
354. Ismail, F.I., Farhan, S.A., Husna, N., Shafiq, N., Wahab, M.M.A., Razak, S.N.A. 2021. Influence of graphene nanoplatelets on the compressive and split tensile strengths of geopolymer concrete. *IOP Conference Series: Earth and Environmental Science* 945 (1). doi: 10.1088/1755-1315/945/1/012060. ISSN-17551307
355. Dinesh, P., Ranjith, P.G., Behera, M.R., Nelson, M. 2021. Mechanical properties of reservoir rock and caprock under varying brine saturation for application of geological carbon storage in deep saline aquifers. *AIP Conference Proceedings* 2417. doi: 10.1063/5.0072588. ISSN-0094243X
356. Kumar, J.S., Kandasami, R.K. 2021. Fluid induced deformation in porous media - Sensitivity analysis of a poroelastic model. *IOP Conference Series: Earth and Environmental Science* 861 (7). doi: 10.1088/1755-1315/861/7/072147. ISSN-17551307
357. Ananda, R.G., Vandavasi, B.N.J., Raju, R., Narayanaswamy, V., Sethuraman, R., Aravindakshan, A.M. 2021. Performance assesment of navigation systems used in deep-water scientific human-occupied vehicle Matsya 6000. *Oceans Conference Record (IEEE) 2021*. doi: 10.23919/OCEANS44145.2021.9705859. ISSN-01977385
358. Singh, A., Chakraborty, O., Das, A., et al. 2021. Semi-supervised action recognition with temporal contrastive learning. *Proceedings of the IEEE Computer Society Conference on Computer Vision and Pattern Recognition*, pp 10384-10394. doi: 10.1109/CVPR46437.2021.01025. ISSN-10636919
359. Shedligeri, P., Schiffers, F., Barutcu, S., Ruiz, P., Katsaggelos, A.K., Cossairt, O. 2021. Regularization for undersampled ptychography. *Optics InfoBase Conference Papers*
360. Shedligeri, P., Schiffers, F., Barutcu, S., Ruiz, P., Katsaggelos, A.K., Cossairt, O. 2021. Improving acquisition speed of x-ray ptychography through spatial undersampling and regularization. *Proceedings - International Conference on Image Processing, ICIP 2021*: 2968-2972. doi: 10.1109/ICIP42928.2021.9506086. ISSN-15224880
361. Mohd, S.S.R., Liew, M.S., Zawaw, N.A.W.A., Farhan, S.A., Shafiq, N. 2021. Green-building-index-assessment-criteria-based comparative evaluation of interlocking blocks as an alternative to conventional masonry for residential buildings in Malaysia. *IOP Conference Series: Earth and Environmental Science* 945 (1). doi: 10.1088/1755-1315/945/1/012071. ISSN-17551307
362. Vashistha, R., Gogoi, A., Gopal, K.V.N. 2021. Study of variation in vectored thrust with nozzle deformation due to exhaust gas pressure and temperature. *AIAA Propulsion and Energy Forum, 2021*. doi: 10.2514/6.2021-3556
363. Saichenthur, N., Murali, K. 2021. Prediction of storm surge due to super cyclone Amphan using a hybrid finite volume and finite element based SWE solver. *Oceans Conference Record (IEEE) 2021*. doi: 10.23919/OCEANS44145.2021.9705787. ISSN-01977385
364. Chandrasekaran, K., Somayaji, A., Thondiyath, A. 2021. Design of a flexure-based compliant grasper for the master arm of a surgical robot. *Proceedings of the 2021 Design of Medical Devices Conference, DMD 2021*. doi: 10.1115/DMD2021-1037
365. Devi, R.G., Seshadri, S., Michelassi, V. 2021. Numerical model for condensing steam through labyrinth seal. *Proceedings of the ASME Turbo Expo 8*. doi: 10.1115/GT2021-58736
366. Anil, R., Sharma, M., Choudhary, R. 2021. SDE-DualENet: A novel dual efficient convolutional neural network for robust stereo depth estimation. *2021 International Conference on Visual Communications and Image Processing, VCIP 2021 - Proceedings*. doi: 10.1109/VCIP53242.2021.9675391
367. Mathew, D.A.S. 2021. Deviations in efficiencies of logarithmically growing sorting algorithms at infinitely large datasets. *3rd IEEE International Virtual Conference on Innovations in Power and Advanced Computing Technologies, i-PACT 2021*. doi: 10.1109/i-PACT52855.2021.9697009
368. Singh, M.P., Gayathri, V., Chaudhuri, D. 2021. Manmade structure segmentation based on morphological operation from high resolution PAN image. *2nd International Conference on Range Technology, ICORT 2021*. doi: 10.1109/ICORT52730.2021.9581563
369. Kumar, R.N., Raghavan, V. 2021. Numerical simulations of biogas flames using OpenFOAM. *AIP Conference Proceedings* 2403. doi: 10.1063/5.0071011. ISSN-0094243X
370. Kumar, S.K.S., Kulyadi, S.P., Mohandas, P., Shankar Raman, M.J., Vasani, V.S. 2021. Computation of cyclomatic complexity and detection of malware executable files. *Proceedings of the 13th International Conference on Electronics, Computers and Artificial Intelligence, ECAI 2021*. doi: 10.1109/ECAI52376.2021.9515044
371. Enadula, S.M., Enadula, A.S., Burri, R.D. 2021. Recognition of student emotions in an online education system. *2021 4th International Conference on Electrical, Computer and Communication Technologies, ICECCT 2021*. doi: 10.1109/ICECCT52121.2021.9616788
372. Marx, D., Sankar, G.S., Schepper, P. 2021. Degrees and gaps: Tight complexity results of general factor problems parameterized by treewidth and cutwidth. *Leibniz International Proceedings in Informatics, LIPIcs* 198. doi: 10.4230/LIPIcs.ICALP.2021.95. ISSN-18688969
373. Kumar, B.K., Marla, L.R., Gangashetty, S.V. 2021. A generative adversarial network based training framework for robust TTS in noisy environment. *ACM International*

- Conference Proceeding Series, pp 273-277. doi: 10.1145/3474124.3474163
- 374.Priyatharshan, S.K., Pham, T.-P., Senname, O. 2021. Identification and comparison of two nonlinear extended phenomenological models for an automotive ElectroRheological (ER) damper. *IFAC-PapersOnLine* 54 (7): 439-444. doi: 10.1016/j.ifacol.2021.08.399. ISSN-24058963
- 375.Gl, T., Ganesh, V., Sethuraman, T.V., Perepu, S.K. 2021. Efficient knowledge distillation of teacher model to multiple student models. *Proceedings - 2021 IEEE International Conference on Industry 4.0, Artificial Intelligence, and Communications Technology, IAICT 2021*, pp 173-179. doi: 10.1109/IAICT52856.2021.9532543
- 376.Agrawal, A., Anand, A., Saurabh, S. 2021. A polynomial kernel for deletion to ptolemaic graphs. *Leibniz International Proceedings in Informatics, LIPIcs* 214. doi: 10.4230/LIPIcs.IPEC.2021.1. ISSN-18688969
- 377.Babu, P.S., Sivaraman, S., Sarma, D.N., Warriar, T.S. 2021. Evaluation of bit manipulation instructions in optimization of size and speed in RISC-V. *Proceedings of the IEEE International Conference on VLSI Design 2021*: 54-59. doi: 10.1109/VLSID51830.2021.00014. ISSN-10639667
- 378.Amalanathan, A.J., Sarathi, R., Harid, N., Griffiths, H. 2021. Impact of benzotriazole on the degradation performance of ester fluid. *2021 Electrical Insulation Conference, EIC 2021*, pp 610-613. doi: 10.1109/EIC49891.2021.9612405
- 379.Murugesan, K., Thangadorai, K.K., Muralidhara, V.N. 2021. PoEx: Proof of existence for evil twin attack prevention in Wi-Fi personal networks. *Proceedings - 2021 International Conference on Future Internet of Things and Cloud, FiCloud 2021*: 92-98. doi: 10.1109/FiCloud49777.2021.00021
- 380.Bommisetty, L. 2021. Performance analysis of TCP queues: Effect of buffer size and round trip time. *Proceedings of IEEE International Conference on Signal Processing, Computing and Control* 2021: 631-635. doi: 10.1109/ISPC53510.2021.9609523. ISSN-26438615
- 381.Shibu, A.J., Sadhana, S., Shilpa, N., Kumar, P. 2021. VerLPy: Python library for verification of digital designs with reinforcement learning. *ACM International Conference Proceeding Series*. doi: 10.1145/3486001.3486236
- 382.Indumathi, D., Lakshmi, S.M., Murthy, M.V.N. 2021. Probing leptonic δ_{cp} using low energy atmospheric neutrinos. *Springer Proceedings in Physics* 261: 487-495. doi: 10.1007/978-981-33-4408-2_68. ISSN-09308989
- 383.Kiran, Y.M., Srinivas, S. 2021. Simple approach to model photovoltaic module using solver utility of microsoft excel. *2021 IEEE International Power and Renewable Energy Conference, IPRECON 2021*. doi: 10.1109/IPRECON52453.2021.9640780
- 384.Verma, E., Singh, V., Safwan, M. 2021. Mitosis detection in phase contrast microscopy image sequences using spatial segmentation and spatio-temporal localization refinement. *Proceedings - International Symposium on Biomedical Imaging* 2021: 1112-1116. doi: 10.1109/ISBI48211.2021.9433933. ISSN-19457928
- 385.Appina, B., Sharma, M., Kumar, S., Kara, P.A., Simon, A., Guindy, M. 2021. Latent factor modeling of perceived quality for stereoscopic 3D video recommendation. *2021 International Conference on 3D Immersion, IC3D 2021 - Proceedings*. doi: 10.1109/IC3D53758.2021.9687271
- 386.Kulyadi, S.P., Mohandas, P., Kumar, S.K.S., Raman, M.J.S., Vasan, V.S. 2021. Anomaly detection using generative adversarial networks on firewall log message data. *Proceedings of the 13th International Conference on Electronics, Computers and Artificial Intelligence, ECAI 2021*. doi: 10.1109/ECAI52376.2021.9515086
- 387.Vishnupriya, R., Robinson, N., Reddy M, R., Guan, C. 2021. Performance evaluation of compressed deep CNN for motor imagery classification using EEG. *Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS*, pp 795-799. doi: 10.1109/EMBC46164.2021.9631018. ISSN-1557170X
- 388.Husna, N., Farhan, S.A., Ismail, F.I., et al. 2021. Building-information-modelling-based thermal-energy performance evaluation of silica-aerogel-incorporated rigid board roof insulation material for residential buildings in the tropical climate of Malaysia. *IOP Conference Series: Earth and Environmental Science* 945 (1). doi: 10.1088/1755-1315/945/1/012066. ISSN-17551307
- 389.Lakshmi, S.M., Choubey, S., Goswami, S. 2021. Sensitivity of INO ICAL to neutrino mass hierarchy and θ_{23} octant in presence of invisible neutrino decay in matter. *Springer Proceedings in Physics* 261: 981-986. doi: 10.1007/978-981-33-4408-2_142. ISSN-09308989
- 390.Navaneethakrishna, M., Manusundan, S.R. 2021. Analysis of heart rate variability in normal and diabetic ECG signals using fragmentation approach. *Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS*, pp 1112-1115. doi: 10.1109/EMBC46164.2021.9631076. ISSN-1557170X
- 391.Gadikar, P., Diehl, P., Jha, P.K. 2021. Load balancing for distributed nonlocal models within asynchronous many-task systems. *2021 IEEE International Parallel and Distributed Processing Symposium Workshops, IPDPSW 2021 - In conjunction with IEEE IPDPS 2021*, pp 669-678. doi: 10.1109/IPDPSW52791.2021.00103
- 392.Rout, N. 2021. Rediscoveries from the first data of Belle II. *Springer Proceedings in Physics* 261: 101-107. doi: 10.1007/978-981-33-4408-2_15. ISSN-09308989
- 393.Bommisetty, L., Gopalakrishnan, V.T. 2021. BIOS: Biogeography Inspired Optimal Scheduling algorithm for TSCH networks. *Proceeding - 2021 26th IEEE Asia-Pacific Conference on Communications, APCC 2021*, pp 166-172. doi: 10.1109/APCC49754.2021.9609891
- 394.Balan, A.N., Thondiyath, A. 2021. Multi-robot decentralized exploration using weighted random selection. *Proceedings of the 18th International Conference on Informatics in Control, Automation and Robotics, ICINCO 2021*, pp 523-529. doi: 10.5220/0010608405230529
- 395.Ravishankar, J., Sharma, M. 2021. A hierarchical coding scheme for glasses-free 3D displays based on scalable hybrid layered representation of real-world light fields.

- Conference Proceedings - IEEE International Conference on Systems, Man and Cybernetics*, pp 3491-3498. doi: 10.1109/SMC52423.2021.9658584. ISSN-1062922X
- 396.Kumar, R.S.A. 2021. A discrete-time delta-sigma modulator with relaxed driving requirements and improved anti-aliasing. *Proceedings - IEEE International Symposium on Circuits and Systems 2021*. doi: 10.1109/ISCAS51556.2021.9401336. ISSN-02714310
- 397.Mondal, S., Silva, D., D'Amorim, M. 2021. Soundy automated parallelization of test execution. *Proceedings - 2021 IEEE International Conference on Software Maintenance and Evolution, ICSME 2021*, pp 309-319. doi: 10.1109/ICSME52107.2021.00034
- 398.Ravishankar, J., Sharma, M., Khaidem, S. 2021. A novel compression scheme based on hybrid tucker-vector quantization via tensor sketching for dynamic light fields acquired through coded aperture camera. *2021 International Conference on 3D Immersion, IC3D 2021 - Proceedings*. doi: 10.1109/IC3D53758.2021.9687155
- 399.Pandey, S., Gopalakrishnan, V.T., Ramavath, N. 2021. Exploration of design optimizations for STTMRAM as L1 cache. *19th IEEE Student Conference on Research and Development: Sustainable Engineering and Technology towards Industry Revolution, SCORed 2021*, pp 317-322. doi: 10.1109/SCORed53546.2021.9652707
- 400.Dutta, S., Das, S.D., Shah, N.A., Tiwari, A.K. 2021. Stacked deep multi-scale hierarchical network for fast Bokeh Effect rendering from a single image. *IEEE Computer Society Conference on Computer Vision and Pattern Recognition Workshops*, pp 2398-2407. doi: 10.1109/CVPRW53098.2021.00272. ISSN-21607508
- 401.Manoharan, P., Venkat, M.P., Nagarathinam, S., Vasana, A. 2021. Learn to chill: Intelligent chiller scheduling using meta-learning and deep reinforcement learning. *BuildSys 2021 - Proceedings of the 2021 ACM International Conference on Systems for Energy-Efficient Built Environments*, pp 21-30. doi: 10.1145/3486611.3486649
- 402.Jain, S., Vasudevan, V., Sujatha, N. 2021. Automated detection of optical phantom layer thickness using image analysis. *Progress in Biomedical Optics and Imaging - Proceedings of SPIE 11600*. doi: 10.1117/12.2582125. ISSN-16057422
- 403.Rout, N. 2021. Measurement of $\gamma(\phi_3)$ and first results on CP violation at Belle II. *Proceedings of Science 390*. ISSN-18248039
- 404.Aggarwal, D., Senthilnath, J., Xiaoli, L., et al. 2021. SGDOL: Self-evolving generative and discriminative online learning for data stream classification. *IEEE International Conference on Data Mining Workshops, ICDMW 2021*: 322-330. doi: 10.1109/ICDMW53433.2021.00047. ISSN-23759232
- 405.Ramakrishnan, K., Deniz, F. 2021. Non-complementarity of information in word-embedding and brain representations in distinguishing between concrete and abstract words. *CMCL 2021 - Workshop on Cognitive Modeling and Computational Linguistics, Proceedings*, p 44572
- 406.Sharma, A. 2021. Measurements of property of Higgs with mass near 125 GeV, CMS Collaboration. *Springer Proceedings in Physics 261*: 39-44. doi: 10.1007/978-981-33-4408-2_6. ISSN-09308989
- 407.Dutta, S., Paul, A., Ozaki, R.H., Ranzan, C.P., Sakurai, K. 2021. A distributed ledger management mechanism for storing and selling private data. *2021 IEEE Conference on Dependable and Secure Computing, DSC 2021*. doi: 10.1109/DSC49826.2021.9346258
- 408.Kumar, M. 2021. Socio-cultural impediments to automation in Indian mines. *E3S Web of Conferences 266*. doi: 10.1051/e3sconf/202126605009. ISSN-25550403
- 409.Meshram, R., Kaza, K. 2021. Monte Carlo rollout policy for recommendation systems with dynamic user behavior. *2021 International Conference on COMMunication Systems and NETWORKS, COMSNETS 2021*, pp 86-89. doi: 10.1109/COMSNETS51098.2021.9352741
- 410.Kumar, J.V.V., Gupta, A., Harisanth, K.S., Jayachandran, S.A. 2021. Influence of perforation pattern in Direct Strength Method of upright design. *Proceedings of the Annual Stability Conference Structural Stability Research Council 2021, SSRC 2021*
- 411.Dixit, A., Agarwal, A.K., Dwivedi, P.K. 2021. Optical performance evaluation of infrared microlens by direct wavefront sensing at LWIR wavelength. *Springer Proceedings in Physics 258*: 303-306. doi: 10.1007/978-981-15-9259-1_68. ISSN-09308989
- 412.Wagh, V., Khandve, S., Joshi, I., Wani, A., Kale, G., Joshi, R. 2021. Comparative study of long document classification. *IEEE Region 10 Annual International Conference, Proceedings/TENCON 2021*: 732-737. doi: 10.1109/TENCON54134.2021.9707465. ISSN-21593442
- 413.Razak, S.N.A., Shafiq, N., Ismail, F.I., et al. 2021. Effect of heating duration at high temperature on the strength and integrity of fly ash-based geopolymers. *IOP Conference Series: Earth and Environmental Science 945 (1)*. doi: 10.1088/1755-1315/945/1/012063. ISSN-17551307
- 414.Chithra 2021. A technique for measuring picosecond delays using phase modulation. *Proceedings - IEEE International Symposium on Circuits and Systems 2021*. doi: 10.1109/ISCAS51556.2021.9401428. ISSN-02714310
- 415.Satish, H., Reddy, R.M. 2021. A simulation study on electrical activity of ventricular endocardial tissue due to SCN5A L812Q mutation. *Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS*, pp 5543-5546. doi: 10.1109/EMBC46164.2021.9630990. ISSN-1557170X
- 416.Sumathi, A.C., Ganti, R., Balasiddharth, D., ArunPrasath, R.V., Sheeba, A. 2021. Development of functional prototype of PDCP sublayer in 5G NR. *12th International Conference on Advances in Computing, Control, and Telecommunication Technologies, ACT 2021 Volume 2021*, pp 733-739
- 417.Goswami, A., Krishna Das, B. 2021. Efficient four wave mixing in a silicon photonic wire waveguide and resonator. *Springer Proceedings in Physics 258*: 169-172. doi: 10.1007/978-981-15-9259-1_37. ISSN-09308989

418. Mohandas, P., Kumar, S.K.S., Kulyadi, S.P., Shankar Raman, M.J., Vasan, V.S., Venkataswami, B. 2021. Detection of malware using machine learning based on operation code frequency. *Proceedings - 2021 IEEE International Conference on Industry 4.0, Artificial Intelligence, and Communications Technology, IAICT 2021*, pp 214-220. doi: 10.1109/IAICT52856.2021.9532521
419. Venkatraman Hegde, A., Sujatha, N. 2021. Differential imaging of dynamic scattering from laser speckle images for applications in perfusion monitoring. *Progress in Biomedical Optics and Imaging - Proceedings of SPIE* 11600. doi: 10.1117/12.2582083. ISSN-16057422
420. Agrawal, A., Allumalla, R.K., Dhanekula, V.T. 2021. Refuting FPT algorithms for some parameterized problems under Gap-ETH. *Leibniz International Proceedings in Informatics, LIPIcs* 214. doi: 10.4230/LIPIcs.IPEC.2021.2. ISSN-18688969
421. Gadikar, P.U., Ganesan, V., Panda, P.K. 2021. Generalized weight agnostic neural networks for configurable and continual autonomous systems. *ACM International Conference Proceeding Series*. doi: 10.1145/3486001.3486226
422. Mohan, S., Vineeth, M. 2021. Phycoremediation of greywater using *Chlorella vulgaris*. *World Environmental and Water Resources Congress 2021: Planning a Resilient Future along America's Freshwaters - Selected Papers from the World Environmental and Water Resources Congress 2021*, pp 734-740. doi: 10.1061/9780784483466.067
423. Mondal, B., Arun Karuppaswamy, B. 2021. Design of Si-IGBT gate driver for inverter applications. *Proceedings of the Energy Conversion Congress and Exposition - Asia, ECCE Asia 2021*, pp 743-748. doi: 10.1109/ECCE-Asia49820.2021.9479078
424. Dawalatabad, N., Ravanelli, M., Grondin, F., Thienpondt, J., Desplanques, B., Na, H. 2021. ECAPA-TDNN embeddings for speaker diarization. *Proceedings of the Annual Conference of the International Speech Communication Association, INTERSPEECH 4: 2528-2532*. doi: 10.21437/Interspeech.2021-941. ISSN-2308457X
425. Manuskandan, S.R., Anandh, K.R. 2021. Laplace Beltrami based formulation of corpus callosum to ventricle ratio for the analysis of Alzheimer's Condition in T1-weighted MR images. *2021 IEEE Signal Processing in Medicine and Biology Symposium, SPMB 2021 - Proceedings*. doi: 10.1109/SPMB52430.2021.9672297
426. Das, S.D., Shah, N.A., Dutta, S., Kumar, H. 2021. DSRN: An efficient deep network for image relighting. *Proceedings - International Conference on Image Processing, ICIP 2021: 2788-2792*. doi: 10.1109/ICIP42928.2021.9506473. ISSN-15224880
427. Gayathri, R., Sandeep, C.S.S., Ahmad, K., Vijayan, C., Murukeshan, V.M. 2021. Non-contact, artefact-free corneal imaging using random laser. *Optics InfoBase Conference Papers*
428. U. Naveen Kumar, Sourav Ghosh, C.R. Jeevandoss, Ranga Rao Gangavarapu and Tiju Thomas. 2021. Temperature and stability study of all oxynitride based asymmetric supercapacitor. *Meet. Abstr. MA2021 01 2081 22*. doi: 10.1149/MA2021-0182081mtgabs
429. Sivasankar Ganesan, Senthil Kumar Natarajan, Asokan Thondiyath. 2021. G RRT Goal oriented sampling based RRT path planning algorithm for mobile robot navigation with improved convergence rate. *AIR2021 Advances in Robotics 5th International Conference of The Robotics Society June 2021*. doi: 10.1145/3478586.3478588

Papers published in national and international journals

1. Andrew, J.J., Schneider, J., Kumar, S., et al. 2021. Energy absorption characteristics of additively manufactured plate-lattices under low-velocity impact loading. *International Journal of Impact Engineering* 149. doi: 10.1016/j.ijimpeng.2020.103768. ISSN-0734743X
2. Mahesh, D., Ahmad, S., Kumar, R., Chakravarthy, S.R., Vinu, R. 2021. Hydrothermal liquefaction of municipal solid wastes for high-quality bio-crude production using glycerol as co-solvent. *Bioresource Technology* 339. doi: 10.1016/j.biortech.2021.125537. ISSN-09608524
3. Bury, T.M., Sujith, R.I., Bauch, C.T., et al. 2021. Deep learning for early warning signals of tipping points. *Proceedings of the National Academy of Sciences of the United States of America* 118 (39). doi: 10.1073/pnas.2106140118. ISSN-00278424
4. Sharma, A.P., Velmurugan, R., Shankar, K., Ha, S.K. 2021. High-velocity impact response of titanium-based fiber metal laminates. Part I: experimental investigations. *International Journal of Impact Engineering* 152. doi: 10.1016/j.ijimpeng.2021.103845. ISSN-0734743X
5. Krishnan, A., Sujith, R.I., Marwan, N., Kurths, J. 2021. Suppression of thermoacoustic instability by targeting the hubs of the turbulent networks in a bluff body stabilized combustor. *Journal of Fluid Mechanics* 916. doi: 10.1017/jfm.2021.166. ISSN-00221120
6. Shahi, K., Boomurugan, R., Velmurugan, R. 2021. Cold programming of epoxy-based shape memory polymer. *Structures* 29, pp 2082-2093. doi: 10.1016/j.istruc.2020.05.023. ISSN-23520124
7. Wang, B., Jiang, W., Chen, G., Tao, L., Li, Z. 2021. Vertical distribution and longitudinal dispersion of gyrotactic microorganisms in a horizontal plane Poiseuille flow. *Physical Review Fluids* 6 (5). doi: 10.1103/PhysRevFluids.6.054502. ISSN-2469990X
8. Sharma, A.P., Velmurugan, R., Shankar, K., Ha, S.K. 2021. High-velocity impact response of titanium-based fiber metal laminates. Part II: Analytical modeling. *International Journal of Impact Engineering* 152. doi: 10.1016/j.ijimpeng.2021.103853. ISSN-0734743X
9. Rana, A.S., Vamshi, M.K., Naresh, K., Velmurugan, R., Sarathi, R. 2021. Effect of nanoclay on mechanical, thermal and morphological properties of silicone rubber and EPDM/silicone rubber hybrid composites. *Advances in Materials and Processing Technologies* 7 (1): 109-116. doi:

10.1080/2374068X.2020.1754720. ISSN-2374068X

10.Torki, M.E., Keralavarma, S.M., Benzerga, A.A. 2021. An analysis of Lode effects in ductile failure. *Journal of the Mechanics and Physics of Solids* 153. doi: 10.1016/j.jmps.2021.104468. ISSN-00225096

11.Manoj, K., Pawar, S.A., Sujith, R.I. 2021. Experimental investigation on the susceptibility of minimal networks to a change in topology and number of oscillators. *Physical Review E* 103 (2). doi: 10.1103/PhysRevE.103.022207. ISSN-24700045

12.Premraj, D., Suresh, K., Pawar, S.A., Kabiraj, L., Prasad, A., Sujith, R.I. 2021. Dragon-king extreme events as precursors for catastrophic transition. *EPL* 134 (3). doi: 10.1209/0295-5075/134/34006. ISSN-02955075

13.Babu, M.S., Velmurugan, R., Sarathi, R., Imai, T. 2021. Influence of water ageing on variation in space charge and thermo-mechanical properties of epoxy micro-nano composites. *IET Science, Measurement and Technology* 15 (1): 44-60. doi: 10.1049/smt2.12005. ISSN-17518822

14.Braun, T., Unni, V.R., Sujith, R.I., Kurths, J., Marwan, N. 2021. Detection of dynamical regime transitions with lacunarity as a multiscale recurrence quantification measure. *Nonlinear Dynamics* 104 (4): 3955-3973. doi: 10.1007/s11071-021-06457-5. ISSN-0924090X

15.Pavithran, I., Sujith, R.I. 2021. Effect of rate of change of parameter on early warning signals for critical transitions. *Chaos* 31 (1). doi: 10.1063/5.0025533. ISSN-10541500

16.Shroyer, E., Tandon, A., Gordon, A.L., et al. 2021. Bay of Bengal intraseasonal oscillations and the 2018 monsoon onset. *Bulletin of the American Meteorological Society* 102 (10): E1936-E1951. doi: 10.1175/BAMS-D-20-0113.1. ISSN-00030007

17.Zinage, V., Ghosh, S. 2021. Directional sampling-based generalized shape expansion for accelerated motion planning in 2-d obstacle-cluttered environments. *IEEE Control Systems Letters* 5 (3): 1067-1072. doi: 10.1109/LCSYS.2020.3009928. ISSN-24751456

18.Dubey, R., Jayaganthan, R., Ruan, D., Velmurugan, R. 2021. Effect of different cryogenic rolling strains on the impact properties of 6082 aluminum alloy. *Journal of Materials Engineering and Performance* 30 (2): 1001-1011. doi: 10.1007/s11665-020-05412-6. ISSN-10599495

19.Roy, A., Sujith, R.I. 2021. Fractal dimension of premixed flames in intermittent turbulence. *Combustion and Flame* 226, pp412-418. doi:10.1016/j.combustflame.2020.12.032. ISSN-00102180

20.Chinthala, V.S.R.K., Mulay, S.S., Harish, A.B. 2021. Constitutive modeling of pH-sensitive hydrogel: Multi-physics coupling of electromagnetics with mechanics and thermodynamics. *Mechanics of Materials* 161. doi: 10.1016/j.mechmat.2021.104002. ISSN-01676636

21.Sandhu, J.P.S., Ghosh, S. 2021. A local correlation-based zero-equation transition model. *Computers and Fluids* 214. doi: 10.1016/j.compfluid.2020.104758. ISSN-00457930

22.Dubey, R., Jayaganthan, R., Ruan, D., Velmurugan, R.

2021. Behavior of thermo-mechanically processed aa 6082 aluminium alloy impacted by conical projectiles. *Journal of Dynamic Behavior of Materials* 7 (1): 48-59. doi: 10.1007/s40870-020-00265-5. ISSN-21997446

23.Singh, S., Roy, A., Sujith, R.I., et al. 2021. Intermittency, secondary bifurcation and mixed-mode oscillations in a Swirl-Stabilized annular combustor: Experiments and Modeling. *Journal of Engineering for Gas Turbines and Power* 143 (5). doi: 10.1115/1.4049407. ISSN-07424795

24.Premraj, D., Manoj, K., Pawar, S.A., Sujith, R.I. 2021. Effect of amplitude and frequency of limit cycle oscillators on their coupled and forced dynamics. *Nonlinear Dynamics* 103 (2): 1439-1452. doi: 10.1007/s11071-020-06135-y. ISSN-0924090X

25.Tandon, S., Sujith, R.I. 2021. Condensation in the phase space and network topology during transition from chaos to order in turbulent thermoacoustic systems. *Chaos* 31 (4). doi: 10.1063/5.0039229. ISSN-10541500

26.Srinivasan, N., Velmurugan, R., Kumar, R., et al. 2021. The role of brass texture on the deformation response of 7075-T651 aluminum alloy under equi-biaxial tension. *Materials Science and Engineering A* 812. doi: 10.1016/j.msea.2021.141133. ISSN-09215093

27.Ravindran, A., Bhaskar, K. 2021. Elasticity solution for a sandwich plate having composite facesheets with in-plane grading. *Journal of Sandwich Structures and Materials* 23 (6): 2484-2505. doi: 10.1177/1099636220909810. ISSN-10996362

28.Bose, C., Gupta, S., Sarkar, S. 2021. Dynamic interlinking between near-and far-field wakes behind a pitching-heaving airfoil. *Journal of Fluid Mechanics* 911. doi: 10.1017/jfm.2020.1030. ISSN-00221120

29.Roy, A., Premchand, C.P., Raghunathan, M., Krishnan, A., Nair, V., Sujith, R.I. 2021. Critical region in the spatiotemporal dynamics of a turbulent thermoacoustic system and smart passive control. *Combustion and Flame* 226, pp 274-284. doi: 10.1016/j.combustflame.2020.12.018. ISSN-00102180

30.Kumar B, P., Kumar, A. 2021. Effects of thermal radiation on near-limit flame spread in a low convective microgravity environment. *Combustion Theory and Modelling* 25 (5): 889-910. doi: 10.1080/13647830.2021.1959069. ISSN-13647830

31.Kochi, S.R.S.P., Ramakrishna, M. 2021. A compact subcell WENO limiting strategy using immediate neighbours for Runge-Kutta discontinuous Galerkin methods. *International Journal of Computer Mathematics* 98 (3): 608-626. doi: 10.1080/00207160.2020.1770234. ISSN-00207160

32.Gangopadhyay, T., Ramanan, V., Sarkar, S., et al. 2021. 3D convolutional selective autoencoder for instability detection in combustion systems. *Energy and AI* 4. doi: 10.1016/j.egyai.2021.100067. ISSN-26665468

33.Sharma, A.P., Velmurugan, R. 2021. Effect of high strain rate on tensile response and failure analysis of titanium/glass fiber reinforced polymer composites. *Journal of Composite Materials* 55 (24): 3443-3470. doi: 10.1177/00219983211018844. ISSN-00219983

34. Aswathy, M.S., Sarkar, S. 2021. Frequency characteristics and phase dynamics of a stochastic vortex induced vibration system. *Journal of Sound and Vibration* 509. doi: 10.1016/j.jsv.2021.116230. ISSN-0022460X
35. Baraiya, N.A., Ramanan, V., Baladandayuthapani, N., Vegad, C.S., Chakravarthy, S.R. 2021. Investigation of oscillatory states involving acoustic mode shifts in a turbulent syngas combustion using non-stationary time-series analysis. *Flow, Turbulence and Combustion* 107 (4): 1067-1089. doi: 10.1007/s10494-021-00258-x. ISSN-13866184
36. Sharma, A., Ramachandran, V. 2021. Low-velocity impact perforation response of titanium/composite laminates: analytical and experimental investigation. *Mechanics Based Design of Structures and Machines*. doi: 10.1080/15397734.2021.1992778. ISSN-15397734
37. Shanmugasudhan, K.P., Manuprasad, E.S., Chiranthan, R.N., Chakravarthy, S.R. 2021. Fuel placement and atomization inside a gas-turbine fuel injector at realistic operating conditions. *Proceedings of the Combustion Institute* 38 (2): 3261-3268. doi: 10.1016/j.proci.2020.09.005. ISSN-15407489
38. Baraiya, N.A., Ramanan, V., Baladandayuthapani, N., Vegad, C.S., Chakravarthy, S.R. 2021. Role of pumping and wrinkle propagation mechanisms in exciting different acoustic-modes in turbulent syngas combustion. *International Journal of Hydrogen Energy* 46 (24): 13413-13429. doi: 10.1016/j.ijhydene.2021.01.151. ISSN-03603199
39. Moyo, M., Kanny, K., Velmurugan, R. 2021. The efficacy of nanoclay loading in the medium velocity impact resistance of kenaf/PLA biocomposites. *Applied Nanoscience (Switzerland)* 11 (2): 441-453. doi: 10.1007/s13204-020-01602-9. ISSN-21905509
40. Sharma, M., Sameen, A. 2021. Synopsis of Vogel-Escudier flow. *Physics of Fluids* 33 (6). doi: 10.1063/5.0053847. ISSN-10706631
41. Ramachandran, P., Muta, A., Ramakrishna, M. 2021. Dual-time smoothed particle hydrodynamics for incompressible fluid simulation. *Computers and Fluids* 227. doi: 10.1016/j.compfluid.2021.105031. ISSN-00457930
42. Joseph, C., Mohan, R. 2021. A parallel, object-oriented framework for unsteady free-wake analysis of multi-rotor/wing systems. *Computers and Fluids* 215. doi: 10.1016/j.compfluid.2020.104788. ISSN-00457930
43. Roy, S., Sandhu, J.P.S., Ghosh, S. 2021. Drag reduction in transonic shock-wave/boundary-layer interaction using porous medium: a computational study. *Shock Waves* 31 (2): 117-132. doi: 10.1007/s00193-021-01009-7. ISSN-09381287
44. Sharma, A.P., Velmurugan, R. 2021. Damage and energy absorption characteristics of glass fiber reinforced titanium laminates to low-velocity impact. *Mechanics of Advanced Materials and Structures*. doi: 10.1080/15376494.2021.1974618. ISSN-15376494
45. Arun, S., Sameen, A., Srinivasan, B., Girimaji, S.S. 2021. Scale-space energy density function transport equation for compressible inhomogeneous turbulent flows. *Journal of Fluid Mechanics* 920. doi: 10.1017/jfm.2021.468. ISSN-00221120
46. Patibandla, R., Mathur, M., Roy, A. 2021. Triadic resonances in internal wave modes with background shear. *Journal of Fluid Mechanics* 929, pp 159-162. doi: 10.1017/jfm.2021.847. ISSN-00221120
47. Singh, S., Mathur, M. 2021. Diffusive effects in local instabilities of a baroclinic axisymmetric vortex. *Journal of Fluid Mechanics* 928. doi: 10.1017/jfm.2021.793. ISSN-00221120
48. Thara Reshma, I.V., Vinoth, P., Rajesh, G., Ben-Dor, G. 2021. Propagation of a planar shock wave along a convex-concave ramp. *Journal of Fluid Mechanics* 924. doi: 10.1017/jfm.2021.631. ISSN-00221120
49. Khavasudhan, P.H., Keralavarma, S.M. 2021. Effective yield criterion for a porous single crystal accounting for void size effects. *Mechanics of Materials* 160. doi: 10.1016/j.mechmat.2021.103950. ISSN-01676636
50. Subramanian, H., Mulay, S.S. 2021. On the homogenization of a laminate beam under transverse loading: extension of Pagano's theory. *Acta Mechanica* 232 (1): 153-176. doi: 10.1007/s00707-020-02827-z. ISSN-00015970
51. Yazhini, V.I., Kathiravan, B., Muruganandam, T.M., Jayaraman, K. 2021. Cowl length variation on performance characteristics of a single expansion ramp nozzle. *Journal of Propulsion and Power* 37 (5): 780-791. doi: 10.2514/1.538217. ISSN-07484658
52. Mahesh, S., Keralavarma, S.M. 2021. The stress field of an infinite set of discrete dislocations. *Philosophical Magazine Letters* 101 (5): 192-202. doi: 10.1080/09500839.2021.1900614. ISSN-09500839
53. Ruiz, E.A., Unni, V.R., Pavithran, I., Sujith, R.I., Saha, A. 2021. Convolutional neural networks to predict the onset of oscillatory instabilities in turbulent systems. *Chaos* 31 (9). doi: 10.1063/5.0056032. ISSN-10541500
54. Baraiya, N.A., Ramanan, V., Baladandayuthapani, N., Vegad, C.S., Chakravarthy, S.R. 2021. Experimental investigation into the role of mean flame stabilization on the combustion dynamics of high-hydrogen fuels in a turbulent combustor. *Journal of Engineering for Gas Turbines and Power* 143 (8). doi: 10.1115/1.4050067. ISSN-07424795
55. Mishra, A., Ghosh, S. 2021. Simultaneous identification and optimal tracking control of unknown continuous-time systems with actuator constraints. *International Journal of Control*. doi: 10.1080/00207179.2021.1890824. ISSN-00207179
56. Dubey, R., Jayaganthan, R., Ruan, D., Velmurugan, R. 2021. On impact of cryogenic temperature rolled 6082 Al alloy by dome- and conical-nosed projectiles. *International Journal of Crashworthiness* doi: 10.1080/13588265.2021.2003158. ISSN-13588265
57. Dhileep, K., Kumar, D., Gautham Vigneswar, P.N., Soni, P., Ghosh, S., Ali, S.F., Arockiarajan, A. 2021. Aerodynamic

- study of single corrugated variable-camber morphing aerofoil concept. *Aeronautical Journal*, p 29-Jan. doi: 10.1017/aer.2021.71. ISSN-00019240
- 58.S, V., Muruganandam, T.M. 2021. Visualization of over-expanded supersonic wall-jet. *Aerospace Science and Technology* 112. doi: 10.1016/j.ast.2021.106617. ISSN-12709638
- 59.Varghese, A.J., Chechkin, A., Metzler, R., Sujith, R.I. 2021. Capturing multifractality of pressure fluctuations in thermoacoustic systems using fractional-order derivatives. *Chaos* 31 (3). doi: 10.1063/5.0032585. ISSN-10541500
- 60.Badrya, C., Govindarajan, B., Medina, A., Yang, S.J., Chopra, I. 2021. Unsteady aerodynamic characteristics of pitching flat plates at low reynolds numbers. *Journal of Aircraft* 58 (4): 917-934. doi: 10.2514/1.C036028. ISSN-00218669
- 61.Goyal, R., Sameen, A., Jayachandran, T., Rajesh, G. 2021. Dynamic effects in transition from regular to Mach reflection in steady supersonic flows. *Physical Review E* 104 (5). doi: 10.1103/PhysRevE.104.055101. ISSN-24700045
- 62.Vasanth, J.V., Chakravarthy, S.R. 2021. A reduced-order model for lock-on via vortex-combustion-acoustic closed-loop coupling in a step combustor. *Combustion Science and Technology*. doi: 10.1080/00102202.2021.1909578. ISSN-00102202
- 63.Ranjan, R., Murthy, H., Sadavarte, V.S., Pande, S.M., Bhowmik, D. 2021. An experimental study of the large-strain tensile behavior of composite solid propellant using digital image correlation. *International Journal of Energetic Materials and Chemical Propulsion* 20 (4): 79-95. doi: 10.1615/IntJEnergeticMaterialsChemProp.2021038444. ISSN-2150766X
- 64.Vishnu, R., Sharma, M., Sameen, A. 2021. Effect of heating on topology of vortex breakdown in Vogel-Escudier flow. *Physics of Fluids* 33 (10). doi: 10.1063/5.0065134. ISSN-10706631
- 65.Naveen, J., Babu, M.S., Sarathi, R., Velmurugan, R., Danikas, M.G., Karlis, A. 2021. Investigation on electrical and thermal performance of glass fiber reinforced epoxy-MgO nanocomposites. *Energies* 14 (23). doi: 10.3390/en14238005. ISSN-19961073
- 66.Mohan, V., Sameen, A., Srinivasan, B., Girimaji, S.S. 2021. Influence of Knudsen and Mach numbers on Kelvin-Helmholtz instability. *Physical Review E* 103 (5). doi: 10.1103/PhysRevE.103.053104. ISSN-24700045
- 67.Joshi, A.K., Kumar, A., Kumar B, et al. 2021. Numerical and experimental study of downward flame spread along multiple parallel fuel sheets. *Fire Safety Journal* 125. doi: 10.1016/j.firesaf.2021.103414. ISSN-03797112
- 68.Pavithran, I., Unni, V.R., Kurths, J., et al. 2021. Predicting the amplitude of thermoacoustic instability using universal scaling behavior. *Journal of Engineering for Gas Turbines and Power* 143 (12). doi: 10.1115/1.4052059. ISSN-07424795
- 69.Marothiya, G., Ramakrishna, P.A., Saravanan, N., Kumar Solasa, P. 2021. Development of H₂O₂ based mixed hybrid rocket. *Propellants, Explosives, Pyrotechnics* 46 (11): 1687-1695. doi: 10.1002/prop.202100061. ISSN-07213115
- 70.Shyam Kumar, M., Mathur, M., Chakravarthy, S.R. 2021. Experimental study of the effects of droplet number density on turbulence-driven polydisperse droplet size growth. *Journal of Fluid Mechanics* 917. doi: 10.1017/jfm.2021.213. ISSN-00221120
- 71.Gara, N., Ramachandran, V., Rengaswamy, J. 2021. Analytical and fem analyses of high-speed impact behaviour of al 2024 alloy. *Aerospace* 8 (10). doi: 10.3390/aerospace8100281. ISSN-22264310
- 72.Kushwaha, A., Kasthuri, P., Pawar, S.A., Sujith, R.I., Chterev, I., Boxx, I. 2021. Dynamical characterization of thermoacoustic oscillations in a hydrogen-enriched partially premixed swirl-stabilized methane/air combustor. *Journal of Engineering for Gas Turbines and Power* 143 (12). doi: 10.1115/1.4052091. ISSN-07424795
- 73.Udayakumar, B., Thiagarajan, P., Gopal, K.V.N. 2021. An extended state space method for three-dimensional elasticity analysis of arbitrary graded sandwich plates. *Journal of Sandwich Structures and Materials* 23 (4): 1311-1346. doi: 10.1177/1099636219856267. ISSN-10996362
- 74.Gurusamy, M., Palaniappan, K., Murthy, H., Rao, B.C. 2021. A finite element study of large strain extrusion machining using modified zerilli-armstrong constitutive relation. *Journal of Manufacturing Science and Engineering, Transactions of the ASME* 143 (10). doi: 10.1115/1.4050652. ISSN-10871357
- 75.Paramasivam, A., Timmaraju, M.V., Velmurugan, R. 2021. Influence of preheating on the fracture behavior of over-molded short/continuous fiber reinforced polypropylene composites. *Journal of Composite Materials* 55 (29): 4387-4397. doi: 10.1177/00219983211038615. ISSN-00219983
- 76.Gautham, M.G., Rao, B.C., Ramakrishna, P.A. 2021. Combustion synthesis of alumina with possible co-generation of power. *International Journal of Hydrogen Energy* 46 (24): 12682-12692. doi: 10.1016/j.ijhydene.2021.01.140. ISSN-03603199
- 77.Suma, H., Ramanan, V., Chakravarthy, S.R., Srinivasan, B. 2021. Predicting onset of combustion instability in gas turbines using fiber optic sensors. *IEEE Sensors Journal* 21 (3): 2980-2988. doi: 10.1109/JSEN.2020.3022688. ISSN-1530437X
- 78.Ramanan, V., Baraiya, N.A., Chakravarthy, S.R. 2021. Experimental analysis of two-period quasi-periodic oscillations in a turbulent hydrogen combustor. *Journal of Visualization* 24 (5): 963-978. doi: 10.1007/s12650-021-00752-4. ISSN-13438875
- 79.Naseem, H., Yerra, J., Murthy, H., Ramakrishna, P.A. 2021. Ageing studies on AP/HTPB based composites solid propellants. *Energetic Materials Frontiers* 2 (2): 111-124. doi: 10.1016/j.enmf.2021.02.001. ISSN-26666472
- 80.Pavithran, I., Unni, V.R., Sujith, R.I. 2021. Critical transitions and their early warning signals in thermoacoustic systems. *European Physical Journal: Special Topics* 230 (16-17): 3411-3432. doi: 10.1140/epjs/s11734-021-00214-w. ISSN-19516355

- 81.Patnaik, G., Kaushik, A., Rajput, A., Prakash, G., Velmurugan, R. 2021. Ballistic performance of quasi-isotropic CFRP laminates under low velocity impact. *Journal of Composite Materials* 55 (24): 3511-3527. doi: 10.1177/00219983211023869. ISSN-00219983
- 82.Sujith, R.I., Unni, V.R. 2021. Dynamical systems and complex systems theory to study unsteady combustion. *Proceedings of the Combustion Institute* 38 (3): 3445-3462. doi: 10.1016/j.proci.2020.07.081. ISSN-15407489
- 83.Roy, A., Singh, S., Nair, A., Chaudhuri, S., Sujith, R.I. 2021. Flame dynamics during intermittency and secondary bifurcation to longitudinal thermoacoustic instability in a swirl-stabilized annular combustor. *Proceedings of the Combustion Institute* 38 (4): 5171-5180. doi: 10.1016/j.proci.2020.08.053. ISSN-15407489
- 84.Korobeinichev, O.P., Trubachev, S.A., Mebel, A.M., et al. 2021. Experimental and numerical studies of downward flame spread over PMMA with and without addition of tri phenyl phosphate. *Proceedings of the Combustion Institute* 38 (3): 4867-4875. doi: 10.1016/j.proci.2020.07.082. ISSN-15407489
- 85.Pawar, S.A., Raghunathan, M., Reeja, K.V., Midhun, P.R., Sujith, R.I. 2021. Effect of preheating of the reactants on the transition to thermoacoustic instability in a bluff-body stabilized dump combustor. *Proceedings of the Combustion Institute* 38 (4): 6193-6201. doi: 10.1016/j.proci.2020.06.370. ISSN-15407489
- 86.Rajak, R., Chakravarthy, S.R., Ganesan, S. 2021. Measurement of admittance and acoustic augmentation of burning rate of composite solid propellants using Laser Doppler Velocimetry. *Proceedings of the Combustion Institute* 38 (3): 4391-4399. doi: 10.1016/j.proci.2020.06.384. ISSN-15407489
- 87.Gnanaprakash, K., Chakravarthy, S.R., Jayaraman, K., Appu, H., Singh, D., Rohit Ananthram. 2021. Combustion behaviour of composite sandwich propellants containing RDX. *Proceedings of the Combustion Institute* 38 (3): 4451-4459. doi: 10.1016/j.proci.2020.06.387. ISSN-15407489
- 88.Sampath, R., Ramanan, V., Baladandayuthapani, N., Chakravarthy, S.R. 2021. Vortex merging events during amplitude switching in mixed-mode pressure oscillations in a partially premixed backward facing combustor. *Proceedings of the Combustion Institute* 38 (4): 6261-6269. doi: 10.1016/j.proci.2020.07.113. ISSN-15407489
- 89.Manu Hegde, Shantanu S. Mulay 2021. An approach to model mechanical damage in particulate composites with viscoelastic matrix. *International Journal of Advances in Engineering Sciences and Applied Mathematics* 13 (1): 79-88.
- 90.Hemanth Putrevu, Harini Subramanian, Shantanu Shashikant Mulay 2021. On the viscoelastic dynamic beam modelling. *International Journal of Advances in Engineering Sciences and Applied Mathematics* 13, pp 18-32.
- 91.Shantanu Shashikant Mulay, Harini Subramanian 2021. On the development of direct displacement control method application to local and nonlocal damage mechanics. *International Journal of Advances in Engineering Sciences and Applied Mathematics* 12, pp 101-124.
- 92.Sandeepkumar, R.; Mohan, Ranjith 2021. Flatness-based reduced hessian method for optimal control of aircraft. *Journal of Guidance Control and Dynamics*. doi: 10.2514/1.6006331. 0731-5090
- 93.Dash, Nehal; Tamadapu, Ganesh 2021. Radial dynamics of an encapsulated microbubble with interface energy. *Journal of Fluid Mechanics* 932. doi: 10.1017/jfm.2021.979. 0022-1120
- 94.Baskaran, Surya Prakash; Muruganandam, T. M. 2021. Influence of finite width of shock generator on shock-wave/boundary-layer interaction. *AIAA Journal* 59(9): 3387-3397. doi: 10.2514/1.J060076. 0001-1452
- 95.Sandhu, Jatinder Pal Singh; Ghosh, Santanu 2021. Dynamical systems analysis of a zero-equation transition model. *AIAA Journal* 59 (10): 4274-4280. doi: 10.2514/1.J060558. 0001-1452
- 96.Joseph, Cibir; Mohan, Ranjith 2021. Closed-form expressions of lift and moment coefficients for generalized camber using thin-airfoil theory. *AIAA Journal* 59 (10): 4264-4270. doi: 10.2514/1.J060859. 0001-1452
- 97.Aravindan, M., Ali, S.F. 2021. Exploring 1:3 internal resonance for broadband piezoelectric energy harvesting. *Mechanical Systems and Signal Processing* 153. doi: 10.1016/j.ymssp.2020.107493. ISSN-08883270
- 98.Singh, M., Chaudhuri, A., Soltanian, M.R., Stauffer, P.H. 2021. Coupled multiphase flow and transport simulation to model CO₂ dissolution and local capillary trapping in permeability and capillary heterogeneous reservoir. *International Journal of Greenhouse Gas Control* 108. doi: 10.1016/j.ijggc.2021.103329. ISSN-17505836
- 99.Vijaya Kumar, G., Cammiade, L.M.F., Rohlf, W., et al. 2021. Implementation of a CFD model for wall condensation in the presence of non-condensable gas mixtures. *Applied Thermal Engineering* 187. doi: 10.1016/j.applthermaleng.2021.116546. ISSN-13594311
- 100.Vayyeti, A., Thittai, A.K. 2021. Weighted non-linear beamformers for low cost 2-element receive ultrasound imaging system. *Ultrasonics* 110. doi: 10.1016/j.ultras.2020.106293. ISSN-0041624X
- 101.Ilango, N.K., Gujar, P., Nagesh, A.K., Alex, A., Ghosh, P. 2021. Interfacial adhesion mechanism between organic polymer coating and hydrating cement paste. *Cement and Concrete Composites* 115. doi: 10.1016/j.cemconcomp.2020.103856. ISSN-09589465
- 102.Mukherjee, A., Ali, S.F., Arockiarajan, A. 2021. Hybrid bistable composite laminates for structural assemblies: A numerical and experimental study. *Composite Structures* 260. doi: 10.1016/j.compstruct.2020.113467. ISSN-02638223
- 103.George, A., Amrutha, M.S., Srivastava, P., Sunil, S., Sai, V.V.R., Srinivasan, R. 2021. Development of a U-bent plastic optical fiber biosensor with plasmonic labels for the detection of chikungunya non-structural protein 3. *Analyst* 146 (1): 244-252. doi: 10.1039/d0an01603a. ISSN-00032654

- 104.Rajan, S.T., Das, M., Kumar, P.S., Arockiarajan, A., Subramanian, B. 2021. Biological performance of metal metalloid (TiCuZrPd:B) TFMG fabricated by pulsed laser deposition. *Colloids and Surfaces B: Biointerfaces* 202. doi: 10.1016/j.colsurfb.2021.111684. ISSN-09277765
- 105.Ghosh, D., Ganayee, M.A., Pradeep, T., et al. 2021. Hierarchical assembly of atomically precise metal clusters as a luminescent strain sensor. *ACS Applied Materials and Interfaces* 13 (5): 6496-6504. doi: 10.1021/acsami.0c19239. ISSN-19448244
- 106.Kelm, S., Kampili, M., Ji, R., et al. 2021. The tailored CFD package 'containmentFOAM' for analysis of containment atmosphere mixing, H₂/CO mitigation and aerosol transport. *Fluids* 6 (3). doi: 10.3390/FLUIDS6030100. ISSN-23115521
- 107.Ganapathy, N., Veeranki, Y.R., Kumar, H., Swaminathan, R. 2021. Emotion recognition using electrodermal activity signals and multiscale deep convolutional neural network. *Journal of Medical Systems* 45 (4). doi: 10.1007/s10916-020-01676-6. ISSN-01485598
- 108.Agaram, S., Kanjarla, A.K., Bhuvaraghan, B., Srinivasan, S.M. 2021. Dislocation density based crystal plasticity model incorporating the effect of precipitates in IN718 under monotonic and cyclic deformation. *International Journal of Plasticity* 141. doi: 10.1016/j.ijplas.2021.102990. ISSN-07496419
- 109.Verma, L., Andrew, J.J., Sivakumar, S.M., Balaganesan, G., Vedantam, S., Dhakal, H.N. 2021. Evaluation of quasi-static indentation response of superelastic shape memory alloy embedded GFRP laminates using AE monitoring. *Polymer Testing* 93. doi: 10.1016/j.polymertesting.2020.106942. ISSN-01429418
- 110.Iqbal, M.U., Shahab, M.A., Choudhary, M., Srinivasan, B., Srinivasan, R. 2021. Electroencephalography (EEG) based cognitive measures for evaluating the effectiveness of operator training. *Process Safety and Environmental Protection* 150, pp 51-67. doi: 10.1016/j.psep.2021.03.050. ISSN-09575820
- 111.Pervin, R., Ghosh, P., Basavaraj, M.G. 2021. Engineering polymer film porosity for solvent triggered actuation. *Soft Matter* 17 (10): 2900-2912. doi: 10.1039/d0sm01772h. ISSN-1744683X
- 112.Sam, A., Hartkamp, R., Todd, B.D., et al. 2021. Fast transport of water in carbon nanotubes: a review of current accomplishments and challenges. *Molecular Simulation* 47 (11-Oct): 905-924. doi: 10.1080/08927022.2020.1782401. ISSN-08927022
- 113.Kurupath, V.P., Kannam, S.K., Hartkamp, R., Sathian, S.P. 2021. Highly efficient water desalination through hourglass shaped carbon nanopores. *Desalination* 505. doi: 10.1016/j.desal.2021.114978. ISSN-00119164
- 114.Makaram, N., Karthick, P.A., Gopinath, V., Swaminathan, R. 2021. Surface electromyography-based muscle fatigue analysis using binary and weighted visibility graph features. *Fluctuation and Noise Letters* 20 (2). doi: 10.1142/S0219477521500164. ISSN-02194775
- 115.Alosious, S., Kannam, S.K., Sathian, S.P., Todd, B.D. 2021. Nanoconfinement effects on the Kapitza resistance at water-CNT interfaces. *Langmuir* 37 (7): 2355-2361. doi: 10.1021/acs.langmuir.0c03298. ISSN-07437463
- 116.Gujar, P., Alex, A., Santhanam, M., Ghosh, P. 2021. Evaluation of interfacial strength between hydrating cement paste and epoxy coating. *Construction and Building Materials* 279. doi: 10.1016/j.conbuildmat.2021.122511. ISSN-09500618
- 117.Rajarathinam, M., Ali, S.F. 2021. Parametric uncertainty and random excitation in energy harvesting dynamic vibration absorber. *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part B: Mechanical Engineering* 7 (1). doi: 10.1115/1.4049211. ISSN-23329017
- 118.Pratoori, R., Meena, R.K., Ghosh, P., Annabattula, R.K. 2021. Coupled diffusion-deformation behavior of stimuli-responsive thin polymer films. *Mechanics of Materials* 152. doi: 10.1016/j.mechmat.2020.103648. ISSN-01676636
- 119.Kumar, D., Ali, S.F., Arockiarajan, A. 2021. Studies on large deflection of geometrically nonlinear corrugated structures. *Acta Mechanica* 232 (2): 461-482. doi: 10.1007/s00707-020-02861-x. ISSN-00015970
- 120.Rajan, A., Arockiarajan, A. 2021. Bending of hard-magnetic soft beams: A finite elasticity approach with anticlastic bending. *European Journal of Mechanics, A/ Solids* 90. doi: 10.1016/j.euromechsol.2021.104374. ISSN-09977538
- 121.Divagar, M., Gayathri, R., Sai, V.V.R., et al. 2021. Plasmonic fiberoptic absorbance biosensor (P-FAB) for rapid detection of SARS-CoV-2 nucleocapsid protein. *IEEE Sensors Journal* 21 (20): 22758-22766. doi: 10.1109/JSEN.2021.3107736. ISSN-1530437X
- 122.Jamal M, N.B., Rao, C.L., Basaran, C. 2021. A unified mechanics theory-based model for temperature and strain rate dependent proportionality limit stress of mild steel. *Mechanics of Materials* 155. doi: 10.1016/j.mechmat.2021.103762. ISSN-01676636
- 123.Ganapathy, N., Swaminathan, R., Deserno, T.M. 2021. Adaptive learning and cross training improves R-wave detection in ECG. *Computer Methods and Programs in Biomedicine* 200. doi: 10.1016/j.cmpb.2021.105931. ISSN-01692607
- 124.Teja, K.M., Narasimhamurthy, V.D., Andersson, H.I., Pettersen, B. 2021. Onset of shear-layer instability at the interface of parallel Couette flows. *International Journal of Heat and Fluid Flow* 89. doi: 10.1016/j.ijheatfluidflow.2021.108786. ISSN-0142727X
- 125.Manish, V., Arockiarajan, A., Tamadapu, G. 2021. Influence of water content on the mechanical behavior of gelatin based hydrogels: Synthesis, characterization, and modeling. *International Journal of Solids and Structures* 233. doi: 10.1016/j.ijsolstr.2021.111219. ISSN-00207683
- 126.Anand, R., Thittai, A.K. 2021. Towards practical implementation of the compressed sensing framework for multi-element synthetic transmit aperture imaging. *Ultrasonics* 112. doi: 10.1016/j.ultras.2021.106354. ISSN-0041624X

- 127.Govindarajan, S., Swaminathan, R. 2021. Extreme learning machine based differentiation of pulmonary tuberculosis in chest radiographs using integrated local feature descriptors. *Computer Methods and Programs in Biomedicine* 204. doi: 10.1016/j.cmpb.2021.106058. ISSN-01692607
- 128.Muddada, S., Hariharan, K., Sanapala, V.S., Patnaik, B.S.V. 2021. Circular cylinder wakes and their control under the influence of oscillatory flows: A numerical study. *Journal of Ocean Engineering and Science* 6 (4): 389-399. doi: 10.1016/j.joes.2021.04.002. ISSN-24680133
- 129.Kumar, R., Ali, S.F., Jeyaraman, S., Gupta, S. 2021. Uncertainty quantification of bladed disc systems using data driven stochastic reduced order models. *International Journal of Mechanical Sciences* 190. doi: 10.1016/j.ijmecsci.2020.106011. ISSN-00207403
- 130.Verma, L., Jefferson Andrew, J., Sivakumar, S.M., Balaganesan, G., Vedantam, S., Dhakal, H.N. 2021. Compression after high-velocity impact behavior of pseudo-elastic shape memory alloy embedded glass/epoxy composite laminates. *Composite Structures* 259. doi: 10.1016/j.compstruct.2020.113519. ISSN-02638223
- 131.Nema, A., Srinivasan, B., Majoji, T., Srinivasan, R. 2021. A simple strategy to maximize water-reuse in multistage, multiproduct batch processes. *Chemical Engineering Research and Design* 168, pp 327-339. doi: 10.1016/j.cherd.2021.02.012. ISSN-02638762
- 132.Kumar, A., Arout Chelvane, J., Arockiarajan, A. 2021. Enhanced self-biased magnetoelectric response in novel distributed disc structure Ni/PZT composite. *Materials Letters* 305. doi: 10.1016/j.matlet.2021.130834. ISSN-0167577X
- 133.Pandey, A.H., Varade, P., Venkataramani, N., et al. 2021. Magnetoelectric response in lead-free $\text{Na}_{0.4}\text{K}_{0.1}\text{Bi}_{0.5}\text{TiO}_3/\text{NiFe}_2\text{O}_4$ laminated composites. *Materials Today Communications* 26. doi: 10.1016/j.mtcomm.2020.101898. ISSN-23524928
- 134.Makaram, N., Karthick, P.A., Swaminathan, R. 2021. Analysis of dynamics of EMG signal variations in fatiguing contractions of muscles using transition network approach. *IEEE Transactions on Instrumentation and Measurement* 70. doi: 10.1109/TIM.2021.3063777. ISSN-00189456
- 135.Kumar, V.A., Sajith, V., Sathian, S.P. 2021. Influence of nanoparticles on the evaporation of a nanodroplet from solid substrates: An experimental and molecular dynamics investigation. *Colloids and Surfaces A: Physicochemical and Engineering Aspects* 615. doi: 10.1016/j.colsurfa.2021.126227. ISSN-09277757
- 136.Shahab, M.A., Iqbal, M.U., Srinivasan, B., Srinivasan, R. 2021. Metrics for objectively assessing operator training using eye gaze patterns. *Process Safety and Environmental Protection* 156, pp 508-520. doi: 10.1016/j.psep.2021.10.043. ISSN-09575820
- 137.Vinothini, S., Punitha, N., Karthick, P.A., Ramakrishnan, S. 2021. Automated detection of preterm condition using uterine electromyography based topological features. *Biocybernetics and Biomedical Engineering* 41 (1): 293-305. doi: 10.1016/j.bbe.2021.01.004. ISSN-02085216
- 138.Mankad, J., Natarajan, B., Srinivasan, B. 2021. Integrated approach for optimal sensor placement and state estimation: A case study on water distribution networks. *ISA Transactions*. doi: 10.1016/j.isatra.2021.06.004. ISSN-00190578
- 139.Rajavelu, H., Vasa, N.J., Seshadri, S. 2021. Laser-induced breakdown spectroscopy combined with temporal plasma analysis of C2 molecular emission for carbon analysis in coal. *Applied Spectroscopy* 75 (7): 893-900. doi: 10.1177/00037028211012399. ISSN-00037028
- 140.Kampili, M., Vijaya Kumar, G., Kelm, S., Arul Prakash, K., Allelein, H.-J. 2021. CFD simulations of stratified layer erosion in MiniPanda facility using the tailored CFD solver containment FOAM. *International Journal of Heat and Mass Transfer* 178. doi: 10.1016/j.ijheatmasstransfer.2021.121568. ISSN-00179310
- 141.Philip, N.T., Patnaik, B.S.V., Sudhir, B.J. 2021. Fluid structure interaction study in model abdominal aortic aneurysms: Influence of shape and wall motion. *International Journal for Numerical Methods in Biomedical Engineering* 37 (3). doi: 10.1002/cnm.3426. ISSN-20407939
- 142.Patel, B.N., Srinivasan, S.M. 2021. Novel nickle foil micro-bend tests and the need for a relook at length scale parameter's numerical value. *Mechanics of Advanced Materials and Structures*. doi: 10.1080/15376494.2021.1913771. ISSN-15376494
- 143.Rajavelu, H., Vasa, N.J., Seshadri, S. 2021. LIBS technique combined with blow gas and vacuum suction to remove particle cloud and enhance emission intensity during characterization of powder samples. *Spectrochimica Acta - Part B Atomic Spectroscopy* 181. doi: 10.1016/j.sab.2021.106215. ISSN-05848547
- 144.Chandramoorthi, S., Thittai, A.K. 2021. Extending imaging depth in PLD-based photoacoustic imaging: Moving beyond averaging. *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control* 68 (3): 549-557. doi: 10.1109/TUFFC.2020.3015130. ISSN-08853010
- 145.Jagtap, P., Nasre, R., Sanapala, V.S., Patnaik, B.S.V. 2021. Efficient parallelization of SPH algorithm on modern multi-core CPUs and massively parallel GPUs. *International Journal of Modeling, Simulation, and Scientific Computing* 12 (6). doi: 10.1142/S1793962321500549. ISSN-17939623
- 146.150. Punitha, N., Vardhini, P., Vinothini, S., Ramakrishnan, S. 2021. Analysis of fluctuations of uterine contractions in preterm pregnancies using adaptive fractal features of electromyography signals. *Fluctuation and Noise Letters* 20 (2). doi: 10.1142/S021947752150019X. ISSN-02194775
- 147.Dhanasekaran, J., Roy, A., Koch, D.L. 2021. Collision rate of bidisperse spheres settling in a compressional non-continuum gas flow. *Journal of Fluid Mechanics*. doi: 10.1017/jfm.2020.942. ISSN-00221120
- 148.Vardhini, P., Punitha, N., Ramakrishnan, S. 2021. Differentiation of fluctuations in uterine contractions associated with Term pregnancies using adaptive

- fractal features of electromyography signals. *Medical Engineering and Physics* 88, pp 78-85. doi: 10.1016/j.medengphy.2020.12.010. ISSN-13504533
- 149.Priyadarsini, R.S., Kalyanaraman, V., Srinivasan, S.M. 2021. Investigations on axially compressed composite cylindrical shells with surface bonded PZT. *Thin-Walled Structures* 161. doi: 10.1016/j.tws.2020.107434. ISSN-02638231
- 150.Haridasan, N., Sathian, S.P. 2021. Rotational dynamics of proteins in nanochannels: Role of solvent's local viscosity. *Nanotechnology* 32 (22). doi: 10.1088/1361-6528/abe906. ISSN-09574484
- 151.Deepthi, S., Vengadesan, S. 2021. Can the ground enhance vertical force for inclined stroke plane flapping wing? *Bioinspiration and Biomimetics* 16 (4). doi: 10.1088/1748-3190/abce4c. ISSN-17483182
- 152.Mohanan, A.K., Prasad, B.V.S.S., Vengadesan, S. 2021. Flow and heat transfer characteristics of a cross-flow heat exchanger with elliptical tubes. *Heat Transfer Engineering* 42 (21): 1846-1860. doi: 10.1080/01457632.2020.1826742. ISSN-01457632
- 153.Madbhavi, R., Natarajan, B., Srinivasan, B. 2021. Enhanced tensor completion based approaches for state estimation in distribution systems. *IEEE Transactions on Industrial Informatics* 17 (9): 5938-5947. doi: 10.1109/TII.2020.3035449. ISSN-15513203
- 154.Mishra, A., Chaudhuri, A., Haese, R.R. 2021. Conditions and processes controlling carbon mineral trapping in intraformational baffles. *International Journal of Greenhouse Gas Control* 106. doi: 10.1016/j.ijggc.2021.103264. ISSN-17505836
- 155.Sreekesh, K., Tafti, D.K., Vengadesan, S. 2021. Large-eddy simulation investigation of modified rib shapes on heat transfer in a ribbed duct. *Journal of Heat Transfer* 143 (11). doi: 10.1115/1.4051507. ISSN-00221481
- 156.Saha, S., Singh, R.P., Ranjan, R., et al. 2021. Strain transfer in ferroelectric-ferrimagnetic magnetoelectric composite. *Physical Review B* 103 (14). doi: 10.1103/PhysRevB.103.L140106. ISSN-24699950
- 157.Gautam, U.C., Pydi, Y.S., Datla, N.V., et al. 2021. A polyvinyl Alcohol (PVA)-based phantom and training tool for use in simulated Transrectal Ultrasound (TRUS) guided prostate needle biopsy procedures. *Medical Engineering and Physics* 96, pp 46-52. doi: 10.1016/j.medengphy.2021.08.008. ISSN-13504533
- 158.Gurusamy, S., Sanapala, V.S., Kumar, D., Patnaik, B.S.V. 2021. Sloshing dynamics of shallow water tanks: Modal characteristics of hydraulic jumps. *Journal of Fluids and Structures* 104. doi: 10.1016/j.jfluidstructs.2021.103322. ISSN-08899746
- 159.Kumar, R., Ali, S.F., Gupta, S. 2021. Static condensation based reduced order modelling of stochastically parametered large ordered systems. *Probabilistic Engineering Mechanics* 66. doi: 10.1016/j.probenmech.2021.103166. ISSN-02668920
- 160.Kumar, D., Banerjee, A., Rajesh, R. 2021. Crushing of square honeycombs using disordered spring network model. *Mechanics of Materials* 160. doi: 10.1016/j.mechmat.2021.103947. ISSN-01676636
- 161.Vayyeti, A., Thittai, A.K. 2021. Optimally-weighted non-linear beamformer for conventional focused beam ultrasound imaging systems. *Scientific Reports* 11 (1). doi: 10.1038/s41598-021-00741-5. ISSN-20452322
- 162.Croft, J., Alam, M.N., Machakaire, N., Srinivasan, B., Srinivasan, R., Majozi, T. 2021. Synthesis of an optimal schedule and water network for a multipurpose multiproduct textile industry through a sequential MILP-NLP technique. *Industrial and Engineering Chemistry Research* 60 (45): 16363-16377. doi: 10.1021/acs.iecr.1c02661. ISSN-08885885
- 163.Varma, H., Jagadeesan, K., Narasimhamurthy, V.D., Kesarkar, A.P., Andersson, H.I. 2021. LES and DNS of symmetrically roughened turbulent channel flows. *Acta Mechanica* 232 (12): 4951-4968. doi: 10.1007/s00707-021-03082-6. ISSN-00015970
- 164.Rajamani, A.S., Rammohan, A., Sai, V.V.R., Rela, M. 2021. Non-invasive real-time assessment of hepatic macrovesicular steatosis in liver donors: Hypothesis, design and proof-of-concept study. *World Journal of Hepatology* 13 (10): 1208-1214. doi: 10.4254/wjh.v13.i10.1208. ISSN-19485182
- 165.Devanathan, K., Ganesan, K., Swaminathan, R. 2021. An automated classification of HEp-2 cellular shapes using Bag-of-keypoint features and Ant Colony Optimization. *BioCybernetics and Biomedical Engineering* 41 (2): 376-390. doi: 10.1016/j.bbe.2021.02.004. ISSN-02085216
- 166.Kumar, D., Ali, S.F., Arockiarajan, A. 2021. Theoretical and experimental studies on large deflection analysis of double corrugated cantilever structures. *International Journal of Solids and Structures* 228. doi: 10.1016/j.ijsolstr.2021.111126. ISSN-00207683
- 167.Sharma, M., Patel, S., Arockiarajan, A., Vaish, R. 2021. Electrical creep and fatigue in $0.5\text{Ba}(\text{Zr}_{0.2}\text{Ti}_{0.8})\text{O}_3-0.5(\text{Ba}_{0.7}\text{Ca}_{0.3})\text{TiO}_3$ ceramics. *Functional Materials Letters* 14 (8). doi: 10.1142/S1793604721500338. ISSN-17936047
- 168.Dhanasekaran, J., Roy, A., Koch, D.L. 2021. Collision rate of bidisperse, hydrodynamically interacting spheres settling in a turbulent flow. *Journal of Fluid Mechanics* 912. doi: 10.1017/jfm.2020.1113. ISSN-00221120
- 169.Pramanik, R., Soni, F., Shanmuganathan, K., Arockiarajan, A. 2021. Mechanics of soft polymeric materials using a fractal viscoelastic model. *Mechanics of Time-Dependent Materials*. doi: 10.1007/s11043-021-09486-0. ISSN-13852000
- 170.Mishra, H., Roy, A., Vengadesan, S. 2021. Stability of two-layer flows past slippery surfaces. II. Inclined channels. *Physics of Fluids* 33 (8). doi: 10.1063/5.0059217. ISSN-10706631
- 171.Gireesh, Y., Singh, D.B., Suryanarayana, G.K., Mukherjee, R. 2021. Effect of aerospike on unsteady transonic flow over a blunt body. *Journal of Spacecraft and Rockets* 58 (6): 1806-1818. doi: 10.2514/1.A34928. ISSN-00224650

172. Javanappa, S.K., Narasimhamurthy, V.D. 2021. Turbulent plane Couette flow with a roughened wall. *Physical Review Fluids* 6 (10). doi: 10.1103/PhysRevFluids.6.104609. ISSN-2469990X
173. Roy, A., Mukherjee, R. 2021. Experimental study on the behaviour of local laminar separation bubble at a rectangular wing section. *Fluid Dynamics* 56, pp S1-S18. doi: 10.1134/S0015462821060136. ISSN-00154628
174. Acharya, A.S., Deevi, S., Dhivyaraja, K., Tangirala, A.K., Panchagnula, M.V. 2021. Spatiooral microstructure of sprays: Data science-based analysis and modelling. *Journal of Fluid Mechanics* 912. doi: 10.1017/jfm.2020.1116. ISSN-00221120
175. Gujar, P., Hirshikesh, H., Annabattula, R.K., Ghosh, P. 2021. Structural to interfacial fracture transition in epoxy coated hydrating cement. *Construction and Building Materials* 310. doi: 10.1016/j.conbuildmat.2021.125128. ISSN-09500618
176. Varma, A., Roy, A., Puthenveetil, B.A. 2021. Inertial effects on the flow near a moving contact line. *Journal of Fluid Mechanics* 924. doi: 10.1017/jfm.2021.582. ISSN-00221120
177. Nijin, I.S., Banerjee, A. 2021. An incremental elastic-plastic triaxiality dependent fatigue model. *International Journal of Fracture* 227 (1): 39-55. doi: 10.1007/s10704-020-00494-8. ISSN-03769429
178. Lambadi, H., Jamal, N.B., Rao, C.L. 2021. Cyclic electro-mechanical modelling of uniaxially stretched PVDF. *Transactions of the Indian Institute of Metals* 74 (10): 2511-2520. doi: 10.1007/s12666-021-02321-7. ISSN-09722815
179. Bhatia, G.S., Arockiarajan, A. 2021. Compressive fatigue behavior of external patch repaired carbon/epoxy composites. *Polymer Composites* 42 (12): 6827-6838. doi: 10.1002/pc.26343. ISSN-02728397
180. Puliyeri, V., Vengadesan, S., Arul Prakash, K. 2021. Effect of cylinder arrangement on fluid flow and heat transfer characteristics past four elliptic cylinders. *Heat Transfer Engineering* 42 (21): 1789-1810. doi: 10.1080/01457632.2020.1826739. ISSN-01457632
181. Patra, M., Gupta, S., Banerjee, S. 2021. Local and global bifurcations in 3D piecewise smooth discontinuous maps. *Chaos* 31 (1). doi: 10.1063/5.0010887. ISSN-10541500
182. Biswas, S., Rounak, A., Perlikowski, P., Gupta, S. 2021. Characterising stochastic fixed points and limit cycles for dynamical systems with additive noise. *Communications in Nonlinear Science and Numerical Simulation* 101. doi: 10.1016/j.cnsns.2021.105870. ISSN-10075704
183. Coccarelli, A., Saha, S., Purushotham, T., Arul Prakash, K., Nithiarasu, P. 2021. On the poro-elastic models for microvascular blood flow resistance: An in vitro validation. *Journal of Biomechanics* 117. doi: 10.1016/j.jbiomech.2021.110241. ISSN-00219290
184. Vardhini, P., Ramakrishnan, S. 2021. Fractal angle based differentiation of term pregnancies using uterine electromyographic signals. *Biomedical Sciences Instrumentation* 57 (2): 350-355. doi: 10.34107/YHPN9422.04350. ISSN-00678856
185. Manoharan, H., Dharanibalaji K.C., Sai, V.V.R. 2021. Highly stable plasmonic nanostructures on a nickel-sputtered glass and polymeric optical fiber sensors. *Plasmonics* 16 (4): 1307-1318. doi: 10.1007/s11468-021-01400-1. ISSN-15571955
186. Mukherjee, A., Sudersan, S., Ali, S.F., Arockiarajan, A. 2021. Magnetic actuation of switchable bistable structures: A numerical study. *Smart Materials and Structures* 30 (7). doi: 10.1088/1361-665X/ac01f9. ISSN-09641726
187. Prabha, S.K., Gafoor, C.P.A., Sathian, S.P. 2021. Transport behavior of pressure-driven gas flow in a nanochannel and the variation of thermal accommodation coefficient. *International Journal of Heat and Mass Transfer* 177. doi: 10.1016/j.ijheatmasstransfer.2021.121528. ISSN-00179310
188. Nath, B., Barai, S., Kumar, P., Srinivasan, B., Mohapatra, N.R. 2021. A novel ML augmented DRC framework for identification of yield detractor patterns. *IEEE Transactions on Semiconductor Manufacturing* 34 (3): 379-386. doi: 10.1109/TSM.2021.3083973. ISSN-08946507
189. Dheeraj, K.V.S., Sathian, S.P. 2021. The disparate effect of strain on thermal conductivity of 2-D materials. *Physical Chemistry Chemical Physics* 23 (40): 23096-23105. doi: 10.1039/d1cp02771a. ISSN-14639076
190. Siva, K.V., Kumar, A., Arockiarajan, A. 2021. Structural, magnetic and magnetoelectric investigations on CoFe₂O₄ prepared via various wet chemical synthesis route : A comparative study. *Journal of Magnetism and Magnetic Materials* 535. doi: 10.1016/j.jmmm.2021.168065. ISSN-03048853
191. Banuvathy, R., Varadhan, S. 2021. Distinct behavior of the little finger during the vertical translation of an unsteady thumb platform while grasping. *Scientific Reports* 11 (1). doi: 10.1038/s41598-021-00420-5. ISSN-20452322
192. Balamurugan, S., Dhanush, R., Varadhan, S.K.M. 2021. Role of post-trial visual feedback on unintentional force drift during isometric finger force production tasks. *Motor control* 26 (1): 14-Jan. doi: 10.1123/mc.2020-0031. ISSN-10871640
193. Singh, A., Narasimhamurthy, V.D. 2021. DNS of wake from perforated plates: Aspect ratio effects. *Progress in Computational Fluid Dynamics* 21 (6): 355-368. doi: 10.1504/PCFD.2021.119266. ISSN-14684349
194. Ray, R.K., Patel, P., Manivannan, M. 2021. Reduction of electrotactile perception threshold using subthreshold vibrotactile stimuli. *Displays* 69. doi: 10.1016/j.displa.2021.102056. ISSN-01419382
195. Choudhury, S., Anupindi, K., Patnaik, B.S.V. 2021. A study on the transport and interaction between blood flow and low-density-lipoprotein in near-wall regions of blood vessels. *Computer Methods in Biomechanics and Biomedical Engineering* 24 (13): 1473-1487. doi: 10.1080/10255842.2021.1893311. ISSN-10255842
196. Noushad Bin Jamal, M., Rao, C.L., Basaran, C. 2021. A semi-infinite edge dislocation model for the proportionality limit stress of metals under high strain rate. *Computational*

- Mechanics* 68 (3): 545-565. doi: 10.1007/s00466-020-01959-2. ISSN-01787675
- 197.Ramakrishnan, V., Mushthaq, R., Roy, A., Vengadesan, S. 2021. Stability of two-layer flows past slippery surfaces. I. Horizontal channels. *Physics of Fluids* 33 (8). doi: 10.1063/5.0050256. ISSN-10706631
- 198.Warrier, J., Ali, S.F. 2021. Nonlinear dynamics and control of helicopter ground resonance. *JVC/Journal of Vibration and Control*. doi: 10.1177/1077546321996937. ISSN-10775463
- 199.David, A., Subash, T., Varadhan, S.K.M., Melendez-Calderon, A., Balasubramanian, S. 2021. A Framework for Sensor-Based Assessment of Upper-Limb Functioning in Hemiparesis. *Frontiers in Human Neuroscience* 15. doi: 10.3389/fnhum.2021.667509. ISSN-16625161
- 200.Govindarajan, S., Swaminathan, R. 2021. Differentiation of COVID-19 conditions in planar chest radiographs using optimized convolutional neural networks. *Applied Intelligence* 51 (5): 2764-2775. doi: 10.1007/s10489-020-01941-8. ISSN-0924669X
- 201.Kumar, P., Garg, P., Solanki, K.N., Adlakha, I. 2021. Effect of hydrogen on the ideal shear strength in metals and its implications on plasticity: A first-principles study. *International Journal of Hydrogen Energy* 46 (50): 25726-25737. doi: 10.1016/j.ijhydene.2021.05.068. ISSN-03603199
- 202.Sreekesh, K., Tafti, D.K., Vengadesan, S. 2021. The effect of rotation on internal cooling of turbine blades with modified ribs using Large Eddy Simulation (LES). *Numerical Heat Transfer; Part A: Applications* 80 (9): 451-474. doi: 10.1080/10407782.2021.1950410. ISSN-10407782
- 203.De, M.M., Mathur, J.S., Vengadesan, S. 2021. Entropy and fractal perspectives of a flapping wing subjected to gust. *Proceedings of the Institution of Mechanical Engineers, Part G: Journal of Aerospace Engineering* 235 (15): 2165-2181. doi: 10.1177/0954410021993297. ISSN-09544100
- 204.Govindarajan, S., Swaminathan, R. 2021. Correction to: Differentiation of COVID-19 conditions in planar chest radiographs using optimized convolutional neural networks (*Applied Intelligence*, (2021), 51, 5, (2764-2775), doi: 10.1007/s10489-020-01941-8). *Applied Intelligence* 51 (5). doi: 10.1007/s10489-021-02343-0. ISSN-0924669X
- 205.Hari, L.M., Venugopal, G., Ramakrishnan, S. 2021. Muscle fatigue analysis in biceps brachii surface electromyography signals using synchrosqueezed Morlet wavelet and singular value decomposition. *Electronics Letters* 57 (1): 42-44. doi: 10.1049/ell2.12026. ISSN-00135194
- 206.Giri, A.M., Ali, S.F., Arockiarajan, A. 2021. Dynamics of symmetric and asymmetric potential well-based piezoelectric harvesters: A comprehensive review. *Journal of Intelligent Material Systems and Structures* 32 (17): 1881-1947. doi: 10.1177/1045389X20978292. ISSN-1045389X
- 207.Rajan, S.T., Arockiarajan, A. 2021. Thin film metallic glasses for bioimplants and surgical tools: A review. *Journal of Alloys and Compounds* 876. doi: 10.1016/j.jallcom.2021.159939. ISSN-09258388
- 208.Usha, S.P., Manoharan, H., Merkoçi, A., et al. 2021. Attomolar analyte sensing techniques (AttoSens): A review on a decade of progress on chemical and biosensing nanoplatfoms. *Chemical Society Reviews* 50 (23): 13012-13089. doi: 10.1039/d1cs00137j. ISSN-03060012
- 209.Sankaralingam, R.K., Seshadri, S., Sunarso, J., Bhatt, A.I., Kapoor, A. 2021. Overview of the factors affecting the performance of vanadium redox flow batteries. *Journal of Energy Storage* 41. doi: 10.1016/j.est.2021.102857. ISSN-2352152X
- 210.Isaac, J. H, R. Manivan, Muniyandi Ravindran, Balaraman 2021. Corrective filter based on kinematics of human hand for pose estimation. *Frontiers in Virtual Reality* 2. doi: 10.3389/frvir.2021.663618
- 211.Bin Jamal M, Noushad, Lee, Hsiao Wei, Lakshmana Rao, Chebolu, Basaran, Cemal and others. 2021. Dynamic equilibrium equations in Unified Mechanics Theory. In *Applied Mechanics* 2, pp 63-80. doi: 10.3390/applmech2010005
- 212.Kumar, Aman, Jamal Mankarathodi, Noushad Bin and Chebolu, Lakshmana Rao. 2021. Fatigue life prediction in nickel based superalloys using unified mechanics theory. In *International Journal of Advances in Engineering Sciences and Applied Mathematics* 13, pp 360-367. doi: 10.1007/s12572-021-00296-8
- 213.Verma, Luv; Andrew, Jefferson; Hom N., et al. 2021. Ballistic impact behaviour of glass/epoxy composite laminates embedded with shape memory alloy (SMA) wires. *Molecules* 26 (1). doi: 10.3390/molecules26010138
- 214.Satheesh, S. M.; Banerjee, Anuradha; Bhattacharya, Enakshi 2021. Transferability of weakest link model parameters of polysilicon from indentation fracture to failure of MEMS structures. *Engineering Failure Analysis* 127. doi: 10.1016/j.engfailanal.2021.105563
- 215.Nikam, R., Kulandaisamy, A., Harini, K., Sharma, D., Michael Gromiha, M. 2021. ProThermDB: Thermodynamic database for proteins and mutants revisited after 15 years. *Nucleic Acids Research* 49 (1): D420-D424. doi: 10.1093/nar/gkaa1035. ISSN-03051048
- 216.Ziaei-Rad, Z., Fooladi, J., Pazouki, M., Gummadi, S.N. 2021. Lignocellulosic biomass pre-treatment using low-cost ionic liquid for bioethanol production: An economically viable method for wheat straw fractionation. *Biomass and Bioenergy* 151. doi: 10.1016/j.biombioe.2021.106140. ISSN-09619534
- 217.Jayasekhar Babu, P., Saranya, S., Singh, Y.D., Venkataswamy, M., Raichur, A.M., Doble, M. 2021. Photoluminescence carbon nano dots for the conductivity based optical sensing of dopamine and bioimaging applications. *Optical Materials* 117. doi: 10.1016/j.optmat.2021.111120. ISSN-09253467
- 218.Prabakaran, R., Rawat, P., Kumar, S., Michael Gromiha, M. 2021. ANuPP: A versatile tool to predict aggregation nucleating regions in peptides and proteins. *Journal of Molecular Biology* 433 (11). doi: 10.1016/j.jmb.2020.11.006. ISSN-00222836

- 219.Ramesh, K., Balavigneswaran, C.K., Siboro, S.A.P., Muthuvijayan, V., Lim, K.T. 2021. Synthesis of cyclodextrin-derived star poly(N-vinylpyrrolidone)/poly(lactic-co-glycolide) supramolecular micelles via host-guest interaction for delivery of doxorubicin. *Polymer* 214. doi: 10.1016/j.polymer.2020.123243. ISSN-00323861
- 220.Rawat, P., Jemimah, S., Ponnuswamy, P.K., Gromiha, M.M. 2021. Why are ACE2 binding coronavirus strains SARS-CoV/SARS-CoV-2 wild and NL63 mild?. *Proteins: Structure, Function and Bioinformatics* 89 (4): 389-398. doi: 10.1002/prot.26024. ISSN-08873585
- 221.Mani, P., Fidal, V.T., Keshavarz, T., Chandra, T.S., Kyazze, G. 2021. Laccase immobilization strategies for application as a cathode catalyst in microbial fuel cells for azo dye decolourization. *Frontiers in Microbiology* 11. doi: 10.3389/fmicb.2020.620075. ISSN-1664302X
- 222.Richard, A.S., Verma, R.S. 2021. Bioactive nano yarns as surgical sutures for wound healing. *Materials Science and Engineering C* 128. doi: 10.1016/j.msec.2021.112334. ISSN-09284931
- 223.Mohinudeen, I.A.H.K., Kanumuri, R., Soujanya, K.N., Shaanker, R.U., Rayala, S.K., Srivastava, S. 2021. Sustainable production of camptothecin from an *Alternaria* sp. isolated from *Nothapodytes nimmoniana*. *Scientific Reports* 11 (1). doi: 10.1038/s41598-020-79239-5. ISSN-20452322
- 224.Sathappan, S., Kirubakaran, N., Gunasekaran, D., Gupta, P.K., Verma, R.S., Sundaram, J. 2021. Green synthesis of zinc oxide nanoparticles (ZnO NPs) using *Cissampelos quadrangularis*: characterization, antimicrobial and anticancer studies. *Proceedings of the National Academy of Sciences India Section B - Biological Sciences* 91 (2): 289-296. doi: 10.1007/s40011-020-01215-w. ISSN-03698211
- 225.Kulandaisamy, A., Zaucha, J., Frishman, D., Gromiha, M.M. 2021. MPTherm-pred: Analysis and prediction of thermal stability changes upon mutations in transmembrane proteins. *Journal of Molecular Biology* 433 (11). doi: 10.1016/j.jmb.2020.09.005. ISSN-00222836
- 226.Balavigneswaran, C.K., Muthuvijayan, V. 2021. Nanohybrid-reinforced gelatin-ureidopyrimidinone-based self-healing injectable hydrogels for tissue engineering applications. *ACS Applied Bio Materials* 4 (6): 5362-5377. doi: 10.1021/acsabm.1c00458. ISSN-25766422
- 227.Vignesh, N., Chandraraj, K. 2021. Improved high solids loading enzymatic hydrolysis and fermentation of cotton microdust by surfactant addition and optimization of pretreatment. *Process Biochemistry* 106, pp 60-69. doi: 10.1016/j.procbio.2021.04.002. ISSN-13595113
- 228.Ravindran, R., Mitra, K., Arumugam, S.K., Doble, M. 2021. Preparation of Curdlan sulphate - Chitosan nanoparticles as a drug carrier to target *Mycobacterium smegmatis* infected macrophages. *Carbohydrate Polymers* 258. doi: 10.1016/j.carbpol.2021.117686. ISSN-01448617
- 229.Thulasinathan, B., Ebenezer, J.O., Alagarsamy, A., et al. 2021. Bioelectricity generation and analysis of anode biofilm metabolites from septic tank wastewater in microbial fuel cells. *International Journal of Energy Research* 45 (12): 17244-17258. doi: 10.1002/er.5734. ISSN-0363907X
- 230.Ashokan, A., Rajendran, V., Sampath Kumar, T.S., Jayaraman, G. 2021. Eggshell derived hydroxyapatite microspheres for chromatographic applications by a novel dissolution-precipitation method. *Ceramics International* 47 (13): 18575-18583. doi: 10.1016/j.ceramint.2021.03.183. ISSN-02728842
- 231.Venkateswaran, M., Jayabal, S., Periyasamy, S., et al. 2021. Polyphenol-rich Indian ginger cultivars ameliorate GLUT4 activity in C2C12 cells, inhibit diabetes-related enzymes and LPS-induced inflammation: An in vitro study. *Journal of Food Biochemistry* 45 (2). doi: 10.1111/jfbc.13600. ISSN-01458884
- 232.Joy, S.P., Kumar, A.A., Krishnan, C., et al. 2021. Variations in structure and saccharification efficiency of biomass of different sorghum varieties subjected to aqueous ammonia and glycerol pretreatments. *Industrial Crops and Products* 159. doi: 10.1016/j.indcrop.2020.113072. ISSN-09266690
- 233.Sundar, S., Sandilya, A.A., Priya, M.H. 2021. Unraveling the influence of osmolytes on water hydrogen-bond network: From local structure to graph theory analysis. *Journal of Chemical Information and Modeling* 61 (8): 3927-3944. doi: 10.1021/acs.jcim.1c00527. ISSN-15499596
- 234.Chandel, S., Manikandan, A., Dixit, M., et al. 2021. The protein tyrosine phosphatase PTP-PEST mediates hypoxia-induced endothelial autophagy and angiogenesis via AMPK activation. *Journal of Cell Science* 134 (1). doi: 10.1242/jcs.250274. ISSN-00219533
- 235.Vignesh, N., Suriyaraj, S.P., Selvakumar, R., Chandraraj, K. 2021. Facile fabrication and characterization of Zn loaded cellulose membrane from cotton microdust waste and its antibacterial properties—a waste to value approach. *Journal of Polymers and the Environment* 29 (5): 1651-1662. doi: 10.1007/s10924-020-02021-1. ISSN-15662543
- 236.Murugan, R., Suraishkumar, G.K., Mukherjee, A., Dhama, N.K. 2021. Insights into the influence of cell concentration in design and development of microbially induced calcium carbonate precipitation (MICP) process. *PLoS ONE* 16 (7). doi: 10.1371/journal.pone.0254536. ISSN-19326203
- 237.Gande, V.V., Vats, S., Bhatt, N., Pushpavanam, S. 2021. Sequential recovery of metals from waste printed circuit boards using a zero-discharge hydrometallurgical process. *Cleaner Engineering and Technology* 4. doi: 10.1016/j.clet.2021.100143. ISSN-26667908
- 238.Chithra Lekha, P., Ram Babu, Y., Fidal Kumar, V.T., Chandra, T.S., Roy, S.C. 2021. Investigation of Photo-induced enhancement of sensitivity and electrochemical surface phenomenon of multileg TiO₂ nanotubes sensor device towards H₂O₂. *Journal of Electroanalytical Chemistry* 895. doi: 10.1016/j.jelechem.2021.115399. ISSN-15726657
- 239.Rawat, P., Prabakaran, R., Kumar, S., Gromiha, M.M. 2021. AbsoluRATE: An in-silico method to predict the aggregation kinetics of native proteins. *Biochimica et Biophysica Acta - Proteins and Proteomics* 1869 (9). doi: 10.1016/j.bbapap.2021.140682. ISSN-15709639
- 240.Muddapu, V.R., Chakravarthy, V.S. 2021. Influence of energy deficiency on the subcellular processes of *Substantia Nigra Pars Compacta* cell for understanding Parkinsonian

- neurodegeneration. *Scientific Reports* 11 (1). doi: 10.1038/s41598-021-81185-9. ISSN-20452322
241. Yesudhas, D., Srivastava, A., Sekijima, M., Gromiha, M.M. 2021. Tackling COVID-19 using disordered-to-order transition of residues in the spike protein upon angiotensin-converting enzyme 2 binding. *Proteins: Structure, Function and Bioinformatics* 89 (9): 1158-1166. doi: 10.1002/prot.26088. ISSN-08873585
242. Kanniyappan, H., Venkatesan, M., Panji, J., Ramasamy, M., Muthuvijayan, V. 2021. Evaluating the inherent osteogenic and angiogenic potential of mesoporous silica nanoparticles to augment vascularized bone tissue formation. *Microporous and Mesoporous Materials* 311. doi: 10.1016/j.micromeso.2020.110687. ISSN-13871811
243. Sannigrahi, A., Chowdhury, S., Chattopadhyay, K., et al. 2021. The metal cofactor zinc and interacting membranes modulate sod1 conformation-aggregation landscape in an in vitro model. *eLife* 10. doi: 10.7554/ELIFE.61453. ISSN-2050084X
244. Rawat, P., Prabakaran, R., Kumar, S., Gromiha, M.M. 2021. Exploring the sequence features determining amyloidosis in human antibody light chains. *Scientific Reports* 11 (1). doi: 10.1038/s41598-021-93019-9. ISSN-20452322
245. Fernandez, R.A., Quimque, M.T., Macabeo, A.P.G., et al. 2021. Myxobacterial depsipeptide chondramides interrupt SARS-CoV-2 entry by targeting its broad, cell tropic spike protein. *Journal of Biomolecular Structure and Dynamics*. doi: 10.1080/07391102.2021.1969281. ISSN-07391102
246. Sharma, V., Dash, S.K., Manhas, A., Radhakrishnan, J., Jagavelu, K., Verma, R.S. 2021. Injectable hydrogel for co-delivery of 5-azacytidine in zein protein nanoparticles with stem cells for cardiac function restoration. *International Journal of Pharmaceutics* 603. doi: 10.1016/j.ijpharm.2021.120673. ISSN-03785173
247. Rahman, M.H., Senapati, S. 2021. Effects of ionic liquids on aqueous urea solutions: insights into the ionic liquid-assisted protein renaturation. *Journal of Physical Chemistry B* 125 (18): 4808-4818. doi: 10.1021/acs.jpcc.1c00586. ISSN-15206106
248. Ravhe, I.S., Krishnan, A., Manoj, N. 2021. Evolutionary history of histamine receptors: Early vertebrate origin and expansion of the H3-H4 subtypes. *Molecular Phylogenetics and Evolution* 154. doi: 10.1016/j.ympev.2020.106989. ISSN-10557903
249. Dharshini, S.A.P., Jemimah, S., Taguchi, Y.H., Gromiha, M.M. 2021. Exploring common therapeutic targets for neurodegenerative disorders using transcriptome study. *Frontiers in Genetics* 12. doi: 10.3389/fgene.2021.639160. ISSN-16648021
250. Mallu, A.C.T., Vasudevan, M., Dixit, M., et al. 2021. Prediabetes uncovers differential gene expression at fasting and in response to oral glucose load in immune cells. *Clinical Nutrition* 40 (3): 1247-1259. doi: 10.1016/j.clnu.2020.08.007. ISSN-02615614
251. Durai, L., Ravindran, S., Arvind, K., Karunakaran, D., Vijayalakshmi, R. 2021. Synergistic effect of metformin and vemurafenib (PLX4032) as a molecular targeted therapy in anaplastic thyroid cancer: An in vitro study. *Molecular Biology Reports* 48 (11): 7443-7456. doi: 10.1007/s11033-021-06762-7. ISSN-03014851
252. Purohit, R., Bera, A.K. 2021. Mutational effects of Pannexin 1 R217H depend on the carboxyl-terminus. *Biochemical and Biophysical Research Communications* 548, pp 143-147. doi: 10.1016/j.bbrc.2021.02.060. ISSN-0006291X
253. Yadav, P., Sharma, P., Sundaram, S., Venkatraman, G., Bera, A.K., Karunakaran, D. 2021. SLC7A11/ xCT is a target of miR-5096 and its restoration partially rescues miR-5096-mediated ferroptosis and anti-tumor effects in human breast cancer cells. *Cancer Letters* 522, pp 211-224. doi: 10.1016/j.canlet.2021.09.033. ISSN-03043835
254. Mondal, B., Banerjee, S., Samanta, S.K., Senapati, S., Tripathy, T. 2021. Highly selective and sensitive electrochemical sensing of trace Zn²⁺ ions, by grafted Tricholoma mushroom polysaccharide/Ag composite nanoparticles in aqueous medium. *Applied Organometallic Chemistry* 35 (4). doi: 10.1002/aoc.6171. ISSN-02682605
255. Srivastava, A., Yesudhas, D., Ahmad, S., Gromiha, M.M. 2021. Understanding disorder-to-order transitions in protein-RNA complexes using molecular dynamics simulations. *Journal of Biomolecular Structure and Dynamics*. doi: 10.1080/07391102.2021.1904005. ISSN-07391102
256. Shanmugam, M.K., Gummadi, S.N. 2021. Degradation of synthetic coffee wastewater using induced cells of *Pseudomonas* sp. NCIM 5235. *International Journal of Environmental Science and Technology* 18 (10): 3013-3022. doi: 10.1007/s13762-020-03019-x. ISSN-17351472
257. Sakthipriya, N., Kumar, G., Agrawal, A., Doble, M., Sangwai, J.S. 2021. Impact of biosurfactants, surfactin, and rhamnolipid produced from *Bacillus subtilis* and *Pseudomonas aeruginosa*, on the enhanced recovery of crude oil and its comparison with commercial surfactants. *Energy and Fuels* 35 (12): 9883-9893. doi: 10.1021/acs.energyfuels.1c00679. ISSN-08870624
258. Mohinudeen, I.A.H.K., Pandey, S., Kanniyappan, H., Muthuvijayan, V., Srivastava, S. 2021. Screening and selection of camptothecin producing endophytes from *Nothapodytes nimmoniana*. *Scientific Reports* 11 (1). doi: 10.1038/s41598-021-90778-3. ISSN-20452322
259. Mohkhedkar, M., Venigalla, S.S.K., Janakiraman, V. 2021. Untangling COVID-19 and autoimmunity: Identification of plausible targets suggests multi organ involvement. *Molecular Immunology* 137, pp 105-113. doi: 10.1016/j.molimm.2021.06.021. ISSN-01615890
260. Gopi, S., Lukose, B., Naganathan, A.N. 2021. Diverse native ensembles dictate the differential functional responses of nuclear receptor ligand-binding domains. *Journal of Physical Chemistry B* 125 (14): 3546-3555. doi: 10.1021/acs.jpcc.1c00972. ISSN-15206106
261. Gupta, S., Balasubramanian, S., Senapati, S. 2021. Understanding the mechanism of HIV-1 protease inhibition

- by monoclonal antibodies. *Journal of Molecular Graphics and Modelling* 103. doi: 10.1016/j.jmgm.2020.107826. ISSN-10933263
- 262.Radha, R., Gummadi, S.N. 2021. Optimisation of physical parameters pH and temperature for maximised activity and stability of *Vibrio cholerae* L-asparaginase by statistical experimental design. *Indian Chemical Engineer* 63 (4): 425-434. doi: 10.1080/00194506.2020.1758224. ISSN-00194506
- 263.Lakshmi Ch, N.P., Sivagnanam, A., Raja, S., Mahalingam, S. 2021. Molecular basis for RASSF10/NPM/RNF2 feedback cascade-mediated regulation of gastric cancer cell proliferation. *Journal of Biological Chemistry* 297 (2). doi: 10.1016/j.jbc.2021.100935. ISSN-00219258
- 264.Misra, R., Patra, B., Varadaraj, S., Verma, R.S. 2021. Establishing the promising role of novel combination of triple therapeutics delivery using polymeric nanoparticles for Triple negative breast cancer therapy. *BiolImpacts* 11 (3): 199-207. doi: 10.34172/bi.2021.27. ISSN-22285652
- 265.Ghanta, P., Doble, M., Ramaiah, B. 2021. Alkaloids of *Adhatoda vasica* Nees. as potential inhibitors of cyclooxygenases—an in-silico study. *Journal of Biomolecular Structure and Dynamics* doi: 10.1080/07391102.2021.1895887. ISSN-07391102
- 266.Uma Mahesh, V.N.M., Chadha, A. 2021. Imine reduction by an Ornithine cyclodeaminase/ μ -crystallin homolog purified from *Candida parapsilosis* ATCC 7330. *Biotechnology Reports* 31. doi: 10.1016/j.btre.2021.e00664. ISSN-2215017X
- 267.Natarajan, B., Arige, V., Khan, A.A., Reddy, S.S., Barthwal, M.K., Mahapatra, N.R. 2021. Hypoxia-mediated regulation of mitochondrial transcription factors in renal epithelial cells: implications for hypertensive renal physiology. *Hypertension Research* 44 (2): 154-167. doi: 10.1038/s41440-020-00539-4. ISSN-09169636
- 268.Sharma, A., Tobar-Tosse, F., Herwig-Carl, M.C., et al. 2021. Ppar-responsive elements enriched with alu repeats may contribute to distinctive ppar γ -dnmt1 interactions in the genome. *Cancers* 13 (16). doi: 10.3390/cancers13163993. ISSN-20726694
- 269.Gupta, P., Kar, S., Santra, T.S., et al. 2021. Pulsed laser assisted high-Throughput intracellular delivery in hanging drop based three dimensional cancer spheroids. *Analyst* 146 (15): 4756-4766. doi: 10.1039/d0an02432e. ISSN-00032654
- 270.Krishnan, S., Patel, P.N., Balasubramanian, K.K., Chadha, A. 2021. Yeast supported gold nanoparticles: an efficient catalyst for the synthesis of commercially important aryl amines. *New Journal of Chemistry* 45 (4): 1915-1923. doi: 10.1039/d0nj04542j. ISSN-11440546
- 271.Murugan, R. 2021. A lattice model on the rate of in vivo site-specific DNA-protein interactions. *Physical Biology* 18 (1). doi: 10.1088/1478-3975/abbe9a. ISSN-14783967
- 272.Kumar, B.S., Mayakkannan, N., Manojna, N.S., Chakravarthy, V.S. 2021. Artificial neurovascular network (ANVN) to study the accuracy vs. efficiency trade-off in an energy dependent neural network. *Scientific Reports* 11 (1). doi: 10.1038/s41598-021-92661-7. ISSN-20452322
- 273.Pratap Reddy Gajulapalli, V., Kumarswamyreddy, N., Lokesh, K., Kesavan, V. 2021. Enantioselective synthesis of 3-acetyl coumarin substituted 3-hydroxy oxindoles and pyranocoumarin fused spirooxindoles. *ChemistrySelect* 6 (31): 7855-7859. doi: 10.1002/slct.202102495. ISSN-23656549
- 274.Kumarswamyreddy, N., Jayakumar, S., Kesavan, V. 2021. Palladium-catalyzed asymmetric allylic alkylation of 3-amino-2-oxindoles: Synthesis of 3-allyl-3-amino-2-oxindoles. *Tetrahedron Letters* 82. doi: 10.1016/j.tetlet.2021.153385. ISSN-00404039
- 275.Giridhar, P.V., Chandra, T.S. 2021. Xylanase production by halophilic bacterium *Gracilibacillus* sp. TSCPVG under solid state fermentation. *Research Journal of Biotechnology* 16 (7): 92-100. ISSN-09736263
- 276.Garg, S., Sagar, A., Rakshit, S., et al. 2021. Weakening of interaction networks with aging in tip-link protein induces hearing loss. *Biochemical Journal* 478 (1): 121-134. doi: 10.1042/BCJ20200799. ISSN-02646021
- 277.Pacheco-Garcia, J.L., Anoz-Carbonell, E., Pey, A.L., et al. 2021. Structural basis of the pleiotropic and specific phenotypic consequences of missense mutations in the multifunctional NAD(P)H:quinone oxidoreductase 1 and their pharmacological rescue. *Redox Biology* 46. doi: 10.1016/j.redox.2021.102112. ISSN-22132317
- 278.Ramakrishnan, C., Nagarajan, R., Sekijima, M., Michael Gromiha, M. 2021. Molecular dynamics simulations of cognate and non-cognate AspRS-tRNA^{Asp} complexes. *Journal of Biomolecular Structure and Dynamics* 39 (2): 493-501. doi: 10.1080/07391102.2019.1711188. ISSN-07391102
- 279.Ganesan, S., Sarangapani, M., Doble, M. 2021. An expedient, one-pot, stepwise sequential approach for the regioselective synthesis of pyrazolines. *Journal of Chemical Research* 45 (04-Mar): 326-333. doi: 10.1177/1747519820977165. ISSN-17475198
- 280.Kumar, B.S., Khot, A., Chakravarthy, V.S., Pushpavanam, S. 2021. A network architecture for bidirectional neurovascular coupling in rat whisker barrel cortex. *Frontiers in Computational Neuroscience* 15. doi: 10.3389/fncom.2021.638700. ISSN-16625188
- 281.Sivanesan, D., Verma, R.S., Prasad, E. 2021. 5FU encapsulated polyglycerol sebacate nanoparticles as anti-cancer drug carriers. *RSC Advances* 11 (31): 18984-18993. doi: 10.1039/d1ra01722e. ISSN-20462069
- 282.Rawat, P., Sharma, D., Srivastava, A., Janakiraman, V., Gromiha, M.M. 2021. Exploring antibody repurposing for COVID-19: beyond presumed roles of therapeutic antibodies. *Scientific Reports* 11 (1). doi: 10.1038/s41598-021-89621-6. ISSN-20452322
- 283.Koyiloth, M., Gummadi, S.N. 2021. Cholesterol interaction attenuates scramblase activity of SCRM-1 in the artificial membrane. *Biochimica et Biophysica Acta - Biomembranes* 1863 (9). doi: 10.1016/j.

bbamem.2020.183548. ISSN-00052736

284.Pandey, M., Gromiha, M.M. 2021. Predicting potential residues associated with lung cancer using deep neural network. *Mutation Research - Fundamental and Molecular Mechanisms of Mutagenesis* 822. doi: 10.1016/j.mrfmmm.2020.111737. ISSN-00275107

285.Banerjee, S., Raman, K., Ravindran, B. 2021. Sequence neighborhoods enable reliable prediction of pathogenic mutations in cancer genomes. *Cancers* 13 (10). doi: 10.3390/cancers13102366. ISSN-20726694

286.Kannan, R., Datta, A., Prabakaran, P., Prasad, E., Muthuvijayan, V. 2021. Modular amphiphilic poly(aryl ether)-based supramolecular nanomicelles: An efficient endocytic drug carrier. *Chemical Communications* 57 (94): 12695-12698. doi: 10.1039/d1cc05652b. ISSN-13597345

287.Krishnan, S., Jayakumar, D., Madhyastha, H., Chadha, A. 2021. The complexity of microbial metal nanoparticle synthesis: a study of candida parapsilosis ATCC 7330 mediated gold nanoparticles formation. *BioNanoScience* 11 (2): 336-344. doi: 10.1007/s12668-021-00825-6. ISSN-21911630

288.Dhanasekaran, S., Sithambaram, D., Verma, R.S. 2021. Hepatocyte nuclear factor foxa-2 effectively differentiates mesenchymal stem cells to functional hepatocytes. *Indian Journal of Experimental Biology* 59 (6): 369-380. ISSN-00195189

289.Mohapatra, S.B., Manoj, N. 2021. Structural basis of catalysis and substrate recognition by the NAD(H)-dependent α -dglucuronidase from the glycoside hydrolase family 4. *Biochemical Journal* 478 (4): 943-959. doi: 10.1042/BCJ20200824. ISSN-02646021

290.Ibrahim, M., Raman, K. 2021. Two-species community design of lactic acid bacteria for optimal production of lactate. *Computational and Structural Biotechnology Journal* 19, pp 6039-6049. doi: 10.1016/j.csbj.2021.11.009. ISSN-20010370

291.Vijayam, R., Damaraju, N., Bhatnagar, S., et al. 2021. Comparison of first trimester dating methods for gestational age estimation and their implication on preterm birth classification in a North Indian cohort. *BMC Pregnancy and Childbirth* 21 (1). doi: 10.1186/s12884-021-03807-4. ISSN-14712393

292.Saren, R.K., Banerjee, S., Mondal, B., Senapati, S., Tripathy, T. 2021. Studies of simultaneous electrochemical sensing of Hg²⁺ and Cd²⁺ ions and catalytic reduction properties of 4-nitrophenol by CuO, Au, and CuO@Au composite nanoparticles synthesised using a graft copolymer as a bio-template. *New Journal of Chemistry* 45 (48): 22798-22813. doi: 10.1039/d1nj04702g. ISSN-11440546

293.Malla, S., Gummadi, S.N. 2021. Simultaneous optimization of activity and stability of xylose reductase from *D. nepalensis* NCYC 3413 using statistical experimental design. *Protein and Peptide Letters* 28 (5): 489-500. doi: 10.2174/0929866527666201103145246. ISSN-18755305

294.Jino Blessy, J., Siva Shanmugam, N.R., Veluraja,

K., Michael Gromiha, M. 2021. Investigations on the binding specificity of β -galactoside analogues with human galectin-1 using molecular dynamics simulations. *Journal of Biomolecular Structure and Dynamics*. doi: 10.1080/07391102.2021.1939788. ISSN-07391102

295.Vignesh, R., Sjölander, A., Venkatraman, G., Rayala, S.K., Aradhyam, G.K. 2021. Aberrant environment and PS-binding to calnuc C-terminal tail drives exosomal packaging and its metastatic ability. *Biochemical Journal* 478 (12): 2265-2283. doi: 10.1042/BCJ20210016. ISSN-02646021

296.Ashokan, A., Harisankar, H.S., Kameswaran, M., Aradhyam, G.K. 2021. Critical APJ receptor residues in extracellular domains that influence effector selectivity. *FEBS Journal* 288 (22): 6543-6562. doi: 10.1111/febs.16048. ISSN-1742464X

297.Senthamizhan, V., Ravindran, B., Raman, K. 2021. NetGenes: A database of essential genes predicted using features from interaction networks. *Frontiers in Genetics* 12. doi: 10.3389/fgene.2021.722198. ISSN-16648021

298.Nivedita, S., Arnepalli, D.N., Krishnan, C. 2021. Kinetics and stoichiometry of an efficient methanotroph methylosarcina sp. LC-4 Isolated from a municipal solid waste dumpsite. *Journal of Environmental Engineering (United States)* 147 (5). doi: 10.1061/(ASCE)EE.1943-7870.0001867. ISSN-07339372

299.Kanumuri, R., Chelluboyina, A.K., Rayala, S.K., et al. 2021. Small peptide inhibitor from the sequence of RUNX3 disrupts PAK1-RUNX3 interaction and abrogates its phosphorylation-dependent oncogenic function. *Oncogene* 40 (34): 5327-5341. doi: 10.1038/s41388-021-01927-x. ISSN-09509232

300.Devi, R.V., Raj, D., Doble, M. 2021. Lockdown of mitochondrial Ca²⁺ extrusion and subsequent resveratrol treatment kill HeLa cells by Ca²⁺ overload. *International Journal of Biochemistry and Cell Biology* 139. doi: 10.1016/j.biocel.2021.106071. ISSN-13572725

301.Venkatachalam, M., Rathinam, A., Rao, J.R., Krishnan, C. 2021. Bioconversion of animal hair waste using salt- and sulphide-tolerant *Bacillus* sp. KLP1 and depilation using keratinase. *International Journal of Environmental Science and Technology*. doi: 10.1007/s13762-021-03437-5. ISSN-17351472

302.Chellam Gayathri, S., Gupta, S., Suresh, A., Senapati, S., Sengupta, T. 2021. Effect of variations in the conserved residues E371 and S359 on the structural dynamics of protein Z dependent protease inhibitor (ZPI): a molecular dynamic simulation study. *Journal of Biomolecular Structure and Dynamics*. doi: 10.1080/07391102.2021.1883114. ISSN-07391102

303.Arumugam, G.S., Sen, A., Gummadi, S.N., et al. 2021. Arjunetin as a promising drug candidate against SARS-CoV-2: Molecular dynamics simulation studies. *Journal of Biomolecular Structure and Dynamics*. doi: 10.1080/07391102.2021.1970627. ISSN-07391102

304.Biswas, D., Pallikkulath, S., Chakravarthy, V.S. 2021. A complex-valued oscillatory neural network for storage and retrieval of multidimensional aperiodic signals.

- Frontiers in Computational Neuroscience* 15. doi: 10.3389/fncom.2021.551111. ISSN-16625188
- 305.Reddy, H.P., Yakubovich, D., Dascal, N., *et al.* 2021. Encephalopathy-causing mutations in G β 1 (GNB1) alter regulation of neuronal GIRK channels. *iScience* 24 (9). doi: 10.1016/j.isci.2021.103018. ISSN-25890042
- 306.Prabakaran, R., Jemimah, S., Rawat, P., Sharma, D., Gromiha, M.M. 2021. A novel hybrid SEIQR model incorporating the effect of quarantine and lockdown regulations for COVID-19. *Scientific Reports* 11 (1). doi: 10.1038/s41598-021-03436-z. ISSN-20452322
- 307.Srivastava, A., Yesudhas, D., Ahmad, S., Michael Gromiha, M. 2021. Deciphering the role of residues involved in disorder-to-order transition regions in archaeal tRNA methyltransferase 5. *Genes* 12 (3). doi: 10.3390/genes12030399. ISSN-20734425
- 308.Khan, A.A., Sundar, P., Mahapatra, N.R., *et al.* 2021. An evolutionarily-conserved promoter allele governs HMG-CoA reductase expression in spontaneously hypertensive rat. *Journal of Molecular and Cellular Cardiology* 158, pp 140-152. doi: 10.1016/j.yjmcc.2021.05.017. ISSN-00222828
- 309.Malla, S., Jisha, K.J., Gardas, R.L., Gummadi, S.N. 2021. Diazobicyclo[5.4.0]undec-7ene-ium and tetramethyl guanidium based ionic liquids enhanced thermal stability of xylose reductase at extreme pH through specific ion effect. *Journal of Molecular Liquids* 328. doi: 10.1016/j.molliq.2021.115394. ISSN-01677322
- 310.Ahsan, M., Pindi, C., Senapati, S. 2021. Hydrogen bonding catalysis by water in epoxide ring opening reaction. *Journal of Molecular Graphics and Modelling* 105. doi: 10.1016/j.jm gm.2021.107894. ISSN-10933263
- 311.Naganathan, A.N., Dani, R., Gopi, S., Aranganathan, A., Narayan, A. 2021. Folding intermediates, heterogeneous native ensembles and protein function. *Journal of Molecular Biology* 433 (24). doi: 10.1016/j.jmb.2021.167325. ISSN-00222836
- 312.Naganathan, A.N., Kannan, A. 2021. A hierarchy of coupling free energies underlie the thermodynamic and functional architecture of protein structures. *Current Research in Structural Biology* 3, pp 257-267. doi: 10.1016/j.crstbi.2021.09.003. ISSN-2665928X
- 313.Gamiz-Arco, G., Risso, V.A., Sanchez-Ruiz, J.M., *et al.* 2021. Combining ancestral reconstruction with folding-landscape simulations to engineer heterologous protein expression: Engineering heterologous protein expression. *Journal of Molecular Biology* 433 (24). doi: 10.1016/j.jmb.2021.167321. ISSN-00222836
- 314.Srikantan, C., Suraishkumar, G.K., Srivastava, S. 2021. A synergistic effect of physicochemical parameters on dye removal and concomitant antioxidant production in sunflower hairy roots. *International Journal of Environmental Science and Technology* 18 (11): 3379-3394. doi: 10.1007/s13762-020-03032-0. ISSN-17351472
- 315.Kulandaisamy, A., Nikam, R., Harini, K., Sharma, D., Gromiha, M.M. 2021. Illustrative tutorials for ProThermDB: Thermodynamic database for proteins and mutants. *Current Protocols* 1 (11). doi: 10.1002/cpz1.306. ISSN-26911299
- 316.Sharma, A., Gupta, S., Sampathkumar, T.S., Verma, R.S. 2021. Modified graphene oxide nanoplates reinforced 3D printed multifunctional scaffold for bone tissue engineering. *Materials Science and Engineering C*. doi: 10.1016/j.msec.2021.112587. ISSN-09284931
- 317.Rai, R.K., Kanniyappan, H., Muthuvijayan, V., Venkitasamy, K., Jayakrishnan, A. 2021. Durable polymeric: N -halamine functionalized stainless steel surface for improved antibacterial and anti-biofilm activity. *Materials Advances* 2 (3): 1090-1098. doi: 10.1039/d0ma00828a. ISSN-26335409
- 318.Taguchi, Y., Akila Parvathy Dharshini, S., Michael Gromiha, M. 2021. Identification of transcription factors, biological pathways, and diseases as mediated by n6-methyladenosine using tensor decomposition-based unsupervised feature extraction. *Applied Sciences (Switzerland)* 11 (1): 16-Jan. doi: 10.3390/app11010213. ISSN-20763417
- 319.Purohit, R., Bera, A.K. 2021. Pannexin 1 plays a pro-survival role by attenuating P2X7 receptor-mediated Ca²⁺ influx. *Cell Calcium* 99. doi: 10.1016/j.ceca.2021.102458. ISSN-01434160
- 320.Shanmugam, M.K., Rathinavelu, S., Gummadi, S.N. 2021. Self-directing optimization for enhanced caffeine degradation in synthetic coffee wastewater using induced cells of *Pseudomonas* sp.: Bioreactor studies. *Journal of Water Process Engineering* 44. doi: 10.1016/j.jwpe.2021.102341. ISSN-22147144
- 321.Kinhal, K.V., Bhatt, N., Pushpavanam, S. 2021. Unraveling reaction pathways for tuning bimetallic nanoparticle structures: role of reactant addition sequence. *Journal of Nanoparticle Research* 23 (7). doi: 10.1007/s11051-021-05238-w. ISSN-13880764
- 322.Pappu, S.J., Pasumarthy, R., Bhatt, N. 2021. Predicting unknown directed links of conserved networks from flow data. *Journal of Complex Networks* 9 (6). doi: 10.1093/comnet/cnab037. ISSN-20511310
- 323.Murugan, R., Suraishkumar, G.K., Mukherjee, A., Dhami, N.K. 2021. Influence of native ureolytic microbial community on biocementation potential of *Sporosarcina pasteurii*. *Scientific Reports* 11 (1). doi: 10.1038/s41598-021-00315-5. ISSN-20452322
- 324.Shettihalli, A.K., Palanirajan, S.K., Gummadi, S.N. 2021. Are cysteine residues of human phospholipid scramblase 1 essential for Pb²⁺ and Hg²⁺ binding-induced scrambling of phospholipids?. *European Biophysics Journal* 50 (5): 745-757. doi: 10.1007/s00249-021-01521-9. ISSN-01757571
- 325.Pindi, C., Chirasani, V.R., Senapati, S. 2021. Identifying crucial E-protein residues responsible for unusual stability of Zika virus envelope. *Biophysical Journal* 120 (18): 4041-4054. doi: 10.1016/j.bpj.2021.08.011. ISSN-00063495
- 326.Sridhar, S., Bhatt, N., Suraishkumar, G.K. 2021. Mechanistic insights into ureolysis mediated calcite precipitation. *Biochemical Engineering Journal* 176. doi: 10.1016/j.bej.2021.108214. ISSN-1369703X

- 327.Raman, K., Sinha, H., Vickers, C.E., Nickel, P.I. 2021. Synthetic biology beyond borders. *Microbial Biotechnology* 14 (6): 2254-2256. doi: 10.1111/1751-7915.13966. ISSN-17517907
- 328.Huang, D.-S., Bevilacqua, V., Gromiha, M.M. 2021. Guest Editorial for Special Section on the 15th International Conference on Intelligent Computing (ICIC). *IEEE/ACM Transactions on Computational Biology and Bioinformatics* 18 (5): 1730-1732. doi: 10.1109/TCBB.2021.3065722. ISSN-15455963
- 329.Kanniyappan, H., Venkatesan, M., Panji, J., Ramasamy, M., Muthuvijayan, V. 2021. Corrigendum to "Evaluating the inherent osteogenic and angiogenic potential of mesoporous silica nanoparticles to augment vascularized bone tissue formation" [*Microporous Mesoporous Mater*, 311, 2021, 110687] (*Microporous and Mesoporous Materials* (2021) 31) *Microporous and Mesoporous Materials* 319. doi: 10.1016/j.micromeso.2021.111083. ISSN-13871811
- 330.Ramesh, S., Govarthanan, K., Ramalingam, M., et al. 2021. Correction to: Cardiac differentiation of mesenchymal stem cells: Impact of biological and chemical inducers (*Stem Cell Reviews and Reports*, (2021), 17, 4, (1343-1361), 10.1007/s12015-021-10165-3). *Stem Cell Reviews and Reports* 17 (4). doi: 10.1007/s12015-021-10183-1. ISSN-26293269
- 331.Muralidharan, N., Sakthivel, R., Velmurugan, D., Gromiha, M.M. 2021. Computational studies of drug repurposing and synergism of lopinavir, oseltamivir and ritonavir binding with SARS-CoV-2 protease against COVID-19. *Journal of Biomolecular Structure and Dynamics* 39 (7): 2673-2678. doi: 10.1080/07391102.2020.1752802. ISSN-07391102
- 332.Mohkhedkar, M., Venigalla, S.S.K., Janakiraman, V. 2021. Autoantigens that may explain postinfection autoimmune manifestations in patients with coronavirus disease 2019 displaying neurological conditions. *Journal of Infectious Diseases* 223 (3): 536-537. doi: 10.1093/infdis/jiaa703. ISSN-00221899
- 333.Yesudhas, D., Srivastava, A., Gromiha, M.M. 2021. COVID-19 outbreak: history, mechanism, transmission, structural studies and therapeutics. *Infection* 49 (2): 199-213. doi: 10.1007/s15010-020-01516-2. ISSN-03008126
- 334.Azeez, N.A., Dash, S.S., Gummadi, S.N., Deepa, V.S. 2021. Nano-remediation of toxic heavy metal contamination: Hexavalent chromium [Cr(VI)]. *Chemosphere* 266. doi: 10.1016/j.chemosphere.2020.129204. ISSN-00456535
- 335.Prabakaran, R., Rawat, P., Thangakani, A.M., Kumar, S., Gromiha, M.M. 2021. Protein aggregation: in silico algorithms and applications. *Biophysical Reviews* 13 (1): 71-89. doi: 10.1007/s12551-021-00778-w. ISSN-18672450
- 336.Ibrahim, M., Raajaraam, L., Raman, K. 2021. Modelling microbial communities: Harnessing consortia for biotechnological applications. *Computational and Structural Biotechnology Journal* 19, pp 3892-3907. doi: 10.1016/j.csbj.2021.06.048. ISSN-20010370
- 337.Mahalingam, S., Peter, J., Muthumani, K., et al. 2021. Landscape of humoral immune responses against SARS-CoV-2 in patients with COVID-19 disease and the value of antibody testing. *Heliyon* 7 (4). doi: 10.1016/j.heliyon.2021.e06836. ISSN-24058440
- 338.Nandhini, A.R., Harshiny, M., Gummadi, S.N. 2021. Chlorpyrifos in environment and food: A critical review of detection methods and degradation pathways. *Environmental Science: Processes and Impacts* 23 (9): 1255-1277. doi: 10.1039/d1em00178g. ISSN-20507887
- 339.Gangadharan, S., Raman, K. 2021. The art of molecular computing: Whence and whither. *BioEssays* 43 (8). doi: 10.1002/bies.202100051. ISSN-02659247
- 340.Damodharan, K., Arumugam, G.S., Ganesan, S., Doble, M., Thennarasu, S. 2021. A comprehensive overview of vaccines developed for pandemic viral pathogens over the past two decades including those in clinical trials for the current novel SARS-CoV-2. *RSC Advances* 11 (33): 20006-20035. doi: 10.1039/d0ra09668g. ISSN-20462069
- 341.Gupta, S., Sharma, A., Archana, S., Verma, R.S. 2021. Mesenchymal stem cells for cardiac regeneration: From differentiation to cell delivery. *Stem Cell Reviews and Reports* 17 (5): 1666-1694. doi: 10.1007/s12015-021-10168-0. ISSN-26293269
- 342.Mohapatra, S.B., Manoj, N. 2021. A conserved π -helix plays a key role in thermostability of catalysis in the glycoside hydrolase family 4. *Biochimica et Biophysica Acta - Proteins and Proteomics* 1869 (1). doi: 10.1016/j.bbapap.2020.140523. ISSN-15709639
- 343.Venkatachalam, G., Arumugam, S., Doble, M. 2021. Industrial production and applications of α/β linear and branched glucans. *Indian Chemical Engineer* 63 (5): 533-547. doi: 10.1080/00194506.2020.1798820. ISSN-00194506
- 344.Sindhu, K.J., Venkatesan, N., Karunakaran, D. 2021. MicroRNA interactome multiomics characterization for cancer research and personalized medicine: An expert review. *OMICS A Journal of Integrative Biology* 25 (9): 545-566. doi: 10.1089/omi.2021.0087. ISSN-15362310
- 345.Chakraborty, D., Rengaswamy, R., Raman, K. 2021. Designing biological circuits: From principles to applications. *ACS Synthetic Biology*. doi: 10.1021/acssynbio.1c000557. ISSN-21615063
- 346.Boddapati, S., Gummadi, S.N. 2021. A comprehensive review on mutan (a mixed linkage of α -1-3 and α -1-6 glucans) from bacterial sources. *Biotechnology and Genetic Engineering Reviews* 37 (2): 208-237. doi: 10.1080/02648725.2021.2003072. ISSN-02648725
- 347.Sonal Omer, D. Karunakaran, G. K. Suraishkumar 2021. The role of circadian and redox rhythms in cancer hypoxia. *Advances in Redox Research* 3. doi: 10.1016/j.arres.2021.100018.
- 348.Govindaraju G, Chavali S, Rajavelu A. 2021. Plasmodium falciparum YTH2 domain binds to m6A-containing mRNA and regulates translation. *mBio* 12 (6). doi: 10.1128/mBio.01367-21. ISSN-21612129
- 349.Sethumadhavan DV, Jabeena CA, Govindaraju G, Soman A, Rajavelu A. 2021. The severity of SARS-CoV-2 infection

- is dictated by host factors? Epigenetic perspectives. *Current Research in Microbial Sciences* 2. doi: 10.1016/j.crmicr.2021.100079. ISSN- 26665174
- 350.Sethumadhavan DV, Govindaraju G, Jabeena CA, Rajavelu A. 2021. Plasmodium falciparum SET2 domain is allosterically regulated by its PHD-like domain to methylate at H3K36. *Biochimica et Biophysica Acta - Gene Regulatory Mechanisms* 1864 (10). doi: 10.1016/j.bbagr.2021.194744. ISSN-18749399
- 351.Jan Zaucha, Michael Heinzinger, Dmitrij Frishman, et al. 2021. Mutations in transmembrane proteins: diseases, evolutionary insights, prediction and comparison with globular proteins. *Briefings in Bioinformatics* 22 (3): 16-Jan. doi: 10.1093/bib/bbaa132. ISSN 1477-4054
- 352.A Kulandaisamy, R Sakthivel, M Michael Gromiha. 2021. MPTherm: database for membrane protein thermodynamics for understanding folding and stability. *Briefings in Bioinformatics* 22 (2): 2119–2125. doi: 10.1093/bib/bbaa064. ISSN 1477-4054
- 353.N R Siva Shanmugam, J Jino Blessy, K Veluraja, M Michael Gromiha. 2021. Prediction of protein–carbohydrate complex binding affinity using structural features. *Briefings in Bioinformatics* 22 (4): 08-Jan. doi: 10.1093/bib/bbaa319. ISSN 1477-4054
- 354.Khan, D., Ara, T., Asirvatham Jeyaraj, N. et al. 2021. SIRT6 transcriptionally regulates fatty acid transport by suppressing PPAR. *Cell Reports* 35 (9). doi: 10.1016/j.celrep.2021.109190.
- 355.Raman K., Sinha H., Vickers C.E., Nikel P.I. 2021. Synthetic biology beyond borders. *Microbial Biotechnology* 14 (6): 2254-2256. doi: 10.1111/1751-7915.13966.
- 356.Rajesh, Rekha; Gummadi, Sathyanarayana N. 2021. alpha-Amylase and cellulase production by novel halotolerant Bacillus sp. PM06 isolated from sugarcane pressmud. *Biotechnology and Applied Biochemistry*. doi: 10.1002/bab.2091. 0885-4513
- 357.Elezaethrani, D.; Leena, R.; Prabakaran, Gopal; Elangovan, Manickam; Meivelu Moovendhan; Kavisri, M. 2021. Bioconversion of agro, cattle waste and blended soil into manure by vermicomposting technology. *Biomass Conversion and Biorefinery*. doi: 10.1007/s13399-021-01754-w. 2190-6815
- 358.Sharma, Sapana; Jagadeesh, Harsha; Saxena, Ambrish; Chakravarthy, Harshini; Devanathan, Vasudharani. 2021. Central nervous system as a target of novel coronavirus infections: Potential routes of entry and pathogenic mechanisms. *Journal of Biosciences* 46 (4). doi: 10.1007/s12038-021-00232-9. 0250-5991
- 359.Raj, Deena Santhana; Nagarajan, Sai Varsha; Raman, Thiagarajan; Venkatachalam, Ponnusami; Parthasarathy, Meera. 2021. Remediation of textile effluents for water reuse: Decolorization and desalination using Escherichia fergusonii followed by detoxification with activated charcoal. *Journal of Environmental Management* 277. doi: 10.1016/j.jenvman.2020.111406. 0301-4797
- 360.Parakh, A., Vaidya, M., Kumar, N., Chetty, R., Murty, B.S. 2021. Effect of crystal structure and grain size on corrosion properties of AlCoCrFeNi high entropy alloy. *Journal of Alloys and Compounds* 863. doi: 10.1016/j.jallcom.2020.158056. ISSN-09258388
- 361.Francis Prashanth, P., Shrivani, B., Vinu, R., M., L., Ramesh Prabu, V. 2021. Production of diesel range hydrocarbons from crude oil sludge via microwave-assisted pyrolysis and catalytic upgradation. *Process Safety and Environmental Protection* 146, pp 383-395. doi: 10.1016/j.psep.2020.08.025. ISSN-09575820
- 362.Gaikwad, N., Nakka, R., Khavala, V., Bhadani, A., Mamane, H., Kumar, R. 2021. Gas hydrate-based process for desalination of heavy metal ions from an aqueous solution: Kinetics and rate of recovery. *ACS Environmental Science and Technology Water* 1 (1): 134-144. doi: 10.1021/acsestwater.0c00025. ISSN-26900637
- 363.Suriapparao, D.V., Vinu, R. 2021. Biomass waste conversion into value-added products via microwave-assisted Co-Pyrolysis platform. *Renewable Energy* 170, pp 400-409. doi: 10.1016/j.renene.2021.02.010. ISSN-09601481
- 364.Ojha, D.K., Vijju, D., Vinu, R. 2021. Fast pyrolysis kinetics of lignocellulosic biomass of varying compositions. *Energy Conversion and Management: X* 10. doi: 10.1016/j.ecmx.2020.100071. ISSN-25901745
- 365.Krishna, J.V.J., Damir, S.S., Vinu, R. 2021. Pyrolysis of electronic waste and their mixtures: Kinetic and pyrolysate composition studies. *Journal of Environmental Chemical Engineering* 9 (4). doi: 10.1016/j.jece.2021.105382. ISSN-22133437
- 366.Chaturvedi, S., Singh, S.V., Dhyani, V.C., Govindaraju, K., Vinu, R., Mandal, S. 2021. Characterization, bioenergy value, and thermal stability of biochars derived from diverse agriculture and forestry lignocellulosic wastes. *Biomass Conversion and Biorefinery*. doi: 10.1007/s13399-020-01239-2. ISSN-21906815
- 367.Vinze, P.M., Choudhary, A., Pushpavanam, S. 2021. Motion of an active particle in a linear concentration gradient. *Physics of Fluids* 33 (3). doi: 10.1063/5.0043578. ISSN-10706631
- 368.Gundlapalli, R., Jayanti, S. 2021. Effective splitting of serpentine flow field for applications in large-scale flow batteries. *Journal of Power Sources* 487. doi: 10.1016/j.jpowsour.2020.229409. ISSN-03787753
- 369.Gaikwad, N., Bhattacharjee, G., Sangwai, J.S., Kumar, R., Linga, P. 2021. Kinetic and morphology study of equimolar CO₂-CH₄ hydrate formation in the presence of cyclooctane and L-tryptophan. *Energy and Fuels* 35 (1): 636-648. doi: 10.1021/acs.energyfuels.0c03665. ISSN-08870624
- 370.Kumar, G., Kakati, A., Mani, E., Sangwai, J.S. 2021. Stability of nanoparticle stabilized oil-in-water Pickering emulsion under high pressure and high temperature conditions: comparison with surfactant stabilized oil-in-water emulsion. *Journal of Dispersion Science and Technology* 42 (8): 1204-1217. doi: 10.1080/01932691.2020.1730888. ISSN-01932691

- 371.Venkatesan, K., Krishna, J.V.J., Anjana, S., Selvam, P., Vinu, R. 2021. Hydrodeoxygenation kinetics of syringol, guaiacol and phenol over H-ZSM-5. *Catalysis Communications* 148. doi: 10.1016/j.catcom.2020.106164. ISSN-15667367
- 372.Yedala, N., Kaisare, N.S. 2021. Modeling of thermal integration of a catalytic microcombustor with a thermoelectric for power generation applications. *Energy and Fuels* 35 (6): 5141-5152. doi: 10.1021/acs.energyfuels.0c03943. ISSN-08870624
- 373.Gundlapalli, R., Jayanti, S. 2021. Case studies of operational failures of vanadium redox flow battery stacks, diagnoses and remedial actions. *Journal of Energy Storage* 33. doi: 10.1016/j.est.2020.102078. ISSN-2352152X
- 374.Sahu, C., Sircar, A., Sangwai, J.S., Kumar, R. 2021. Kinetics of methane hydrate formation in the presence of 1-dodecyl-2-pyrrolidinone and tetrahydrofuran in pure water. *Industrial and Engineering Chemistry Research* 60 (20): 7588-7598. doi: 10.1021/acs.iecr.1c00925. ISSN-08885885
- 375.Reddy, B.R., Vinu, R. 2021. Evidence of interactions in microwave-assisted co-pyrolysis of different varieties of coals. *Journal of the Energy Institute* 95, pp 18-29. doi: 10.1016/j.joei.2020.11.006. ISSN-17439671
- 376.Meshram, S.B., Sardar, H., Kushwaha, O.S., Sangwai, J., Kumar, R. 2021. A systematic molecular investigation on Sodium Dodecyl Benzene Sulphonate (SDBS) as a Low Dosage Hydrate Inhibitor (LDHI) and the role of Benzene Ring in the structure. *Journal of Molecular Liquids* 337. doi: 10.1016/j.molliq.2021.116374. ISSN-01677322
- 377.Abraham, B.G., Chetty, R. 2021. Design and fabrication of a quick-fit architecture air breathing direct methanol fuel cell. *International Journal of Hydrogen Energy* 46 (9): 6845-6856. doi: 10.1016/j.ijhydene.2020.11.184. ISSN-03603199
- 378.Jayaraman, J.P., Hamdan, M., Velpula, M., Kaisare, N.S., Chandiran, A.K. 2021. BiVO₄/Cs₂PtI₆ vacancy-ordered halide perovskite heterojunction for panchromatic light harvesting and enhanced charge separation in photoelectrochemical water oxidation. *ACS Applied Materials and Interfaces* 13 (14): 16267-16278. doi: 10.1021/acsami.0c22654. ISSN-19448244
- 379.Malhotra, A., Chen, W., Vlachos, D.G., et al. 2021. Temperature homogeneity under selective and localized microwave heating in structured flow reactors. *Industrial and Engineering Chemistry Research* 60 (18): 6835-6847. doi: 10.1021/acs.iecr.0c05580. ISSN-08885885
- 380.Kunche, L., Natarajan, U. 2021. Structure and dynamics of aqueous solutions containing poly-(acrylic acid) and non-ionic surfactant pentaethylene glycol n-octyl ether (C8E5): A molecular simulations study. *Computational Materials Science* 186. doi: 10.1016/j.commatsci.2020.110043. ISSN-09270256
- 381.Gaikwad, N., Sangwai, J., Linga, P., Kumar, R. 2021. Separation of coal mine methane gas mixture via sII and sH hydrate formation. *Fuel* 305. doi: 10.1016/j.fuel.2021.121467. ISSN-00162361
- 382.Rao, P., Jayanti, S. 2021. Influence of electrode design parameters on the performance of vanadium redox flow battery cells at low temperatures. *Journal of Power Sources* 482. doi: 10.1016/j.jpowsour.2020.228988. ISSN-03787753
- 383.Bhagavathi, L.R., Deshpande, A.P., Janaki Ram, G.D., Panigrahi, S.K. 2021. Hygrothermal aging, fatigue and dynamic mechanical behavior of cellulosic particles reinforced one-component moisture curable polyurethane adhesive joints. *International Journal of Adhesion and Adhesives* 105. doi: 10.1016/j.ijadhadh.2020.102771. ISSN-01437496
- 384.Kodavaty, J., Deshpande, A.P. 2021. Evaluation of solute diffusion and polymer relaxation in cross-linked hyaluronic acid hydrogels: experimental measurement and relaxation modeling. *Polymer Bulletin* 78 (5): 2605-2626. doi: 10.1007/s00289-020-03224-1. ISSN-01700839
- 385.Harisankar, S., Francis Prashanth, P., Nallasivam, J., Vishnu Mohan, R., Vinu, R. 2021. Effects of aqueous phase recirculation on product yields and quality from hydrothermal liquefaction of rice straw. *Bioresource Technology* 342. doi: 10.1016/j.biortech.2021.125951. ISSN-09608524
- 386.Abraham, B.G., Chetty, R. 2021. Influence of electrodeposition techniques and parameters towards the deposition of Pt electrocatalysts for methanol oxidation. *Journal of Applied Electrochemistry* 51 (3): 503-520. doi: 10.1007/s10800-020-01510-4. ISSN-0021891X
- 387.Arokianathan, J.F., Ramya, K.A., Deshpande, A.P., Leemarose, A., Shanmugam, G. 2021. Supramolecular organogel based on di-Fmoc functionalized unnatural amino acid: An attempt to develop a correlation between molecular structure and ambidextrous gelation. *Colloids and Surfaces A: Physicochemical and Engineering Aspects* 618. doi: 10.1016/j.colsurfa.2021.126430. ISSN-09277757
- 388.Appadurai, T., Kashikar, R., Sikarwar, P., Antharjanam, S., Nanda, B.R.K., Chandiran, A.K. 2021. Manipulation of parity and polarization through structural distortion in light-emitting halide double perovskites. *Communications Materials* 2 (1). doi: 10.1038/s43246-021-00172-9. ISSN-26624443
- 389.Adhikari, S., Purushothaman, A., Krauskopf, A.A., Durning, C., Kumar, S.K., Thampi, S.P. 2021. Modeling polymer crystallisation induced by a moving heat sink. *Soft Matter* 17 (9): 2518-2529. doi: 10.1039/d0sm02237c. ISSN-1744683X
- 390.Appadurai, T., Chaure, S., Mala, M., Chandiran, A.K. 2021. Role of copper in enhancing visible light absorption in Cs₂Ag(Bi, In, Sb)Cl₆ halide double-perovskite materials. *Energy and Fuels* 35 (14): 11479-11487. doi: 10.1021/acs.energyfuels.1c01366. ISSN-08870624
- 391.Arora, A., Cameotra, S.S., Laik, S., et al. 2021. Rhamonolipids produced by *Pseudomonas aeruginosa* promotes methane hydrates formation in fixed bed silica gel medium. *Marine Geophysical Research* 42 (1). doi: 10.1007/s11001-020-09426-6. ISSN-00253235
- 392.Arun Sankar, E.M., Shahab, M., Rengaswamy, R. 2021. Spacing optimization for active droplet sorting in

- microfluidic networks using genetic algorithm. *Industrial and Engineering Chemistry Research* 60 (4): 1699-1708. doi: 10.1021/acs.iecr.0c04455. ISSN-08885885
- 393.Choudhary, A., Renganathan, T., Pushpavanam, S. 2021. Comment on "migration of an electrophoretic particle in a weakly inertial or viscoelastic shear flow". *Physical Review Fluids* 6 (3). doi: 10.1103/PhysRevFluids.6.036701. ISSN-2469990X
- 394.Suriapparao, D.V., Vinu, R. 2021. Recovery of renewable carbon resources from the household kitchen waste via char induced microwave pyrolysis. *Renewable Energy* 179, pp 370-378. doi: 10.1016/j.renene.2021.07.044. ISSN-09601481
- 395.Abdul Jameel, A.G., Dahiphale, C., Alquaity, A.B.S., Zahid, U., Jayanti, S. 2021. Numerical simulation of coal combustion in a tangential pulverized boiler: Effect of burner vertical tilt angle. *Arabian Journal for Science and Engineering*. doi: 10.1007/s13369-021-05613-8. ISSN-2193567X
- 396.Parthasarathy, D., Thampi, S.P., Ravindran, P., Basavaraj, M.G. 2021. Further insights into patterns from drying particle laden sessile drops. *Langmuir* 37 (14): 4395-4402. doi: 10.1021/acs.langmuir.1c00512. ISSN-07437463
- 397.Kumar, A., Veluswamy, H.P., Kumar, S., Kumar, R., Linga, P. 2021. In situ characterization of mixed CH₄-THF hydrates formed from seawater: High-pressure calorimetric and spectroscopic analysis. *Journal of Physical Chemistry C* 125 (30): 16435-16443. doi: 10.1021/acs.jpcc.1c04483. ISSN-19327447
- 398.Yedala, N., Kaisare, N.S. 2021. A CFD study of ignition of lean propane-air mixtures in a heat recirculating U-bend catalytic microreactor. *Chemical Engineering Research and Design* 173, pp 15-26. doi: 10.1016/j.cherd.2021.06.019. ISSN-02638762
- 399.Eapen, D.E., Suresh, R., Patil, S., Rengaswamy, R. 2021. A systems engineering perspective on electrochemical energy technologies and a framework for application driven choice of technology. *Renewable and Sustainable Energy Reviews* 147. doi: 10.1016/j.rser.2021.111165. ISSN-13640321
- 400.Bhattacharya, M., Basak, T. 2021. Critical role of Prandtl number on multiple steady states during natural convection in square enclosures: Analysis of heat transfer rates, flow and thermal maps. *International Journal of Heat and Mass Transfer* 170. doi: 10.1016/j.ijheatmasstransfer.2021.120900. ISSN-00179310
- 401.Mayarani, M., Basavaraj, M.G., Satapathy, D.K. 2021. Colloidal monolayers with cell-like tessellations via interface assisted evaporative assembly. *Journal of Colloid and Interface Science* 583, pp 683-691. doi: 10.1016/j.jcis.2020.09.019. ISSN-00219797
- 402.Prabhudesai, V.S., Meshram, A.A., Vinu, R., Sontakke, S.M. 2021. Superior photocatalytic removal of metamitron and its mixture with Rhodamine B dye using combustion synthesized TiO₂ nanomaterial. *Chemical Engineering Journal Advances* 5. doi: 10.1016/j.cej.2020.100084. ISSN-26668211
- 403.Upendar, S., Mani, E., Basavaraj, M.G. 2021. Pickering emulsions stabilized by sphere-spheroid mixtures. *Journal of Dispersion Science and Technology* 42 (13): 2022-2031. doi: 10.1080/01932691.2020.1798778. ISSN-01932691
- 404.John, J., Deshpande, A.P., Varughese, S. 2021. Morphology control and ionic crosslinking of pectin domains to enhance the toughness of solvent cast PVA/pectin blends. *Journal of Applied Polymer Science* 138 (18). doi: 10.1002/app.50360. ISSN-00218995
- 405.Ahadh, A., Binish, G.V., Srinivasan, R. 2021. Text mining of accident reports using semi-supervised keyword extraction and topic modeling. *Process Safety and Environmental Protection* 155, pp 455-465. doi: 10.1016/j.psep.2021.09.022. ISSN-09575820
- 406.Gopalakrishnan, S., Ghosh, R., Renganathan, T., Pushpavanam, S. 2021. Sensitive and selective determination of triclosan using visual spectroscopy. *Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy* 254. doi: 10.1016/j.saa.2021.119623. ISSN-13861425
- 407.Purushothaman, A., Thampi, S.P. 2021. Hydrodynamic collision between a microswimmer and a passive particle in a micro-channel. *Soft Matter* 17 (12): 3380-3396. doi: 10.1039/d0sm02140g. ISSN-1744683X
- 408.Goyal, H., Sadula, S., Vlachos, D.G. 2021. Microwave heating of slurries. *Chemical Engineering Journal* 417. doi: 10.1016/j.cej.2020.127892. ISSN-13858947
- 409.Jose, M., Mayarani, M., Basavaraj, M.G., Satapathy, D.K. 2021. Evaporative self-assembly of the binary mixture of soft colloids. *Physical Chemistry Chemical Physics* 23 (12): 7115-7124. doi: 10.1039/d1cp00440a. ISSN-14639076
- 410.Bhattacharya, D., Patra, T.K. 2021. DPOLY: Deep learning of polymer phases and phase transition. *Macromolecules* 54 (7): 3065-3074. doi: 10.1021/acs.macromol.0c02655. ISSN-00249297
- 411.Ojha, D.K., Kumar, V.S.P., Vinu, R. 2021. Analytical pyrolysis of bagasse and groundnut shell briquettes: Kinetics and pyrolysate composition studies. *Bioresource Technology Reports* 15. doi: 10.1016/j.biteb.2021.100784. ISSN-2589014X
- 412.Kumar, D., Tangirala, A.K. 2021. Adaptive model predictive control of module temperature in photovoltaic systems. *Industrial and Engineering Chemistry Research* 60 (11): 4351-4365. doi: 10.1021/acs.iecr.0c03787. ISSN-08885885
- 413.Lama, H., Gogoi, T., Basavaraj, M.G., Pauchard, L., Satapathy, D.K. 2021. Synergy between the crack pattern and substrate elasticity in colloidal deposits. *Physical Review E* 103 (3). doi: 10.1103/PhysRevE.103.032602. ISSN-24700045
- 414.Madhavan, N., Yalla, E., Pushpavanam, S., Renganathan, T., Mukherjee, M., Basavaraj, M.G. 2021. Semi-batch and continuous production of Pickering emulsion via direct contact steam condensation. *Soft Matter* 17 (42): 9636-9643. doi: 10.1039/d1sm00933h. ISSN-1744683X
- 415.Shahrukh, M., Srinivasan, R., Karimi, I.A. 2021. Optimal

- procurement of liquefied natural gas cargos from long-term contracts and spot market through mathematical programming. *Industrial and Engineering Chemistry Research* 60 (9): 3658-3669. doi: 10.1021/acs.iecr.0c05757. ISSN-08885885
416. Biswas, D., Varughese, S., Dutta, S. 2021. Investigation on resistive humidity sensing in sulfosuccinic acid doped polyaniline films. *Synthetic Metals* 272. doi: 10.1016/j.synthmet.2020.116662. ISSN-03796779
417. Travitz, A., Mani, E., Larson, R.G. 2021. Transitioning from underdamped to overdamped behavior in theory and in Langevin simulations of desorption of a particle from a Lennard-Jones potential. *Journal of Rheology* 65 (6): 1235-1243. doi: 10.1122/8.0000177. ISSN-01486055
418. Khatun, N., Dey, S., Appadurai, T., Chandiran, A.K., Roy, S.C. 2021. Enhanced H₂ evolution through water splitting using TiO₂/ultrathin g-C₃N₄: A type II heterojunction photocatalyst fabricated by in situ thermal exfoliation. *Applied Physics Letters* 119 (9). doi: 10.1063/5.0061923. ISSN-00036951
419. Dwivedi, N., Neogi, A., Bhatia, C.S., et al. 2021. Angstrom-scale transparent overcoats: Interfacial nitrogen-driven atomic intermingling promotes lubricity and surface protection of ultrathin carbon. *Nano Letters* 21 (21): 8960-8969. doi: 10.1021/acs.nanolett.1c01997. ISSN-15306984
420. Lukose, L., Basak, T. 2021. Finite element-based evaluation on the role of various shaped containers (oil saturated porous media) for entropy generation versus heating efficiency involving thermal convection with identical heating. *Numerical Heat Transfer; Part A: Applications* 79 (12-Oct): 681-707. doi: 10.1080/10407782.2021.1884413. ISSN-10407782
421. Bhattacharya, M., Basak, T. 2021. Analysis of multiple steady states for natural convection of Newtonian fluids in a square enclosure. *Physics of Fluids* 33 (10). doi: 10.1063/5.0064899. ISSN-10706631
422. Kambhammettu, S.K.S., Deshpande, A.P., Chebolu, L.R. 2021. A compressible porous media model to estimate fluid leak through a metal-elastomer interface. *Transport in Porous Media* 136 (1): 191-215. doi: 10.1007/s11242-020-01507-9. ISSN-01693913
423. Arora, A., Cameotra, S.S., Laik, S., et al. 2021. Combination of silica gel and surfactin promoting methane hydrate formation. *Journal of Energy Resources Technology, Transactions of the ASME* 143 (10). doi: 10.1115/1.4049318. ISSN-01950738
424. Keerthiga, G., Chetty, R. 2021. Electrochemical reduction of CO₂ on flame annealed Cu. *ChemistrySelect* 6 (12): 2887-2892. doi: 10.1002/slct.202100235. ISSN-23656549
425. Gaikwad, N., Sangwai, J.S., Kumar, R., Linga, P. 2021. CO₂-CH₄ hydrate formation using L-tryptophan and cyclooctane employing a conventional stirred tank reactor. *Energy and Fuels* 35 (16): 13224-13239. doi: 10.1021/acs.energyfuels.1c01759. ISSN-08870624
426. Mathews K, R.A., Mani, E. 2021. Stabilizing ordered structures with single patch inverse patchy colloids in two dimensions. *Journal of Physics Condensed Matter* 33 (19). doi: 10.1088/1361-648X/abf0c0. ISSN-09538984
427. Logesh Kumar, P., Thampi, S.P., Basavaraj, M.G. 2021. Patterns from drops drying on inclined substrates. *Soft Matter* 17 (33): 7670-7681. doi: 10.1039/d1sm00714a. ISSN-1744683X
428. Bhagavathi, L.R., Deshpande, A.P., Ram, G.D.J., Panigrahi, S.K. 2021. Effect of cellulosic fillers addition on curing and adhesion strength of moisture-curing one-component polyurethane adhesives. *International Journal of Adhesion and Adhesives* 108. doi: 10.1016/j.ijadhadh.2021.102871. ISSN-01437496
429. Gundlapalli, R., Jayanti, S. 2021. Comparative study of kilowatt-scale vanadium redox flow battery stacks designed with serpentine flow fields and split manifolds. *Batteries* 7 (2). doi: 10.3390/batteries7020030. ISSN-23130105
430. Dammalapati, S., Aghalayam, P., Kaisare, N. 2021. Modeling the effects of the inlet manifold design on the performance of a diesel oxidation catalytic converter. *Industrial and Engineering Chemistry Research* 60 (10): 3860-3870. doi: 10.1021/acs.iecr.0c05061. ISSN-08885885
431. Chaithanya K. V. S., Thampi, S.P. 2021. Wall-curvature driven dynamics of a microswimmer. *Physical Review Fluids* 6 (8). doi: 10.1103/PhysRevFluids.6.083101. ISSN-2469990X
432. Adhikari, S., Krauskopf, A.A., Kumar, S.K., Thampi, S.P., Durning, C.J. 2021. Boundary layer description of directional polymer crystallisation. *Soft Matter* 17 (33): 7755-7768. doi: 10.1039/d1sm00913c. ISSN-1744683X
433. Sonallya, T., Sruthi, L., Deshpande, A.P., Shanmugam, G. 2021. Tweaking of supramolecular hydrogel property of single and two-component gel systems by a bifunctional molecule. *Journal of Molecular Liquids* 342. doi: 10.1016/j.molliq.2021.116945. ISSN-01677322
434. Nirmala, M.J., Durai, L., Anusha, G.S., Nagarajan, R. 2021. Nanoemulsion of mentha arvensis essential oil as an anticancer agent in anaplastic thyroid cancer cells and as an antibacterial agent in *staphylococcus aureus*. *BioNanoScience* 11 (4): 1017-1029. doi: 10.1007/s12668-021-00893-8. ISSN-21911630
435. Kumar, V., Srikrishnarka, P., Mohanty, J.S., Kannan, M.P., Nagarajan, R., Pradeep, T. 2021. Triboelectric generators for sustainable reduction leading to nanoparticles and nanoclusters. *ACS Sustainable Chemistry and Engineering* 9 (22): 7431-7436. doi: 10.1021/acssuschemeng.1c01586. ISSN-21680485
436. Hazra, S., Abhale, P., Nag, S., Mathew, S., Narasimhan, S. 2021. Application of data reconciliation and gross error detection techniques to enhance reliability and consistency of the blast furnace process data. *Asia-Pacific Journal of Chemical Engineering* 16 (3). doi: 10.1002/apj.2628. ISSN-19322135
437. Jose, M., Basavaraj, M.G., Satapathy, D.K. 2021. Evaporative self-assembly of soft colloidal monolayers: The role of particle softness. *Soft Matter* 17 (34): 7921-7931.

doi: 10.1039/d1sm00841b. ISSN-1744683X

438.Samui, A., Yeomans, J.M., Thampi, S.P. 2021. Flow transitions and length scales of a channel-confined active nematic. *Soft Matter* 17 (47): 10640-10648. doi: 10.1039/d1sm01434j. ISSN-1744683X

439.Ravi, A., Kaisare, N.S. 2021. Two-layered dynamic control for simultaneous set-point tracking and improved economic performance. *Journal of Process Control* 97, pp 17-25. doi: 10.1016/j.jprocont.2020.11.008. ISSN-09591524

440.Bhosale, A.C., Suseendiran, S.R., Rokhade, K., Rengaswamy, R. 2021. Effect of gas pressure and clamping pressure on interfacial contact resistance of a cylindrical polymer electrolyte membrane fuel cell. *International Journal of Sustainable Engineering* 14 (6): 1791-1799. doi: 10.1080/19397038.2021.1986592. ISSN-19397038

441.Harija, H., George, B., Tangirala, A.K. 2021. A cantilever-based flow sensor for domestic and agricultural water supply system. *IEEE Sensors Journal* 21 (23): 27147-27156. doi: 10.1109/JSEN.2021.3121306. ISSN-1530437X

442.Kalipillai, P., Mani, E. 2021. Adsorption of the amyloid β 40 monomer on charged gold nanoparticles and slabs: A molecular dynamics study. *Physical Chemistry Chemical Physics* 23 (34): 18618-18627. doi: 10.1039/d1cp01652k. ISSN-14639076

443.Vinze, P.M., Pushpavanam, S. 2021. Effect of weak solute advection on a chemically active particle under the influence of an external concentration gradient. *Physical Review Fluids* 6 (12). doi: 10.1103/PhysRevFluids.6.124201. ISSN-2469990X

444.Kaisare, N.S., Di Sarli, V. 2021. The effect of catalyst placement on the stability of a u-bend catalytic heat-recirculating micro-combustor: A numerical investigation. *Catalysts* 11 (12). doi: 10.3390/catal11121560. ISSN-20734344

445.Kulkarni, N., Mani, E. 2021. Stabilization of water-in-water pickering emulsions by charged particles. *Journal of Dispersion Science and Technology*. doi: 10.1080/01932691.2021.1931285. ISSN-01932691

446.Kunche, L., Natarajan, U. 2021. Structure and dynamics of an aqueous solution containing poly-(acrylic acid) and non-ionic surfactant octaethylene glycoln-decyl ether (C10E8) aggregates and their complexes investigated by molecular dynamics simulations. *Soft Matter* 17 (3): 670-687. doi: 10.1039/d0sm01322f. ISSN-1744683X

447.Raghu, A.K., Kaisare, N.S. 2021. Study of propane/air catalytic combustion in heat recirculating U-bend and spiral microcombustors. *Journal of Flow Chemistry* 11 (3): 345-355. doi: 10.1007/s41981-021-00170-5. ISSN-2062249X

448.Deodhar, S., Thampi, S.P., Basavaraj, M.G. 2021. Drops spreading on fluid surfaces: Transition from Laplace to Marangoni regime. *Physical Review Fluids* 6 (11). doi: 10.1103/PhysRevFluids.6.L112001. ISSN-2469990X

449.Gande, V.V., Pushpavanam, S. 2021. Continuous synthesis of copper nanoparticles using a polyol process in a milli-channel reactor. *Journal of Flow Chemistry* 11 (3): 661-

674. doi: 10.1007/s41981-021-00169-y. ISSN-2062249X

450.Aggarwal, K., Mukhopadhyaya, S., Tangirala, A.K. 2021. A prediction framework with time-frequency localization feature for detecting the onset of seismic events. *PLoS ONE* 16 (4). doi: 10.1371/journal.pone.0250008. ISSN-19326203

451.Parmeshwarappa, P., Gundlapalli, R., Jayanti, S. 2021. Power and energy rating considerations in integration of flow battery with solar PV and residential load. *Batteries* 7 (3). doi: 10.3390/batteries7030062. ISSN-23130105

452.Kumar, A., Jayanti, S. 2021. A land-use-constrained, generation-transmission model for electricity generation through solar photovoltaic technology: a case study of South India. *Clean Technologies and Environmental Policy* 23 (9): 2757-2774. doi: 10.1007/s10098-021-02202-z. ISSN-1618954X

453.Mottammal, P., Thampi, S.P., Pototsky, A. 2021. Collective surfing of two self-propelled swimmers at liquid-air interface aided by self-induced Marangoni flow. *Physical Review Fluids* 6 (9). doi: 10.1103/PhysRevFluids.6.094004. ISSN-2469990X

454.Lukose, L., Basak, T. 2021. Unified approach on numerical implementation of heatfunction boundary conditions for accurate prediction of heatlines involving steady convection in enclosures. *Numerical Heat Transfer; Part A: Applications* 80 (6): 291-317. doi: 10.1080/10407782.2021.1940779. ISSN-10407782

455.Singeetham, P.K., Chaithanya, K.V.S., Thampi, S.P. 2021. Dilute dispersion of compound particles: Deformation dynamics and rheology. *Journal of Fluid Mechanics* 917. doi: 10.1017/jfm.2021.233. ISSN-00221120

456.Shahid, S., Madhavan, N., Mukherjee, M., Basavaraj, M.G. 2021. Macroporous ceramic monolith from nanoparticle-polyelectrolyte-stabilized Pickering emulsions. *Journal of Physical Chemistry B* 125 (49): 13575-13584. doi: 10.1021/acs.jpcc.1c08858. ISSN-15206106

457.Singh, N.K., Tangirala, A.K., Vanajakshi, L.D. 2021. A multivariate analysis framework for vehicle detection from loop data under heterogeneous and less lane disciplined traffic. *IEEE Access* 9, pp 143580-143591. doi: 10.1109/ACCESS.2021.3120470. ISSN-21693536

458.Jose, N.A., Varghese, J.J., Mushrif, S.H., Zeng, H.C., Lapkin, A.A. 2021. Assembly of two-dimensional metal organic framework superstructures via solvent-mediated oriented attachment. *Journal of Physical Chemistry C* 125 (41): 22837-22847. doi: 10.1021/acs.jpcc.1c06699. ISSN-19327447

459.Pachpinde, S., Natarajan, U. 2021. Conformations, inter-molecular structure and hydrogen bond dynamics of neutral and cationic poly(vinyl amine) in aqueous solution. *Molecular Simulation* 47 (16): 1299-1312. doi: 10.1080/08927022.2021.1968389. ISSN-08927022

460.Shahid, S., Basavaraj, M.G. 2021. Controlling the microstructure of emulsions by exploiting particle-polyelectrolyte association. *Journal of Colloid and Interface Science* 597, pp 409-421. doi: 10.1016/j.jcis.2021.03.148. ISSN-00219797

461. Kumar, H., Dugyala, V.R., Basavaraj, M.G. 2021. Phase inversion of ellipsoid-stabilized emulsions. *Langmuir* 37 (24): 7295-7304. doi: 10.1021/acs.langmuir.1c00456. ISSN-07437463
462. Yedala, N., Kaisare, N.S. 2021. Integration of heat recirculating microreactors with thermoelectric modules for power generation: A comparative study using CFD. *Reaction Chemistry and Engineering* 6 (12): 2327-2341. doi: 10.1039/d1re00382h. ISSN-20589883
463. Mahant, B., Linga, P., Kumar, R. 2021. Hydrogen economy and role of hydrogen as a bridging solution: A perspective review. *Energy and Fuels* 35 (19): 15424-15454. doi: 10.1021/acs.energyfuels.1c02404. ISSN-08870624
464. Sahu, C., Kumar, R., Sangwai, J.S. 2021. A comprehensive review on well completion operations and artificial lift techniques for methane gas production from natural gas hydrate reservoirs. *Energy and Fuels* 35 (15): 11740-11760. doi: 10.1021/acs.energyfuels.1c01437. ISSN-08870624
465. Gurralla L., Kumar M.M., Paek C., Vinu R. 2021. Characterization data of palladium-alumina on activated biochar catalyst for hydrogenolysis reactions. *Data in Brief* 39. doi: 10.1016/j.dib.2021.107591
466. Loeffler T.D., Banik S., Patra T.K., Sternberg M., Sankaranaraya S.K.R.S. 2021. Reinforcement learning in discrete action space applied to inverse defect design. *Journal of Physics Communications* 5 (3). doi: 10.1088/2399-6528/abe591
467. Gundlapalli R., Jayanti S. 2021. Dataset on performance of large-scale vanadium redox flow batteries with serpentine flow fields. *Data in Brief* 35. doi: 10.1016/j.dib.2021.106835
468. Lukose, Leo; Basak, Tanmay. 2021. A comprehensive review on mixed convection for various patterns of kinematically and thermally induced scenarios within cavities. *International Journal of Numerical Methods For Heat & Fluid Flow*. doi: 10.1108/HFF-07-2020-0399. 0961-5539
469. Kumar, P. Logesh; Thampi, Sumesh P.; Basavaraj, Madivala G. 2021. Particle size and substrate wettability dependent patterns in dried pendant drops. *Journal of Physics-Condensed Matter*. doi: 10.1088/1361-648X/abb64e. 0953-8984
470. Rajakumar, Balla; Arathala, Parandaman; Muthiah, Balaganesh. 2021. Thermal decomposition of 2-methyltetrahydrofuran behind reflected shock waves over the temperature range of 1179-1361 K. *Journal of Physical Chemistry A*. doi: 10.1021/acs.jpca.0c11490. ISSN: 1089-5639
471. Chaturvedi, Anuj; Rai, Birendra Nath; Singh, Ram Sharan; Jaiswal, Ravi Prakash. 2021. Comparative toxicity assessment using plant and luminescent bacterial assays after anaerobic treatments of dyeing wastewater in a recirculating fixed bed bioreactor. *Journal of Environmental Chemical Engineering*. doi: 10.1016/j.jece.2021.105466. ISSN: 2213-2929
472. Nandy, A., Kazi, I., Guha, S., Sekar, G. 2021. Visible-light-driven halogen-bond-assisted direct synthesis of heteroaryl thioethers using transition-metal-free one-pot C-I bond formation/C-S cross-coupling reaction. *Journal of Organic Chemistry* 86 (3): 2570-2581. doi: 10.1021/acs.joc.0c02672. ISSN-00223263
473. Nanaji, K., Sarada, B.V., Varadaraju, U.V., N Rao, T., Anandan, S. 2021. A novel approach to synthesize porous graphene sheets by exploring KOH as pore inducing agent as well as a catalyst for supercapacitors with ultra-fast rate capability. *Renewable Energy* 172, pp 502-513. doi: 10.1016/j.renene.2021.03.039. ISSN-09601481
474. Kempasiddaiah, M., Kandathil, V., Dateer, R.B., Baidya, M., Patil, S.A., Patil, S.A. 2021. Efficient and recyclable palladium enriched magnetic nanocatalyst for reduction of toxic environmental pollutants. *Journal of Environmental Sciences (China)* 101, pp 189-204. doi: 10.1016/j.jes.2020.08.015. ISSN-10010742
475. Sundaravelu, N., Nandy, A., Sekar, G. 2021. Visible light mediated photocatalyst free C-S cross coupling: Domino synthesis of thiochromane derivatives via photoinduced electron transfer. *Organic Letters* 23 (8): 3115-3119. doi: 10.1021/acs.orglett.1c00806. ISSN-15237060
476. Donthireddy, S.N.R., Pandey, V.K., Rit, A. 2021. [(PPh₃)₂NiCl₂]-Catalyzed C-N bond formation reaction via borrowing hydrogen strategy: Access to diverse secondary amines and quinolines. *Journal of Organic Chemistry* 86 (9): 6994-7001. doi: 10.1021/acs.joc.1c00510. ISSN-00223263
477. Saha, K., Roy, D.K., Dewhurst, R.D., Ghosh, S., Braunschweig, H. 2021. Recent advances in the synthesis and reactivity of transition metal σ -borane/borate complexes. *Accounts of Chemical Research* 54 (5): 1260-1273. doi: 10.1021/acs.accounts.0c00819. ISSN-00014842
478. Logeswaran, R., Jeganmohan, M. 2021. Rhodium(III)-catalyzed aerobic oxidative C-H olefination of unsaturated acrylamides with unactivated olefins. *Organic Letters* 23 (3): 767-771. doi: 10.1021/acs.orglett.0c03981. ISSN-15237060
479. Ramesh, B., Jeganmohan, M. 2021. Cobalt(III)-catalyzed redox-neutral [4+2]-annulation of N-chlorobenzamides/acrylamides with alkylidenecyclopropanes at room temperature. *Chemical Communications* 57 (30): 3692-3695. doi: 10.1039/d1cc00654a. ISSN-13597345
480. Neumaier, M., Baksi, A., Kappes, M.M., et al. 2021. Kinetics of intercluster reactions between atomically precise noble metal clusters [Ag₂₅(DMBT)₁₈]- and [Au₂₅(PET)₁₈]- in room temperature solutions. *Journal of the American Chemical Society* 143 (18): 6969-6980. doi: 10.1021/jacs.1c01140. ISSN-00027863
481. Zafar, M., Ramalakshmi, R., Ghosh, S., et al. 2021. Cooperative B-H and Si-H bond activations by κ^2 -N, S-chelated ruthenium borate complexes. *Inorganic Chemistry* 60 (2): 1183-1194. doi: 10.1021/acs.inorgchem.0c03306. ISSN-00201669
482. Nagarajan, B., C D, A., Elumalai, R., Chandran, S., Raghavachari, D. 2021. Naphthalimide-phenothiazine based A'- π -D- π -A featured organic dyes for dye sensitized solar cell applications. *Journal of Photochemistry and Photobiology A: Chemistry* 404. doi: 10.1016/j.jphotochem.2020.112820. ISSN-10106030

483. Chahal, S., Ranjan, P., Kumar, P., *et al.* 2021. Borophene via micromechanical exfoliation. *Advanced Materials* 33 (34). doi: 10.1002/adma.202102039. ISSN-09359648
484. Crespo, E.A., Silva, L.P., Coutinho, J.A.P., *et al.* 2021. Development of a robust soft-SAFT model for protic ionic liquids using new high-pressure density data. *Fluid Phase Equilibria* 539. doi: 10.1016/j.fluid.2021.113036. ISSN-03783812
485. Chakraborty, A., Nonappa, Pradeep, T., *et al.* 2021. Near-infrared chiral plasmonic microwires through precision assembly of gold nanorods on soft biotemplates. *Journal of Physical Chemistry C* 125 (5): 3256-3267. doi: 10.1021/acs.jpcc.0c11512. ISSN-19327447
486. Jambu, S., Shambhavi, C.N., Jeganmohan, M. 2021. Aerobic oxidative C-H olefination of arylamides with unactivated olefins via a Rh(III)-catalyzed C-H activation. *Organic Letters* 23 (8): 2964-2970. doi: 10.1021/acs.orglett.1c00646. ISSN-15237060
487. Bose, S., Chatterjee, A., Pradeep, T., *et al.* 2021. Molecular materials through microdroplets: Synthesis of protein-protected luminescent clusters of noble metals. *ACS Sustainable Chemistry and Engineering* 9 (12): 4554-4563. doi: 10.1021/acssuschemeng.0c09145. ISSN-21680485
488. Mandal, A., Bera, R., Baidya, M. 2021. Regioselective C-H alkenylation and unsymmetrical bis-olefination of heteroarene carboxylic acids with ruthenium catalysis in water. *Journal of Organic Chemistry* 86 (1): 62-73. doi: 10.1021/acs.joc.0c02215. ISSN-00223263
489. Gorantla, S.M.N.V.T., Pan, S., Mondal, K.C., Frenking, G. 2021. Revisiting the bonding scenario of two donor ligand stabilized C₂ species. *Journal of Physical Chemistry A* 125 (1): 291-301. doi: 10.1021/acs.jpca.0c09951. ISSN-10895639
490. Shambhavi, C.N., Jeganmohan, M. 2021. Ruthenium(II)-catalyzed redox-neutral C-H alkylation of arylamides with unactivated olefins. *Organic Letters* 23 (12): 4849-4854. doi: 10.1021/acs.orglett.1c01575. ISSN-15237060
491. Krishnan, S., Chinnadurai, G.S., Ravishankar, K., Raghavachari, D., Perumal, P. 2021. Statistical augmentation of polyhydroxybutyrate production by *Isotericola variabilis*: Characterization, moulding, in vitro cytocompatibility and biodegradability evaluation. *International Journal of Biological Macromolecules* 166, pp 80-97. doi: 10.1016/j.ijbiomac.2020.10.089. ISSN-01418130
492. Kulkarni, A., Arumugam, S., Roy, S., *et al.* 2021. Solid-state isolation of cyclic alkyl(amino) carbene (cAAC)-supported structurally diverse alkali metal-phosphinidenides. *Chemistry - A European Journal* 27 (1): 200-206. doi: 10.1002/chem.202003505. ISSN-09476539
493. Nishad, R.C., Rit, A. 2021. Self-assembly of benzimidazole-derived tris-NHC ligands and Ag^I-ions to hexanuclear organometallic cages and their unusual transmetalation chemistry. *Chemistry - A European Journal* 27 (2): 594-599. doi: 10.1002/chem.202003937. ISSN-09476539
494. Pandey, V.K., Tiwari, C.S., Rit, A. 2021. Silver-catalyzed hydroboration of C-X (X = C, O, N) multiple bonds. *Organic Letters* 23 (5): 1681-1686. doi: 10.1021/acs.orglett.1c00106. ISSN-15237060
495. Reddy, P.M., Ramachandran, K., Anbarasan, P. 2021. Palladium-catalyzed diastereoselective synthesis of 2,2,3-trisubstituted dihydrobenzofurans via intramolecular trapping of O-ylides with activated alkenes. *Journal of Catalysis* 396, pp 291-296. doi: 10.1016/j.jcat.2021.02.032. ISSN-00219517
496. Prakash, S., Sahu, S., Bhattacharya, S., Bisht, P.B., Mishra, A.K. 2021. Carbon dot-NaCl crystals for white-light generation and Fabry-Perot lasing. *Chemistry - An Asian Journal* 16 (7): 783-792. doi: 10.1002/asia.202100074. ISSN-18614728
497. Bhanuprakash, P., Gardas, R.L., Prathibha, R., Sivakumar, K., Jyothi, N.V.V. 2021. Insights into non-ideal behaviour of benzyl alcohol with (C₂-C₄) carboxylic acids through volumetric, ultrasonic and ATR-FTIR spectroscopic studies. *Physics and Chemistry of Liquids* 59 (4): 632-654. doi: 10.1080/00319104.2020.1808654. ISSN-00319104
498. Jana, A., Jash, M., Pradeep, T., *et al.* 2021. Light-activated intercluster conversion of an atomically precise silver nanocluster. *ACS Nano* 15 (10): 15781-15793. doi: 10.1021/acsnano.1c02602. ISSN-19360851
499. Mandal, M., Chakraborty, D. 2021. Co₂O₃ and MnO₂ as inexpensive catalysts for the ring-opening polymerization of cyclic esters. *Journal of Polymer Research* 28 (2). doi: 10.1007/s10965-020-02381-1. ISSN-10229760
500. Sihag, P., Jeganmohan, M. 2021. Recent advances in transition-metal-catalyzed C-H functionalization reactions involving aza/oxabicyclic alkenes. *Synthesis (Germany)* 53 (18): 3249-3262. doi: 10.1055/a-1528-1711. ISSN-00397881
501. Illam, P.M., Singh, V.K., Priya, Rit, A. 2021. Modulating the electronics of orthometalated Ru(II)-NHC complexes via substitution patterns or NHC donors: Studies towards the impacts in catalysis. *Journal of Organometallic Chemistry* 951. doi: 10.1016/j.jorganchem.2021.122008. ISSN-0022328X
502. Prakash, S., Panigrahi, S.K., Dorner, R.P., Wagner, M., Schmidt, W., Mishra, A.K. 2021. Understanding the photophysics of stercobilin-Zn(II) and urobilin-Zn(II) complexes towards faecal pigment analysis. *Chemosphere* 265. doi: 10.1016/j.chemosphere.2020.129189. ISSN-00456535
503. Ghorai, J., Kesavan, A., Anbarasan, P. 2021. Cp*Co(III)-catalyzed C₂-thiolation and C₂,C₃-dithiolation of substituted indoles with N-(aryltio)succinimide. *Chemical Communications* 57 (81): 10544-10547. doi: 10.1039/d1cc03760a. ISSN-13597345
504. Kumar, A., Gonu, S., Vijayakumar, S., Ramya, C.B., Rajakumar, B. 2021. Experimental and computational investigations of the tropospheric photooxidation reactions of 1,1,1,3,3,3-hexafluoro-2-methyl-2-propanol initiated by OH radicals and Cl atoms. *Journal of Physical Chemistry A* 125 (2): 523-535. doi: 10.1021/acs.jpca.0c08130. ISSN-10895639
505. Islam, M.R., Gupta, S.S., Pradeep, T., *et al.* 2021.

- A covalently integrated reduced graphene oxide-ion-exchange resin electrode for efficient capacitive deionization. *Advanced Materials Interfaces* 8 (5). doi: 10.1002/admi.202001998. ISSN-21967350
- 506.Hadi, S., Taheri, E., Amin, M.M., Fatehizadeh, A., Gardas, R.L. 2021. Empirical modeling and kinetic study of methylene blue removal from synthetic wastewater by activation of persulfate with heterogeneous Fenton-like process. *Journal of Molecular Liquids* 328. doi: 10.1016/j.molliq.2021.115408. ISSN-01677322
- 507.Gorantla, S.M.N.V.T., Francis, M., Roy, S., Mondal, K.C. 2021. Bonding and stability of donor ligand-supported heavier analogues of cyanogen halides (L')PSi(X)(L). *RSC Advances* 11 (12): 6586-6603. doi: 10.1039/d0ra10338a. ISSN-20462069
- 508.Maddala, S., Panua, A., Venkatakrishnan, P. 2021. Steering Scholl oxidative heterocoupling by tuning topology and electronics for building thiananographenes and their functional N-/C-cxongeners. *Chemistry - A European Journal* 27 (64): 16013-16020. doi: 10.1002/chem.202102920. ISSN-09476539
- 509.Logeswaran, R., Jeganmohan, M. 2021. Effect of transition metals on chemodivergent cross-coupling of acrylamides with vinyl acetate via C-H activation. *Organic Letters* 23 (15): 5679-5683. doi: 10.1021/acs.orglett.1c01797. ISSN-15237060
- 510.Prakash, R., Haridas, A., Bakthavachalam, K., Roisnel, T., Halet, J.-F., Ghosh, S. 2021. Chemistry of group 5 metallaboranes with heterocyclic thiol ligands: a combined experimental and theoretical study. *Dalton Transactions* 50 (11): 4036-4044. doi: 10.1039/d0dt04362a. ISSN-14779226
- 511.Gorantla, S.M.N.V.T., Parameswaran, P., Mondal, K.C. 2021. Stabilization of group 14 elements E = C, Si, Ge by hetero-bileptic ligands cAAC, MCO_n with push-pull mechanism. *Journal of Computational Chemistry* 42 (16): 1159-1177. doi: 10.1002/jcc.26530. ISSN-01928651
- 512.Ramachandran, K., Anbarasan, P. 2021. Cobalt-catalyzed multisubstituted allylation of the chelation-assisted C-H bond of (hetero)arenes with cyclopropenes. *Chemical Science* 12 (40): 13442-13449. doi: 10.1039/d1sc03476f. ISSN-20416520
- 513.Balaji, S., Venkatesan, R., Mugeeth, L., Dhamodharan, R. 2021. Hydrophobic nanocomposites of PBAT with Cl-fn-POSS nanofiller as compostable food packaging films. *Polymer Engineering and Science* 61 (1): 314-326. doi: 10.1002/pen.25577. ISSN-00323888
- 514.Reddy, M.K., Bhajammanavar, V., Baidya, M. 2021. Annulation cascade of sulfamate-derived cyclic imines with glycine aldimino esters: Synthesis of 1,3-benzoxazepine scaffolds. *Organic Letters* 23 (10): 3868-3872. doi: 10.1021/acs.orglett.1c01001. ISSN-15237060
- 515.Bag, R., Prakash, R., Saha, S., Roisnel, T., Ghosh, S. 2021. Triple-decker sandwich complexes of tungsten with planar and puckered middle decks. *Inorganic Chemistry* 60 (6): 3524-3528. doi: 10.1021/acs.inorgchem.0c03411. ISSN-00201669
- 516.Mohanty, J.S., Maity, A., Pradeep, T., *et al.* 2021. Gold cluster-loaded dendritic nanosilica: Single particle luminescence and catalytic properties in the bulk. *Nanoscale* 13 (21): 9788-9797. doi: 10.1039/d1nr00619c. ISSN-20403364
- 517.Ghosh, J., Vishwakarma, G., Das, S., Pradeep, T. 2021. Facile crystallization of ice i_h via formaldehyde hydrate in ultrahigh vacuum under cryogenic conditions. *Journal of Physical Chemistry C* 125 (8): 4532-4539. doi: 10.1021/acs.jpcc.0c10367. ISSN-19327447
- 518.Dana, S., Sureshbabu, P., Giri, C.K., Baidya, M. 2021. Ruthenium(II)-Catalyzed C-H activation/annulation of aromatic hydroxamic acid esters with enamides leading to amination motifs. *European Journal of Organic Chemistry* 2021 (9): 1385-1389. doi: 10.1002/ejoc.202001632. ISSN-1434193X
- 519.Nag, A., Islam, M.R., Pradeep, T. 2021. Selective extraction of gold by niacin. *ACS Sustainable Chemistry and Engineering* 9 (5): 2129-2135. doi: 10.1021/acssuschemeng.0c07409. ISSN-21680485
- 520.Prakash, S., Banu, S., Mishra, A.K. 2021. The structure and stability of faecal pigment-Zinc(II) complexes. *Journal of Molecular Structure* 1238. doi: 10.1016/j.molstruc.2021.130440. ISSN-00222860
- 521.Nishad, R.C., Kumar, S., Rit, A. 2021. Hetero- and homobimetallic complexes bridged by a Bis(NHC) ligand: Synthesis via selective sequential metalation and catalytic applications in tandem organic transformations. *Organometallics* 40 (7): 915-926. doi: 10.1021/acs.organomet.1c00019. ISSN-02767333
- 522.Sihag, P., Jeganmohan, M. 2021. Rh(iii)-catalyzed allylic C-H amidation of unactivated alkenes within sitogenerated iminoiodinanes. *Chemical Communications* 57 (52): 6428-6431. doi: 10.1039/d1cc02283k. ISSN-13597345
- 523.Gomosta, S., Kar, S., Pradhan, A.N., Bairagi, S., Ramkumar, V., Ghosh, S. 2021. Synthesis, structures, and bonding of metal-rich metallaboranes comprising triply bridging borylene and boride moieties. *Organometallics* 40 (4): 529-538. doi: 10.1021/acs.organomet.0c00780. ISSN-02767333
- 524.Velmurugan, G., Mohanraj, S., Swaminathan, K., *et al.* 2021. Differential risk factor profile of diabetes and atherosclerosis in rural, sub-urban and urban regions of South India: The KMCH-Non-communicable disease studies. *Diabetic Medicine* 38 (6). doi: 10.1111/dme.14466. ISSN-07423071
- 525.Aravindan, N., Jeganmohan, M. 2021. A short total synthesis of benzophenanthridine alkaloids via a rhodium(III)-catalyzed C-H ring-opening reaction. *Journal of Organic Chemistry* 86 (21): 14826-14843. doi: 10.1021/acs.joc.1c01612. ISSN-00223263
- 526.Nandy, A., Sekar, G. 2021. KOTBu-promoted halogen-bond-assisted intramolecular C-S cross-coupling of o-iodothioanilides for the synthesis of 2-substituted benzothiazoles. *Journal of Organic Chemistry* 86 (21): 15825-15834. doi: 10.1021/acs.joc.1c02023. ISSN-00223263

527. Ray Chowdhuri, A., Spoorthi, B.K., Mondal, B., Bose, P., Bose, S., Pradeep, T. 2021. Ambient microdroplet annealing of nanoparticles. *Chemical Science* 12 (18): 6370-6377. doi: 10.1039/d1sc00112d. ISSN-20416520
528. Yamijala, S.S.R.K.C., Huo, P. 2021. Direct nonadiabatic simulations of the photoinduced charge transfer dynamics. *Journal of Physical Chemistry A* 125 (2): 628-635. doi: 10.1021/acs.jpca.0c10151. ISSN-10895639
529. Bag, R., Gayen, S., Mohapatra, S., Antharjanam, P.K.S., Halet, J.-F., Ghosh, S. 2021. Planar triple-decker and capped octahedral clusters of group-6 transition metals. *Journal of Organometallic Chemistry* 952. doi: 10.1016/j.jorganchem.2021.122023. ISSN-0022328X
530. Nagar, A., Kumar, R., Srikrishnarka, P., Thomas, T., Pradeep, T. 2021. Scalable drop-to-film condensation on a nanostructured hierarchical surface for enhanced humidity harvesting. *ACS Applied Nano Materials* 4 (2): 1540-1550. doi: 10.1021/acsanm.0c03032. ISSN-25740970
531. Sivasakthi, P., Sangaranarayanan, M.V., Gurumallesh Prabu, H. 2021. Micro-nanoarchitectures of electrodeposited Ni-ITO nanocomposites on copper foil as electrocatalysts for the oxygen evolution reaction. *New Journal of Chemistry* 45 (11): 5146-5153. doi: 10.1039/d0nj05954d. ISSN-11440546
532. Tripathy, D., Pal, A.K., Rath, S.L., Hanan, G.S., Panda, B.B., Chand, D.K. 2021. Synthesis, characterization and molecular docking study of Nitro(4'-(2-pyridyl)-2,2':6',2''-terpyridyl) Palladium(II) nitrate. *Inorganic Chemistry Communications* 126. doi: 10.1016/j.inoche.2021.108494. ISSN-13877003
533. Pathak, K., Nandi, C., Halet, J.-F., Ghosh, S. 2021. Metal-rich metallaboranes: Synthesis, structures and bonding of bi- and trimetallic open-faced cobaltaboranes. *Inorganics* 9 (4). doi: 10.3390/inorganics9040028. ISSN-23046740
534. Losetty, V., Hazarathiah Yadav, C., Devi Wilfred, C., Gardas, R.L. 2021. Investigation of anion structural effects on solute-solvent interactions of ionic liquids with DMF by volumetric, acoustic, viscometric properties and COSMO-RS calculations. *ChemistrySelect* 6 (12): 2994-3005. doi: 10.1002/slct.202004769. ISSN-23656549
535. Kar, S., Bairagi, S., Kar, K., Roisnel, T., Dorcet, V., Ghosh, S. 2021. Metal coordinated tri- and tetraborane analogues. *European Journal of Inorganic Chemistry* 2021 (43): 4443-4451. doi: 10.1002/ejic.202100687. ISSN-14341948
536. Ramkumar, V., Gardas, R.L. 2021. Exploring the solvation behavior of guanidinium based carboxylate ionic liquids in DMSO and DMF through apparent molar properties. *Journal of Molecular Liquids* 343. doi: 10.1016/j.molliq.2021.117664. ISSN-01677322
537. Govindaraj, P., Raghavachari, D. 2021. Fabrication of macroporous soft hydrogels of Chitosan scaffolds by hydrothermal reaction and cytotoxicity to 3T3 L1 cells. *Journal of Polymer Research* 28 (3). doi: 10.1007/s10965-021-02426-z. ISSN-10229760
538. Devarahosahalli Veeranna, K., Kanti Das, K., Baskaran, S. 2021. Reversal of polarity by catalytic SET oxidation: Synthesis of [azabicyclo : M. n.0 alkanes] via chemoselective reduction of amidines. *Organic and Biomolecular Chemistry* 19 (18): 4054-4059. doi: 10.1039/d1ob00416f. ISSN-14770520
539. Sharma, M.G., Pandya, J., Patel, H.M., et al. 2021. One-pot assembly for synthesis of 1,4-dihydropyridine scaffold and their biological applications. *Polycyclic Aromatic Compounds* 41 (7): 1495-1505. doi: 10.1080/10406638.2019.1686401. ISSN-10406638
540. Feder-Kubis, J., Gardas, R.L., Geppert-Rybczyńska, M. 2021. On the influence of the menthol moiety on the transport properties of a homologue series of functionalized bis(trifluoromethylsulfonyl)imide room-temperature ionic liquids: A quest for the structure-property relationship. *Journal of Physical Chemistry B* 125 (30): 8502-8510. doi: 10.1021/acs.jpcc.1c03827. ISSN-15206106
541. Shome, A., Rather, A.M., Manna, U., et al. 2021. Design of a waste paper-derived chemically 'reactive' and durable functional material with tailorable mechanical property following an ambient and sustainable chemical approach. *Chemistry - An Asian Journal* 16 (14): 1988-2001. doi: 10.1002/asia.202100475. ISSN-18614728
542. Ayyappan, R., Coppel, Y., Vendier, L., Ghosh, S., Sabo-Etienne, S., Bontemps, S. 2021. Synthesis and reactivity of phosphine borohydride compounds. *Chemical Communications* 57 (3): 375-378. doi: 10.1039/d0cc07072f. ISSN-13597345
543. Rai, R., Chand, D.K. 2021. Copper nanoparticles (CuNPs) catalyzed chemoselective reduction of nitroarenes in aqueous medium. *Journal of Chemical Sciences* 133 (3). doi: 10.1007/s12039-021-01940-3. ISSN-09743626
544. Saha, K., Gayen, S., Kaur, U., Roisnel, T., Ghosh, S. 2021. Stabilization of dichalcogenide ligands in the coordination sphere of a ruthenium system. *Dalton Transactions* 50 (37): 12990-13001. doi: 10.1039/d1dt01614h. ISSN-14779226
545. Gorantla, S.M.N.V.T., Mondal, K.C. 2021. Energy decomposition analysis coupled with natural orbitals for chemical valence and nucleus-independent chemical shift analysis of bonding, stability, and aromaticity of functionalized fulvenes: A bonding insight. *ACS Omega* 6 (28): 17798-17810. doi: 10.1021/acsomega.1c00648. ISSN-24701343
546. Egor, M., Kumar, A.A., Pradeep, T., et al. 2021. Cellulosic ternary nanocomposite for affordable and sustainable fluoride removal. *ACS Sustainable Chemistry and Engineering* 9 (38): 12788-12799. doi: 10.1021/acssuschemeng.1c03272. ISSN-21680485
547. Narendran, R.L., Patnaik, A. 2021. Synergistic effect of hydrophobic and hydrogen bonding interaction-driven viologen-pyranine charge-transfer aggregates: adenosine monophosphate recognition. *Soft Matter* 17 (4): 903-914. doi: 10.1039/d0sm01641a. ISSN-1744683X
548. Arya, J.S., Mahato, M.K., Sankararaman, S., Prasad, E. 2021. Conducting and superhydrophobic hybrid 2D material from coronene and pyrene. *Journal of Materials Chemistry C* 9 (32): 10324-10333. doi: 10.1039/d1tc02334a. ISSN-20507534

- 549.Vala, R.M., Sharma, M.G., Patel, H.M., *et al.* 2021. Synthesis and in vitro study of antiproliferative benzyloxy dihydropyrimidinones. *Archiv der Pharmazie* 354 (6). doi: 10.1002/ardp.202000466. ISSN-03656233
- 550.Roymuhury, S.K., Mandal, M., Chakraborty, D., Ramkumar, V. 2021. Homoleptic titanium and zirconium complexes exhibiting unusual Oiminol-metal coordination: Application in stereoselective ring-opening polymerization of lactide. *Polymer Chemistry* 12 (27): 3953-3967. doi: 10.1039/d1py00237f. ISSN-17599954
- 551.Kumar, A., Adhikari, R., Dua, A. 2021. Transients generate memory and break hyperbolicity in stochastic enzymatic networks. *Journal of Chemical Physics* 154 (3). doi: 10.1063/5.0031368. ISSN-00219606
- 552.Kumar, A., Venkatakrishnan, P. 2021. An angular coumarinacene and its characteristics. *Asian Journal of Organic Chemistry* 10 (6): 1390-1394. doi: 10.1002/ajoc.202100131. ISSN-21935807
- 553.Dana, S., Giri, C.K., Baidya, M. 2021. Ruthenium(II)-catalyzed regioselective C-H olefination of aromatic ketones and amides with allyl sulfones. *Organic Letters* 23 (17): 6855-6860. doi: 10.1021/acs.orglett.1c02424. ISSN-15237060
- 554.Gorantla, S.M.N.V.T., Mondal, K.C. 2021. Estimations of Fe-N₂ intrinsic interaction energies of iron-sulfur/nitrogen-carbon sites: A deeper bonding insight by EDA-NOCV Analysis of a model complex of the nitrogenase cofactor. *ACS Omega* 6 (49): 33932-33942. doi: 10.1021/acsomega.1c05238. ISSN-24701343
- 555.Nandi, C., Kar, K., Gayen, S., Roisnel, T., Ghosh, S. 2021. Directed syntheses of CS₂- and CS₃-bridged decaborane-14 analogues. *Inorganic Chemistry* 60 (16): 12367-12376. doi: 10.1021/acs.inorgchem.1c01585. ISSN-00201669
- 556.Sahu, S., Karan, P., Mishra, A.K. 2021. Nature of Saccharide-Induced F127 micellar dehydration: An insight with FDAPT (2-Formyl-5-(4'-N, N-dimethylaminophenyl) thiophene), a multiparametric fluorescent probe. *Langmuir* 37 (10): 3067-3074. doi: 10.1021/acs.langmuir.0c03284. ISSN-07437463
- 557.Ahuja, T., Chaudhari, K., Paramasivam, G., Ragupathy, G., Mohanty, J.S., Pradeep, T. 2021. Toward vibrational tomography of citrate on dynamically changing individual silver nanoparticles. *Journal of Physical Chemistry C* 125 (6): 3553-3566. doi: 10.1021/acs.jpcc.0c09981. ISSN-19327447
- 558.Sahu, A.K., Mishra, A.K. 2021. Interaction of Dopamine with Zwitterionic DMPC and Anionic DMPS Multilamellar Vesicle Membranes. *Langmuir* 37 (45): 13430-13443. doi: 10.1021/acs.langmuir.1c02184. ISSN-07437463
- 559.Giri, C.K., Dana, S., Baidya, M. 2021. Ruthenium(ii)-catalyzed C-H activation and (4+2) annulation of aromatic hydroxamic acid esters with allylic amides. *Chemical Communications* 57(81): 10536-10539. doi: 10.1039/d1cc04422b. ISSN-13597345
- 560.Gupta, P., Rajakumar, B. 2021. Reaction kinetics of a series of alkanes with ClO and BrO radicals: A theoretical study. *International Journal of Chemical Kinetics* 53 (2): 189-206. doi: 10.1002/kin.21433. ISSN-05388066
- 561.Kar, S., Bairagi, S., Joshi, G., Jemmis, E.D., Ghosh, S. 2021. Metal-Stabilized [B₈H₈]₂⁻ derivatives with dodecahedral structure in the solid and solution states: [(Cp₂MBH₃)₂B₈H₆] (Cp=η⁵-C₅H₅; M=Zr (1-Zr) and Hf (1-Hf)). *Chemistry - A European Journal* 27 (63): 15634-15637. doi: 10.1002/chem.202102832. ISSN-09476539
- 562.Kannan, R., Datta, A., Prabakaran, P., Prasad, E., Muthuvijayan, V. 2021. Modular amphiphilic poly(aryl ether)-based supramolecular nanomicelles: An efficient endocytic drug carrier. *Chemical Communications* 57 (940): 12695-12698. doi: 10.1039/d1cc05652b. ISSN-13597345
- 563.Sundaravelu, N., Singha, T., Nandy, A., Sekar, G. 2021. Copper-catalyzed domino synthesis of multi-substituted benzo[b] thiophene through radical cyclization using xanthate as a sulfur surrogate. *Chemical Communications* 57 (37): 4512-4515. doi: 10.1039/d0cc08429h. ISSN-13597345
- 564.Govindaraj, P., Subramanian, S., Raghavachari, D. 2021. Preparation of gels of chitosan through a hydrothermal reaction in the presence of malonic acid and cinnamaldehyde: Characterization and antibacterial activity. *New Journal of Chemistry* 45 (47): 22101-22112. doi: 10.1039/d1nj04149e. ISSN-11440546
- 565.Bag, R., Gomosta, S., Pradhan, A.N., Roisnel, T., Ghosh, S. 2021. Synthesis and characterization of group 6-9 metal-rich homo- and hetero-metallaboranes. *Journal of the Indian Chemical Society* 98 (3). doi: 10.1016/j.jics.2021.100040. ISSN-00194522
- 566.Prakash, S., Mishra, A.K. 2021. Photophysics of faecal pigments stercobilin and urobilin in aliphatic alcohols: Introduction of a sensitive method for their detection using solvent phase extraction and fluorometry. *Analytical Methods* 13 (46): 5573-5588. doi: 10.1039/d1ay01539g. ISSN-17599660
- 567.Kuzhantavil, S., Rajakumar, B. 2021. Kinetic investigation of the reaction of ethylperoxy radicals with ethanol. *International Journal of Chemical Kinetics* 53 (2): 274-286. doi: 10.1002/kin.21441. ISSN-05388066
- 568.597. Ghorai, J., Ramachandran, K., Anbarasan, P. 2021. Rhodium-catalyzed annulation of N-acetoxyacetanilide with substituted alkynes: Conversion of nitroarenes to substituted indoles. *Journal of Organic Chemistry* 86 (21): 14812-14825. doi: 10.1021/acs.joc.1c01604. ISSN-00223263
- 569.Mishra, J., Mishra, A.K. 2021. Interaction of human intestinal bile salt with bioactive diet capsaicin and indole-3-carbinol. *ACS Food Science and Technology* 1 (4): 588-595. doi: 10.1021/acsfoodscitech.0c00086. ISSN-26921944
- 570.Sangaranarayanan, M.V. 2021. Amrendra Vijay (1967-2020). *Current Science* 120 (1): 229-229. ISSN-00113891
- 571.Padinhattath, S.P., Chenthamara, B., Gardas, R.L. 2021. Ionic liquids as alternative solvents for energy conservation and environmental engineering. *Acta Innovations* 38, pp 62-79. doi: 10.32933/ActaInnovations.38.6. ISSN-23005599
- 572.Mondal, K., Kumar, A., Rajakumar, B. 2021. Kinetics of IO

- radicals with ethyl formate and ethyl acetate: A study using cavity ring-down spectroscopy and theoretical methods. *Physical Chemistry Chemical Physics* 23 (45): 25974-25993. doi: 10.1039/d1cp02615a. ISSN-14639076
573. Bej, P.K., Mondal, K., Rajakumar, B. 2021. Absorption cross-section measurements of ortho-xylyl radical in the 460.1–475.1 nm region and investigation of its temperature and pressure dependence using cavity ringdown spectroscopy. *Chemical Physics Letters* 765. doi: 10.1016/j.cplett.2020.138314. ISSN-00092614
574. Kaipara, R., Kumar, A., Gupta, P., Rajakumar, B. 2021. Temperature-dependent kinetic study of the photo-oxidation reaction of vinyl butyrate with Cl atoms and fate of the formation of alkoxy radicals. *Chemical Physics Letters* 771. doi: 10.1016/j.cplett.2021.138500. ISSN-00092614
575. Satyanarayana, M., Umeshbabu, E., Jibin, A.K., James, J., Justin, P., Varadaraju, U.V. 2021. Electrochemical lithium and sodium insertion studies in 3D metal oxy-phosphate framework $\text{MoWO}_3(\text{PO}_4)_2$ for battery applications. *Journal of Solid State Electrochemistry* 25 (11-Oct): 2675-2685. doi: 10.1007/s10008-021-05051-4. ISSN-14328488
576. Kumar, A., Mondal, K., Rajakumar, B. 2021. A combined experimental and theoretical study to determine the kinetics of 2-ethoxy ethanol with OH radical in the gas phase. *Journal of Physical Chemistry A* 125 (40): 8869-8881. doi: 10.1021/acs.jpca.1c06590. ISSN-10895639
577. Mishra, J., Mishra, A.K., Swain, J. 2021. Exploring the biophysical interaction of 3-pentadecylphenol with the head group region of a lipid membrane using fisetin as an interfacial membrane probe. *New Journal of Chemistry* 45 (29): 13015-13020. doi: 10.1039/d1nj01484f. ISSN-11440546
578. Krishnan, S., Chinnadurai, G.S., Ravishankar, K., Raghavachari, D., Perumal, P. 2021. Valorization of agro-wastes for the biosynthesis and characterization of polyhydroxybutyrate by *Bacillus* sp. isolated from rice bran dumping yard. *3 Biotech* 11 (4). doi: 10.1007/s13205-021-02722-x. ISSN-2190572X
579. Guha, S., Kazi, I., Sathish, D., Sekar, G. 2021. Iodine-promoted controlled and selective oxidation of (Aryl) (Heteroaryl) Methanes. *Journal of Organic Chemistry*. doi: 10.1021/acs.joc.1c03067. ISSN-00223263
580. Gupta, P., Jabeen, F., Rajakumar, B. 2021. Theoretical investigations on the OH radical mediated kinetics of cis- and trans- $\text{CH}_3\text{CF}=\text{CHF}$ and $\text{CH}_3\text{CH}=\text{CF}_2$ over temperature range of 200-400K. *Journal of Fluorine Chemistry* 250. doi: 10.1016/j.jfluchem.2021.109884. ISSN-00221139
581. Basuri, P., Jana, S.K., Pradeep, T., et al. 2021. 2D-Molybdenum disulfide-derived ion source for mass spectrometry. *ACS Nano* 15 (3): 5023-5031. doi: 10.1021/acsnano.0c09985. ISSN-19360851
582. Gupta, P., Rajakumar, B. 2021. Reaction kinetics of a series of alkenes with ClO and BrO radicals: A theoretical study. *International Journal of Chemical Kinetics* 53 (2): 250-264. doi: 10.1002/kin.21439. ISSN-05388066
583. Sharma, A., Tayal, R.K., Pradeep, T., et al. 2021. Personal News: Sanjay Bajpai (1965-2021). *Current Science* 120 (11): 1790-1791. ISSN-00113891
584. Sarkar, M., Dasary, H., Chand, D.K. 2021. Helicity induction by innocent anion in a quadruple stranded cage. *Journal of Organometallic Chemistry* 950. doi: 10.1016/j.jorganchem.2021.121984. ISSN-0022328X
585. Mallik, S., Bhajammanavar, V., Baidya, M. 2021. Regioselective nitrosocarbonyl aldol reaction of deconjugated butyrolactams: synthesis of γ -heterosubstituted α,β -unsaturated γ -lactams. *Asian Journal of Organic Chemistry* 10 (6): 1419-1423. doi: 10.1002/ajoc.202100187. ISSN-21935807
586. Sahu, A.K., Mishra, A.K. 2021. Curcumin-Induced Membrane Property Changes in DMPC Multilamellar Vesicles and the Effects of Membrane-Destabilizing Molecules on Curcumin-Loaded Multilamellar Vesicles. *Langmuir* 37 (43): 12753-12766. doi: 10.1021/acs.langmuir.1c02407. ISSN-07437463
587. Vishwakarma, G., Ghosh, J., Pradeep, T. 2021. Desorption-induced evolution of cubic and hexagonal ices in an ultrahigh vacuum and cryogenic temperatures. *Physical Chemistry Chemical Physics* 23 (41): 24052-24060. doi: 10.1039/d1cp03872a. ISSN-14639076
588. Gorantla, S.M.N.V.T., Mondal, K.C. 2021. Bonding and stability of C_6F_4 bridged by bis-carbenes: EDA-NOCV Analysis of $(\text{L})_2\text{C}_6\text{F}_4$ [L = SNHCDip, cAACMe]. *European Journal of Inorganic Chemistry* 2021 (10): 960-968. doi: 10.1002/ejic.202001056. ISSN-14341948
589. Basuri, P., Das, S., Jenifer, S.K., Jana, S.K., Pradeep, T. 2021. Microdroplet impact-induced spray ionization mass spectrometry (MISI MS) for online reaction monitoring and bacteria discrimination. *Journal of the American Society for Mass Spectrometry* 32 (1): 355-363. doi: 10.1021/jasms.0c00365. ISSN-10440305
590. Sudhakar, C., Mukherjee, S., Kumar, A.A., Paramasivam, G., Meena, P.K., Nonappa, Pradeep, T. 2021. Interference of phosphate in adsorption of arsenate and arsenite over confined metastable two-line ferrihydrite and magnetite. *Journal of Physical Chemistry C* 125 (41): 22502-22512. doi: 10.1021/acs.jpcc.1c04317. ISSN-19327447
591. Chakraborty, P., Bose, P., Pradeep, T., et al. 2021. Isotopic exchange of atomically precise nanoclusters with materials of varying dimensions: From nanoscale to bulk. *Journal of Physical Chemistry C* 125 (29): 16110-16117. doi: 10.1021/acs.jpcc.1c02264. ISSN-19327447
592. Satyabola, D., Ahuja, T., Pradeep, T., et al. 2021. Transformation of nanodiamonds to onion-like carbons by ambient electrospray deposition. *Journal of Physical Chemistry C* 125 (20): 10998-11006. doi: 10.1021/acs.jpcc.1c00166. ISSN-19327447
593. Kesavan, A., Anbarasan, P. 2021. Vicinal trifluoromethylthioamination of alkenes with trifluoromethanesulfenamides. *Asian Journal of Organic Chemistry* 10 (10): 2562-2565. doi: 10.1002/ajoc.202100553. ISSN-21935807
594. Kaur, U., Saha, K., Bairagi, S., Das, A., Roisnel, T., Paine,

- T.K., Ghosh, S. 2021. Structural and electronic analysis of bimetallic thiolate complexes of group-5 transition metal ions. *Journal of Organometallic Chemistry* 949. doi: 10.1016/j.jorganchem.2021.121943. ISSN-0022328X
- 595.Kushvaha, S.K., Francis, M., Chandra Mondal, K., *et al.* 2021. Synthesis, oligomerization and catalytic studies of a redox-active Ni₄-cubane: A detailed mechanistic investigation. *RSC Advances* 11 (37): 22849-22858. doi: 10.1039/d1ra03071j. ISSN-20462069
- 596.Balisetty, V., Vidyasagar, K. 2021. Structural characterization of quaternary selenites of tungsten(VI), A₂W₃SeO₁₂ (A = NH₄, Cs, Rb, K or Tl). *Acta Crystallographica Section E: Crystallographic Communications* 77, pp 406-411. doi: 10.1107/S2056989021002735. ISSN-20569890
- 597.Bhyrappa, P., Sarangi, U.K. 2021. Effect of solvent on the electronic absorption spectral properties of mixed β-octasubstituted free base tetraphenylporphyrins. *Journal of Porphyrins and Phthalocyanines* 25 (06-May): 500-510. doi: 10.1142/S1088424621500371. ISSN-10884246
- 598.Islam, M.R., Khurana, Pradeep, T., *et al.* 2021. Aminoclay-graphene oxide composite for thin-film composite reverse osmosis membranes with unprecedented water flux and Fouling resistance. *Advanced Materials Interfaces* 8 (20). doi: 10.1002/admi.202100533. ISSN-21967350
- 599.Gorantla, S.M.N.V.T., Mondal, K.C. 2021. EDA-NOCV Calculation for efficient N₂ binding to the reduced Ni₃S₈ complex: Estimation of Ni-N₂ intrinsic interaction energies. *ACS Omega* 6 (49): 33389-33397. doi: 10.1021/acsomega.1c03715. ISSN-24701343
- 600.Pappuru, S., Ramkumar, V., Chakraborty, D. 2021. Benzoxazole phenoxide ligand supported group IV catalysts and their application for the ring-opening polymerization of rac-lactide and ε-caprolactone. *Polymers for Advanced Technologies* 32 (9): 3392-3401. doi: 10.1002/pat.5349. ISSN-10427147
- 601.Tamilmani, V., Mondal, M., Rai, V.K., Mishra, A.K. 2021. Tunable luminescence from yttrium oxide flowers using asparagine as shape modifier. *Journal of Alloys and Compounds* 857. doi: 10.1016/j.jallcom.2020.157575. ISSN-09258388
- 602.Ayyappan, R., Saha, K., Bontemps, S., *et al.* 2021. Impact of the alkali metal on the structural and dynamic properties of the anionic pentahydride ruthenium complexes [M(THF)_x][RuH₅(PCy₃)₂] (M = Li, Na, K). *Organometallics* 40 (17): 3024-3032. doi: 10.1021/acs.organomet.1c00384. ISSN-02767333
- 603.Dhar, R., Ramakrishna, J., Dutta, S., *et al.* 2021. Solution-processable small molecule based all-organic ultraviolet photodetector. *Synthetic Metals* 280. doi: 10.1016/j.synthmet.2021.116883. ISSN-03796779
- 604.Sundaravelu, N., Sangeetha, S., Sekar, G. 2021. Metal-catalyzed C-S bond formation using sulfur surrogates. *Organic and Biomolecular Chemistry* 19 (7): 1459-1482. doi: 10.1039/d0ob02320e. ISSN-14770520
- 605.Rival, J.V., Mymoona, P., Lakshmi, K.M., Nonappa Pradeep, T., Shibu, E.S. 2021. Self-assembly of precision noble metal nanoclusters: hierarchical structural complexity, colloidal superstructures, and applications. *Small* 17 (27). doi: 10.1002/smll.202005718. ISSN-16136810
- 606.Basaiahgari, A., Gardas, R.L. 2021. Ionic liquid-based aqueous biphasic systems as sustainable extraction and separation techniques. *Current Opinion in Green and Sustainable Chemistry* 27. doi: 10.1016/j.cogsc.2020.100423. ISSN-24522236
- 607.Khatun, E., Pradeep, T. 2021. New routes for multicomponent atomically precise metal nanoclusters. *ACS Omega* 6 (1): 16-Jan. doi: 10.1021/acsomega.0c04832. ISSN-24701343
- 608.Donthireddy, S.N.R., Tiwari, C.S., Kumar, S., Rit, A. 2021. Atom-economic alk(en)ylations of esters, amides, and methyl heteroarenes utilizing alcohols following dehydrogenative strategies. *Asian Journal of Organic Chemistry* 10 (3): 464-484. doi: 10.1002/ajoc.202000634. ISSN-21935807
- 609.Bodiuzzaman, M., Dar, W.A., Pradeep, T. 2021. Cocrystals of atomically precise noble metal nanoclusters. *Small* 17 (27). doi: 10.1002/smll.202003981. ISSN-16136810
- 610.Kaur, U., Saha, K., Gayen, S., Ghosh, S. 2021. Contemporary developments in transition metal boryl complexes: An overview. *Coordination Chemistry Reviews* 446. doi: 10.1016/j.ccr.2021.214106. ISSN-00108545
- 611.Ghosh, P., Chowdhury, D., Dana, S., Baidya, M. 2021. Transition metal catalyzed free-amine (-NH₂) directed C-H bond activation and functionalization for biaryl frameworks. *Chemical Record* 21 (12): 3795-3817. doi: 10.1002/tcr.202100158. ISSN-15278999
- 612.Malek, A., Rao, G.R., Thomas, T. 2021. Waste-to-wealth approach in water economy: The case of beneficiation of mercury-contaminated water in hydrogen production. *International Journal of Hydrogen Energy* 46 (52): 26677-26692. doi: 10.1016/j.ijhydene.2021.05.133. ISSN-03603199
- 613.Kar, S., Nanda Pradhan, A., Ghosh, S. 2021. Metal-rich metallaboranes: Clusters containing triply and tetra bridging borylene and boride units. *Coordination Chemistry Reviews* 436. doi: 10.1016/j.ccr.2021.213796. ISSN-00108545
- 614.Akter, M., Anbarasan, P. 2021. (Cyclopentadienone) iron Complexes: Synthesis, mechanism and applications in organic synthesis. *Chemistry - An Asian Journal* 16 (13): 1703-1724. doi: 10.1002/asia.202100400. ISSN-18614728
- 615.Tiwari, C.S., Illam, P.M., Donthireddy, S.N.R., Rit, A. 2021. Recent advances in the syntheses and catalytic applications of homonuclear Ru-, Rh-, and Ir-complexes of CNHC[^]C cyclometalated ligands. *Chemistry - A European Journal* 27 (67): 16581-16600. doi: 10.1002/chem.202102540. ISSN-09476539
- 616.Singha Roy, S., Sarkar, S., Chakraborty, D. 2021. Determination of polylactide microstructure by homonuclear decoupled 1H NMR spectroscopy. *Chemical Record* 21 (8): 1968-1984. doi: 10.1002/tcr.202100073. ISSN-15278999
- 617.Roy, S.S., Sarkar, S., Chakraborty, D. 2021. Macrocycles

- in dual role: ancillary ligands in metal complexes and organocatalysts for the ring-opening polymerization of lactide. *Journal of Inclusion Phenomena and Macrocyclic Chemistry* 100 (02-Jan). doi: 10.1007/s10847-021-01045-x. ISSN-09230750
- 618.Yadagiri, D., Anbarasan, P. 2021. Catalytic functionalization of metallocarbenes derived from α -diazocarbonyl compounds and their precursors. *Chemical Record* 21 (12): 3872-3883. doi: 10.1002/tcr.202100167. ISSN-15278999
- 619.Sreenath Pappuru, Venkatachalam Ramkumar, Debashis Chakraborty 2021. Benzoxazole phenoxide ligand supported group IV catalysts and their application for the ring opening polymerization of rac lactide and caprolactone. *Polymers for Advanced Technologies* 32, pp 3392-3401. doi: 10.1002/pat.5349.
- 620.Kumar C.B., Bhanuprakash P., Rao C.N., Gardas R.L., Sivakumar K. 2021. Excess volume speed of sound and isentropic compressibility data of ternary mixtures containing N-methylcyclohexylamine p-xylene and C3-C5 1-alkanols. *Chemical Data Collections* 31. doi: 10.1016/j.cdc.2020.100610.
- 621.Jhili Mishra and Ashok Kumar Mishra 2021. Interaction of human intestinal bile salt with bioactive diet capsaicin and indole 3 carbinol. *ACS Food Science and Technology* 1 (4): 588-595. doi: 10.1021/acfoodscitech.0c00086.
- 622.Anastas, Paul, Nolasco, Marcelo, Kerton, Francesca, Kirchoff, Mary, Licence, Peter, Pradeep, Thalappil, Subramaniam, Bala and Moores, Audrey. 2021. The Power of the United Nations Sustainable Development Goals in Sustainable Chemistry and Engineering Research. In *ACS Sustainable Chemistry Engineering* 9, pp 8015-8017. doi: 10.1021/acssuschemeng.1c03762.
- 623.Subramaniam, Bala, Allen, David, Kuok Mimi Hii, King, Colberg, Juan and Pradeep, Thalappil 2021. Lab to market where the rubber meets the road for sustainable chemical technologies. In *ACS Sustainable Chemistry Engineering* 9, pp 2987-2989. doi: 10.1021/acssuschemeng.1c00980.
- 624.Zhang, Linggen, Pradeep, Thalappil, Licence, Peter, Subramaniam, Bala and Allen, David T. 2021. ACS Sustainable Chemistry Engineering welcomes manuscripts on advanced e waste recycling. *ACS Sustainable Chemistry Engineering* 9, pp 3624-3625. doi: 10.1021/acssuschemeng.1c01344.
- 625.Jana A., Jash M., Pradeep T., et al. 2021. Light-activated intercluster conversion of an atomically precise silver ocluster. *ACS Nano* 15 (10): 15781-15793. doi: 10.1021/acso.1c02602
- 626.Saranya, A.; Vivekanandan, G.; Krishnamurthy, K. R.; Viswanathan, B. 2021. Selective hydrogenation of cinnamaldehyde using palladium based bimetallic catalysts Pd-M/TiO₂ (M=Cu, Ag and Au). *Indian Journal of Chemistry Section A-Inorganic Bio-Inorganic Physical Theoretical & Analytical Chemistry*, pp 0376-4710
- 627.Baire, Beeraiyah; Santhi, Jampani 2021. Ag(i)-Promoted homo-dimerization of 2-(alk-2-yn-1-onyl)-1-alkynylbenzenes via a [4+2] cycloaddition of benzopyrylium ions: access to structurally unique naphthalenes. *Organic & Biomolecular Chemistry*, pp 1477-0520. doi: 10.1039/d1ob02229f.
- 628.Kesavan, Arunachalam; Anbarasan, Pazhamalai 2021. Catalytic enantioselective oxysulfonylation of o-vinylanilides. *Chemical Communications*, pp 1359-7345. doi: 10.1039/d1cc05835e.
- 629.Kar, Sourav; Ghosh, Sundargopal 2021. Borane Polyhedra Beyond Icosahedron. *50th Anniversary Of Electron Counting Paradigms For Polyhedral Molecules: Historical and Recent Developments*, pp 0081-5993. doi: 10.1007/430_2021_85.
- 630.Razia; Chugh, Manjusha; Ranganathan, Madhav 2021. Surface energy and surface stress of polar GaN(0001). *Applied Surface Science*, pp 0169-4332. doi: 10.1016/j.apsusc.2021.150627.
- 631.Sharma, Ashutosh; Tayal, Rajiv K.; Pradeep, T., et al. 2021. Sanjay Bajpai (1965-2021). *Current Science*, pp 0011-3891
- 632.Gunthe, S.S., Liu, P., Pö, et al. 2021. Enhanced aerosol particle growth sustained by high continental chlorine emission in India. *Nature Geoscience* 14 (2): 77-84. doi: 10.1038/s41561-020-00677-x. ISSN-17520894
- 633.Bhattacharjee, S., Basavaraj, A.S., Mechtcherine, V., et al. 2021. Sustainable materials for 3D concrete printing. *Cement and Concrete Composites* 122. doi: 10.1016/j.cemconcomp.2021.104156. ISSN-09589465
- 634.Kumar, P., Hama, S., Ngowi, et al. 2021. In-car particulate matter exposure across ten global cities. *Science of the Total Environment* 750. doi: 10.1016/j.scitotenv.2020.141395. ISSN-00489697
- 635.Rajasekhar, B., Nambi, I.M., Govindarajan, S.K. 2021. Investigating the degradation of nC12 to nC23 alkanes and PAHs in petroleum- contaminated water by electrochemical advanced oxidation process using an inexpensive Ti/Sb-SnO₂/PbO₂ anode. *Chemical Engineering Journal* 404. doi: 10.1016/j.cej.2020.125268. ISSN-13858947
- 636.Julina, M., Thyagaraj, T. 2021. Determination of volumetric shrinkage of an expansive soil using digital camera images. *International Journal of Geotechnical Engineering* 15 (5): 624-632. doi: 10.1080/19386362.2018.1460961. ISSN-19386362
- 637.Chakraborty, T.C., Sarangi, C., Lee, X. 2021. Reduction in human activity can enhance the urban heat island: Insights from the COVID-19 lockdown. *Environmental Research Letters* 16 (5). doi: 10.1088/1748-9326/abef8e. ISSN-17489318
- 638.Kolluru, S.S.R., Patra, A.K., Nazneen, Shiva Nagendra, S.M. 2021. Association of air pollution and meteorological variables with COVID-19 incidence: Evidence from five megacities in India. *Environmental Research* 195. doi: 10.1016/j.envres.2021.110854. ISSN-00139351
- 639.Mhawish, A., Sorek-Hamer, M., Kalashnikova, O., et al. 2021. Aerosol characteristics from earth observation systems: A comprehensive investigation over South Asia (2000-2019). *Remote Sensing of Environment* 259. doi: 10.1016/j.rse.2021.112410. ISSN-00344257

- 640.Sivagami, K., Divyapriya, G., Selvaraj, R., Madhiyazhagan, P., Sriram, N., Nambi, I. 2021. Catalytic pyrolysis of polyolefin and multilayer packaging based waste plastics: A pilot scale study. *Process Safety and Environmental Protection* 149, pp 497-506. doi: 10.1016/j.psep.2020.10.038. ISSN-09575820
- 641.Debbarma, S., Ransinchung R.N, G.D., Singh, S. 2021. Suitability of various supplementary cementitious admixtures for RAP inclusive RCCP mixes. *International Journal of Pavement Engineering* 22 (12): 1568-1581. doi: 10.1080/10298436.2019.1703981. ISSN-10298436
- 642.Bose, S., Kumar Tripathy, B., Debnath, A., Kumar, M. 2021. Boosted sono-oxidative catalytic degradation of Brilliant green dye by magnetic $MgFe_2O_4$ catalyst: Degradation mechanism, assessment of bio-toxicity and cost analysis. *Ultrasonics Sonochemistry* 75. doi: 10.1016/j.ultsonch.2021.105592. ISSN-13504177
- 643.Divya Rani, S., Rahul, A.V., Santhanam, M. 2021. A multi-analytical approach for pore structure assessment in historic lime mortars. *Construction and Building Materials* 272. doi: 10.1016/j.conbuildmat.2020.121905. ISSN-09500618
- 644.B.r, Madhusudhan, Boominathan, A., Banerjee, S. 2021. Engineering properties of sand-rubber tire shred mixtures. *International Journal of Geotechnical Engineering* 15 (9): 1061-1077. doi: 10.1080/19386362.2019.1617479. ISSN-19386362
- 645.Manthiram Karthik, R., Philip, L. 2021. Sorption of pharmaceutical compounds and nutrients by various porous low cost adsorbents. *Journal of Environmental Chemical Engineering* 9 (1). doi: 10.1016/j.jece.2020.104916. ISSN-22133437
- 646.Sivagami, K., Tamizhdurai, P., Mujahed, S., Nambi, I. 2021. Process optimization for the recovery of oil from tank bottom sludge using microwave pyrolysis. *Process Safety and Environmental Protection* 148, pp 392-399. doi: 10.1016/j.psep.2020.10.004. ISSN-09575820
- 647.Manjunath, S.V., Kumar, M. 2021. Simultaneous removal of antibiotic and nutrients via Prosopis juliflora activated carbon column: Performance evaluation, effect of operational parameters and breakthrough modeling. *Chemosphere* 262. doi: 10.1016/j.chemosphere.2020.127820. ISSN-00456535
- 648.Kant, S., Panda, J., Rao, P., Sarangi, C., Ghude, S.D. 2021. Study of aerosol-cloud-precipitation-meteorology interaction during a distinct weather event over the Indian region using WRF-Chem. *Atmospheric Research* 247. doi: 10.1016/j.atmosres.2020.105144. ISSN-01698095
- 649.Anilkumar, P.M., Haldar, A., Jansen, E.L., Rao, B.N., Rolfes, R. 2021. Snap-through of bistable variable stiffness laminates using MFC actuators. *Composite Structures* 266. doi: 10.1016/j.compstruct.2021.113694. ISSN-02638223
- 650.Patra, S.S., Chilukuri, B.R., Vanajakshi, L. 2021. Analysis of road traffic pattern changes due to activity restrictions during COVID-19 pandemic in Chennai. *Transportation Letters* 13 (06-May): 473-481. doi: 10.1080/19427867.2021.1899580. ISSN-19427867
- 651.Gedela, R., Karpurapu, R. 2021. Influence of pocket shape on numerical response of geocell reinforced foundation systems. *Geosynthetics International* 28 (3): 327-337. doi: 10.1680/jgein.20.00042. ISSN-10726349
- 652.Murthy, D.S., Robinson, R.G., Rajagopal, K. 2021. Formation of soil plug in open-ended pipe piles in sandy soils. *International Journal of Geotechnical Engineering* 15 (5): 519-529. doi: 10.1080/19386362.2018.1465742. ISSN-19386362
- 653.Jose, J., Philip, L. 2021. Continuous flow pulsed power plasma reactor for the treatment of aqueous solution containing volatile organic compounds and real pharmaceutical wastewater. *Journal of Environmental Management* 286. doi: 10.1016/j.jenvman.2021.112202. ISSN-03014797
- 654.Krishnan, N., Kamde, D.K., Doosa Veedu, Z., Pillai, R.G., Shah, D., Velayudham, R. 2021. Long-term performance and life-cycle-cost benefits of cathodic protection of concrete structures using galvanic anodes. *Journal of Building Engineering* 42. doi: 10.1016/j.jobbe.2021.102467. ISSN-23527102
- 655.Sriram Karthick Raja, P., Thyagaraj, T. 2021. Effect of short-term sulphate contamination on lime-stabilized expansive soil. *International Journal of Geotechnical Engineering* 15 (8): 964-976. doi: 10.1080/19386362.2019.1641665. ISSN-19386362
- 656.Jyoteeshkumar Reddy, P., Sriram, D., Gunthe, S.S., Balaji, C. 2021. Impact of climate change on intense Bay of Bengal tropical cyclones of the post-monsoon season: a pseudo global warming approach. *Climate Dynamics* 56 (10-Sep): 2855-2879. doi: 10.1007/s00382-020-05618-3. ISSN-09307575
- 657.Harilal, M., Kamde, D.K., Albert, S.K., et al. 2021. The chloride-induced corrosion of a fly ash concrete with nanoparticles and corrosion inhibitor. *Construction and Building Materials* 274. doi: 10.1016/j.conbuildmat.2020.122097. ISSN-09500618
- 658.Jose, J., Philip, L. 2021. Comparative study of degradation of toluene and methyl isobutyl ketone (MIBK) in aqueous solution by pulsed corona discharge plasma. *Journal of Environmental Sciences (China)* 101, pp 382-396. doi: 10.1016/j.jes.2020.09.003. ISSN-10010742
- 659.Thomas, A., Kanawade, V.P., Sarangi, C., Srivastava, A.K. 2021. Effect of COVID-19 shutdown on aerosol direct radiative forcing over the Indo-Gangetic Plain outflow region of the Bay of Bengal. *Science of the Total Environment* 782. doi: 10.1016/j.scitotenv.2021.146918. ISSN-00489697
- 660.Gedela, R., Karpurapu, R. 2021. Laboratory and numerical studies on the performance of geocell reinforced base layer overlying soft subgrade. *International Journal of Geosynthetics and Ground Engineering* 7 (1). doi: 10.1007/s40891-020-00249-4. ISSN-21999260
- 661.Bugalia, N., Maemura, Y., Ozawa, K. 2021. A system dynamics model for near-miss reporting in complex systems. *Safety Science* 142. doi: 10.1016/j.ssci.2021.105368. ISSN-09257535

662. Maji, S., Yadav, R., Beig, G., Gunthe, S.S., Ojha, N. 2021. On the processes governing the variability of PTR-MS based VOCs and OVOCs in different seasons of a year over hilly mega city of India. *Atmospheric Research* 261. doi: 10.1016/j.atmosres.2021.105736. ISSN-01698095
663. Mukhopadhyay, A., Tripathy, B.K., Debnath, A., Kumar, M. 2021. Enhanced persulfate activated sono-catalytic degradation of brilliant green dye by magnetic CaFe_2O_4 nanoparticles: Degradation pathway study, assessment of bio-toxicity and cost analysis. *Surfaces and Interfaces* 26. doi: 10.1016/j.surf.2021.101412. ISSN-24680230
664. Hilaridoss, S., Delhiraja, K., Reddy, K.S., Philip, L., Chand, D., Benny, B. 2021. Thermal modeling, characterization, and enviro-economic investigations on inclined felt sheet solar distiller for seawater desalination. *Environmental Science and Pollution Research* 28 (45): 63572-63588. doi: 10.1007/s11356-020-10831-y. ISSN-09441344
665. Kumar, P., Hama, S., Salam, A., et al. 2021. Potential health risks due to in-car aerosol exposure across ten global cities. *Environment International* 155. doi: 10.1016/j.envint.2021.106688. ISSN-01604120
666. Abhijith, G.R., Mohan, S. 2021. Cellular automata-based mechanistic model for analyzing microbial regrowth and trihalomethanes formation in water distribution systems. *Journal of Environmental Engineering (United States)* 147 (1). doi: 10.1061/(ASCE)EE.1943-7870.0001833. ISSN-07339372
667. Sivakumar, G., Maji, V.B. 2021. Crack growth in rocks with preexisting narrow flaws under uniaxial compression. *International Journal of Geomechanics* 21 (4). doi: 10.1061/(ASCE)GM.1943-5622.0001960. ISSN-15323641
668. Bhuvaneswari, R., Jeyanthi, J., Mathava Kumar, S. 2021. Visible light assisted degradation of Atenolol by Fe-TiO_2 : Synthesis, characterization, optimization and mechanism. *Optik* 239. doi: 10.1016/j.ijleo.2021.166658. ISSN-00304026
669. Thappeta, S.K., Bhallamudi, S.M., Chandra, V., Fiener, P., Baki, A.B.M. 2021. Energy loss in steep open channels with step-pools. *Water (Switzerland)* 13 (1). doi: 10.3390/w13010072. ISSN-20734441
670. Pratapa, P.P., Liu, K., Vasudevan, S.P., Paulino, G.H. 2021. Reprogrammable kinematic branches in tessellated origami structures. *Journal of Mechanisms and Robotics* 13 (3). doi: 10.1115/1.4049949. ISSN-19424302
671. Amrutsamanvar, R.B., Muthurajan, B.R., Vanajakshi, L.D. 2021. Extraction and analysis of microscopic traffic data in disordered heterogeneous traffic conditions. *Transportation Letters* 13 (1): 20-Jan. doi: 10.1080/19427867.2019.1695563. ISSN-19427867
672. Singh, J., Singh, N., Rao Kotamarthi, V., et al. 2021. Effects of spatial resolution on WRF v3.8.1 simulated meteorology over the central Himalaya. *Geoscientific Model Development* 14 (3): 1427-1443. doi: 10.5194/gmd-14-1427-2021. ISSN-1991959X
673. Jayarajan, J., Karpurapu, R. 2021. Bearing capacity and settlement response of ordinary and geosynthetic encased granular columns in soft clay soils: Analysis and design charts. *Indian Geotechnical Journal* 51 (2): 237-253. doi: 10.1007/s40098-020-00457-9. ISSN-09719555
674. Chavda, J.T., Dodagoudar, G.R. 2021. On vertical bearing capacity of ring footings: Finite element analysis, observations and recommendations. *International Journal of Geotechnical Engineering* 15 (10): 1207-1219. doi: 10.1080/19386362.2019.1648737. ISSN-19386362
675. Varma, M., Maji, V.B., A, B. 2021. Influence of rock joints on longitudinal wave velocity using experimental and numerical techniques. *International Journal of Rock Mechanics and Mining Sciences* 141. doi: 10.1016/j.ijrmm.2021.104699. ISSN-13651609
676. Attada, P.K., Parapparambil Muraleedharan Nair, A., Bhairavavajjula, N.R. 2021. Study on the actuation force of triangular bistable composite laminates. *Material Design and Processing Communications* 3 (5). doi: 10.1002/mdp2.169. ISSN-25776576
677. Sreejaya, K.P., Basu, J., Raghukanth, S.T.G., Srinagesh, D. 2021. Prediction of ground motion intensity measures using an artificial neural network. *Pure and Applied Geophysics* 178 (6): 2025-2058. doi: 10.1007/s00024-021-02752-9. ISSN-00334553
678. Malek, A., Ganta, A., Divyapriya, G., Nambi, I.M., Thomas, T. 2021. Hydrogen production from human and cow urine using in situ synthesized aluminium nanoparticles. *International Journal of Hydrogen Energy* 46 (54): 27319-27329. doi: 10.1016/j.ijhydene.2021.06.024. ISSN-03603199
679. Kasiviswanathan, K.S., Sudheer, K.P., Soundharajan, B.-S., Adeloje, A.J. 2021. Implications of uncertainty in inflow forecasting on reservoir operation for irrigation. *Paddy and Water Environment* 19 (1): 99-111. doi: 10.1007/s10333-020-00822-7. ISSN-16112490
680. Joseph, N., Preetha, P.P., Narasimhan, B. 2021. Assessment of environmental flow requirements using a coupled surface water-groundwater model and a flow health tool: A case study of Son river in the Ganga basin. *Ecological Indicators* 121. doi: 10.1016/j.ecolind.2020.107110. ISSN-1470160X
681. Kumar, K.S.R., Thyagaraj, T. 2021. Comparison of lime treatment techniques for deep stabilization of expansive soils. *International Journal of Geotechnical Engineering* 15 (8): 1021-1039. doi: 10.1080/19386362.2020.1775359. ISSN-19386362
682. G Krishnanunni, C., N Rao, B. 2021. Indirect health monitoring of bridges using Tikhonov regularization scheme and signal averaging technique. *Structural Control and Health Monitoring* 28 (3). doi: 10.1002/stc.2686. ISSN-15452255
683. Haldar, A., Anilkumar, P.M., Jansen, E.L., Rao, B.N., Rolfes, R. 2021. Semi-analytical investigations on bistable cross-ply laminates with MFC actuators. *Smart Materials and Structures* 30 (10). doi: 10.1088/1361-665X/ac1736. ISSN-09641726
684. Thomas, T., Ghosh, N.C., Sudheer, K.P. 2021. Optimal

- reservoir operation – A climate change adaptation strategy for Narmada basin in central India. *Journal of Hydrology* 598. doi: 10.1016/j.jhydrol.2021.126238. ISSN-00221694
- 685.Panda, U., Boopathy, R., Gadhavi, H.S., Renuka, K., Gunthe, S.S., Das, T. 2021. Metals in coarse ambient aerosol as markers for source apportionment and their health risk assessment over an eastern coastal urban atmosphere in India. *Environmental Monitoring and Assessment* 193 (5). doi: 10.1007/s10661-021-09057-3. ISSN-01676369
- 686.Khadhir, A., Anil Kumar, B., Vanajakshi, L.D. 2021. Analysis of global positioning system based bus travel time data and its use for advanced public transportation system applications. *Journal of Intelligent Transportation Systems: Technology, Planning, and Operations* 25 (1): 58-76. doi: 10.1080/15472450.2020.1754818. ISSN-15472450
- 687.Pallav, K., Raghukanth, S.T.G., Singh, K.D. 2021. Surface level ground motion estimation for 1869 Cachar earthquake (MW 7.5) at Imphal city. *Journal of Geophysics and Engineering* 7 (3): 321-331. doi: 10.1088/1742-2132/7/3/010. ISSN-17422132
- 688.Ajeesh, S.S., Arul Jayachandran, S. 2021. Spline finite strip analysis of thin-walled flexural members subjected to general loading with intermediate restraints. *Thin-Walled Structures* 158. doi: 10.1016/j.tws.2020.107171. ISSN-02638231
- 689.Annamalaisami, C.D., Kuppuswamy, A. 2021. Managing cost risks: Toward a taxonomy of cost overrun factors in building construction projects. *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering* 7 (2). doi: 10.1061/AJRUA6.0001132. ISSN-23767642
- 690.Saravanan, M., Goswami, R., Palani, G.S. 2021. Energy dissipative beam-column connection for earthquake resistant moment frames. *Journal of Constructional Steel Research* 176. doi: 10.1016/j.jcsr.2020.106428. ISSN-0143974X
- 691.Jayalakshmi, S., Dhanya, J., Raghukanth, S.T.G., Mai, P.M. 2021. Hybrid broadband ground motion simulations in the Indo-Gangetic basin for great Himalayan earthquake scenarios. *Bulletin of Earthquake Engineering* 19 (9): 3319-3348. doi: 10.1007/s10518-021-01094-0. ISSN-1570761X
- 692.Reyes-Villegas, E., Panda, U., Lee, J., et al. 2021. PM1 composition and source apportionment at two sites in Delhi, India, across multiple seasons. *Atmospheric Chemistry and Physics* 21 (15): 11655-11667. doi: 10.5194/acp-21-11655-2021. ISSN-16807316
- 693.Naik, P.M., Bhowmik, T., Menon, A. 2021. Estimating joint stiffness and friction parameters for dry stone masonry constructions. *International Journal of Masonry Research and Innovation* 6 (2): 232-254. doi: 10.1504/ijmri.2021.113934. ISSN-20569459
- 694.Prabavathy, S., Rajagopal, K., Pitchumani, N.K. 2021. Investigation of smear zone around PVD Mandrel using image-based analysis. *International Journal of Geosynthetics and Ground Engineering* 7 (4). doi: 10.1007/s40891-021-00337-z. ISSN-21999260
- 695.Ghosh, G., Duddu, R., Annavarapu, C. 2021. On the robustness of the stabilized finite element method for delamination analysis of composites using cohesive elements. *International Journal for Computational Methods in Engineering Science and Mechanics* 22 (6): 538-558. doi: 10.1080/15502287.2021.1896607. ISSN-15502287
- 696.Mohan, S., Balakrishnan, P. 2021. Kinetics of ciprofloxacin removal using a sequential two-step ozonation-biotreatment process. *Environmental Technology and Innovation* 21. doi: 10.1016/j.eti.2020.101284. ISSN-23521864
- 697.Gupta, R., Atul Narayan, S.P. 2021. Tensile creep of asphalt concrete in repeated loading tests and its effect on energy dissipation. *International Journal of Pavement Engineering* 22 (7): 927-939. doi: 10.1080/10298436.2019.1654101. ISSN-10298436
- 698.Lekshmy, P.R., Raghukanth, S.T.G. 2021. A hybrid genetic algorithm-neural network model for power spectral density compatible ground motion prediction. *Soil Dynamics and Earthquake Engineering* 142. doi: 10.1016/j.soildyn.2020.106528. ISSN-02677261
- 699.Kirthiga, S.M., Narasimhan, B., Balaji, C. 2021. A multi-physics ensemble approach for short-term precipitation forecasts at convective permitting scales based on sensitivity experiments over southern parts of peninsular India. *Journal of Earth System Science* 130 (2). doi: 10.1007/s12040-021-01556-8. ISSN-23474327
- 700.Lakshmi, G., Sudheer, K.P. 2021. Parameterization in hydrological models through clustering of the simulation time period and multi-objective optimization based calibration. *Environmental Modelling and Software* 138. doi: 10.1016/j.envsoft.2021.104981. ISSN-13648152
- 701.Amuthan, M.S., Boominathan, A., Banerjee, S. 2021. Sand and concrete interface behaviour of particulate rubber-sand-fly ash mixture. *International Journal of Geotechnical Engineering* 15 (6): 753-759. doi: 10.1080/19386362.2018.1499269. ISSN-19386362
- 702.Ravichandran, M.K., Philip, L. 2021. Insight into the uptake, fate and toxic effects of pharmaceutical compounds in two wetland plant species through hydroponics studies. *Chemical Engineering Journal* 426. doi: 10.1016/j.cej.2021.131078. ISSN-13858947
- 703.Kommula, S.M., Upasana, P., Gunthe, S.S., et al. 2021. Chemical characterization and source apportionment of organic aerosols in the coastal city of Chennai, India: Impact of marine air masses on aerosol chemical composition and potential for secondary organic aerosol formation. *ACS Earth and Space Chemistry* 5 (11): 3197-3209. doi: 10.1021/acsearthspacechem.1c00276. ISSN-24723452
- 704.Sangeetha, S., Dhanya, J., Raghukanth, S.T.G. 2021. 3D Crustal velocity model for ground motion simulations in North-East India. *Journal of Earthquake Engineering* 25 (3): 475-511. doi: 10.1080/13632469.2018.1520760. ISSN-13632469
- 705.Sharanya, A.G., Heeralal, M., Thyagaraj, T. 2021. Soil shrinkage characterization of low plasticity soil using digital image analysis process. *International Journal of*

- Engineering, Transactions B: Applications* 34 (10): 2206-2212. doi: 10.5829/IJE.2021.34.10A.02. ISSN-1728144X
- 706.Singh, R.B., Debbarma, S., Kumar, N., Singh, S. 2021. Hardened state behaviour of self-compacting concrete pavement mixes containing alternative aggregates and secondary binders. *Construction and Building Materials* 266. doi: 10.1016/j.conbuildmat.2020.120624. ISSN-09500618
- 707.Azneb, A.S., Banerjee, S., Robinson, R.G. 2021. Shear strength of cement-treated marine clay under triaxial and plane strain conditions. *Proceedings of the Institution of Civil Engineers: Ground Improvement* 174 (3): 143-156. doi: 10.1680/jgrim.18.00090. ISSN-17550750
- 708.Girijan, S., Kumar, M., Gomber, S. 2021. Starch and powdered activated carbon amended alginate-biomass beads for metronidazole and bulk organic matter removal: Synthesis, optimization, reaction kinetics and reusability. *Journal of Environmental Chemical Engineering* 9 (5). doi: 10.1016/j.jece.2021.106102. ISSN-22133437
- 709.Mohan, M.K., Pillai, R.G., Santhanam, M., Gettu, R. 2021. High-performance cementitious grout with fly ash for corrosion protection of post-tensioned concrete structures. *Construction and Building Materials* 281. doi: 10.1016/j.conbuildmat.2021.122612. ISSN-09500618
- 710.Dev, A., Dilly, T.C., Bakhshipour, A.E., Dittmer, U., Bhallamudi, S.M. 2021. Optimal implementation of wastewater reuse in existing sewerage systems to improve resilience and sustainability in water supply systems. *Water (Switzerland)* 13 (15). doi: 10.3390/w13152004. ISSN-20734441
- 711.Sivagami, K., Rajasekhar, B., Mujahed, S., Nambi, I.M., Rajan, A.K. 2021. Application of combined chemical oxidation and microwave treatment for hydrocarbon-contaminated soil from an urban oil spill site. *Journal of Hazardous, Toxic, and Radioactive Waste* 25 (2). doi: 10.1061/(ASCE)HZ.2153-5515.0000570. ISSN-21535493
- 712.Nayak, A.K., Biswal, B., Sudheer, K.P. 2021. Role of hydrological model structure in the assimilation of soil moisture for streamflow prediction. *Journal of Hydrology* 598. doi: 10.1016/j.jhydrol.2021.126465. ISSN-00221694
- 713.Balakrishnan, P., Mohan, S. 2021. Treatment of triclosan through enhanced microbial biodegradation. *Journal of Hazardous Materials* 420. doi: 10.1016/j.jhazmat.2021.126430. ISSN-03043894
- 714.Kamde, D.K., Manickam, K., Pillai, R.G., Sergi, G. 2021. Long-term performance of galvanic anodes for the protection of steel reinforced concrete structures. *Journal of Building Engineering* 42. doi: 10.1016/j.job.2021.103049. ISSN-23527102
- 715.Kumar, A.P., Anilkumar, P.M., Haldar, A., Scheffler, S., Jansen, E.L., Rao, B.N., Rolfes, R. 2021. Tailoring bistability in unsymmetrical laminates using an additional composite strip. *Thin-Walled Structures* 168. doi: 10.1016/j.tws.2021.108212. ISSN-02638231
- 716.Shenbagam, V.K., Cepuritis, R., Chaunsali, P. 2021. Influence of exposure conditions on expansion characteristics of lime-rich calcium sulfoaluminate-belite blended cement. *Cement and Concrete Composites* 118. doi: 10.1016/j.cemconcomp.2021.103932. ISSN-09589465
- 717.Varghese, R., Boominathan, A., Banerjee, S. 2021. Investigation of pile-induced filtering of seismic ground motion considering embedment effect. *Earthquake Engineering and Structural Dynamics* 50 (12): 3201-3219. doi: 10.1002/eqe.3506. ISSN-00988847
- 718.Mohandoss, P., Pillai, R.G., Gettu, R. 2021. Determining bond strength of seven-wire strands in prestressed concrete. *Structures* 33, pp 2413-2423. doi: 10.1016/j.istruc.2021.06.004. ISSN-23520124
- 719.Nayak, A.K., Biswal, B., Sudheer, K.P. 2021. A novel framework to determine the usefulness of satellite-based soil moisture data in streamflow prediction using dynamic Budyko model. *Journal of Hydrology* 595. doi: 10.1016/j.jhydrol.2020.125849. ISSN-00221694
- 720.Vasudevan, S.P., Pratapa, P.P. 2021. Origami metamaterials with near-constant poisson functions over finite strains. *Journal of Engineering Mechanics* 147 (11). doi: 10.1061/(ASCE)EM.1943-7889.0002002. ISSN-07339399
- 721.Srinivasan, R., Rajasekhar, B., Nambi, I.M. 2021. Deterministic and probabilistic health risk assessment for exposure to non-steroidal anti-inflammatory drugs in an Indian river. *Environmental Science and Pollution Research* 28(29): 39826-39839. doi: 10.1007/s11356-020-11897-4. ISSN-09441344
- 722.Middela, M.S., Ramadurai, G. 2021. Incorporating spatial interactions in zero-inflated negative binomial models for freight trip generation. *Transportation* 48 (5): 2335-2356. doi: 10.1007/s11116-020-10132-w. ISSN-00494488
- 723.Kavinmathi, K., Atul Narayan, S.P., Subramanian, S.C. 2021. Impact of lateral load transfer in heavy road vehicles at horizontal curves on the distress of asphalt pavements. *Road Materials and Pavement Design*. doi: 10.1080/14680629.2021.1977683. ISSN-14680629
- 724.Kamde, D.K., Pillai, R.G. 2021. Corrosion initiation mechanisms and service life estimation of concrete systems with fusion-bonded-epoxy (FBE) coated steel exposed to chlorides. *Construction and Building Materials* 277. doi: 10.1016/j.conbuildmat.2021.122314. ISSN-09500618
- 725.Passi, A., Shiva Nagendra, S.M., Maiya, M.P. 2021. Assessment of exposure to airborne aerosol and bio-aerosol particles and their deposition in the respiratory tract of subway metro passengers and workers. *Atmospheric Pollution Research* 12 (11). doi: 10.1016/j.apr.2021.101218. ISSN-13091042
- 726.Joseph, M., Banerjee, S., Pakrashi, V. 2021. Estimation of the dynamic amplification factor at backfill soil behind a gravity wall. *Geotechnical Research* 8 (4). doi: 10.1680/jgere.21.00005. ISSN-20526156
- 727.Kamde, D.K., Zintel, M., Kessler, S., Pillai, R.G. 2021. Performance indicators and specifications for fusion-bonded-epoxy(FBE)-coated steel rebars in concrete exposed

- to chlorides. *Sustainable and Resilient Infrastructure*. doi: 10.1080/23789689.2020.1871539. ISSN-23789689
- 728.S. Raj, S., Krüger, O.O., Pöschl, U., *et al.* 2021. Planetary boundary layer height modulates aerosol–water vapor interactions during winter in the megacity of Delhi. *Journal of Geophysical Research: Atmospheres* 126 (24). doi: 10.1029/2021JD035681. ISSN-2169897X
- 729.Renganathan, J., S, I.U.H., Ramakrishnan, K., Ravichandran, M.K., Philip, L. 2021. Spatio-temporal distribution of pharmaceutically active compounds in the River Cauvery and its tributaries, South India. *Science of the Total Environment* 800. doi: 10.1016/j.scitotenv.2021.149340. ISSN-00489697
- 730.Patra, S.S., Vanajakshi, L.D. 2021. Analysis of the near-road fine particulate exposure to pedestrians at varying heights. *Aerosol and Air Quality Research* 21 (12). doi: 10.4209/AAQR.210104. ISSN-16808584
- 731.Krishnachandran, S., Menon, A. 2021. A normative framework for assessment and retrofit of existing unreinforced masonry buildings in India. *Journal of The Institution of Engineers (India): Series A* 102 (2): 369-387. doi: 10.1007/s40030-021-00512-5. ISSN-22502149
- 732.George, J., Menon, A. 2021. Simplified performance assessment for single-span masonry arch bridges under live load. *Journal of Bridge Engineering* 26 (6). doi: 10.1061/(ASCE)BE.1943-5592.0001723. ISSN-10840702
- 733.Preetha, P.P., Joseph, N., Narasimhan, B. 2021. Quantifying surface water and ground water interactions using a coupled SWAT_FEM model: Implications of management practices on hydrological processes in irrigated river basins. *Water Resources Management* 35 (9): 2781-2797. doi: 10.1007/s11269-021-02867-7. ISSN-09204741
- 734.Adrija, D., Geevar, I., Menon, D., Prasad, M. 2021. Strength assessment of RC deep beams and corbels. *Structural Engineering and Mechanics* 77 (2): 273-291. doi: 10.12989/sem.2021.77.2.273. ISSN-12254568
- 735.Mohan, S., Gokul, D. 2021. Treatment of leachate from open dumpsite of municipal solid waste by ozone based advanced oxidation process. *Ozone: Science and Engineering*. doi: 10.1080/01919512.2021.1919053. ISSN-01919512
- 736.Kondalraj, R., Appa Rao, G. 2021. Experimental investigation of RC deep beams with web reinforcement and improvement of ACI 318–19 strut coefficient. *Structures* 32, pp 914-928. doi: 10.1016/j.istruc.2021.03.052. ISSN-23520124
- 737.Dhabu, A.C., Raghukanth, S.T.G. 2021. Translational and rotational ground motion simulations in homogeneous reduced micropolar half-space. *Journal of Seismology* 25 (2): 599-623. doi: 10.1007/s10950-021-09983-2. ISSN-13834649
- 738.Bindhu, V.M., Smitha, P.S., Narasimhan, B., Annamalai, H., Srinivasan, G. 2021. Koppen–Trewartha climate classification as a diagnostic tool to identify pronounced changes in the projected climate by the General Circulation Models over India. *International Journal of Climatology* 41 (15): 6616-6639. doi: 10.1002/joc.7216. ISSN-08998418
- 739.Senapati, S., Banerjee, S., Thyagaraj, T. 2021. Effect of frequency on cyclic response of marine clay saturated with various pore fluids. *International Journal of Geotechnical Engineering* 15 (9): 1155-1164. doi: 10.1080/19386362.2019.1595302. ISSN-19386362
- 740.Kuppili, S.K., Dheeraj Alshetty, V., De Vito, L., *et al.* 2021. Characteristics of real-world gaseous exhaust emissions from cars in heterogeneous traffic conditions. *Transportation Research Part D: Transport and Environment* 95. doi: 10.1016/j.trd.2021.102855. ISSN-13619209
- 741.George, J., Menon, A. 2021. A mechanism-based assessment framework for masonry arch bridges under scour-induced support rotation. *Advances in Structural Engineering* 24 (12): 2637-2651. doi: 10.1177/13694332211009325. ISSN-13694332
- 742.Girijan, A., Vanajakshi, L.D., Chilukuri, B.R. 2021. Dynamic thresholds identification for green extension and red truncation strategies for bus priority. *IEEE Access* 9, pp 64291-64305. doi: 10.1109/ACCESS.2021.3074361. ISSN-21693536
- 743.Athira, P., Sudheer, K.P. 2021. Calibration of distributed hydrological models considering the heterogeneity of the parameters across the basin: a case study of SWAT model. *Environmental Earth Sciences* 80 (4). doi: 10.1007/s12665-021-09434-8. ISSN-18666280
- 744.Gedela, R., Kalla, S., Sudarsanan, N., Karpurapu, R. 2021. Assessment of load distribution mechanism in geocell reinforced foundation beds using Digital Imaging Correlation Techniques. *Transportation Geotechnics* 31. doi: 10.1016/j.trgeo.2021.100664. ISSN-22143912
- 745.Kondalraj, R., Appa Rao, G. 2021. Experimental verification of ACI 318 strut-and-tie method for design of deep beams without web reinforcement. *ACI Structural Journal* 118 (1): 139-152. doi: 10.14359/51728083. ISSN-08893241
- 746.Bugalia, N., Maemura, Y., Ozawa, K. 2021. Characteristics of enhanced safety coordination between high-speed rail operators and manufacturers. *Reliability Engineering and System Safety* 216. doi: 10.1016/j.res.2021.107995. ISSN-09518320
- 747.Prajapati, R., Gettu, R., Singh, S. 2021. Thermomechanical beneficiation of recycled concrete aggregates (RCA). *Construction and Building Materials* 310. doi: 10.1016/j.conbuildmat.2021.125200. ISSN-09500618
- 748.779.Vemula, S., Yellapragada, M., Podili, B., Raghukanth, S.T.G., Ponnalagu, A. 2021. Ground motion intensity measures for New Zealand. *Soil Dynamics and Earthquake Engineering* 150. doi: 10.1016/j.soildyn.2021.106928. ISSN-02677261
- 749.Rohith, A.N., Gitau, M.W., Chaubey, I., Sudheer, K.P. 2021. A multistate first-order Markov model for modeling time distribution of extreme rainfall events. *Stochastic Environmental Research and Risk Assessment* 35 (6): 1205-1221. doi: 10.1007/s00477-020-01939-1. ISSN-14363240

- 750.Ojha, N., Girach, I., Sharma, K., Sharma, A., Singh, N., Gunthe, S.S. 2021. Exploring the potential of machine learning for simulations of urban ozone variability. *Scientific Reports* 11 (1). doi: 10.1038/s41598-021-01824-z. ISSN-20452322
- 751.Sangani, J., Srinivasan, V. 2021. Improved Domenico solution for three-dimensional contaminant transport. *Journal of Contaminant Hydrology* 243. doi: 10.1016/j.jconhyd.2021.103897. ISSN-01697722
- 752.Kumar, G.S., Krishnanunni, C.G., Rao, B.N. 2021. Indirect damage identification in bridges based on dynamic tyre pressure monitoring. *International Journal of Structural Stability and Dynamics* 21 (4). doi: 10.1142/S0219455421500565. ISSN-02194554
- 753.Choudhary, V., Philip, L. 2021. Stable paper-based colorimetric sensor for selective detection of phosphate ion in aqueous phase. *Microchemical Journal* 171. doi: 10.1016/j.microc.2021.106809. ISSN-0026265X
- 754.Sriram Karthick Raja, P., Thyagaraj, T. 2021. Significance of compaction time delay on compaction and strength characteristics of sulfate resistant cement-treated expansive soil. *Journal of Rock Mechanics and Geotechnical Engineering* 13 (5): 1193-1202. doi: 10.1016/j.jrmge.2021.03.003. ISSN-16747755
- 755.Aarthi, N., Dodagoudar, G.R. 2021. Three-dimensional finite-element analysis of pressure-settlement response of sand compaction pile-treated cohesionless deposits. *International Journal of Geomechanics* 21 (4). doi: 10.1061/(ASCE)GM.1943-5622.0001957. ISSN-15323641
- 756.Ravichandran, M.K., Yoganathan, S., Philip, L. 2021. Removal and risk assessment of pharmaceuticals and personal care products in a decentralized greywater treatment system serving an Indian rural community. *Journal of Environmental Chemical Engineering* 9 (6). doi: 10.1016/j.jece.2021.106832. ISSN-22133437
- 757.Anand, V., Satish Kumar, S.R. 2021. Evaluation of seismic response of inelastic structures considering soil-structure interaction. *Innovative Infrastructure Solutions* 6 (2). doi: 10.1007/s41062-020-00423-7. ISSN-23644176
- 758.Atul Narayan, S.P., Rajagopal, K.R. 2021. A constitutive model for wet granular materials. *Particulate Science and Technology* 39 (7): 903-910. doi: 10.1080/02726351.2020.1860171. ISSN-02726351
- 759.Anusha, S.P., Vanajakshi, L., Subramanian, S.C. 2021. Dynamical systems approach for queue and delay estimation at signalized intersections under mixed traffic conditions. *Transportation Letters*. doi: 10.1080/19427867.2021.1908492. ISSN-19427867
- 760.Janmejaya, B., Abhijith, B.S., Krishnan, J.M. 2021. Influence of confinement pressure and rest periods on measurement of dynamic modulus of bituminous mixtures. *Journal of Materials in Civil Engineering* 33 (9). doi: 10.1061/(ASCE)MT.1943-5533.0003854. ISSN-08991561
- 761.Wang, L., Qian, Y., Zhang, Y., et al. 2021. Multiple metrics informed projections of future precipitation in China. *Geophysical Research Letters* 48 (18). doi: 10.1029/2021GL093810. ISSN-00948276
- 762.Balireddy, R., Chakravorty, A., Bhallamudi, S.M., Kuiry, S.N. 2021. Applications of the single-port linear Thevenin theorem for focused and efficient analysis of a sub-network connected with a large existing pipe network. *Urban Water Journal* 18 (9): 681-698. doi: 10.1080/1573062X.2021.1925705. ISSN-1573062X
- 763.Tamizharasi, G., Meher Prasad, A., Murty, C.V.R. 2021. Lateral-torsional seismic behaviour of plan unsymmetric buildings. *Earthquake and Structures* 20 (3): 239-260. doi: 10.12989/eas.2021.20.3.239. ISSN-20927614
- 764.Sudhir Ekande, O., Kumar, M. 2021. Facile synthesis of graphitic carbon nitride from acetic acid pretreatment to activate persulfate in presence of blue light for photocatalytic removal of metronidazole. *Chemosphere* 276. doi: 10.1016/j.chemosphere.2021.130171. ISSN-00456535
- 765.Harichandran, A., Raphael, B., Mukherjee, A. 2021. A hierarchical machine learning framework for the identification of automated construction operations. *Journal of Information Technology in Construction* 26, pp 591-623. doi: 10.36680/j.itcon.2021.031. ISSN-18744753
- 766.Thyagaraj, T., Julina, M. 2021. Effect of physico-chemical interactions and cyclic wet-dry process on behaviour of compacted expansive soils. *Indian Geotechnical Journal* 51 (1): 225-235. doi: 10.1007/s40098-021-00518-7. ISSN-09719555
- 767.Mohan, S., Oke, N. 2021. Application of the optimized pre-ozonation treatment for potential resource recovery from industrial textile effluent. *Ozone: Science and Engineering*. doi: 10.1080/01919512.2021.1911621. ISSN-01919512
- 768.Nellaippan, N., Ravi, G., Kumar, M. 2021. Synthesis and application of chitosan-graphene oxide and titanium-dioxide coated granular activated carbon composites for adsorptive and photocatalytic removal of antibiotics. *Journal of Hazardous, Toxic, and Radioactive Waste* 25 (4). doi: 10.1061/(ASCE)HZ.2153-5515.0000627. ISSN-21535493
- 769.Nalarajan, N.A., Govindarajan, S.K., Nambi, I.M. 2021. Sensitivity analysis of inflow boundary conditions on solute transport modeling using M5' model trees. *Modeling Earth Systems and Environment*. doi: 10.1007/s40808-021-01189-2. ISSN-23636203
- 770.Palissery, S., Goswami, R., Murty, C.V.R. 2021. Design of RC moment frame buildings consistent with earthquake resistant design philosophy. *Earthquake and Structures* 20 (6): 599-615. doi: 10.12989/eas.2021.20.6.599. ISSN-20927614
- 771.Delhiraja, K., Sharon, H., Reddy, K.S., Philip, L. 2021. Performance evaluation of solar thermal systems as an alternative for human waste treatment. *Sustainable Energy Technologies and Assessments* 47. doi: 10.1016/j.seta.2021.101393. ISSN-22131388
- 772.Nivedita, S., Arnepalli, D.N., Krishnan, C. 2021. Kinetics and stoichiometry of an efficient methanotroph

- methylosarcina sp. LC-4 isolated from a municipal solid waste dumpsite. *Journal of Environmental Engineering (United States)* 147 (5). doi: 10.1061/(ASCE)EE.1943-7870.0001867. ISSN-07339372
- 773.Dlnesh, N., Banerjee, S., Rajagopal, K. 2021. Numerical analysis of shallow foundations resting on granular columns embedded in liquefiable soil. *Journal of Earthquake and Tsunami* 15 (3). doi: 10.1142/S1793431121500147. ISSN-17934311
- 774.Sivaguru, V., Rao, G.A. 2021. Strength and behavior of reinforced concrete squat shear walls with openings under cyclic loading. *ACI Structural Journal* 118 (5): 235-250. doi: 10.14359/51732832. ISSN-08893241
- 775.Aswini, M.A., Tiwari, S., Kumar, A., et al. 2021. Aeolian dust and sea salt in marine aerosols over the Arabian Sea during the southwest monsoon: Sources and spatial variability. *ACS Earth and Space Chemistry*. doi: 10.1021/acsearthspacechem.1c00400. ISSN-24723452
- 776.Mali, V.K., Venu, P., Nagaraj, M.K., Kuiry, S.N. 2021. Demonstration of structure-from-motion (SfM) and multi-view stereo (MVS) close range photogrammetry technique for scour hole analysis. *Sadhana - Academy Proceedings in Engineering Sciences* 46 (4). doi: 10.1007/s12046-021-01758-2. ISSN-02562499
- 777.Abhijith, B.S., Atul Narayan, S.P. 2021. Evolution of complex modulus and higher harmonics of stress response of asphalt concrete in strain-controlled four-point beam fatigue tests. *International Journal of Pavement Engineering*. doi: 10.1080/10298436.2021.1954181. ISSN-10298436
- 778.Balasubramanian S. R., Rao K., Goswami, R., Meher Prasad A. 2021. Structural performance characteristics based seismic damage gradation schema for single storey URBM buildings in India with a rigid diaphragm. *International Journal of Architectural Heritage* 15 (9): 1227-1249. doi: 10.1080/15583058.2019.1665144. ISSN-15583058
- 779.Alagappan, P., Muliana, A., Rajagopal, K.R. 2021. A study of the dissipation of energy in the helmet due to a blast on a helmet-skull-brain assembly. *Composite Structures* 257. doi: 10.1016/j.compstruct.2020.113124. ISSN-02638223
- 780.Sridharan, B., Bates, P.D., Sen, D., Kuiry, S.N. 2021. Local-inertial shallow water model on unstructured triangular grids. *Advances in Water Resources* 152. doi: 10.1016/j.advwatres.2021.103930. ISSN-03091708
- 781.Karpurapu, R., Jayarajan, J., Mohapatra, S.R. 2021. Geosynthetic-encased granular columns subjected to vertical and shear loads. *Indian Geotechnical Journal* 51 (1): 137-153. doi: 10.1007/s40098-020-00486-4. ISSN-09719555
- 782.Palanisamy, B., Narasimhan, B., Sayasane, R., et al. 2021. Studying onset and evolution of agricultural drought in mekong river basin through hydrologic modeling. *Water (Switzerland)* 13 (24). doi: 10.3390/w13243622. ISSN-20734441
- 783.Mohan, S., Kuipally, N. 2021. Influence of discontinuity on groundwater flow and depressurisation plans in mine water pumping for an open cast lignite mine. *Groundwater for Sustainable Development* 14. doi: 10.1016/j.gsd.2021.100601. ISSN-2352801X
- 784.Rangaswamy, D.R., Ramamurthy, K. 2021. Evaluation of eight thermal comfort indices based on perception survey for a hot-humid climate through a naturally ventilated apartment. *Journal of Architectural Engineering* 27 (4). doi: 10.1061/(ASCE)AE.1943-5568.0000508. ISSN-10760431
- 785.Joseph, N., Ryu, D., Malano, H.M., George, B., Sudheer, K.P. 2021. Estimation of state-wide and monthly domestic water use in India from 1975 to 2015. *Urban Water Journal* 18 (6): 421-432. doi: 10.1080/1573062X.2021.1893362. ISSN-1573062X
- 786.Joju, J., Goswami, R. 2021. Simplified design approaches for panel zones in steel special moment frame buildings. *Proceedings of the Institution of Civil Engineers: Structures and Buildings* doi: 10.1680/jstbu.21.00034. ISSN-09650911
- 787.Manohar, S., Santhanam, M. 2021. Use of poulticing in desalination of masonry units – implications on salt-deteriorated structures. *Current Science* 121 (10): 1307-1315. doi: 10.18520/cs/v121/i10/1307-1315. ISSN-00113891
- 788.Sharma, A., Tayal, R.K., Pradeep, T., et al. 2021. Personal News: Sanjay Bajpai (1965-2021). *Current Science* 120 (11): 1790-1791. ISSN-00113891
- 789.Manohar, S., Bala, K., Shukla, S., Haneefa, K.M., Santhanam, M., Menon, A. 2021. Multiscale fire damage assessment of historical stone trabeated hypostyle halls. *International Journal of Architectural Heritage*. doi: 10.1080/15583058.2021.1992535. ISSN-15583058
- 790.Jangid, M., Mishra, A.K., Tripathi, S., et al. 2021. Observation of aerosol induced 'lower tropospheric cooling' over Indian core monsoon region. *Environmental Research Letters* 16 (12). doi: 10.1088/1748-9326/ac3b7a. ISSN-17489318
- 791.Azneb, A.S., Banerjee, S., Robinson, R.G. 2021. Numerical simulation of triaxial tests on cement-treated clays using Hoek-Brown criterion. *Proceedings of the Institution of Civil Engineers: Ground Improvement*. doi: 10.1680/jgrim.20.00041. ISSN-17550750
- 792.Rengaraju, S., Pillai, R.G. 2021. An accelerated chloride threshold test for uncoated steel in highly resistive cementitious systems (hr-ACT test). *Construction and Building Materials* 305. doi: 10.1016/j.conbuildmat.2021.124797. ISSN-09500618
- 793.Kumar, A., Vema, V.K., Kurian, C., Thomas, J., Sudheer, K.P. 2021. A decision support system for the identification of critical zones in a watershed to implement land management practices. *Stochastic Environmental Research and Risk Assessment* 35 (8): 1649-1664. doi: 10.1007/s00477-021-01983-5. ISSN-14363240
- 794.Kumaraguru, S., Alagusundaramoorthy, P. 2021. Flexural strengthening of steel beams using pultruded CFRP composite sheets with anchorage mechanisms. *Structures* 33, pp 1414-1427. doi: 10.1016/j.istruc.2021.05.024. ISSN-

23520124

795. Ayinippully Nalarajan, N., Govindarajan, S.K., Nambi, I.M. 2021. Aquifer heterogeneity on well capture zone and solute transport: numerical investigations with spatial moment analysis. *International Journal of Environmental Science and Technology*. doi: 10.1007/s13762-021-03573-y. ISSN-17351472
796. Raheena, M., Robinson, R.G. 2021. End-of-primary consolidation parameters using inflection point method. *Geotechnique* 71 (7): 645-654. doi: 10.1680/jgeot.18.P.124. ISSN-00168505
797. Mohan, S., Oke, N., Gokul, D. 2021. Conventional and zero liquid discharge treatment plants for textile wastewater through the lens of carbon footprint analysis. *Journal of Water and Climate Change* 12 (5): 1392-1403. doi: 10.2166/wcc.2020.100. ISSN-20402244
798. Saravanan, U., Rajagopal, K.R., Tom, R.M., Bharadwaj, K. 2021. A model for a solid undergoing rate-independent dissipative mechanical processes. *Mathematics and Mechanics of Solids* 26 (2): 230-243. doi: 10.1177/1081286520951921. ISSN-10812865
799. Manohar, S., Chockalingam, N., Santhanam, M. 2021. Experimental comparison between salt weathering testing procedures on different types of bricks. *Journal of Materials in Civil Engineering* 33 (11). doi: 10.1061/(ASCE)MT.1943-5533.0003936. ISSN-08991561
800. Kumar, B.A., Mothukuri, S., Vanajakshi, L. 2021. Numerical stability of conservation equation for bus travel time prediction using automatic vehicle location data. *International Journal of Intelligent Transportation Systems Research* 19 (1): 141-154. doi: 10.1007/s13177-020-00230-5. ISSN-13488503
801. Behera, A., Charmot, S., Asif, A., Krishnan, J.M. 2021. Influence of confinement pressure on the mechanical response of emulsified cold-recycled mixtures. *Journal of Materials in Civil Engineering* 33 (11). doi: 10.1061/(ASCE)MT.1943-5533.0003871. ISSN-08991561
802. Jittin, V., Madhuri, P., Santhanam, M., Bahurudeen, A. 2021. Influence of preconditioning and curing methods on the durability performance of alkali-activated binder composites. *Construction and Building Materials* 311. doi: 10.1016/j.conbuildmat.2021.125346. ISSN-09500618
803. Ravikanth Reddy, S., Arul Jayachandran, S. 2021. Experimental investigation on the steel standing seam roof systems subjected to wind uplift. *Journal of Structural Engineering (India)* 48 (4): 255-264. ISSN-09700137
804. Naik, P., Menon, A. 2021. Experimental and theoretical studies to characterize structural behavior of dry-stone corbelled arches under support disturbances. *International Journal of Architectural Heritage*. doi: 10.1080/15583058.2021.1912207. ISSN-15583058
805. Islam, M.R., Khurana, P., Pradeep, T., et al. 2021. Aminoclay-graphene oxide composite for thin-film composite reverse osmosis membranes with unprecedented water flux and fouling resistance. *Advanced Materials Interfaces* 8 (20). doi: 10.1002/admi.202100533. ISSN-21967350
806. Selvaraj, S., Karpurapu, R. 2021. Numerical analysis of Leutner shear tests on interface between geosynthetic and asphalt layers. *International Journal of Geosynthetics and Ground Engineering* 7 (3). doi: 10.1007/s40891-021-00295-6. ISSN-21999260
807. Vaasudevaa, B.V., Dhandapani, Y., Santhanam, M. 2021. Performance evaluation of limestone-calcined clay (LC2) combination as a cement substitute in concrete systems subjected to short-term heat curing. *Construction and Building Materials* 302. doi: 10.1016/j.conbuildmat.2021.124121. ISSN-09500618
808. Singh, A., Balakrishnan, B., Menon, D. 2021. Combined beam-slab collapse mechanism in isolated reinforced concrete beam-slabs—strength design and load testing. *ACI Structural Journal* 118 (3): 223-240. doi: 10.14359/51730527. ISSN-08893241
809. Mohan, R., Ramadurai, G. 2021. Multi-class traffic flow model based on three-dimensional flow-concentration surface. *Physica A: Statistical Mechanics and its Applications* 577. doi: 10.1016/j.physa.2021.126060. ISSN-03784371
810. Gopinath, S., Iyer, N.R., Gettu, R. 2021. Non-iterative model for analysis of RC beams strengthened with textile reinforced concrete. *Australian Journal of Structural Engineering* 22 (4): 277-288. doi: 10.1080/13287982.2021.1962618. ISSN-13287982
811. Nithishwer, M.A., Kumar, B.A., Vanajakshi, L. 2021. Deep learning—just data or domain related knowledge adds value?: bus travel time prediction as a case study. *Transportation Letters*. doi: 10.1080/19427867.2021.1952042. ISSN-19427867
812. Thazhathe Kalathil, S., Chandra, V. 2021. The influence of different morphological units on the turbulent flow characteristics in step-pool mountain streams. *Scientific Reports* 11 (1). doi: 10.1038/s41598-021-99564-7. ISSN-20452322
813. Sirajudeen, R.S., Alagusundaramoorthy, P. 2021. GFRP stiffened plate with square cutout under axial and out-of-plane load. *Polymers* 13 (8). doi: 10.3390/polym13081185. ISSN-20734360
814. Padmaraj, D., Arnepalli, D.N. 2021. Mechanism of carbonation in lime-stabilized silty clay from chemical and microstructure perspectives. *International Journal of Geosynthetics and Ground Engineering* 7 (4). doi: 10.1007/s40891-021-00318-2. ISSN-21999260
815. Bachu, A.K., Reddy, K.K., Vanajakshi, L. 2021. Bus travel time prediction using support vector machines for high variance conditions. *Transport* 36 (3): 221-234. doi: 10.3846/transport.2021.15220. ISSN-16484142
816. Devasena, M., Nambi, I.M. 2021. Potential leaching of mercury from stable mercury sulphide. *International Journal of Environmental Science and Technology* 18 (11): 3677-3684. doi: 10.1007/s13762-020-03064-6. ISSN-17351472
817. Passi, A., Shiva Nagendra, S.M., Maiya, M.P. 2021. Assessment of indoor and outdoor exposure to airborne particles in subway metro stations and their associated

- health risks. *WIT Transactions on Ecology and the Environment* 252 (2021): 85-96. doi: 10.2495/AIR210081. ISSN-1746448X
- 818.Dhandapani, Y., Santhanam, M., Kaladharan, G., Ramanathan, S. 2021. Towards ternary binders involving limestone additions — A review. *Cement and Concrete Research* 143. doi: 10.1016/j.cemconres.2021.106396. ISSN-00088846
- 819.Choudhary, V., Vellingiri, K., Thayyil, M.I., Philip, L. 2021. Removal of antibiotics from aqueous solutions by electrocatalytic degradation. *Environmental Science: Nano* 8 (5): 1133-1176. doi: 10.1039/d0en01276a. ISSN-20518153
- 820.Ekande, O.S., Kumar, M. 2021. Review on polyaniline as reductive photocatalyst for the construction of the visible light active heterojunction for the generation of reactive oxygen species. *Journal of Environmental Chemical Engineering* 9 (4). doi: 10.1016/j.jece.2021.105725. ISSN-22133437
- 821.Choudhary, V., Vellingiri, K., Philip, L. 2021. Potential nanomaterials-based detection and treatment methods for aqueous chloroform. *Environmental Nanotechnology, Monitoring and Management* 16. doi: 10.1016/j.enmm.2021.100487. ISSN-22151532
- 822.Sharanya, A.G., Mudavath, H., Thyagaraj, T. 2021. Review of methods for predicting soil volume change induced by shrinkage. *Innovative Infrastructure Solutions* 6 (2). doi: 10.1007/s41062-021-00485-1. ISSN-23644176
- 823.Mohan, S., Joseph, C.P. 2021. Potential hazards due to municipal solid waste open dumping in India. *Journal of the Indian Institute of Science* 101 (4): 523-536. doi: 10.1007/s41745-021-00242-4. ISSN-09704140
- 824.Sundar, S., Ponnalagu, A. 2021. Biomechanical analysis of head subjected to blast waves and the role of combat protective headgear under blast loading: A review. *Journal of Biomechanical Engineering* 143 (10). doi: 10.1115/1.4051047. ISSN-01480731
- 825.Kollannur, N.J., Arnepalli, D.N. 2021. Electrochemical treatment and associated chemical modifications of clayey soils: A review. *International Journal of Geotechnical Engineering* 15 (3): 349-358. doi: 10.1080/19386362.2019.1653513. ISSN-19386362
- 826.Sathi, V.N., Srinivasan, M., Thiruvassagam, P.K., Murthy, C.S.R. 2021. Novel protocols to mitigate network slice topology learning attacks and protect privacy of users' service access behavior in softwarized 5G networks. *IEEE Transactions on Dependable and Secure Computing* 18 (6): 2888-2906. doi: 10.1109/TDSC.2020.2968885. ISSN-15455971
- 827.Thiruvassagam, P.K., Chakraborty, A., Mathew, A., Murthy, C.S.R. 2021. Reliable placement of service function chains and virtual monitoring functions with minimal cost in softwarized 5G networks. *IEEE Transactions on Network and Service Management* 18 (2): 1491-1507. doi: 10.1109/TNSM.2021.3056917. ISSN-19324537
- 828.Mondal, S., Nasre, R. 2021. Hansie: Hybrid and consensus regression test prioritization. *Journal of Systems and Software* 172. doi: 10.1016/j.jss.2020.110850. ISSN-01641212
- 829.Gouthaman, K.V., Nambiar, A., Srinivas, K.S., Mittal, A. 2021. Linguistically-aware attention for reducing the semantic gap in vision-language tasks. *Pattern Recognition* 112. doi: 10.1016/j.patcog.2020.107812. ISSN-00313203
- 830.Thiruvassagam, P.K., Chakraborty, A., Murthy, C.S.R. 2021. Resilient and latency-aware orchestration of network slices using multi-connectivity in MEC-enabled 5G networks. *IEEE Transactions on Network and Service Management* 18 (3): 2502-2514. doi: 10.1109/TNSM.2021.3091053. ISSN-19324537
- 831.Dawalatabad, N., Madikeri, S., Sekhar, C.C., Murthy, H.A. 2021. Novel architectures for unsupervised information bottleneck based speaker diarization of meetings. *IEEE/ACM Transactions on Audio Speech and Language Processing* 29, pp 14-27. doi: 10.1109/TASLP.2020.3036231. ISSN-23299290
- 832.Tiwari, S., Gala, N., Rebeiro, C., Kamakoti, V. 2021. PERI: A configurable posit enabled RISC-V core. *ACM Transactions on Architecture and Code Optimization* 18 (3). doi: 10.1145/3446210. ISSN-15443566
- 833.Sebastian, J., Sur, M., Murthy, H.A., Magimai-Doss, M. 2021. Signal-to-signal neural networks for improved spike estimation from calcium imaging data. *PLoS Computational Biology* 17 (3). doi: 10.1371/journal.pcbi.1007921. ISSN-1553734X
- 834.Sathi, V.N., Murthy, C.S.R. 2021. DSM Attack resistant slice selection in 5G. *IEEE Wireless Communications Letters* 10 (7): 1469-1473. doi: 10.1109/LWC.2021.3070322. ISSN-21622337
- 835.Roy, I., Rebeiro, C., Hazra, A., Bhunia, S. 2021. FaultDroid: An algorithmic approach for fault-induced information leakage analysis. *ACM Transactions on Design Automation of Electronic Systems* 26 (1). doi: 10.1145/3410336. ISSN-10844309
- 836.Mitra, P.P. 2021. Fitting elephants in modern machine learning by statistically consistent interpolation. *Nature Machine Intelligence* 3 (5): 378-386. doi: 10.1038/s42256-021-00345-8. ISSN-25225839
- 837.Rebeiro, C., Mukhopadhyay, D. 2021. A formal analysis of prefetching in profiled cache-timing attacks on block ciphers. *Journal of Cryptology* 34 (3). doi: 10.1007/s00145-021-09394-z. ISSN-09332790
- 838.Prashanth, L.A., Korda, N., Munos, R. 2021. Concentration bounds for temporal difference learning with linear function approximation: the case of batch data and uniform sampling. *Machine Learning* 110 (3): 559-618. doi: 10.1007/s10994-020-05912-5. ISSN-08856125
- 839.Sharma, A., Jayakumar, J., Mitra, P.P., Chakraborti, S., Kumar, P.S. 2021. Application of supervised machine learning to extract brain connectivity information from neuroscience research articles. *Interdisciplinary Sciences: Computational Life Sciences* 13 (4): 731-750. doi: 10.1007/s12539-021-00443-6. ISSN-19132751

840. Banerjee, S., Raman, K., Ravindran, B. 2021. Sequence neighborhoods enable reliable prediction of pathogenic mutations in cancer genomes. *Cancers* 13 (10). doi: 10.3390/cancers13102366. ISSN-20726694
841. Anbiah, A., Sivalingam, K.M. 2021. Optimal segments for forwarding table size minimization in segment-routed SDNs. *International Journal of Network Management* 31 (4). doi: 10.1002/nem.2142. ISSN-10557148
842. Paul, A., Sharmila Deva Selvi, S., Pandu Rangan, C. 2021. A provably secure conditional proxy re-encryption scheme without pairing. *Journal of Internet Services and Information Security* 11 (2): 44582. doi: 10.22667/JISIS.2021.05.31.001. ISSN-21822069
843. Senthamizhan, V., Ravindran, B., Raman, K. 2021. NetGenes: A database of essential genes predicted using features from interaction networks. *Frontiers in Genetics* 12. doi: 10.3389/fgene.2021.722198. ISSN-16648021
844. Santara, A., Rudra, S., Ravindran, B., et al. 2021. MADRaS: Multi agent driving simulator. *Journal of Artificial Intelligence Research* 70, pp 1517-1555. doi: 10.1613/JAIR.1.12531. ISSN-10769757
845. Narayanan, R., Murthy, C.S.R. 2021. A Routing Framework with Protocol Conversions across Multiradio IoT Platforms. *IEEE Internet of Things Journal* 8 (6): 4417-4432. doi: 10.1109/JIOT.2020.3028239. ISSN-23274662
846. Pattanayak, D., Augustine, J., Mandal, P.S. 2021. Randomized gathering of asynchronous mobile robots. *Theoretical Computer Science* 858, pp 64-80. doi: 10.1016/j.tcs.2020.11.048. ISSN-03043975
847. Augustine, J., Sivasubramaniam, S. 2021. Spartan: Sparse robust addressable networks. *Journal of Parallel and Distributed Computing* 150, pp 121-138. doi: 10.1016/j.jpdc.2020.12.013. ISSN-07437315
848. Anbiah, A., Sivalingam, K.M. 2021. An online distributed approach to Network Function Placement in NFV-enabled networks. *Sadhana - Academy Proceedings in Engineering Sciences* 46 (1). doi: 10.1007/s12046-020-01530-y. ISSN-02562499
849. Singh, V., Mittal, A. 2021. WDN: A wide and deep network to divide-and-conquer image super-resolution. *IEEE Journal on Selected Topics in Signal Processing* 15 (2): 264-278. doi: 10.1109/JSTSP.2020.3044182. ISSN-19324553
850. Singh, K., Rangan, C.P., Sheshank, S., Agrawal, R. 2021. Lattice-based unidirectional Proxy Re-Encryption and Proxy Re-Encryption+ schemes. *IET Information Security* 15 (1): 44573. doi: 10.1049/ise2.12000. ISSN-17518709
851. Pandia, K., Murthy, H.A. 2021. Acoustic unit discovery using transient and steady-state regions in speech and its applications. *Journal of Phonetics* 88. doi: 10.1016/j.wocn.2021.101081. ISSN-00954470
852. Kumar, M.G., Narayanan, S., Sur, M., Murthy, H.A. 2021. Evidence of task-independent person-specific signatures in EEG using subspace techniques. *IEEE Transactions on Information Forensics and Security* 16, pp 2856-2871. doi: 10.1109/TIFS.2021.3067998. ISSN-15566013
853. Vijayan, N., L.A., P. 2021. Smoothed functional-based gradient algorithms for off-policy reinforcement learning: A non-asymptotic viewpoint. *Systems and Control Letters* 155. doi: 10.1016/j.sysconle.2021.104988. ISSN-01676911
854. Kumar, M.G., Hu, M., Ramanujan, A., Sur, M., Murthy, H.A. 2021. Functional parcellation of mouse visual cortex using statistical techniques reveals response-dependent clustering of cortical processing areas. *PLoS Computational Biology* 17 (2). doi: 10.1371/JOURNAL.PCBI.1008548. ISSN-1553734X
855. Chakraborty, S., Rao, S.Y., Pandu Rangan, C. 2021. Efficient single round attribute-based authenticated key exchange protocol. *International Journal of Computer Mathematics: Computer Systems Theory* 6 (4): 313-336. doi: 10.1080/23799927.2021.1873192. ISSN-23799927
856. Mondal, S., Nasre, R. 2021. Colosseum: Regression test prioritization by delta displacement in test coverage. *IEEE Transactions on Software Engineering*. doi: 10.1109/TSE.2021.3111169. ISSN-00985589
857. Maurya, D., Ravindran, B. 2021. Hyperedge prediction using tensor eigenvalue decomposition. *Journal of the Indian Institute of Science* 101 (3): 443-453. doi: 10.1007/s41745-021-00225-5. ISSN-09704140
858. K. E. Srinivasa Desikan, Vijeth J. Kotagi, and C. Siva Ram Murthy 2021. A novel matching theory based data offloading framework for a fog network with selfish and rational nodes. *IEEE Networking Letters* 3 (4): 172-176. doi: 10.1109/LNET.2021.3124577.
859. Kakadiya, Ashutosh, Natarajan, Sriaram and Ravindran, Balaraman 2021. Relational Boosted Bandits. *In Proceedings of the AAAI Conference on Artificial Intelligence* 6: 1517-1555. doi: 10.1145/3447548.3467443.
860. Anand, Daksh; Gupta, Vaibhav; Paruchuri, Praveen; and Ravindran, Balaraman. 2021. An enhanced advising model in teacher student framework using state categorization. *Proceedings of the AAAI Conference on Artificial Intelligence*, pp 1100-1108. doi: 10.23915/distill.00032
861. Kansal, Meenakshi; Singh, Amit Kumar; Dutta, Ratna 2021. Efficient multi-signature scheme using lattice. *Computer Journal*. doi: 10.1093/comjnl/bxab077. 0010-4620
862. Egala, Bhaskara S.; Pradhan, Ashok K.; Badarla, Venkataramana; Mohanty, Saraju P. 2021. iBlock: An intelligent decentralised blockchain-based pandemic detection and assisting system. *Journal of Signal Processing Systems for Signal Image and Video Technology*. doi: 10.1007/s11265-021-01704-9. 1939-8018
863. Delmade, A., Browning, C., Barry, L.P., et al. 2021. Optical heterodyne analog radio-over-fiber link for millimeter-wave wireless systems. *Journal of Lightwave Technology* 39 (2): 465-474. doi: 10.1109/JLT.2020.3032923. ISSN-07338724
864. Jay, D., Swarup, K.S. 2021. Game theoretical approach to novel reactive power ancillary service market mechanism. *IEEE Transactions on Power Systems* 36 (2): 1298-1308. doi: 10.1109/TPWRS.2020.3019786. ISSN-08858950
865. Kosaraju, K.C., Cucuzzella, M., Scherpen, J.M.A., Pasumarthy, R. 2021. Differentiation and passivity for

- control of Brayton-Moser Systems. *IEEE Transactions on Automatic Control* 66 (3): 1087-1101. doi: 10.1109/TAC.2020.2994317. ISSN-00189286
- 866.Natarajan, S., Jayaraj, J., Prazeres, D.M.F. 2021. A cellulose paper-based fluorescent lateral flow immunoassay for the quantitative detection of cardiac troponin I. *Biosensors* 11 (2). doi: 10.3390/bios11020049. ISSN-20796374
- 867.Vigneshwara Raja, P., Nallatamby, J.-C., DasGupta, N., DasGupta, A. 2021. Trapping effects on AlGaIn/GaN HEMT characteristics. *Solid-State Electronics* 176. doi: 10.1016/j.sse.2020.107929. ISSN-00381101
- 868.Suin, M., Purohit, K., Rajagopalan, A.N. 2021. Degradation aware approach to image restoration using knowledge distillation. *IEEE Journal on Selected Topics in Signal Processing* 15 (2): 162-173. doi: 10.1109/JSTSP.2020.3043622. ISSN-19324553
- 869.Joseph, J., Nabeel, P.M., Rao, S.R., Venkatachalam, R., Shah, M.I., Kaur, P. 2021. Assessment of carotid arterial stiffness in community settings with ARTSENS®. *IEEE Journal of Translational Engineering in Health and Medicine* 9. doi: 10.1109/JTEHM.2020.3042386. ISSN-21682372
- 870.Nandi, R., Goswami, A., Das, B.K. 2021. Phase controlled bistability in silicon microring resonators for nonlinear photonics. *IEEE Journal of Selected Topics in Quantum Electronics* 27 (2). doi: 10.1109/JSTQE.2020.3018739. ISSN-1077260X
- 871.Gopi, S., Kalyani, S., Hanzo, L. 2021. Intelligent reflecting surface assisted beam index-modulation for millimeter wave communication. *IEEE Transactions on Wireless Communications* 20 (2): 983-996. doi: 10.1109/TWC.2020.3029743. ISSN-15361276
- 872.Pavan, S., Shibata, H. 2021. Continuous-time pipelined analog-to-digital converters: A mini-tutorial. *IEEE Transactions on Circuits and Systems II: Express Briefs* 68 (3): 810-815. doi: 10.1109/TCSII.2020.3048850. ISSN-15497747
- 873.Vijaya Bhaskar, A., Venkatesh, T.G. 2021. Performance analysis of network-on-chip in many-core processors. *Journal of Parallel and Distributed Computing* 147, pp 196-208. doi: 10.1016/j.jpdc.2020.09.013. ISSN-07437315
- 874.Cai, W., Ryali, S., Pasumarthy, R., Talasila, V., Menon, V. 2021. Dynamic causal brain circuits during working memory and their functional controllability. *Nature Communications* 12 (1). doi: 10.1038/s41467-021-23509-x. ISSN-20411723
- 875.Babu, M.S., Imai, T., Sarathi, R. 2021. Classification of aged epoxy micro-nanocomposites through PCA- and ANN-Adopted LIBS analysis. *IEEE Transactions on Plasma Science* 49 (3): 1088-1096. doi: 10.1109/TPS.2021.3061410. ISSN-00933813
- 876.Kajli, S.K., Ray, D., Roy, S.C. 2021. Morphology dependent electrical conduction and breakdown in single TiO₂ nanotubes. *Nanoscale Advances* 3 (2): 432-445. doi: 10.1039/d0na00713g. ISSN-25160230
- 877.Sandeep Kumar, E., Talasila, V., Pasumarthy, R. 2021. A novel architecture to identify locations for real estate investment. *International Journal of Information Management* 56. doi: 10.1016/j.ijinfomgt.2019.09.008. ISSN-02684012
- 878.Nair, N.M., Khanra, I., Ray, D., Swaminathan, P. 2021. Silver nanowire-based printable electrothermochromic ink for flexible touch-display applications. *ACS Applied Materials and Interfaces* 13 (29): 34550-34560. doi: 10.1021/acsami.1c09115. ISSN-19448244
- 879.Lamba, M., Rachavarapu, K.K., Mitra, K. 2021. Harnessing multi-view perspective of light fields for low-light imaging. *IEEE Transactions on Image Processing* 30, pp 1501-1513. doi: 10.1109/TIP.2020.3045617. ISSN-10577149
- 880.Ananda, S., Lakshminarasamma, N., Radhakrishna, V., Srinivasan, M.S., Satyanarayana, P., Sankaran, M. 2021. Genetic algorithm driven generic estimation model of lithium-ion battery for energy balance calculation in spacecraft. *IEEE Transactions on Industry Applications* 57 (3): 2726-2736. doi: 10.1109/TIA.2021.3059194. ISSN-00939994
- 881.Khan, I., Prabhakar, A., Delepine, C., Tsang, H., Pham, V., Sur, M. 2021. A low-cost 3D printed microfluidic bioreactor and imaging chamber for live-organoid imaging. *Biomicrofluidics* 15 (2). doi: 10.1063/5.0041027. ISSN-19321058
- 882.Kajli, S.K., Ray, D., Roy, S.C. 2021. Anomalous diameter dependent electrical transport in individual CuO nanowire. *Journal of Physics D: Applied Physics* 54 (25). doi: 10.1088/1361-6463/abeb8. ISSN-00223727
- 883.Sadana, U., Reddy, P.V., Zaccour, G. 2021. Nash equilibria in nonzero-sum differential games with impulse control. *European Journal of Operational Research*. doi: 10.1016/j.ejor.2021.03.025. ISSN-03772217
- 884.Panbharwala, Y., Harish, A.V., Feng, Y., Venkitesh, D., Nilsson, J., Srinivasan, B. 2021. Stimulated Brillouin scattering mitigation using optimized phase modulation waveforms in high power narrow linewidth Yb-doped fiber amplifiers. *Optics Express* 29 (11): 17183-17200. doi: 10.1364/OE.425159. ISSN-10944087
- 885.Jena, S., Ray, D. 2021. A study on the effect of film crystallinity and morphology on charge carrier concentration-dependent hole mobility in pentacene thin-film transistors: Advantages of high deposition rate. *Journal of Physics D: Applied Physics* 54 (1). doi: 10.1088/1361-6463/abb8fe. ISSN-00223727
- 886.Davis, N., Raina, G., Jagannathan, K. 2021. Grids versus graphs: partitioning space for improved taxi demand-supply forecasts. *IEEE Transactions on Intelligent Transportation Systems* 22 (10): 6526-6535. doi: 10.1109/TITS.2020.2993798. ISSN-15249050
- 887.Natarajan, S., Derosa, M.C., Shah, M.I., Jayaraj, J. 2021. Development and evaluation of a quantitative fluorescent lateral flow immunoassay for cystatin-c, a renal dysfunction biomarker. *Sensors* 21 (9). doi: 10.3390/s21093178. ISSN-14248220
- 888.Li, Y., Tao, K., George, B., Tan, Z. 2021. Harvesting vibration energy: technologies and challenges. *IEEE*

- Industrial Electronics Magazine* 15 (1): 30-39. doi: 10.1109/MIE.2020.2978219. ISSN-19324529
- 889.Nape, I., Mashaba, N., Mphuthi, N., Jayakumar, S., Bhattacharya, S., Forbes, A. 2021. Vector-mode decay in atmospheric turbulence: an analysis inspired by quantum mechanics. *Physical Review Applied* 15 (3). doi: 10.1103/PhysRevApplied.15.034030. ISSN-23317019
- 890.Arora, A., Nayak, P.K., Rao, M.S.R., et al. 2021. Interlayer excitonic states in MoSe₂/MoS₂ van der Waals heterostructures. *Physical Review B* 103 (20). doi: 10.1103/PhysRevB.103.205406. ISSN-24699950
- 891.Tabjula, J.L., Kanakambaran, S., Kalyani, S., Rajagopal, P., Srinivasan, B. 2021. Outlier analysis for defect detection using sparse sampling in guided wave structural health monitoring. *Structural Control and Health Monitoring* 28 (3). doi: 10.1002/stc.2690. ISSN-15452255
- 892.Sinha, A., Modiano, E. 2021. Throughput-optimal broadcast in wireless networks with point-to-multipoint transmissions. *IEEE Transactions on Mobile Computing* 20 (1): 232-246. doi: 10.1109/TMC.2019.2940025. ISSN-15361233
- 893.Neelmani, Thangabalan, B., Vasa, N.J., Srinivasan, B., Suematsu, H., Sarathi, R. 2021. Investigation on surface condition of the corona-aged silicone rubber nanocomposite adopting wavelet and LIBS technique. *IEEE Transactions on Plasma Science* 49 (8): 2294-2304. doi: 10.1109/TPS.2021.3094124. ISSN-00933813
- 894.Manivannan, S., Pavan, S. 2021. A 65-nm CMOS continuous-time pipeline ADC achieving 70-dB SNDR in 100-MHz bandwidth. *IEEE Solid-State Circuits Letters* 4, pp 92-95. doi: 10.1109/LSSC.2021.3071965. ISSN-25739603
- 895.Mani, N., Haridoss, P., George, B. 2021. A wearable ultrasonic-based ankle angle and toe clearance sensing system for gait analysis. *IEEE Sensors Journal* 21 (6): 8593-8603. doi: 10.1109/JSEN.2020.3047900. ISSN-1530437X
- 896.Baluni, A., Pavan, S. 2021. Analysis and design of a 20-MHz bandwidth continuous-time delta-sigma modulator with time-interleaved virtual-ground-switched FIR feedback. *IEEE Journal of Solid-State Circuits* 56 (3): 729-738. doi: 10.1109/JSSC.2020.3025573. ISSN-00189200
- 897.Deepak, P., George, B. 2021. Piezoelectric energy harvesting from a magnetically coupled vibrational source. *IEEE Sensors Journal* 21 (3): 3831-3838. doi: 10.1109/JSEN.2020.3025216. ISSN-1530437X
- 898.Ragul, S., Dutta, S., Ray, D. 2021. Defect mediated small molecular doping of graphene. *Advanced Optical Materials* 9 (14). doi: 10.1002/adom.202002046. ISSN-21951071
- 899.Arathy, R., Nabeel, P.M., Abhidev, V.V., Sivaprakasam, M., Joseph, J. 2021. An accelerometric sensor system with integrated hydrostatic pressure correction to assess carotid arterial stiffness. *IEEE Sensors Journal* 21 (9): 11163-11175. doi: 10.1109/JSEN.2021.3059292. ISSN-1530437X
- 900.Titus, J., Pe, H., Hatua, K. 2021. An SCR-Based CSI-fed induction motor drive for high power medium voltage applications. *IEEE Transactions on Industrial Electronics* 68 (6): 4657-4666. doi: 10.1109/TIE.2020.2988216. ISSN-02780046
- 901.Srighakollapu, M.V., Kalaimani, R.K., Pasumarthy, R. 2021. Optimizing driver nodes for structural controllability of temporal networks. *IEEE Transactions on Control of Network Systems*. doi: 10.1109/TCNS.2021.3106454. ISSN-23255870
- 902.Areekath, L., George, B., Reverter, F. 2021. Analysis of a direct microcontroller interface for capacitively coupled resistive sensors. *IEEE Transactions on Instrumentation and Measurement* 70. doi: 10.1109/TIM.2020.3034969. ISSN-00189456
- 903.Naveen, J., Babu, M.S., Sarathi, R. 2021. Impact of MgO nanofiller-addition on electrical and mechanical properties of glass fiber reinforced epoxy nanocomposites. *Journal of Polymer Research* 28 (10). doi: 10.1007/s10965-021-02746-0. ISSN-10229760
- 904.Nair, S.V., Hatua, K., Prasad, N.V.P.R.D., Reddy, D.K. 2021. A quick I-f Starting of PMSM drive with pole slipping prevention and reduced speed oscillations. *IEEE Transactions on Industrial Electronics* 68 (8): 6650-6661. doi: 10.1109/TIE.2020.3005070. ISSN-02780046
- 905.Datta, A., Raj, V., Sankar, V., Kalyani, S., Srinivasan, B. 2021. Measurement accuracy enhancement with multi-event detection using the deep learning approach in Raman distributed temperature sensors. *Optics Express* 29 (17): 26745-26764. doi: 10.1364/OE.433690. ISSN-10944087
- 906.Murugesan, S., Amalanathan, A.J., Sarathi, R., Srinivasan, B., Samikannu, R. 2021. Investigation on impact of magnetic field on the corona discharge activity in punga oil using fluorescent fiber and uhf sensor techniques. *IEEE Access* 9, pp 129218-129228. doi: 10.1109/ACCESS.2021.3113332. ISSN-21693536
- 907.Dharmaraj, C., Vasudevan, V., Chandrachoodan, N. 2021. Analysis of power-accuracy trade-off in digital signal processing applications using low-power approximate adders. *IET Computers and Digital Techniques* 15 (2): 97-111. doi: 10.1049/cdt2.12006. ISSN-17518601
- 908.Bai, J.R., Kumar, V.J. 2021. Use of magneto plethysmogram sensor for real-time estimation of hemoglobin concentration. *IEEE Sensors Journal* 21 (4): 4405-4411. doi: 10.1109/JSEN.2020.3029179. ISSN-1530437X
- 909.Dharmaraj, C., Vasudevan, V., Chandrachoodan, N. 2021. Optimization of signal processing applications using parameterized error models for approximate adders. *ACM Transactions on Embedded Computing Systems* 20 (2). doi: 10.1145/3430509. ISSN-15399087
- 910.Kalepu, Y., Sanghvi, Y., Khankhoje, U.K. 2021. Reconstructing dispersive scatterers with minimal frequency data. *IEEE Geoscience and Remote Sensing Letters* 18 (1): 62-66. doi: 10.1109/LGRS.2020.2968256. ISSN-1545598X
- 911.M Nair, N., Jahanara, M.M., Ray, D., Swaminathan, P. 2021. Photoresponse of a printed transparent silver nanowire-zinc oxide nanocomposite. *Flexible and Printed Electronics* 6 (4). doi: 10.1088/2058-8585/ac2e48. ISSN-20588585
- 912.Muthuvel, P., George, B., Ramadass, G.A. 2021. A highly

- sensitive in-line oil wear debris sensor based on passive wireless LC sensing. *IEEE Sensors Journal* 21 (5): 6888-6896. doi: 10.1109/JSEN.2020.3036154. ISSN-1530437X
- 913.Sahoo, S., Dhar, R., Dutta, S., Bhattacharyya, J. 2021. Investigation of internal fields in organic semiconductors in the presence of traps. *Journal of Applied Physics* 130 (8). doi: 10.1063/5.0058515. ISSN-00218979
- 914.Patil, D., Aravindan, S., Sarathi, R., Rao, P.V. 2021. Fabrication of self-cleaning superhydrophobic silicone rubber insulator through laser texturing. *Surface Engineering* 37 (3): 308-317. doi: 10.1080/02670844.2020.1780673. ISSN-02670844
- 915.Vishnu, P., Ramalingam, C.S. 2021. A method with lower-than-MLE threshold SNR for frequency estimation of multiple sinusoids. *Signal Processing* 186. doi: 10.1016/j.sigpro.2021.108128. ISSN-01651684
- 916.Srinivasan, M., Gopi, S., Kalyani, S., Huang, X., Hanzo, L. 2021. Airplane-aided integrated next-generation networking. *IEEE Transactions on Vehicular Technology* 70 (9): 9345-9354. doi: 10.1109/TVT.2021.3098098. ISSN-00189545
- 917.Bai, J.R., Kumar, V.J. 2021. Optimal design to ensure maximum coupling between magnetic flux and arterial blood in a magneto plethysmo gram sensor head. *IEEE Sensors Journal* 21 (2): 1417-1423. doi: 10.1109/JSEN.2020.3017664. ISSN-1530437X
- 918.Prajosh, K.P., Khankhoje, U.K., Ferranti, F. 2021. Element excitation optimization for phased array fault diagnosis. *Journal of Electromagnetic Waves and Applications* 35 (1): 39-50. doi: 10.1080/09205071.2020.1825123. ISSN-09205071
- 919.Musunuru, N.S.P., Srirama, S. 2021. Cascaded predictive control of a single power supply-driven four-level open-end winding induction motor drive without weighting factors. *IEEE Journal of Emerging and Selected Topics in Power Electronics* 9 (3): 2858-2867. doi: 10.1109/JESTPE.2020.3014921. ISSN-21686777
- 920.Gowda, M.G., Sarvepalli, P.K. 2021. Color codes with twists: Construction and universal-gate-set implementation. *Physical Review A* 104 (1). doi: 10.1103/PhysRevA.104.012603. ISSN-24699926
- 921.Raveendran, R., Mahindrakar, A.D., Vaidya, U. 2021. Non-smooth projected primal-dual dynamical approach to solve the extended fermat-torricelli problem. *IEEE Control Systems Letters* 5 (3): 1109-1114. doi: 10.1109/LCSYS.2020.3006822. ISSN-24751456
- 922.Hariharan, R., Mishra, M.K. 2021. Analysis and design of gradient descent based pre-synchronization control for synchronverter. *IET Renewable Power Generation*. doi: 10.1049/rpg2.12024. ISSN-17521416
- 923.Anjali, P.S., Srivastava, M., Srinivasan, B., Venkitesh, D. 2021. Numerical studies of the operating regimes of a passively mode-locked Thulium doped fiber laser. *OSA Continuum* 4 (8): 2193-2209. doi: 10.1364/OSAC.431551. ISSN-25787519
- 924.Akshay, K., Karmalkar, S. 2021. Optimum aspect ratio of superjunction pillars considering charge imbalance. *IEEE Transactions on Electron Devices* 68 (4): 1798-1803. doi: 10.1109/TED.2021.3060684. ISSN-00189383
- 925.Saha, B., Fregonese, S., Zimmer, T., et al. 2021. Reliable technology evaluation of SiGe HBTs and MOSFETs: FMAX estimation from measured data. *IEEE Electron Device Letters* 42 (1): 14-17. doi: 10.1109/LED.2020.3040891. ISSN-07413106
- 926.Nallathambi, A., Sen, S., Raghunathan, A., Chandrathoodan, N. 2021. Probabilistic spike propagation for efficient hardware implementation of spiking neural networks. *Frontiers in Neuroscience* 15. doi: 10.3389/fnins.2021.694402. ISSN-16624548
- 927.Jena, S., Ray, D. 2021. A systematic approach to reduce non idealities in pentacene bottom-contact bottom-gate transistors. *Thin Solid Films* 721. doi: 10.1016/j.tsf.2021.138542. ISSN-00406090
- 928.Amalanathan, A.J., Vasa, N.J., Harid, N., Griffiths, H., Sarathi, R. 2021. Classification of thermal ageing impact of ester fluid-impregnated pressboard material adopting LIBS. *High Voltage* 6 (4): 655-664. doi: 10.1049/hve2.12092. ISSN-23977264
- 929.Das, A., Rath, M., Nair, D.R., Ramachandra Rao, M.S., DasGupta, A. 2021. Realization of preferential (100) oriented AlN thin films on Mo coated Si substrate using reactive RF magnetron sputtering. *Applied Surface Science* 550. doi: 10.1016/j.apsusc.2021.149308. ISSN-01694332
- 930.Ranu, S.K., Prabhakar, A., Mandayam, P. 2021. Differential phase encoded measurement-device-independent quantum key distribution. *Quantum Information Processing* 20 (2). doi: 10.1007/s11128-021-03006-2. ISSN-15700755
- 931.Roy, U., Pramanik, T., Roy, S., Chatterjee, A., Register, L.F., Banerjee, S.K. 2021. Machine learning for statistical modeling: The case of perpendicular spin-transfer-torque random access memory. *ACM Transactions on Design Automation of Electronic Systems* 26 (3). doi: 10.1145/3440014. ISSN-10844309
- 932.Bhemavarapu, L.P., Shah, M.I., Joseph, J., Sivaprakasam, M. 2021. IQVision: An image-based evaluation tool for quantitative lateral flow immunoassay kits. *Biosensors* 11 (7). doi: 10.3390/bios11070211. ISSN-20796374
- 933.Vinod, P., Desai, B.M.A., Sarathi, R., Kornhuber, S. 2021. Investigation on the thermal properties, space charge and charge trap characteristics of silicone rubber nano-micro composites. *Electrical Engineering* 103 (3): 1779-1790. doi: 10.1007/s00202-020-01195-0. ISSN-09487921
- 934.Huszka, Z., Nidhin, K., Celi, D., Chakravorty, A. 2021. Extraction of compact static thermal model parameters for SiGe HBTs. *IEEE Transactions on Electron Devices* 68 (2): 491-496. doi: 10.1109/TED.2020.3045688. ISSN-00189383
- 935.Naveen, J., Sarathi, R., Srinivasan, B. 2021. Fluorescent fiber-based identification of incipient discharges in liquid nitrogen. *Cryogenics* 120. doi: 10.1016/j.cryogenics.2021.103376. ISSN-00112275

- 936.Srinivasu, B., Sridharan, K. 2021. Low-power and high-performance ternary SRAM designs with application to CNTFET technology. *IEEE Transactions on Nanotechnology* 20, pp 562-566. doi: 10.1109/TNANO.2021.3096123. ISSN-1536125X
- 937.Singh, K., Sharma, P., Suchita Dixit, A., Srinivasan, B., David Koilpillai, R., Venkitesh, D. 2021. Theoretical and experimental investigation of the sources of error in stochastic parallel gradient descent-based digital modal decomposition technique. *OSA Continuum* 4 (July), pp 1916-1932. doi: 10.1364/OSAC.426431. ISSN-25787519
- 938.Suchita Srinivasan, B., Agrawal, G.P., Venkitesh, D. 2021. Role of the modal composition of pump in the multi-peak Brillouin gain spectrum in a few-mode fiber. *Optics Communications* 494. doi: 10.1016/j.optcom.2021.127052. ISSN-00304018
- 939.Reddy, L.H., Pande, S.R., Roy, T., Vogel, E.M., Chakravorty, A., Chakrabarti, B. 2021. A SPICE compact model for forming-free, low-power graphene-insulator-graphene ReRAM technology. *Emergent Materials* 4 (4): 1055-1065. doi: 10.1007/s42247-021-00265-8. ISSN-25225731
- 940.Ragul, S., Krishnan, D., Dutta, S., Ray, D. 2021. A facile mold-free micromechanical method for patterning multilayer graphene by utilizing the difference in interfacial adhesion forces. *Diamond and Related Materials* 120. doi: 10.1016/j.diamond.2021.108686. ISSN-09259635
- 941.Areekath, L., George, B., Reverter, F. 2021. An auto-balancing capacitance-to-pulse-width converter for capacitive sensors. *IEEE Sensors Journal* 21 (1): 765-775. doi: 10.1109/JSEN.2020.3014206. ISSN-1530437X
- 942.Deshmukh, A., Veeravalli, V.V., Bhashyam, S. 2021. Sequential controlled sensing for composite multihypothesis testing. *Sequential Analysis* 40 (2): 259-289. doi: 10.1080/07474946.2021.1912525. ISSN-07474946
- 943.Subhash, A., Kalyani, S. 2021. Cooperative relaying in a SWIPT Network: Asymptotic analysis using extreme value theory for non-identically distributed RVs. *IEEE Transactions on Communications* 69 (7): 4360-4372. doi: 10.1109/TCOMM.2021.3073029. ISSN-00906778
- 944.Ghosh, A., Vallam Thodi, F., Sengupta, S., Kannan, S., Krishnan, L., Bhattacharya, E. 2021. Effective clearance of uremic toxins using functionalised silicon nanoporous membranes. *Biomedical Microdevices* 23 (1). doi: 10.1007/s10544-020-00539-8. ISSN-13872176
- 945.Sastry, K., Bhat, C., Solimene, R., Khankhoje, U.K. 2021. Electromagnetic field imaging in arbitrary scattering environments. *IEEE Transactions on Computational Imaging* 7, pp 224-233. doi: 10.1109/TCI.2021.3055982. ISSN-25730436
- 946.Pavan, S., Halder, T., Kannan, A. 2021. Continuous-time incremental delta-sigma modulators with FIR feedback. *IEEE Transactions on Circuits and Systems I: Regular Papers* 68 (8): 3222-3231. doi: 10.1109/TCSI.2021.3080379. ISSN-15498328
- 947.Angara, B.R., Shanmugam, P., Ramachandran, H. 2021. Inversion of volume scattering function for estimation of bubble size distribution in ocean waters. *IEEE Access* 9, pp 135069-135078. doi: 10.1109/ACCESS.2021.3115253. ISSN-21693536
- 948.Kesavan, H., Sahoo, S., Jena, S., Bhattacharyya, J., Ray, D. 2021. Spatial extent of interaction between excitons and polarons in a bilayer organic field-effect transistor. *ACS Photonics*. doi: 10.1021/acsp Photonics.0c01693. ISSN-23304022
- 949.Vuppalapati, N., Venkatesh, T.G. 2021. Modeling and analysis of software defined networks under non-stationary conditions. *Peer-to-Peer Networking and Applications* 14 (3): 1174-1189. doi: 10.1007/s12083-020-01026-w. ISSN-19366442
- 950.Shedligeri, P., S, A., Mitra, K. 2021. CodedRecon: Video reconstruction for coded exposure imaging techniques. *Software Impacts* 8. doi: 10.1016/j.simpa.2021.100064. ISSN-26659638
- 951.Ram, T.K., Krishna, S. 2021. Accuracy of normal form approximation for power system nonlinear analysis. *IEEE Transactions on Power Systems* 36 (5): 4828-4831. doi: 10.1109/TPWRS.2021.3084465. ISSN-08858950
- 952.Miryala, V.K., Dhanasekaran, S., Ganesan, P., Hatua, K., Bhattacharya, S. 2021. Active gate driving technique for series connecting SiC MOSFETs in the presence of gate pulse delay mismatch. *IEEE Transactions on Industrial Electronics*. doi: 10.1109/TIE.2021.3128907. ISSN-02780046
- 953.Sadana, U., Reddy, P.V., Başar, T., Zaccour, G. 2021. Sampled-data Nash equilibria in differential games with impulse controls. *Journal of Optimization Theory and Applications* 190 (3): 999-1022. doi: 10.1007/s10957-021-01920-0. ISSN-00223239
- 954.Jagadeesh Kumar, N., Venkatakrishnan, J.V., Kumar, C.M., George, B., Sivaprakasam, M. 2021. Comparative study of silicone membrane simulator and animal eye models for sub-Tenon's block. *Journal of Clinical Monitoring and Computing* 35 (6): 1519-1524. doi: 10.1007/s10877-021-00667-3. ISSN-13871307
- 955.Lokesh, M., Vaippully, R., Roy, B., et al. 2021. Estimation of rolling work of adhesion at the nanoscale with soft probing using optical tweezers. *RSC Advances* 11 (55): 34636-34642. doi: 10.1039/d1ra06960h. ISSN-20462069
- 956.Parmar, Y., Sridharan, K. 2021. A high-performance VLSI architecture for a self-feedback convolutional neural network. *IEEE Transactions on Circuits and Systems II: Express Briefs* 68 (1): 456-460. doi: 10.1109/TCSII.2020.3004616. ISSN-15497747
- 957.Balireddy, R., Chakravorty, A., Bhallamudi, S.M., Kuiry, S.N. 2021. Applications of the single-port linear Thevenin theorem for focused and efficient analysis of a sub-network connected with a large existing pipe network. *Urban Water Journal* 18 (9): 681-698. doi: 10.1080/1573062X.2021.1925705. ISSN-1573062X
- 958.Mahesh Mohan, M. R.; Nithin, G. K.; Rajagopalan, A.N. 2021. Deep dynamic scene deblurring for unconstrained dual-lens cameras. *IEEE Transactions on Image Processing*.

doi: 10.1109/TIP.2021.3072856. ISSN-10577149

959.Dubey, A.C., Subramanian, A.V., Jagadeesh Kumar, V. 2021. Steering model identification and control design of autonomous ship: a complete experimental study. *Ships and Offshore Structures*. doi: 10.1080/17445302.2021.1889193. ISSN-17445302

960.Kumar, N.J., George, B., Sivaprakasam, M., Jaichandran, V.V. 2021. A mannequin-based training system with integrated sensors for ophthalmic sub-tenon anesthesia. *IEEE Sensors Journal* 21 (3): 3839-3848. doi: 10.1109/JSEN.2020.3025963. ISSN-1530437X

961.Gupta, A., Nidhin, K., Chakravorty, A., et al. 2021. Extraction of true finger temperature from measured data in multifinger bipolar transistors. *IEEE Transactions on Electron Devices* 68 (3): 1385-1388. doi: 10.1109/TED.2021.3054602. ISSN-00189383

962.Sruthi, M.P., Shanbhag, A., Chakravorty, A., Dasgupta, N., Dasgupta, A. 2021. Analytical model for gate capacitance and threshold voltage in fin-shaped GaN HEMTs. *IEEE Transactions on Electron Devices* 68 (9): 4793-4796. doi: 10.1109/TED.2021.3096497. ISSN-00189383

963.Nidhin, K., Nair, D.R., Chakravorty, A. 2021. Modeling peak temperature in SOI-FinFET-like structures considering 2-D heat flow. *IEEE Transactions on Electron Devices* 68 (3): 981-986. doi: 10.1109/TED.2021.3053224. ISSN-00189383

964.Sreeram, T.S., Krishna, S. 2021. Protection against false data injection attacks considering degrees of freedom in attack vectors. *IEEE Transactions on Smart Grid* 12 (6): 5258-5267. doi: 10.1109/TSG.2021.3093498. ISSN-19493053

965.Mohan, S., Bhikkaji, B., Poongothai, C., Vasudevan, K. 2021. A linear programming approach for designing multilevel PWM waveforms. *International Journal of Control* 94 (9) 2584-2595. doi: 10.1080/00207179.2020.1725133. ISSN-00207179

966.Jena, S., Rajpoot, A., Dutta, S., Ray, D. 2021. Influence of film morphology and crystallinity on charge carrier concentration-dependent hole mobility in hexamethyldisilazane treated Pentacene bottom contact devices. *Journal of Physics D: Applied Physics* 54 (44). doi: 10.1088/1361-6463/ac17b5. ISSN-00223727

967.Babu, M.S., Neelmani, Vasa, N.J., Sarathi, R., Imai, T. 2021. Use of LIBS technique for identification of type of pollutant and ESDD level on epoxy-alumina nanocomposites using ANN. *Measurement Science and Technology* 32 (11). doi: 10.1088/1361-6501/ac0d22. ISSN-09570233

968.Amizhtan, S.K., Ganesh, P., Srinivasan, B., Vasa, N.J., Aravindan, S., Sarathi, R. 2021. Investigation of water droplet-initiated discharges on laser textured silicone nano-micro composites using UHF and fluorescent fibre techniques. *IET Nanodielectrics* 4 (4): 201-209. doi: 10.1049/nde2.12016. ISSN-25143255

969.Singh, D., Dwarakanath, K., Pasumarthy, R. 2021. Event-triggered control design for systems with exogenous inputs: application for auto-scaling of cloud-hosted web servers. *IEEE Transactions on Systems, Man, and Cybernetics: Systems*. doi: 10.1109/TSMC.2021.3121681. ISSN-21682216

970.Bhadri Narayanan, K.N., Nair, D.R., Dasgupta, A. 2021. Design, modeling and fabrication of tpos mems resonators with improved performance at 1 GHz. *Journal of Microelectromechanical Systems* 30 (3): 375-383. doi: 10.1109/JMEMS.2021.3072898. ISSN-10577157

971.Ajith, A., Venkatesh, T.G. 2021. Delayed mobile data offloading scheme for quality of service traffic: Design and analysis. *IET Networks* 10 (5): 217-229. doi: 10.1049/ntw2.12012. ISSN-20474954

972.Chithra, Narayanan, A., Kumar, R.S.A., Krishnapura, N. 2021. Auto-zeroing static phase offset in dlls using a digitally programmable sensing circuit. *IEEE Transactions on Circuits and Systems II: Express Briefs* 68 (6): 1788-1792. doi: 10.1109/TCSII.2021.3049134. ISSN-15497747

973.Rallis, G., Sarathi, R., Danikas, G. 2021. Dielectric strength of transformer oil of various qualities. *Journal of Engineering Science and Technology Review* 14 (1): 201-205. doi: 10.25103/jestr.141.24. ISSN-17919320

974.Shukkoor, A.A., Karmalkar, S. 2021. Edge effects on the contact resistance of side-bonded contacts to heavily n-doped silicon nanowires. *Physica E: Low-Dimensional Systems and Nanostructures* 130. doi: 10.1016/j.physe.2021.114669. ISSN-13869477

975.Neettiyath, A., Vasa, N.J., Sarathi, R. 2021. Life expectancy estimation of thermally aged Cu contaminant-diffused oil impregnated pressboard. *IEEE Transactions on Dielectrics and Electrical Insulation* 28 (2): 637-645. doi: 10.1109/TDEI.2020.009197. ISSN-10709878

976.Nabeel, P.M., Chandran, D.S., Kaur, P., Thanikachalam, S., Sivaprakasam, M., Joseph, J. 2021. Association of incremental pulse wave velocity with cardiometabolic risk factors. *Scientific Reports* 11 (1). doi: 10.1038/s41598-021-94723-2. ISSN-20452322

977.Sahu, H.S., Mishra, M.K., Kumar, S., Kumar Nayak, S. 2021. A novel approach for direct MPP estimation of a PV module under different irradiation conditions. *IEEE Transactions on Energy Conversion* 36 (4): 3127-3136. doi: 10.1109/TEC.2021.3072453. ISSN-08858969

978.Neelmani, Sarathi, R., Suematsu, H., Tanaka, T. 2021. Influence of nanofiller dispersion on electrical and mechanical properties of epoxy alumina nanocomposites. *Revue des Composites et des Materiaux Avances* 31 (4): 217-225. doi: 10.18280/rcma.310405. ISSN-11697954

979.Qumar, J., Christopher, S., Bhattacharjee, R. 2021. Multidynamic radar: A concept for strategic air surveillance system. *IEEE Sensors Letters* 5 (12). doi: 10.

980. Maneesha, A., Swarup, K.S. 2021. Stochastic optimal bidding strategy for energy and ancillary services in microgrid. *IEEE Transactions on Industry Applications* 57 (6): 5698-5705. doi: 10.1109/TIA.2021.3112936. ISSN-00939994

981.Vaheeda, J.T., George, B. 2021. TMR Sensor-based detection of EVs in semi-dynamic traffic for optimal charging. *IEEE Transactions on Intelligent Transportation Systems*. doi: 10.1109/TITS.2021.3126693. ISSN-15249050

982.Bagath Chandraprasad, T., Vayalamkuzhi, P.,

- Bhattacharya, S. 2021. Transform-based phase retrieval techniques from a single off-axis interferogram. *Applied Optics* 60 (19): 5523-5533. doi: 10.1364/AO.422900. ISSN-1559128X
- 983.Murugesan, B., Ramanarayanan, S., Vijayarangan, S., Ram, K., Jagannathan, N.R., Sivaprakasam, M. 2021. A deep cascade of ensemble of dual domain networks with gradient-based T1 assistance and perceptual refinement for fast MRI reconstruction. *Computerized Medical Imaging and Graphics* 91. doi: 10.1016/j.compmedimag.2021.101942. ISSN-08956111
- 984.Sobhanan, A., Pelusi, M., Inoue, T., Venkitesh, D., Namiki, S. 2021. Compensation of SOA-induced nonlinear phase distortions by optical phase conjugation. *Optics Express* 29 (8): 12252-12265. doi: 10.1364/OE.416955. ISSN-10944087
- 985.Jayaganthan, S., Babu, M.S., Vasa, N.J., Sarathi, R., Imai, T. 2021. Classification of coal deposited epoxy micro-nanocomposites by adopting machine learning techniques to libs analysis. *Journal of Physics Communications* 5 (10). doi: 10.1088/2399-6528/ac2b5d. ISSN-23996528
- 986.Voice, T., Abdulrahman, A., Raina, G. 2021. Global stability of the Rate Control Protocol (RCP) and some implications for protocol design. *Performance Evaluation* 146. doi: 10.1016/j.peva.2020.102164. ISSN-01665316
- 987.Shedligeri, P., Mitra, K. 2021. High frame rate optical flow estimation from event sensors via intensity estimation. *Computer Vision and Image Understanding* 208-209. doi: 10.1016/j.cviu.2021.103208. ISSN-10773142
- 988.Mazhirina, Yu.A., Mel'nikov, L.A., Sarkar, S., et al. 2021. Parametric amplification in optical fibre with longitudinally varying dispersion. *Quantum Electronics* 51 (8): 692-699. doi: 10.1070/QEL17464. ISSN-10637818
- 989.1028. Singh, S.K., Reddy, P.V., Vundurthy, B. 2021. Study of multiple target defense differential games using receding horizon-based switching strategies. *IEEE Transactions on Control Systems Technology*. doi: 10.1109/TCST.2021.3104857. ISSN-10636536
- 990.Mondal, I., Krishnapura, N. 2021. Effects of ac response imperfections in true-time-delay lines. *IEEE Transactions on Circuits and Systems II: Express Briefs* 68 (4): 1173-1177. doi: 10.1109/TCSII.2020.3027529. ISSN-15497747
- 991.Gandhi, N.S., Dhar, R., Imroze, F., Chennamkulam Ajith, M., Manda, P.K., Dutta, S. 2021. Investigation of the intrinsic nature of organic semiconductors using a metal contact-induced capacitance study in organic metal-insulator-semiconductor capacitors. *ACS Applied Electronic Materials* 3 (12): 5219-5225. doi: 10.1021/acsaelm.1c00671. ISSN-26376113
- 992.Khade, R.P., Sarkar, S., Dasgupta, A., Dasgupta, N. 2021. Origin of the kink effect in AlInN/GaN high electron-mobility transistor. *Journal of Applied Physics* 130 (20). doi: 10.1063/5.0066036. ISSN-00218979
- 993.Sreenivasan, S.C., Bhashyam, S. 2021. Sequential nonparametric detection of anomalous data streams. *IEEE Signal Processing Letters* 28, pp 932-936. doi: 10.1109/LSP.2021.3075919. ISSN-10709908
- 994.Malik, A.E.F., Delhaas, T., Reesink, K.D., et al. 2021. Single M-line is as reliable as multiple M-line ultrasound for carotid artery screening. *Frontiers in Physiology* 12. doi: 10.3389/fphys.2021.787083. ISSN-1664042X
- 995.Venkatasubramani, L.N., Sobhanan, A., Vijay, A., Koilpillai, R.D., Venkitesh, D. 2021. Optical phase conjugation using nonlinear SOA for nonlinearity and dispersion compensation of coherent multi-carrier lightwave systems. *IEEE Access* 9, pp 44059-44068. doi: 10.1109/ACCESS.2021.3066264. ISSN-21693536
- 996.Srighakollapu, M.V., Kalaimani, R.K., Pasumarthy, R. 2021. Optimizing network topology for average controllability. *Systems and Control Letters* 158. doi: 10.1016/j.sysconle.2021.105061. ISSN-01676911
- 997.Vishvakarma, S., Srinivas, V., Ranjan, P., Sarathi, R. 2021. Anomalous magnetic behavior in Ni₈₀Cr₂₀ nanoparticles prepared by physical and chemical methods. *Materials Research Bulletin* 141. doi: 10.1016/j.materresbull.2021.111356. ISSN-00255408
- 998.Sarathi, R., Danikas, M.G. 2021. RTV Silicone rubber coatings for outdoor insulators: A concise review of some factors affecting their behavior and some comments. *Journal of Engineering Science and Technology Review* 14 (1): 163-169. doi: 10.25103/jestr.141.19. ISSN-17919320
- 999.Kantamani, T., George, B., Kumar V, J. 2021. Assay of inductive-capacitive probe for the measurement of the conductivity of liquids. *IEEE Transactions on Industrial Electronics* 68 (9): 8911-8918. doi: 10.1109/TIE.2020.3013754. ISSN-02780046
- 1000.Aloshious, A.B., Sarvepalli, P.K. 2021. Decoding toric codes on three dimensional simplicial complexes. *IEEE Transactions on Information Theory* 67 (2): 931-945. doi: 10.1109/TIT.2020.3037042. ISSN-00189448
- 1001.Zhang, J., Sinha, A., Llorca, J., Tulino, A.M., Modiano, E. 2021. Optimal control of distributed computing networks with mixed-cast traffic flows. *IEEE/ACM Transactions on Networking* 29 (4): 1760-1773. doi: 10.1109/TNET.2021.3070699. ISSN-10636692
- 1002.Naresh, C., Jayaganthan, R., Sarathi, R., Danikas, M.G. 2021. Charge trapping phenomenon in Al-filled epoxy nanocomposite materials: Current status and challenges for insulation structures. *Journal of Engineering Science and Technology Review* 14(3): 179-193. doi: 10.25103/jestr.143.20. ISSN-17919320
- 1003.Kumar, N., Arora, A., Krishnan, A. 2021. Single-shot generation of composite optical vortex beams using hybrid binary fork gratings. *Optics Express* 29 (21): 33703-33715. doi: 10.1364/OE.437659. ISSN-10944087
- 1004.Vikas, D., Nayak, N., Kalyani, S. 2021. Realizing neural decoder at the edge with ensembled BNN. *IEEE Communications Letters* 25 (10): 3315-3319. doi: 10.1109/LCOMM.2021.3102319. ISSN-10897798
- 1005.Sobhanan, A., Iyer, A., Anthur, A., Agrawal, G.P., Barry, L.P., Venkitesh, D. 2021. Power optimization for phase quantization with SOAs using the gain extinction ratio. *Optics Express* 29 (2): 1545-1557. doi: 10.1364/OE.410973. ISSN-10944087

1006. Amalanathan, A.J., Harid, N., Griffiths, H., Sarathi, R. 2021. Impact of adding activated bentonite to thermally aged ester-based TiO₂ nanofluids on insulation performance. *IET Nanodielectrics* 4 (2): 63-74. doi: 10.1049/nde.2.12010. ISSN-25143255
1007. Vaheeda, J.T., George, B. 2021. A smart primary pad with integrated TMR sensors for wirelessly charged EVs. *IEEE Transactions on Instrumentation and Measurement* 70. doi: 10.1109/TIM.2021.3102680. ISSN-00189456
1008. Vinod, P., Babu, M.S., Sarathi, R., Kornhuber, S. 2021. Impact of salt fog aging on space charge and charge trap-controlled mobility characteristics of silicone rubber micro-nanocomposites. *Journal of Electronic Materials* 50 (10): 5881-5890. doi: 10.1007/s11664-021-09131-z. ISSN-03615235
1009. Konyukhov, A.I., Mavrin, P.A., Suchita| Sobhanan, A., Venkitesh, D., Gochelashvili, K.S., Sysoliatin, A. A. 2021. Phase-sensitive amplification in dispersion oscillating fibers. *Laser Physics* 31 (8). doi: 10.1088/1555-6611/ac0dc9. ISSN-1054660X
1010. Debnath, A., Sarkar, S., Pandurang, K.R., Dasgupta, N., Dasgupta, A. 2021. Gate current partitioning model for schottky gate GaN HEMTs. *IEEE Transactions on Electron Devices* 68 (1): 425-429. doi: 10.1109/TED.2020.3035552. ISSN-00189383
1011. Khandelwal, Y., Dogra, A., Ganti, K., Purini, S., Reddy, P.V. 2021. Pricing strategies of an oligopolist in federated cloud markets. *Journal of Cloud Computing* 10 (1). doi: 10.1186/s13677-021-00270-6. ISSN-2192113X
1012. Mutagekar, S., Jhunjunwala, A. 2021. Some studies on impact of temperature and DoD on performance of lithium-ion battery pack. *IEEJ Transactions on Electronics, Information and Systems* 141 (8): 909-914. doi: 10.1541/ieejess.141.909. ISSN-03854221
1013. Koneru, B.N.G., Chandrachoodan, N., Vasudevan, V. 2021. A smoothed LASSO-based DNN sparsification technique. *IEEE Transactions on Circuits and Systems I: Regular Papers* 68 (10): 4287-4298. doi: 10.1109/TCSI.2021.3097765. ISSN-15498328
1014. Dhar, R., Ramakrishna, J., Dutta, S., et al. 2021. Solution-processable small molecule based all-organic ultraviolet photodetector. *Synthetic Metals* 280. doi: 10.1016/j.synthmet.2021.116883. ISSN-03796779
1015. Shenil, P.S., George, B. 2021. Nonintrusive AC voltage measurement unit utilizing the capacitive coupling to the power system ground. *IEEE Transactions on Instrumentation and Measurement* 70. doi: 10.1109/TIM.2020.3044757. ISSN-00189456
1016. Poongothai, C., Vasudevan, K. 2021. A novel approach for grid-connected inverter operation based on selective harmonic elimination. *International Transactions on Electrical Energy Systems* 31 (10). doi: 10.1002/2050-7038.12679. ISSN-20507038
1017. Kumar, A.S.A., George, B., Mukhopadhyay, S.C. 2021. Technologies and applications of angle sensors: A review. *IEEE Sensors Journal* 21 (6): 7195-7206. doi: 10.1109/JSEN.2020.3045461. ISSN-1530437X
1018. Jay, D., Swarup, K.S. 2021. A comprehensive survey on reactive power ancillary service markets. *Renewable and Sustainable Energy Reviews* 144. doi: 10.1016/j.rser.2021.110967. ISSN-13640321
1019. Babu, M.S., Sarathi, R., Imai, T., Tanaka, T. 2021. Influence of gamma irradiation and water aging on the space charge characteristics of epoxy micro-nano composites. *Polymers* 13 (6). doi: 10.3390/polym13060964. ISSN-20734360
1020. Saha, B., Fregonese, S., Chakravorty, A., Panda, S.R., Zimmer, T. 2021. Sub-THz and THz SiGe HBT electrical compact modeling. *Electronics (Switzerland)* 10 (12). doi: 10.3390/electronics10121397. ISSN-20799292
1021. Maneesha, A., Swarup, K.S. 2021. A survey on applications of Alternating Direction Method of Multipliers in smart power grids. *Renewable and Sustainable Energy Reviews* 152. doi: 10.1016/j.rser.2021.111687. ISSN-13640321
1022. Chiu Y., Law M. K., Krishnapura N., Stauth J.T., Walling J.S. 2021. Guest Editorial Introduction to the Special Issue on the 2021 IEEE International Solid-State Circuits Conference ISSCC. *IEEE Journal of Solid-State Circuits* 56 (12): 3547-3550. doi: 10.1109/JSSC.2021.3121154.
1023. A. Ghosh, D. Sathish Kumar, K. Sivasundari, E. Bhattacharya. 2021. Optimising oxide capping layer for tuning pore formation in silicon porous membranes. *ISSS J Micro Smart Syst.* 10, pp 51-58. doi: 10.1007/s41683-021-00070-9.
1024. Jerin Geogy George, Susan Thomas and Shanti Bhattacharya. 2021. Design of multi wavelength dielectric metasurfaces using finite element software. *Asian Journal of Physics* 30 (4): 623-632. doi: SSN: 0971 - 3093.
1025. Francis, Fredy, and R. Manivasakan. 2021. On the theoretical performance limits of long repeated regenerated optical IMDD links. *On the Theoretical Performance Limits of Long Repeated Regenerated Optical IMDD Links*, 16-Jan. doi: 10.21203/rs.3.rs-615471/v1.
1026. Venkata Sitaram. A, Venkatesh. T. G, Arun George, Manivasakan. R, Bhasker Dappuri. 2021. Performance evaluation of the QOS provisioning ability of IEEE 802.11e WLAN standard for multimedia traffic. <https://arxiv.org/abs/2112.07170>, 08-Jan. doi: arXiv:2112.07170v1.
1027. M.B. Krish, S. Bhattacharya, and E. Bhattacharya. 2021. Design and fabrication of a combined MEMS actuator and grating. *ISSS J Micro Smart Syst.* 10 (2): 135-143. doi: 10.1007/s41683-021-00080-7.
1028. Mohan, Aparna; Mohanasankar, S.; Kumar, V. Jagadeesh. 2021. Assay of direct digital output floating-wiper resistive displacement sensor. *Measurement Science and Technology* 32 (2). doi: 10.1088/1361-6501/abbf0b. 0957-0233
1029. Srivastava, Manas; Venkatasubramani, Lakshmi Narayanan; Srinivasan, Balaji; Venkitesh, Deepa. 2021. Nonlinearity-assisted all-optical clock recovery for phase modulated lightwave systems. *IEEE Journal of Selected*

Topics in Quantum Electronics 27 (2). doi: 10.1109/JSTQE.2020.3032654. 1077-260X

1030. Borkar, Vivek S.; Choudhary, Shantanu; Gupta, Vaibhav Kumar; Kasbekar, Gaurav S. 2021. Scheduling in wireless networks with spatial reuse of spectrum as restless bandits. *Performance Evaluation* 149. doi: 10.1016/j.peva.2021.102208. 0166-5316

1031. Mishra, Rahul Dev; Singh, Lalit; Rajput, Swati; Kaushik, Vishal; Srivastava, Sulabh; Kumar, Mukesh. 2021. Engineered nanophotonic waveguide with ultra-low dispersion. *Applied Optics* 60 (16): 4732-4737. doi: 10.1364/AO.428534. 1559-128X

1032. Sengottaiyan, Rathinavelu; Saxena, Nishant; Shukla, Krishna Dayal; Manivannan, Anbarasu. 2021. Rapid threshold switching dynamics of co-sputtered chalcogenide Ge₁₅Te₈₅ device for selector application. *Semiconductor Science and Technology* 36 (1). doi: 10.1088/1361-6641/abc390. 0268-1242

1033. Buonanno, Giovanni; Solimene, Raffaele. 2021. Global characterization of linear statistically thinned antenna arrays. *IEEE ACCESS* 9, pp 119629-119640. doi: 10.1109/ACCESS.2021.3107095. 2169-3536

1034. Sekuboyina, Anjany; Husseini, Malek E.; Wang, Ti., et al. 2021. VERSE: A Vertebrae labelling and segmentation benchmark for multi-detector CT images. *Medical Image Analysis* 73. doi: 10.1016/j.media.2021.102166. 1361-8415

1035. Ranjan, Prem; Parvathi, G.; Sarathi, R.; Robinson, R. G.; Harid, N.; Griffiths, H. 2021. Influence of water, acid rain and bentonite on ionization characteristics of sand under lightning impulse voltage. *IEEE Transactions on Dielectrics and Electrical Insulation* 28 (3): 897-905. doi: 10.1109/TDEI.2021.009501. ISSN: 1070-9878

1036. Kim, Y.J., Jang, H., Choi, J., et al. 2021. PAIP 2019: Liver cancer segmentation challenge. *Medical Image Analysis* 67. doi: 10.1016/j.media.2020.101854. ISSN-13618415

1037. Khened, M., Kori, A., Rajkumar, H., Krishnamurthi, G., Srinivasan, B. 2021. A generalized deep learning framework for whole-slide image segmentation and analysis. *Scientific Reports* 11 (1). doi: 10.1038/s41598-021-90444-8. ISSN-20452322

1038. Vidhya, Y.E.B., Pattamatta, A., Manivannan, A., Vasa, N.J. 2021. Influence of fluence, beam overlap and aging on the wettability of pulsed Nd³⁺:YAG nanosecond laser-textured Cu and Al sheets. *Applied Surface Science* 548. doi: 10.1016/j.apsusc.2021.149259. ISSN-01694332

1039. Sridhar, N., Devika, K.B., Subramanian, S.C., Vivekanandan, G., Sivaram, S. 2021. Antilock brake algorithm for heavy commercial road vehicles with delay compensation and chattering mitigation. *Vehicle System Dynamics* 59 (4): 526-546. doi: 10.1080/00423114.2019.1697457. ISSN-00423114

1040. Balasubramanian, V., Sivasankaran, S.K. 2021. Analysis of factors associated with exceeding lawful speed traffic violations in Indian metropolitan city. *Journal of Transportation Safety and Security* 13 (2): 206-222. doi: 10.1080/19439962.2019.1626962. ISSN-19439962

1041. Nasir, A., Mikami, Y., Yatabe, R., Yoshioka, H., Vasa, N., Oki, Y. 2021. Fully room temperature and label free biosensing based on an ink-jet printed polymer microdisk laser. *Optical Materials Express* 11 (3): 592-602. doi: 10.1364/OME.415000. ISSN-21593930

1042. Subramaniyam, K.V., Subramanian, S.C. 2021. Impact of regenerative braking torque blend-out characteristics on electrified heavy road vehicle braking performance. *Vehicle System Dynamics* 59 (2): 269-294. doi: 10.1080/00423114.2019.1677921. ISSN-00423114

1043. Uchimali, M., Rao, B.C., Vedantam, S. 2021. Modeling size and orientation effects on the morphology of microstructure formed in martensitic phase transformations using a novel discrete particle model. *Acta Materialia* 205. doi: 10.1016/j.actamat.2020.116528. ISSN-13596454

1044. Manda, B., Bhaskare, P., Muthuganapathy, R. 2021. A convolutional neural network approach to the classification of engineering models. *IEEE Access* 9, pp 22711-22723. doi: 10.1109/ACCESS.2021.3055826. ISSN-21693536

1045. Mamidi, T.K., Bandyopadhyay, S. 2021. Forward dynamic analyses of cable-driven parallel robots with constant input with applications to their kinetostatic problems. *Mechanism and Machine Theory* 163. doi: 10.1016/j.mechmachtheory.2021.104381. ISSN-0094114X

1046. Mohan, L., Kar, S., Mahapatra, P.S., Nagai, M., Santra, T.S. 2021. Fabrication of TiO₂ microspikes for highly efficient intracellular delivery by pulse laser-assisted photoporation. *RSC Advances* 11 (16): 9336-9348. doi: 10.1039/d0ra09785c. ISSN-20462069

1047. Mohan, L., Kar, S., Nagai, M., et al. 2021. Can titanium oxide nanotubes facilitate intracellular delivery by laser-assisted photoporation? *Applied Surface Science* 543. doi: 10.1016/j.apsusc.2020.148815. ISSN-01694332

1048. Vimal Kumar, A.R., Subramanian, S.C., Rajamani, R. 2021. On using a low-density flash lidar for road vehicle tracking. *Journal of Dynamic Systems, Measurement and Control, Transactions of the ASME* 143 (8). doi: 10.1115/1.4050255. ISSN-00220434

1049. Mookara, R.K., Seman, S., Jayaganthan, R., Amirthalingam, M. 2021. Influence of droplet transfer behaviour on the microstructure, mechanical properties and corrosion resistance of wire arc additively manufactured Inconel (IN) 625 components. *Welding in the World* 65 (4): 573-588. doi: 10.1007/s40194-020-01043-6. ISSN-00432288

1050. Sivasankaran, S.K., Rangam, H., Balasubramanian, V. 2021. Investigation of factors contributing to injury severity in single vehicle motorcycle crashes in India. *International Journal of Injury Control and Safety Promotion* 28 (2): 243-254. doi: 10.1080/17457300.2021.1908367. ISSN-17457300

1051. Sivasankari, S., Balasubramanian, V. 2021. Influence of occupant collision state parameters on the lumbar spinal injury during frontal crash. *Journal of Advanced Research* 28, pp 17-26. doi: 10.1016/j.jare.2020.06.010. ISSN-20901232

- 1052.Verma, R., Nath, S.K., Jayaganthan, R. 2021. Effect of microstructural constituents on mechanical behaviour of Mg-Zn-Gd alloy processed through hybrid severe plastic deformation. *Materials Letters* 285. doi: 10.1016/j.matlet.2020.129111. ISSN-0167577X
- 1053.Yadam, Y.R., Ramanujam, S., Arunachalam, K. 2021. An ultrawideband conical monopole with radome for detection of partial discharges. *IEEE Sensors Journal* 21 (17): 18764-18772. doi: 10.1109/JSEN.2021.3090099. ISSN-1530437X
- 1054.Devika, K.B., Sridhar, N., Patil, H., Subramanian, S.C. 2021. Delay compensated pneumatic brake controller for heavy road vehicle active safety systems. *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science* 235 (13): 2333-2346. doi: 10.1177/0954406220952822. ISSN-09544062
- 1055.Narasimhan, A.K., Balasubramanian, S.L., Krishnamurthi, G. 2021. Influence of europium (Eu) doped tantalum oxide nanoparticles (TaO_x NPs): A potential contrast agent. *Materials Letters* 300. doi: 10.1016/j.matlet.2021.130214. ISSN-0167577X
- 1056.Nasir, A., Yatabe, R., Mikami, Y., Yoshioka, H., Vasa, N., Oki, Y. 2021. Ink-jet printed, blended polymer-based microdisk resonators for controlling non-specific adsorption of biomolecules. *Optics Letters* 46 (2): 262-265. doi: 10.1364/OL.412993. ISSN-01469592
- 1057.Subramaniam, K.V., Subramanian, S.C. 2021. Electrified vehicle wheel slip control using responsiveness of regenerative braking. *IEEE Transactions on Vehicular Technology* 70 (4): 3208-3217. doi: 10.1109/TVT.2021.3066095. ISSN-00189545
- 1058.Thayyil, S.B., Yadav, S.K., Polthier, K., Muthuganapathy, R. 2021. Local Delaunay-based high fidelity surface reconstruction from 3D point sets. *Computer Aided Geometric Design* 86. doi: 10.1016/j.cagd.2021.101973. ISSN-01678396
- 1059.Neelmani, Thangabalan, B., Vasa, N.J., Srinivasan, B., Suematsu, H., Sarathi, R. 2021. Investigation on surface condition of the corona-aged silicone rubber nanocomposite adopting wavelet and LIBS technique. *IEEE Transactions on Plasma Science* 49 (8): 2294-2304. doi: 10.1109/TPS.2021.3094124. ISSN-00933813
- 1060.Ananchaperumal, V., Vedantam, S. 2021. Formation and evolution of microstructure in shape memory alloy wire reinforced composites. *Transactions of the Indian Institute of Metals* 74 (10): 2499-2510. doi: 10.1007/s12666-021-02283-w. ISSN-09722815
- 1061.Ezhilmaran, V., Vasa, N.J., Krishnan, S., Vijayaraghavan, L. 2021. Femtosecond pulsed Ti: Sapphire laser-assisted surface texturing on piston ring and its tribology characterization. *Journal of Tribology* 143 (4). doi: 10.1115/1.4048385. ISSN-07424787
- 1062.Baskaran, D., Arunachalam, K. 2021. Design and experimental verification of 434 MHz phased array applicator for hyperthermia treatment of locally advanced breast cancer. *IEEE Transactions on Antennas and Propagation* 69 (3): 1706-1715. doi: 10.1109/TAP.2020.3016462. ISSN-0018926X
- 1063.Manda, B., Dhayarkar, S., Mitheran, S., Viakash, V.K., Muthuganapathy, R. 2021. 'CADSketchNet' - An annotated sketch dataset for 3D CAD model retrieval with deep neural networks. *Computers and Graphics (Pergamon)* 99, pp 100-113. doi: 10.1016/j.cag.2021.07.001. ISSN-00978493
- 1064.Mohan, L., Kar, S., Nagai, M., Santra, T.S. 2021. Electrochemical fabrication of TiO₂ micro-flowers for an efficient intracellular delivery using nanosecond light pulse. *Materials Chemistry and Physics* 267. doi: 10.1016/j.matchemphys.2021.124604. ISSN-02540584
- 1065.Gairola, S., Jayaganthan, R. 2021. Xfem simulation of tensile and fracture behavior of ultrafine-grained al 6061 alloy. *Metals* 11, p 11. doi: 10.3390/met11111761. ISSN-20754701
- 1066.Ohrhallinger, S., Peethambaran, J., Parakkat, A.D., Dey, T.K., Muthuganapathy, R. 2021. 2D Points curve reconstruction survey and benchmark. *Computer Graphics Forum* 40 (2): 611-632. doi: 10.1111/cgf.142659. ISSN-01677055
- 1067.Kavinmathi, K., Atul Narayan, S.P., Subramanian, S.C. 2021. Impact of lateral load transfer in heavy road vehicles at horizontal curves on the distress of asphalt pavements. *Road Materials and Pavement Design*. doi: 10.1080/14680629.2021.1977683. ISSN-14680629
- 1068.Nag, A., Bandyopadhyay, S. 2021. Singularity-free spheres in the position and orientation workspaces of Stewart platform manipulators. *Mechanism and Machine Theory* 155. doi: 10.1016/j.mechmachtheory.2020.104041. ISSN-0094114X
- 1069.Nag, A., V, S., Bandyopadhyay, S. 2021. A uniform geometric-algebraic framework for the forward kinematic analysis of 6-6 stewart platform manipulators of various architectures and other related 6-6 spatial manipulators. *Mechanism and Machine Theory* 155. doi: 10.1016/j.mechmachtheory.2020.104090. ISSN-0094114X
- 1070.Mukundan, M.K., Muthuganapathy, R. 2021. A dynamic sampling approach towards computing Voronoi diagram of a set of circles. *Computer Aided Geometric Design* 90. doi: 10.1016/j.cagd.2021.102023. ISSN-01678396
- 1071.Sharma, S., Thiruselvam, N.I., Subramanian, S.J., Kumar, G.S. 2021. Computation of strains from stereo digital image correlation using principal component analysis. *Measurement Science and Technology* 32 (10). doi: 10.1088/1361-6501/abf537. ISSN-09570233
- 1072.Gupta, P., Kar, S., Santra, T.S., et al. 2021. Pulsed laser assisted high-Throughput intracellular delivery in hanging drop based three dimensional cancer spheroids. *Analyst* 146 (15): 4756-4766. doi: 10.1039/d0an02432e. ISSN-00032654
- 1073.Mythreyi, O.V., Srinivaas, M.R., Amit Kumar, T., Jayaganthan, R. 2021. Machine-learning-based prediction of corrosion behavior in additively manufactured inconel 718. *Data* 6 (8). doi: 10.3390/data6080080. ISSN-23065729
- 1074.Amalanathan, A.J., Vasa, N.J., Harid, N., Griffiths, H., Sarathi, R. 2021. Classification of thermal ageing impact of

- ester fluid-impregnated pressboard material adopting LIBS. *High Voltage* 6 (4): 655-664. doi: 10.1049/hve2.12092. ISSN-23977264
- 1075.Nirmal, R.R., Patnaik, B.S.V., Jayaganthan, R. 2021. FEM Simulation of high speed impact behaviour of additively manufactured $AlSi_{10}Mg$ Alloy. *Journal of Dynamic Behavior of Materials* 7 (3): 469-484. doi: 10.1007/s40870-020-00285-1. ISSN-21997446
- 1076.Hussain, M., Rao, P.N., Singh, D., Jayaganthan, R., Goel, S., Saxena, K.K. 2021. Insight to the evolution of nano precipitates by cryo rolling plus warm rolling and their effect on mechanical properties in Al 6061 alloy. *Materials Science and Engineering A* 811. doi: 10.1016/j.msea.2021.141072. ISSN-09215093
- 1077.Thomas, D., Surendran, S., Vasa, N.J. 2021. A simplified approach for voyage analysis of fouled hull in a tropical marine environment. *Ships and Offshore Structures* 16 (7): 762-772. doi: 10.1080/17445302.2020.1781745. ISSN-17445302
- 1078.Randive, V., Subramanian, S.C., Thondiyath, A. 2021. Design and analysis of a hybrid electric powertrain for military tracked vehicles. *Energy* 229. doi: 10.1016/j.energy.2021.120768. ISSN-03605442
- 1079.John, J.D., Kumar, G.S., Yoganandan, N., Rajshekhar, V. 2021. Influence of cervical spine sagittal alignment on range of motion after corpectomy: a finite element study. *Acta Neurochirurgica* 163 (1): 251-257. doi: 10.1007/s00701-020-04619-9. ISSN-00016268
- 1080.Thayyil, S.B., Peethambaran, J., Muthuganapathy, R. 2021. A sampling type discernment approach towards reconstruction of a point set in R2. *Computer Aided Geometric Design* 84. doi: 10.1016/j.cagd.2020.101953. ISSN-01678396
- 1081.Jayaraman, D., Ramu, P. 2021. L-moments-based uncertainty quantification for scarce samples including extremes. *Structural and Multidisciplinary Optimization* 64 (2): 505-539. doi: 10.1007/s00158-021-02930-2. ISSN-1615147X
- 1082.Raveendran, R., Devika, K.B., Subramanian, S.C. 2021. Learning-based fault diagnosis of air brake system using wheel speed data. *Proceedings of the Institution of Mechanical Engineers, Part D: Journal of Automobile Engineering*. doi: 10.1177/09544070211063719. ISSN-09544070
- 1083.Rao, B.C. 2021. Frugal manufacturing in smart factories for widespread sustainable development. *Royal Society Open Science* 8 (12). doi: 10.1098/rsos.210375. ISSN-20545703
- 1084.Anusha, S.P., Vanajakshi, L., Subramanian, S.C. 2021. Dynamical systems approach for queue and delay estimation at signalized intersections under mixed traffic conditions. *Transportation Letters*. doi: 10.1080/19427867.2021.1908492. ISSN-19427867
- 1085.Yoganandan, N., Baisden, J.L., John, J., Saravna Kumar, G., Banerjee, A., Choi, H. 2021. Vertebral level-dependent kinematics of female and male necks under G+x loading. *Military Medicine* 186, pp 619-624. doi: 10.1093/milmed/usaa312. ISSN-00264075
- 1086.Rajendran, T., Arunachalam, K. 2021. Microwave intracavitary applicator using 434 MHz conformal patch antennas for hyperthermia treatment of gynaecological cancers. *IET Microwaves, Antennas and Propagation* 15 (9): 1117-1126. doi: 10.1049/mia2.12122. ISSN-17518725
- 1087.Kumaran, N., Arunachalam, K. 2021. Low-profile high impedance surface on magneto-dielectric nanocomposite for wideband absorption of mobile phone radiation. *International Journal of Applied Electromagnetics and Mechanics* 67 (4): 487-506. doi: 10.3233/JAE-210092. ISSN-13835416
- 1088.Babu, M.S., Neelmani, Vasa, N.J., Sarathi, R., Imai, T. 2021. Use of LIBS technique for identification of type of pollutant and ESDD level on epoxy-alumina nanocomposites using ANN. *Measurement Science and Technology* 32 (11). doi: 10.1088/1361-6501/ac0d22. ISSN-09570233
- 1089.Amizhtan, S.K., Ganesh, P., Srinivasan, B., Vasa, N.J., Aravindan, S., Sarathi, R. 2021. Investigation of water droplet-initiated discharges on laser textured silicone nano-micro composites using UHF and fluorescent fibre techniques. *IET Nanodielectrics* 4 (4): 201-209. doi: 10.1049/nde2.12016. ISSN-25143255
- 1090.Gurusamy, M., Rao, B.C. 2021. A modified Zerilli-Armstrong constitutive model for simulating severe plastic deformation of a steel alloy. *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*. doi: 10.1177/09544054211060914. ISSN-09544054
- 1091.Uchimali, M., Vedantam, S. 2021. Modeling stress-strain response of shape memory alloys during reorientation of self-accommodated martensites with different morphologies. *Mechanics of Advanced Materials and Structures*. doi: 10.1080/15376494.2021.1989527. ISSN-15376494
- 1092.Dubey, R., Jayaganthan, R., Ruan, D., Velmurugan, R. 2021. On impact of cryogenic temperature rolled 6082 Al alloy by dome- and conical-nosed projectiles. *International Journal of Crashworthiness*. doi: 10.1080/13588265.2021.2003158. ISSN-13588265
- 1093.Neettiyath, A., Vasa, N.J., Sarathi, R. 2021. Life expectancy estimation of thermally aged Cu contaminant-diffused oil impregnated pressboard. *IEEE Transactions on Dielectrics and Electrical Insulation* 28 (2): 637-645. doi: 10.1109/TDEI.2020.009197. ISSN-10709878
- 1094.Ayyasamy, S., Ramu, P., Elishakoff, I. 2021. Chebyshev inequality-based inflated convex hull for uncertainty quantification and optimization with scarce samples. *Structural and Multidisciplinary Optimization* 64 (4): 2267-2285. doi: 10.1007/s00158-021-02981-5. ISSN-1615147X
- 1095.Challa, A., Singh, H.K., Sivaram, S., et al. 2021. An experimentally corroborated framework for emulating wheel lock in a heavy vehicle brake dynamometer. *Proceedings of the Institution of Mechanical Engineers, Part D: Journal of Automobile Engineering* 235 (3 February 2022): 697-707. doi: 10.1177/0954407020950056. ISSN-09544070

1096. Jayaganthan, S., Babu, M.S., Vasa, N.J., Sarathi, R., Imai, T. 2021. Classification of coal deposited epoxy micro-nanocomposites by adopting machine learning techniques to libs analysis. *Journal of Physics Communications* 5 (10). doi: 10.1088/2399-6528/ac2b5d. ISSN-23996528
1097. Athertya, J.S., Kumar, G.S. 2021. Classification of certain vertebral degenerations using MRI image features. *Biomedical Physics and Engineering Express* 7 (4). doi: 10.1088/2057-1976/ac00d2. ISSN-20571976
1098. De, P.S., Vuppuluri, A., Vadlamani, S.S., Vedantam, S. 2021. A physically based model of the effect of recovery and clustering on recrystallization kinetics. *Journal of Materials Science* 56 (11). 7082-7093. doi: 10.1007/s10853-020-05630-2. ISSN-00222461
1099. Challa, A., Ramakrushnan, K., Gaurkar, P.V., Subramanian, S.C., Vivekanandan, G., Sivaram, S. 2021. A 3-phase combined wheel slip and acceleration threshold algorithm for anti-lock braking in heavy commercial road vehicles. *Vehicle System Dynamics*. doi: 10.1080/00423114.2021.1903048. ISSN-00423114
1100. Naresh, C., Jayaganthan, R., Sarathi, R., Danikas, M.G. 2021. Charge trapping phenomenon in al-filled epoxy nanocomposite materials: Current status and challenges for insulation structures. *Journal of Engineering Science and Technology Review* 14 (3): 179-193. doi: 10.25103/jestr.143.20. ISSN-17919320
1101. Pakkathillam, J.K., Sivaprakasam, B.T., Poojali, J., Krishnamurthy, C.V., Arunachalam, K. 2021. Tailoring antenna focal plane characteristics for a compact free-space microwave complex dielectric permittivity measurement setup. *IEEE Transactions on Instrumentation and Measurement* 70. doi: 10.1109/TIM.2020.3013997. ISSN-00189456
1102. Devika, K.B., Rohith, G., Subramanian, S.C. 2021. Potential function-based string stable controller for heavy road vehicle platoons. *IEEE Access* 9, pp 156274-156282. doi: 10.1109/ACCESS.2021.3129191. ISSN-21693536
1103. Grenadyorov, A.S., Solovyev, A.A., Oskomov, K.V., Santra, T.S., Gupta, P., Korneev, D.S. 2021. Influence of structure and composition of diamond-like nanocomposite coatings on cell viability. *Journal of Vacuum Science and Technology B: Nanotechnology and Microelectronics* 39 (6). doi: 10.1116/6.0001263. ISSN-21662746
1104. Tulo, S.K., Govindarajan, S., Ramu, P., Swaminathan, R. 2021. Shape characterization of mediastinum in tuberculosis chest radiographs using level set segmentation. *Biomedical Sciences Instrumentation* 57 (2): 212-218. doi: 10.34107/YHPN9422.04212. ISSN-00678856
1105. Rajkamal, N., Vedantam, S. 2021. Dissipative particle dynamics study of strain distribution in capsules deformed by microfluidic constrictions. *European Journal of Computational Mechanics* 30 (6 April 2022): 409-430. doi: 10.13052/ejcm2642-2085.30465. ISSN-17797179
1106. Shinde, A., Illath, K., Santra, T.S., et al. 2021. A review of single-cell adhesion force kinetics and applications. *Cells* 10 (3), p Jan-46. doi: 10.3390/cells10030577. ISSN-20734409
1107. Allavikutty, R., Gupta, P., Santra, T.S., Rengaswamy, J. 2021. Additive manufacturing of Mg alloys for biomedical applications: Current status and challenges. *Current Opinion in Biomedical Engineering* 18. doi: 10.1016/j.cobme.2021.100276. ISSN-24684511
1108. Kaladharan, K., Kumar, A., Gupta, P., Illath, K., Santra, T.S., Tseng, F.-G. 2021. Microfluidic based physical approaches towards single-cell intracellular delivery and analysis. *Micromachines* 12 (6). doi: 10.3390/mi12060631. ISSN-2072666X
1109. Acar, E., Bayrak, G., Jung, Y., Lee, I., Ramu, P., Ravichandran, S.S. 2021. Modeling, analysis, and optimization under uncertainties: a review. *Structural and Multidisciplinary Optimization* 64 (5): 2909-2945. doi: 10.1007/s00158-021-03026-7. ISSN-1615147X
1110. V. Balasubramanian, H. Rangam and S. Sivasankaran 2021. Investigation of Injury patterns in heavy duty single vehicle crashes based on real world accident data in Tamil Nadu, India. *Journal of Road Safety* 32 (2): 30-40. doi: 10.33492/JRS-D-20-00127.
1111. Santra T.S., Tseng F. G. 2021. Editorial for the special issue on micro fluidic devices for single cell analysis volume II. *Micromachines* 12 (8). doi: 10.3390/mi12080875.
1112. Kim N.H., Queipo N.V., Zhou M., et al. 2021. Special issue dedicated to Former Editor-in-Chief Raphael T Haftka. *Structural and Multidisciplinary Optimization* 64 (5): 2825-2826. doi: 10.1007/s00158-021-03084-x.
1113. Balkrishna C Rao 2021. Frugal manufacturing in smart factories for widespread sustainable development. *Royal Society Open Science* 8. doi: 10.1098/rsos.210375.
1114. Reddy, K., Chundakkadan, R., Sasidharan, S. 2021. Firm innovation and global value chain participation. *Small Business Economics* 57 (4): 1995-2015. doi: 10.1007/s11187-020-00391-3. ISSN-0921898X
1115. Prasad, B.M., Tripathy, J.P., Muraleedharan, V.R., Tonsing, J. 2021. Rising catastrophic expenditure on households due to tuberculosis: Is India moving away from the END-TB goal? *Frontiers in Public Health* 9. doi: 10.3389/fpubh.2021.614466. ISSN-22962565
1116. Ramaswamy, S., Choutagunta, A., Sahu, S.K. 2021. Evaluating Asian Free Trade Agreements: What does Gravity Model tell us?. *Foreign Trade Review* 56 (1): 60-70. doi: 10.1177/0015732520961330. ISSN-00157325
1117. Padmaja, M., Sasidharan, S. 2021. Financing constraints and exports: evidence from India. *Journal of Economics and Finance* 45 (1): 118-145. doi: 10.1007/s12197-020-09532-6. ISSN-10550925
1118. Santhosh, R., Paleri, D. 2021. Ethnicization of religion in practice? Recasting competing communal mobilizations in coastal Karnataka, South India. *Ethnicities* 21 (3): 563-588. doi: 10.1177/1468796820974502. ISSN-14687968
1119. Padhan, H., Sahu, S.K., Dash, U. 2021. Non-linear analysis of international reserve, trade and trilemma in India. *Journal of Economic Asymmetries* 23. doi: 10.1016/j.jeca.2020.e00191. ISSN-17034949

- 1120.Reddy, K., Sasidharan, S. 2021. Financial constraints and global value chain participation: Firm-level evidence from India. *Journal of International Trade and Economic Development* 30 (5): 739-765. doi: 10.1080/09638199.2021.1900343. ISSN-09638199
- 1121.Verma, V.R., Dash, U. 2021. Horizontal inequity in self-reported morbidity and untreated morbidity in India: Evidence from National Sample Survey Data. *International Journal for Equity in Health* 20 (1). doi: 10.1186/s12939-020-01376-0. ISSN-14759276
- 1122.Irshad, C.V., Dash, U. 2021. Healthy aging in India: evidence from a panel study. *Journal of Health Research*. doi: 10.1108/JHR-09-2020-0395. ISSN-08574421
- 1123.Sahu, S.K., Bagchi, P., Kumar, A., Tan, K.H. 2021. Technology, price instruments and energy intensity: a study of firms in the manufacturing sector of the Indian economy. *Annals of Operations Research*. doi: 10.1007/s10479-021-04295-7. ISSN-02545330
- 1124.Mandel, A., Veetil, V.P. 2021. Monetary dynamics in a network economy. *Journal of Economic Dynamics and Control* 125. doi: 10.1016/j.jedc.2021.104084. ISSN-01651889
- 1125.Chundakkadan, R., Sasidharan, S. 2021. Central bank's money market operations and daily stock returns. *International Journal of Finance and Economics* 26 (1): 136-152. doi: 10.1002/ijfe.1781. ISSN-10769307
- 1126.Verma, V.R., Kumar, P., Dash, U. 2021. Assessing the household economic burden of non-communicable diseases in India: evidence from repeated cross-sectional surveys. *BMC Public Health* 21 (1). doi: 10.1186/s12889-021-10828-3. ISSN-14712458
- 1127.Zaman, M.S., Bhandari, A.K. 2021. Stressed assets, off-balance sheet business activities and performance of Indian banking sector: a DEA double bootstrap approach. *Studies in Economics and Finance*. doi: 10.1108/SEF-09-2020-0369. ISSN-10867376
- 1128.Irshad, C.V., Dash, U., Muraleedharan, V.R. 2021. Healthy ageing in India: A quantile regression approach. *Journal of Population Ageing*. doi: 10.1007/s12062-021-09340-8. ISSN-18747884
- 1129.Sethy, S.S. 2021. 'Academic Freedom' in Indian Higher Education Setting. *Asian Journal of University Education* 17 (2): 39-49. doi: 10.24191/AJUE.V17I2.9022. ISSN-18237797
- 1130.Drall, A., Mandal, S.K. 2021. Investigating the existence of entry barriers in rural non-farm sector (RNFS) employment in India: A theoretical modelling and an empirical analysis. *World Development* 141. doi: 10.1016/j.worlddev.2020.105381. ISSN-0305750X
- 1131.CV, I., Behera, D.K., Dash, U. 2021. Participation of older adults in the intra-household decision-making activities: evidence from the longitudinal ageing study in India. *Journal of Adult Protection* 23 (5): 325-336. doi: 10.1108/JAP-03-2021-0013. ISSN-14668203
- 1132.Narayanan, J., Dhanavel, S.P. 2021. The play of cultural subcodes in decoding the visual signs of Karnatik music videos. *Visual Communication Quarterly* 28 (3): 166-175. doi: 10.1080/15551393.2021.1949720. ISSN-15551393
- 1133.Rajamony, K., Tripathy, J. 2021. Namma Chennai: The Dravidian City and Its Others in Tirumurti's Fiction¹. *South Asian Review*. doi: 10.1080/02759527.2021.1965457. ISSN-02759527
- 1134.Parui, A. 2021. 'The wakefulness was always beside me': Sleeplessness, embodiment, and female agency in Haruki Murakami's *Sleep*. *Media Watch* 12 (1): 46-57. doi: 10.15655/mw/2021/v12i1/205457. ISSN-09760911
- 1135.Khatun, H., Tripathy, J. 2021. Development against violence: Prime Minister's Rural Development Fellowship (PMRDF) in India. *Journal of Peacebuilding and Development* 16 (2): 242-253. doi: 10.1177/1542316620972645. ISSN-15423166
- 1136.Brahma, S., Kumar, R. 2021. The scalar interpretation of the additive focus particle *=BV in select BORO-GARO languages. *Journal of the Southeast Asian Linguistics Society* 14 (1): 73-91. ISSN-18366821
- 1137.Santhosh, R., Paleri, D. 2021. Crisis of secularism and changing contours of minority politics in India: Lessons from the analysis of a muslim political organization. *Asian Survey* 61 (6): 999-1027. doi: 10.1525/as.2021.1433091. ISSN-00044687
- 1138.Sofi, A.A., Sasidharan, S., Bhat, M.Y. 2021. Economic growth and club convergence: Is there a neighbour's effect? *International Journal of Finance and Economics*. doi: 10.1002/ijfe.2545. ISSN-10769307
- 1139.Bhandari, A.K. 2021. Withdrawal of the multifibre agreement and Indian textile industry: Concerns, efforts, and achievements. *Review of Development Economics* 25 (3): 1397-1436. doi: 10.1111/rode.12760. ISSN-13636669
- 1140.Parui, A., Simi Raj, M. 2021. The COVID-19 crisis chronotope: The pandemic as matter, metaphor and memory. *Memory Studies* 14 (6): 1431-1444. doi: 10.1177/17506980211054346. ISSN-17506980
- 1141.Prasad, V., Thampi, B.V. 2021. Gender ideology and gendered political dynamics shaping electoral fortunes of women politicians in Kerala, India. *Women's Studies International Forum* 84. doi: 10.1016/j.wsif.2021.102437. ISSN-02775395
- 1142.Shabna, P., Kalpana, K. 2021. Re-making the self: Discourses of ideal Islamic womanhood in Kerala. *Asian Journal of Women's Studies*. doi: 10.1080/12259276.2021.2010907. ISSN-12259276
- 1143.Paul, B., Patnaik, U., Murari, K.K., Sahu, S.K., Muralidharan, T. 2021. The impact of COVID-19 on the household economy of India. *Indian Journal of Labour Economics* 64 (4): 867-882. doi: 10.1007/s41027-021-00352-8. ISSN-09717927
- 1144.Karmakar, M., Parui, A. 2021. "Shadowy objects in the test tubes": Biocitizenship, disposable bodies, and wasted lives in Hanif Kureishi's *The Body* and Kazuo Ishiguro's *Never Let Me Go*. *Rupkatha Journal on Interdisciplinary Studies in Humanities* 12 (6): 6 January 2022. doi: 10.21659/RUPKATHA.V12N6.04. ISSN-09752935

1145. Maharatha, T.M., Dash, U. 2021. Inequity in health care utilization for common childhood illnesses in India: measurement and decomposition analysis using the India demographic and health survey 2015–16. *BMC Health Services Research* 21 (1). doi: 10.1186/s12913-021-06887-2. ISSN-14726963
1146. Varghese, S.M., Parui, A. 2021. “An umbrella made of precious gems”: An examination of memory and diasporic identities in Kerala Jewish songs and literature. *Rupkatha Journal on Interdisciplinary Studies in Humanities* 12 (5). doi: 10.21659/RUPKATHA.V12N5.RIOC1S32N1. ISSN-09752935
1147. Sahu, S.K., Goel, A. 2021. Wages and firm ownership: a study of the manufacturing sector of India. *Studies in Microeconomics*. doi: 10.1177/232102222111051453. ISSN-23210222
1148. Vinayan, S., Raj, M.S. 2021. The Indulekha moment and the Malayalam literary canon: On the literary history of the early twentieth-century novels in Kerala, South India. *Rupkatha Journal on Interdisciplinary Studies in Humanities* 13 (1): 44573. doi: 10.21659/RUPKATHA.V13N1.37. ISSN-09752935
1149. Veetil, V.P. 2021. Distributed knowledge and the organization of economic activity. *Computational and Mathematical Organization Theory*. doi: 10.1007/s10588-021-09350-z. ISSN-1381298X
1150. Reddy, K.K., Veetil, V.P. 2021. Business cycles and the internal dynamics of firms. *Review of Austrian Economics*. doi: 10.1007/s11138-020-00538-1. ISSN-08893047
1151. Vasudevan, S., Babu, M.S. 2021. Global production sharing and trade effects: an analysis of Eurasian Economic Union. *Eurasian Economic Review* 11(4): 633-665. doi: 10.1007/s40822-021-00179-0. ISSN-1309422X
1152. Prinja, S., Chugh, Y., Rajsekar, K., Muraleedharan, V.R. 2021. National methodological guidelines to conduct budget impact analysis for health technology assessment in India. *Applied Health Economics and Health Policy* 19 (6): 811-823. doi: 10.1007/s40258-021-00668-y. ISSN-11755652
1153. Viswamohan, A.I. 2021. Fashioning masculine anxieties: Clothes and style in *The Bonfire of the Vanities*. *European Journal of American Culture* 40 (3): 215-231. doi: 10.1386/ejac_00054_1. ISSN-14660407
1154. Padhan, H., Sahu, S.K., Dash, U. 2021. Economic globalization and energy consumption patterns in Organisation for Economic Co-operation and Development economies. *Energy and Environment*. doi: 10.1177/0958305X2111042537. ISSN-0958305X
1155. Roy, G., Subbārāo, K.V., Kumar, R., Everaert, M. 2021. Kokborok and the simple-complex reflexive distinction. *Studies in Language* 45 (2): 384-407. doi: 10.1075/sl.19091.roy. ISSN-03784177
1156. Saha, A., Karah, H. 2021. Nalini Jameela and the itinerant sex pedagogy of a *veshya*. *Sexuality and Culture* 25 (6): 2231-2245. doi: 10.1007/s12119-021-09874-1. ISSN-10955143
1157. Gupta, S. 2021. Frontiers in Flux: Indo-Tibetan Border: 1946–1948. *India Quarterly* 77 (1): 42-58. doi: 10.1177/0974928420983095. ISSN-09749284
1158. Gandhi, S., Maharatha, T.M., Dash, U., Babu, S.M. 2021. Level of inequality and the role of governance indicators in the coverage of reproductive maternal and child healthcare services: Findings from India. *PLoS ONE* 16 (11). doi: 10.1371/journal.pone.0258244. ISSN-19326203
1159. Verma, V.R., Dash, U. 2021. Supply-side readiness for universal health coverage: assessing service availability and barriers in remote and fragile setting. *Journal of Health Management* 23 (3): 441-469. doi: 10.1177/097206342111035211. ISSN-09720634
1160. Rajamony, K., Tripathy, J. 2021. Between Madras and Chennai: Narratives of belonging in a post colonial city. *Journal of Commonwealth Literature*. doi: 10.1177/0021989421992450. ISSN-00219894
1161. Sudhakaran, S., Brahme, M. 2021. Aesthetics of excess: The singing and dancing of pey in the folktales from Karisial Kādu. *Rupkatha Journal on Interdisciplinary Studies in Humanities* 13 (1). doi: 10.21659/RUPKATHA.V13N1.26. ISSN-09752935
1162. Padmanabhan, S. 2021. To take or not to take: is the freebie culture in Tamil Nadu elections a threat to Indian democracy? *Asian Journal of Political Science* 29 (2): 215-237. doi: 10.1080/02185377.2021.1951783. ISSN-02185377
1163. Kumar, N., Sethy, S.S. 2021. Buddhism and no-Self Theory: Examining the relation between human actions and moral responsibility. *Philosophia (United States)*. doi: 10.1007/s11406-021-00347-1. ISSN-00483893
1164. Suresh, M., Sethy, S.S. 2021. Is “free will” an emergent property of immaterial soul? A critical examination of human beings’ decision-making process(es) followed by voluntary actions and their moral responsibility. *Journal of Indian Council of Philosophical Research* 38 (3): 491-505. doi: 10.1007/s40961-021-00260-8. ISSN-09707794
1165. Visakh, M.S., Santhosh, R., Mohammed Roshan, C.K. 2021. Islamic traditionalism in a globalizing world: Sunni Muslim identity in Kerala, South India. *Modern Asian Studies* 55 (6): 2046-2087. doi: 10.1017/S0026749X20000347. ISSN-0026749X
1166. Gandhi, S., Ramesh, S., Dash, U., Babu, S.M. 2021. A systematic review of Demand-based & Supply-based Interventions on continuum of maternal and child healthcare in south Asian countries. *Journal of Public Health (Germany)* 29 (4): 857-870. doi: 10.1007/s10389-019-01148-3. ISSN-21981833
1167. Divya, A. 2021. “He made me fall at the feet of a woman”: Masculine anxieties and dysfunctional romance in Tamil cult film *Subramaniyapuram* (2008). *Rupkatha Journal on Interdisciplinary Studies in Humanities* 13 (2). doi: 10.21659/RUPKATHA.V13N2.38. ISSN-09752935
1168. Krishnan, R., Yen, P., Agarwal, R., Arshinder, K., Bajada, C. 2021. Collaborative innovation and sustainability in the food supply chain- evidence from farmer producer

- organisations. *Resources, Conservation and Recycling* 168. doi: 10.1016/j.resconrec.2020.105253. ISSN-09213449
- 1169.Srivatsa Srinivas, S., Marathe, R.R. 2021. Moving towards “mobile warehouse”: Last-mile logistics during COVID-19 and beyond. *Transportation Research Interdisciplinary Perspectives* 10. doi: 10.1016/j.trip.2021.100339. ISSN-25901982
- 1170.Issac, A.C., Baral, R., Bednall, T.C. 2021. What is not hidden about knowledge hiding: Deciphering the future research directions through a morphological analysis. *Knowledge and Process Management* 28 (1): 40-55. doi: 10.1002/kpm.1657. ISSN-10924604
- 1171.Krishna Mohan, T.V., Amit, R.K. 2021. Modeling oligopsony market for end-of-life vehicle recycling. *Sustainable Production and Consumption* 25, pp 325-346. doi: 10.1016/j.spc.2020.09.001. ISSN-23525509
- 1172.Joshi, B.V., Vipin, B., Ramkumar, J., Amit, R.K. 2021. Impact of policy instruments on lead-acid battery recycling: A system dynamics approach. *Resources, Conservation and Recycling* 169. doi: 10.1016/j.resconrec.2021.105528. ISSN-09213449
- 1173.Rajendran, D.P.D., Sundarraj, R.P. 2021. Using topic models with browsing history in hybrid collaborative filtering recommender system: Experiments with user ratings. *International Journal of Information Management Data Insights* 1 (2). doi: 10.1016/j.ijime.2021.100027. ISSN-26670968
- 1174.Rajesh, R., Agariya, A.K., Rajendran, C. 2021. Predicting resilience in retailing using grey theory and moving probability based Markov models. *Journal of Retailing and Consumer Services* 62. doi: 10.1016/j.jretconser.2021.102599. ISSN-09696989
- 1175.Manohar, S., Rehman, V., Sivakumaran, B. 2021. Role of unfamiliarity and information on consumers’ willingness to try new healthy foods. *Food Quality and Preference* 87. doi: 10.1016/j.foodqual.2020.104037. ISSN-09503293
- 1176.Ramanathan, U., Mazzola, E., Mohan, U., Bruccoleri, M., Awasthi, A., Garza-Reyes, J.A. 2021. How selection of collaborating partners impact on the green performance of global businesses? An empirical study of green sustainability. *Production Planning and Control* 32 (14): 1207-1222. doi: 10.1080/09537287.2020.1796133. ISSN-09537287
- 1177.Baliga, A.J., Chawla, V., Sunder M, V., Kumar, R. 2021. Barriers to service recovery in B2B markets: a TISM approach in the context of IT-based services. *Journal of Business and Industrial Marketing* 36 (8): 1452-1473. doi: 10.1108/JBIM-02-2020-0112. ISSN-08858624
- 1178.Sunder M, V., Ganesh, L.S. 2021. Identification of the dynamic capabilities ecosystem—a systems thinking perspective. *Group and Organization Management* 46 (5): 893-930. doi: 10.1177/1059601120963636. ISSN-10596011
- 1179.Balan U, M., Mathew, S.K. 2021. Personalize, summarize or let them read? A study on online word of mouth strategies and consumer decision process. *Information Systems Frontiers* 23 (3): 627-647. doi: 10.1007/s10796-020-09980-9. ISSN-13873326
- 1180.Ramya, S.M., Baral, R. 2021. CSR during COVID-19: exploring select organizations’ intents and activities. *Corporate Governance (Bingley)* 21 (6): 1028-1042. doi: 10.1108/CG-09-2020-0426. ISSN-14720701
- 1181.Goel, A., Ganesh, L.S., Kaur, A. 2021. Sustainability assessment of construction practices in India using inductive content analysis of research literature. *International Journal of Construction Management* 21 (8): 802-817. doi: 10.1080/15623599.2019.1583851. ISSN-15623599
- 1182.Issac, A.C., Issac, T.G., Baral, R., Bednall, T.C., Thomas, T.S. 2021. Why you hide what you know: Neuroscience behind knowledge hiding. *Knowledge and Process Management* 28 (3): 266-276. doi: 10.1002/kpm.1677. ISSN-10924604
- 1183.Sekar, S., Dyaram, L. 2021. What makes employees participate in volunteering programs? The role of organizational support. *International Journal of Organizational Analysis* 29 (2): 512-528. doi: 10.1108/IJOA-11-2019-1939. ISSN-19348835
- 1184.Kshatriya, S., Prasanna, K. 2021. Jump Interdependencies: Stochastic linkages among international stock markets. *North American Journal of Economics and Finance* 57. doi: 10.1016/j.najef.2021.101418. ISSN-10629408
- 1185.Krishnan, S.N., Ganesh, L.S., Rajendran, C. 2021. The Square Inch quilting studio: Survival strategies for a lifestyle enterprise. *International Journal of Entrepreneurship and Innovation*. doi: 10.1177/14657503211044771. ISSN-14657503
- 1186.Ramesh, R., Ananthram, S., Vijayalakshmi, V., Sharma, P. 2021. Technostressors – a boon or bane? Toward an integrative conceptual model. *Journal of Indian Business Research* doi: 10.1108/JIBR-10-2021-0348. ISSN-17554195
- 1187.Attili, V.S.P., Mathew, S.K., Sugumaran, V. 2021. Information privacy assimilation in IT organizations. *Information Systems Frontiers*. doi: 10.1007/s10796-021-10158-0. ISSN-13873326
- 1188.Chandrasekar, K., Selvanayagam, K., Rehman, V. 2021. Responsibility finds a way: A typology and framework development approach towards public sector crisis management. *International Journal of Strategic Communication* 15 (4): 328-356. doi: 10.1080/1553118X.2021.1872081. ISSN-1553118X
- 1189.Paramasivan, K., Sudarsanam, N. 2021. Impact of COVID-19 pandemic on road safety in Tamil Nadu, India. *International Journal of Injury Control and Safety Promotion*. doi: 10.1080/17457300.2021.2007134. ISSN-17457300
- 1190.Saravanan, P., Thenmozhi, M., Sasidharan, A. 2021. Are independent directors enhancing value in the post mandate period?: Empirical evidence from India. *Journal of Public Affairs*. doi: 10.1002/pa.2730. ISSN-14723891
- 1191.Chebolu-Subramanian, V., Sundarraj, R.P. 2021. Essential medicine shortages, procurement process and supplier response: A normative study across Indian states. *Social Science and Medicine* 278. doi: 10.1016/j.socscimed.2021.113926. ISSN-02779536

- 1192.Vipin, B., Amit, R.K. 2021. Wholesale price versus buyback: A comparison of contracts in a supply chain with a behavioral retailer. *Computers and Industrial Engineering* 162. doi: 10.1016/j.cie.2021.107689. ISSN-03608352
- 1193.Kim, H.-D., Kamalanabhan, T.J. 2021. Task performance of expatriates based on emissary model of global human resource strategy. *Management and Labour Studies* 46 (1): 78-93. doi: 10.1177/0258042X20959987. ISSN-0258042X
- 1194.Banu, J., Baral, R. 2021. Career choice, growth and well-being of women entrepreneurs' community: insights on driving factors in India. *Journal of Enterprising Communities*. doi: 10.1108/JEC-12-2020-0206. ISSN-17506204
- 1195.Rajesh, R., Rajeev, A., Rajendran, C. 2021. Corporate social performances of firms in select developed economies: A comparative study. *Socio-Economic Planning Sciences*. doi: 10.1016/j.seps.2021.101194. ISSN-00380121
- 1196.Venkatraman, K., Vijayalakshmi, V., Sudarsanam, N., Manoharan, A. 2021. Designing dynamic interventions to improve adherence in pediatric long-term treatment—the role of perceived value of the physician by primary caregivers. *Health Communication* 36 (14): 1825-1840. doi: 10.1080/10410236.2020.1796284. ISSN-10410236
- 1197.Bansal, S., Thenmozhi, M. 2021. Does CEO duality affect board independence? The moderating impact of founder ownership and family blockholding. *IIMB Management Review* 33 (3): 225-238. doi: 10.1016/j.iimb.2021.09.004. ISSN-09703896
- 1198.Omar, A., Prasanna, P.K. 2021. Asymmetric effects of noise in Merton default risk model: Evidence from emerging Asia. *Pacific Basin Finance Journal* 65. doi: 10.1016/j.pacfin.2021.101497. ISSN-0927538X
- 1199.Mohammed, N., Kamalanabhan, T.J. 2021. Tacit knowledge sharing and creative performance: a transformative learning perspective. *Development and Learning in Organizations*. doi: 10.1108/DLO-09-2021-0161. ISSN-14777282
- 1200.Pichandi, R., Gupta, N.S., Rajendran, C. 2021. CARIMO - A heuristic approach to machine-part cell formation. *Sadhana - Academy Proceedings in Engineering Sciences* 46 (2). doi: 10.1007/s12046-021-01575-7. ISSN-02562499
- 1201.Balaraman, K.K., Sundarraj, R.P. 2021. Exploring an extension to the foresight measure: A mixed-mode study of individual managerial employees. *IEEE Transactions on Engineering Management* 68 (4): 982-998. doi: 10.1109/TEM.2019.2919120. ISSN-00189391
- 1202.Sunder M, V., S, G.L., Marathe, R.R. 2021. A dynamic capabilities view of lean in a service context. *IEEE Transactions on Engineering Management*. doi: 10.1109/TEM.2021.3089850. ISSN-00189391
- 1203.Mukherjee, A., Sundarraj, R.P., Dutta, K. 2021. Time-preference-based on-spot bundled cloud-service provisioning. *Decision Support Systems* 151. doi: 10.1016/j.dss.2021.113607. ISSN-01679236
- 1204.Srivatsa Srinivas, S., Marathe, R.R. 2021. Averting adverse selection: The Government of India's scheme to distribute affordable medicines. *Socio-Economic Planning Sciences* 78. doi: 10.1016/j.seps.2021.101035. ISSN-00380121
- 1205.Arumugam, D., Prasanna, P.K. 2021. A game of hide-and-seek between proprietary and buy-side algorithmic traders: Causal links with market quality. *Applied Economics* 53 (41): 4788-4798. doi: 10.1080/00036846.2021.1907290. ISSN-00036846
- 1206.Selvam, S.K., Rajendran, C. 2021. tofee-tree: automatic feature engineering framework for modeling trend-cycle in time series forecasting. *Neural Computing and Applications*. doi: 10.1007/s00521-021-06438-0. ISSN-09410643
- 1207.Venkiteswaran, S., Sundarraj, R.P. 2021. How angry are you? Anger intensity, demand and subjective value in multi-round distributive electronic negotiation. *Group Decision and Negotiation* 30 (1): 143-170. doi: 10.1007/s10726-020-09710-1. ISSN-09262644
- 1208.Govindarajan, H.K., Ganesh, L.S. 2021. A morphological analysis of energy policy analysis research - emerging issues and concerns. *Journal of World Energy Law and Business* 14 (5): 313-343. doi: 10.1093/jwelb/jwab016. ISSN-17549957
- 1209.Kumar, S.S., Rajendran, C., Leisten, R. 2021. Bounding strategies for obtaining a lower bound for N-job and M-machine flowshop scheduling problem with objective of minimising the total flowtime of jobs. *International Journal of Operational Research* 41 (2): 244-269. doi: 10.1504/IJOR.2021.115634. ISSN-17457645
- 1210.Natesan, S.D., Marathe, R.R. 2021. MGNREGA Implementation in Tamil Nadu: Voices from the fields. *Indian Journal of Human Development* 15 (1): 128-137. doi: 10.1177/09737030211008298. ISSN-09737030
- 1211.Vissa, S.K., Thenmozhi, M. 2021. Do home country stability factors matter for domestic and cross border mergers and acquisitions? A case of G19 countries. *Finance Research Letters*. doi: 10.1016/j.frl.2021.102527. ISSN-15446123
- 1212.Sunder M, V., Ganesh, L.S. 2021. Lean additives in a service factory: A design science approach. *Technovation* 104. doi: 10.1016/j.technovation.2021.102269. ISSN-01664972
- 1213.Shinde, A., Mehta, P., Amit, R.K. 2021. An experimental investigation of newsvendor decisions under ambiguity. *International Journal of Production Research* 59 (19): 5960-5971. doi: 10.1080/00207543.2020.1797206. ISSN-00207543
- 1214.Kumar, S., Prasanna, K. 2021. Liquidity commonality on National Stock Exchange: size and sector effect. *Applied Economics Letters* 28 (14): 1208-1221. doi: 10.1080/13504851.2020.1804046. ISSN-13504851
- 1215.Baliga, A.J., Chawla, V., Sunder M, V., Ganesh, L.S., Sivakumaran, B. 2021. Service failure and recovery in B2B markets – a morphological analysis. *Journal of Business Research* 131, pp 763-781. doi: 10.1016/j.jbusres.2020.09.025. ISSN-01482963
- 1216.Issac, A.C., Baral, R. 2021. Techniques that facilitate

- knowledge hiding: perspectives of ethical dilemmas from both sides of the coin. *Development and Learning in Organizations* 35 (2): 15-17. doi: 10.1108/DLO-11-2019-0263. ISSN-14777282
- 1217.Ranjith Kumar, R., Ganesh, L.S., Rajendran, C. 2021. Quality 4.0 – a review of and framework for quality management in the digital era. *International Journal of Quality and Reliability Management*. doi: 10.1108/IJQRM-05-2021-0150. ISSN-0265671X
- 1218.Sumathi, G N, Elango,J. and M.Thenmozhi 2021. Patient Satisfaction on Hospital care services A study with specific reference to beneficiaries of Community Based Health Insurance Schemes in India. doi: 10.1504/IJSOM.2021.10042141.
- 1219.Liu, M.-S., Ponnusamy, S. 2021. Multidimensional analogues of refined Bohr's inequality. *Proceedings of the American Mathematical Society* 149 (5): 2133-2146. doi: 10.1090/proc/15371. ISSN-00029939
- 1220.Kumar, A., Bhardwaj, A., Dubey, S. 2021. A local meshless method to approximate the time-fractional telegraph equation. *Engineering with Computers* 37 (4): 3473-3488. doi: 10.1007/s00366-020-01006-x. ISSN-01770667
- 1221.Liu, G., Liu, Z., Ponnusamy, S. 2021. Refined Bohr inequality for bounded analytic functions. *Bulletin des Sciences Mathematiques* 173. doi: 10.1016/j.bulsci.2021.103054. ISSN-00074497
- 1222.Bahri, A., Notbohm, D., Sarkar, S., Song, J. 2021. On integral cohomology of certain orbifolds. *International Mathematics Research Notices* 2021 (6): 4140-4168. doi: 10.1093/imrn/rny283. ISSN-10737928
- 1223.Evdoridis, S., Ponnusamy, S., Rasila, A. 2021. Improved Bohr's Inequality for shifted disks. *Results in Mathematics* 76 (1). doi: 10.1007/s00025-020-01325-x. ISSN-14226383
- 1224.Jha, S., Chand, A.K.B., Navascués, M.A., Sahu, A. 2021. Approximation properties of bivariate α -fractal functions and dimension results. *Applicable Analysis* 100 (16): 3426-3444. doi: 10.1080/00036811.2020.1721472. ISSN-00036811
- 1225.Jayanthan, A.V., Selvaraja, S. 2021. Upper bounds for the regularity of powers of edge ideals of graphs. *Journal of Algebra* 574, pp 184-205. doi: 10.1016/j.jalgebra.2021.01.030. ISSN-00218693
- 1226.Jayanthan, A.V., Selvaraja, S. 2021. Linear polynomials for the regularity of powers of edge ideals of very well-covered graphs. *Journal of Commutative Algebra* 13 (1): 89-101. doi: 10.1216/jca.2021.13.89. ISSN-19390807
- 1227.Balaji, R., Bapat, R.B., Goel, S. 2021. An inverse formula for the distance matrix of a wheel graph with an even number of vertices. *Linear Algebra and Its Applications* 610, pp 274-292. doi: 10.1016/j.laa.2020.10.003. ISSN-00243795
- 1228.Biswas, L., Shukla, P. 2021. Stability analysis of a resonant triad in a stratified uniform shear flow. *Physical Review Fluids* 6 (1). doi: 10.1103/PhysRevFluids.6.014802. ISSN-2469990X
- 1229.Patil, P.M., Roy, S. 2021. Corrigendum of "Mixed convection flow past a yawed cylinder" [ICHMT 114 (2020) 104582]. *International Communications in Heat and Mass Transfer* 124. doi: 10.1016/j.icheatmasstransfer.2021.105246. ISSN-07351933
- 1230.Xu, H.-K., Dey, S., Vetrivel, V. 2021. Notes on a neural network approach to inverse variational inequalities. *Optimization* 70 (06-May-2022): 901-910. doi: 10.1080/02331934.2019.1705822. ISSN-02331934
- 1231.Jha, S., Chand, A.K.B., Navascués, M.A. 2021. Approximation by shape preserving fractal functions with variable scalings. *Calcolo* 58 (1). doi: 10.1007/s10092-021-00396-8. ISSN-00080624
- 1232.Huang, Y., Liu, M.-S., Ponnusamy, S. 2021. Bohr-type inequalities for harmonic mappings with a multiple zero at the origin. *Mediterranean Journal of Mathematics* 18 (2). doi: 10.1007/s00009-021-01726-4. ISSN-16605446
- 1233.Roy, N., Wijaya, K.P., Götz, T., Sundar, S. 2021. A mathematical model governing the short-range transport of microplastic particles in a lid-driven cavity with an obstacle. *Communications in Nonlinear Science and Numerical Simulation* 101. doi: 10.1016/j.cnsns.2021.105893. ISSN-10075704
- 1234.Deng, H., Ponnusamy, S., Qiao, J. 2021. Extreme points and support points of families of harmonic Bloch mappings. *Potential Analysis* 55 (4): 619-638. doi: 10.1007/s11118-020-09871-3. ISSN-09262601
- 1235.Jha, S., Chand, A.K.B., Navascues, M.A. 2021. Generalized bivariate Hermite fractal interpolation function. *Numerical Analysis and Applications* 14 (2): 103-114. doi: 10.1134/S1995423921020014. ISSN-19954239
- 1236.Sivakumar, K.C., Sushmitha, P., Wendler, M. 2021. Karamardian matrices: An analogue of q-matrices. *Electronic Journal of Linear Algebra* 37, pp 127-155. doi: 10.13001/ela.2021.5017. ISSN-15379582
- 1237.Som, K., Vetrivel, V. 2021. On robustness for set-valued optimization problems. *Journal of Global Optimization* 79 (4): 905-925. doi: 10.1007/s10898-020-00959-z. ISSN-09255001
- 1238.Raja Preethi, V., Radha, R., Vinod, R.K., Balakumar, S., Gupta, B., Singh, S. 2021. Controlled synthesis of photoactive gallium based sillenite single crystal and its application in environmental remediation. *Solar Energy* 220, pp 890-900. doi: 10.1016/j.solener.2021.03.060. ISSN-0038092X
- 1239.Alam, M.M., Dubey, S., Baleanu, D. 2021. New interpolation spaces and strict Hölder regularity for fractional abstract Cauchy problem. *Boundary Value Problems* 2021 (1). doi: 10.1186/s13661-021-01559-w. ISSN-16872762
- 1240.Bisui, S., Hà, H.T., Jayanthan, A.V., Thomas, A.C. 2021. Resurgence numbers of fiber products of projective schemes. *Collectanea Mathematica* 72 (3): 605-614. doi: 10.1007/s13348-020-00302-5. ISSN-00100757
- 1241.Rajan, P., Navascués, M.A., Chand, A.K.B. 2021. Iterated functions systems composed of generalized

- θ -contractions. *Fractal and Fractional* 5 (3). doi: 10.3390/fractalfract5030069. ISSN-25043110
- 1242.Foucaud, F., Hocquard, H., Valicov, P., et al. 2021. Exact square coloring of subcubic planar graphs. *Discrete Applied Mathematics* 293, pp 74-89. doi: 10.1016/j.dam.2021.01.007. ISSN-0166218X
- 1243.Nandi, S., Sanyasiraju, Y.V.S.S. 2021. A grid based ADI method for the problem of two phase solidification. *International Journal of Heat and Mass Transfer* 178. doi: 10.1016/j.ijheatmasstransfer.2021.121569. ISSN-00179310
- 1244.Kayumov, I.R., Khammatova, D.M., Ponnusamy, S. 2021. Bohr–Rogosinski phenomenon for analytic functions and Cesàro operators. *Journal of Mathematical Analysis and Applications* 496 (2). doi: 10.1016/j.jmaa.2020.124824. ISSN-0022247X
- 1245.Mahalingam, K., Pandoh, P. 2021. Enumeration of two dimensional palindromes. *Information and Computation*. doi: 10.1016/j.ic.2021.104781. ISSN-08905401
- 1246.Anoop, T.V., Ashok Kumar, K., Kesavan, S. 2021. A shape variation result via the geometry of eigenfunctions. *Journal of Differential Equations* 298, pp 430-462. doi: 10.1016/j.jde.2021.07.001. ISSN-00220396
- 1247.Sarkar, S., Song, J. 2021. GKM theory for orbifold stratified spaces and application to singular toric varieties. *Topology and its Applications* 288. doi: 10.1016/j.topol.2020.107472. ISSN-01668641
- 1248.Vijender, N., Chand, A.K.B. 2021. Shape preserving aspects of bivariate α -fractal function. *Fractals* 29 (7). doi: 10.1142/S0218348X21501784. ISSN-0218348X
- 1249.Narang, A., Shaiju, A.J. 2021. Stability of faces in asymmetric evolutionary games. *Annals of Operations Research* 304 (02-01-2022): 343-359. doi: 10.1007/s10479-021-04157-2. ISSN-02545330
- 1250.Jayanthan, A.V., Kumar, A., Sarkar, R. 2021. Almost complete intersection binomial edge ideals and their Rees algebras. *Journal of Pure and Applied Algebra* 225 (6). doi: 10.1016/j.jpaa.2020.106628. ISSN-00224049
- 1251.Balaji, R., Bapat, R.B., Goel, S. 2021. Generalized Euclidean distance matrices. *Linear and Multilinear Algebra*. doi: 10.1080/03081087.2021.1972083. ISSN-03081087
- 1252.Tyada, K.R., Chand, A.K.B., Sajid, M. 2021. Shape preserving rational cubic trigonometric fractal interpolation functions. *Mathematics and Computers in Simulation* 190, pp 866-891. doi: 10.1016/j.matcom.2021.06.015. ISSN-03784754
- 1253.Ismagilov, A.A., Kayumova, A.V., Kayumov, I.R., Ponnusamy, S. 2021. Bohr Inequalities in some classes of analytic functions. *Journal of Mathematical Sciences (United States)* 252 (3): 360-373. doi: 10.1007/s10958-020-05165-6. ISSN-10723374
- 1254.Baksi, A., Sarkar, S., Siddhanti, A., Anand, R., Chattopadhyay, A. 2021. Differential fault location identification by machine learning. *CAAI Transactions on Intelligence Technology* 6 (1): 17-24. doi: 10.1049/cit2.12027. ISSN-24686557
- 1255.Anoop, T.V., Das, U. 2021. The compactness and the concentration compactness via p-capacity. *Annali di Matematica Pura ed Applicata* 200 (6): 2715-2740. doi: 10.1007/s10231-021-01098-2. ISSN-03733114
- 1256.Navascués, M., Mohapatra, R.N., Chand, A.K.B. 2021. Some properties of the fractal convolution of functions. *Fractional Calculus and Applied Analysis* 24 (6): 1735-1757. doi: 10.1515/fca-2021-0075. ISSN-13110454
- 1257.Mahalingam, K., Rajendran, H.P. 2021. m-Bonacci graceful labeling. *AKCE International Journal of Graphs and Combinatorics* 18 (1): 15 July 2022. doi: 10.1080/09728600.2021.1876505. ISSN-09728600
- 1258.Govindhasamy, I., Singh, A.K., Roy, S. 2021. Analysis of unsteady force convection flows on irregular boundary over a diverging channel. *Heat Transfer* 50 (3): 2610-2623. doi: 10.1002/htj.21996. ISSN-26884534
- 1259.Anoop, T.V., Biswas, N., Das, U. 2021. Admissible function spaces for weighted Sobolev Inequalities. *Communications on Pure and Applied Analysis* 20 (9): 3241-3279. doi: 10.3934/cpaa.2021105. ISSN-15340392
- 1260.Sarkar, S., Song, J. 2021. Equivariant cohomological rigidity of certain T-manifolds. *Algebraic and Geometric Topology* 21 (7): 3601-3622. doi: 10.2140/agt.2021.21.3601. ISSN-14722747
- 1261.Dey, S., Sarkar, S. 2021. A theoretical investigation on the distinguishers of Salsa and ChaCha. *Discrete Applied Mathematics* 302, pp 147-162. doi: 10.1016/j.dam.2021.06.017. ISSN-0166218X
- 1262.Rohit, R., Sarkar, S. 2021. Diving deep into the weak keys of round reduced ascon. *IACR Transactions on Symmetric Cryptology* 2021 (4): 74-99. doi: 10.46586/tosc.v2021.i4.74-99. ISSN-2519173X
- 1263.Ashok, R., Manam, S.R. 2021. Oblique water wave scattering by vertical elastic porous barriers. *International Journal of Engineering Science* 169. doi: 10.1016/j.ijengsci.2021.103578. ISSN-00207225
- 1264.Kallyadan, S.S., Shukla, P. 2021. Dynamics of two moving vortices in the presence of a fixed vortex. *European Journal of Mechanics, B/Fluids* 89, pp 458-472: doi: 10.1016/j.euromechflu.2021.07.004. ISSN-09977546
- 1265.Bhar, S., Bhaskaran, R., Sarkar, B. 2021. Erratum to 'Solutions of SPDE's Associated with a Stochastic Flow'. *Potential Analysis*. doi: 10.1007/s11118-021-09956-7. ISSN-09262601
- 1266.Brahma, K., Sarkar, S., Sau, S. 2021. Torsion in the cohomology of blowups of quasitoric orbifolds. *Topology and its Applications* 295. doi: 10.1016/j.topol.2021.107666. ISSN-01668641
- 1267.Pal, S.K., Sanyasiraju, Y.V.S.S., Usha, R. 2021. A consistent energy integral model for a film over a substrate featuring topographies. *International Journal for Numerical Methods in Fluids* 93 (12): 3424-3446. doi: 10.1002/flid.5040. ISSN-02712091
- 1268.Banik, S., Caforio, A., Isobe, T., Liu, F., Meier, W., Sakamoto, K., Sarkar, S. 2021. Atom: A stream cipher

- with double key filter. *IACR Transactions on Symmetric Cryptology* 2021 (1): 13271. doi: 10.46586/tosc.v2021.i1.5-36. ISSN-2519173X
- 1269.Bannon, J., Cameron, J., Mukherjee, K. 2021. Noncommutative joinings II. *Groups, Geometry, and Dynamics* 15 (2): 533-575. doi: 10.4171/GGD/606. ISSN-16617207
- 1270.Biswas, I., Dey, A., Genc, O., Poddar, M. 2021. On stability of tangent bundle of toric varieties. *Proceedings of the Indian Academy of Sciences: Mathematical Sciences* 131 (2). doi: 10.1007/s12044-021-00623-w. ISSN-02534142
- 1271.Das, S.R., Radha, R. 2021. Shift-invariant system on the Heisenberg Group. *Advances in Operator Theory* 6 (1). doi: 10.1007/s43036-020-00117-y. ISSN-2538225X
- 1272.Kumar, M., Upadhye, N.S., Chand, A. 2021. Distribution of linear fractal interpolation function for random dataset with stable noise. *Fractals* 29 (4). doi: 10.1142/S0218348X21500869. ISSN-0218348X
- 1273.Mahalingam, K., Rajendran, H.P. 2021. Properties of m-Bonacci-sum graphs. *Discrete Applied Mathematics*. doi: 10.1016/j.dam.2021.02.022. ISSN-0166218X
- 1274.Biswas, I., Dey, A., Poddar, M., Rayan, S. 2021. Toric co-higgs bundles on toric varieties. *Illinois Journal of Mathematics* 65 (1): 181-190. doi: 10.1215/00192082-8827663. ISSN-00192082
- 1275.Kalauch, A., Lavanya, S., Sivakumar, K.C. 2021. Singular irreducible M-operators on ordered Banach spaces. *Journal of Analysis* 29 (2): 407-423. doi: 10.1007/s41478-020-00225-1. ISSN-09713611
- 1276.Vijender, N., Chand, A.K.B., Navascués, M.A., Sebastián, M.V. 2021. Quantum Bernstein fractal functions. *Computational and Mathematical Methods* 3 (3). doi: 10.1002/cmm4.1118. ISSN-25777408
- 1277.Annamalai, K., Radha, R., Kichanov, S.E., Navaneethan, M., Balakumar, S. 2021. Ice bath assisted BiMn₂O₅(Mullite) phase synthesis, structural and compositional analysis under different Bi concentration. *ECS Journal of Solid State Science and Technology* 10 (6). doi: 10.1149/2162-8777/ac040c. ISSN-21628769
- 1278.Chen, S., Ponnusamy, S., Wang, X. 2021. Remarks on 'Norm Estimates of the Partial Derivatives for Harmonic Mappings and Harmonic Quasiregular Mappings'. *Journal of Geometric Analysis* 31 (11): 11051-11060. doi: 10.1007/s12220-021-00672-7. ISSN-10506926
- 1279.John, A., Kulkarni, S.H., Radha, R. 2021. Shift invariant spaces in L₂(R, Cm) with m generators. *Journal of Analysis* 29 (2): 383-405. doi: 10.1007/s41478-019-00219-8. ISSN-09713611
- 1280.Sivakumar, K.C., Sushmitha, P., Tsatsomeros, M. 2021. Q#-matrices and Q†-matrices: two extensions of the Q-matrix concept. *Linear and Multilinear Algebra*. doi: 10.1080/03081087.2021.1975620. ISSN-03081087
- 1281.Dalai, D.K., Pal, S., Sarkar, S. 2021. Some conditional cube testers for Grain-128a of reduced rounds. *IEEE Transactions on Computers*. doi: 10.1109/TC.2021.3085144. ISSN-00189340
- 1282.Riera, C., Roy, T., Sarkar, S., Stanica, P. 2021. A hybrid inversive congruential pseudorandom number generator with high period. *European Journal of Pure and Applied Mathematics* 14 (1): 44579. doi: 10.29020/NYBG.EJPAM.V14I1.3852. ISSN-13075543
- 1283.Huang, Y., Liu, M.-S., Ponnusamy, S. 2021. The Bohr-type operator on analytic functions and sections. *Complex Variables and Elliptic Equations*. doi: 10.1080/17476933.2021.1990272. ISSN-17476933
- 1284.Kalauch, A., Lavanya, S., Sivakumar, K.C. 2021. Matrices whose group inverses are M-matrices. *Linear Algebra and Its Applications* 614, pp 44-67. doi: 10.1016/j.laa.2019.12.026. ISSN-00243795
- 1285.Choudhury, P.N., Eagambaram, N., Sivakumar, K.C., Sushmitha, P. 2021. On the matrix class Q₀ and inverse monotonicity properties of bordered matrices. *Linear Algebra and Its Applications* 612, pp 206-222. doi: 10.1016/j.laa.2020.10.041. ISSN-00243795
- 1286.Bueno, M.I., Furtado, S., Sivakumar, K.C. 2021. Linear maps preserving the Lorentz-cone spectrum in certain subspaces of Mn. *Banach Journal of Mathematical Analysis* 15 (3). doi: 10.1007/s43037-021-00140-y. ISSN-17358787
- 1287.Pancholi, D.M., Pandit, S., Saha, K. 2021. Embeddings of 3-manifolds via open books. *Journal of the Ramanujan Mathematical Society* 36 (3): 243-250. ISSN-09701249
- 1288.Bikram, P., Kumar, R., Mohanta, R., Mukherjee, K., Saha, D. 2021. On the von Neumann algebras associated to Yang-Baxter operators. *Proceedings of the Royal Society of Edinburgh Section A: Mathematics* 151 (4): 1331-1354. doi: 10.1017/prm.2020.62. ISSN-03082105
- 1289.Baksi, A., Kumar, S., Sarkar, S. 2021. A new approach for side channel analysis on stream ciphers and related constructions. *IEEE Transactions on Computers*. doi: 10.1109/TC.2021.3135191. ISSN-00189340
- 1290.Pandit, S., Selvakumar, A. 2021. Co-dimension two spinal open book embeddings of 3-manifolds. *Journal of Knot Theory and its Ramifications* 30 (3). doi: 10.1142/S0218216521500231. ISSN-02182165
- 1291.Sarkar, S., Suh, D.Y. 2021. Equivariant cobordism of torus orbifolds. *Chinese Annals of Mathematics. Series B* 42 (6): 861-890. doi: 10.1007/s11401-021-0295-0. ISSN-02529599
- 1292.Kesarwani, A., Pandey, S.K., Sarkar, S., Venkateswarlu, A. 2021. Recursive MDS matrices over finite commutative rings. *Discrete Applied Mathematics* 304., pp 384-396. doi: 10.1016/j.dam.2021.08.016. ISSN-0166218X
- 1293.De, D., Mukherjee, K. 2021. On symmetric embedding of type I factors. *Journal of Mathematical Physics* 62 (1). doi: 10.1063/5.0026933. ISSN-00222488
- 1294.Sathe, A.M., Upadhye, N.S. 2021. Estimation of the parameters of symmetric stable ARMA and ARMA-GARCH models. *Journal of Applied Statistics*. doi: 10.1080/02664763.2021.1928019. ISSN-02664763
- 1295.Guan, T., Huang, M., Ponnusamy, S., Wang, X. 2021. Quasiisometric mappings in the distance ratio metric in

- Banach spaces. *Monatshefte fur Mathematik* 195 (2): 249-265. doi: 10.1007/s00605-021-01548-2. ISSN-00269255
- 1296.Nair, M.T. 2021. Regularization of ill-posed operator equations: an overview. *Journal of Analysis* 29 (2): 519-541. doi: 10.1007/s41478-020-00263-9. ISSN-09713611
- 1297.Guan, T., Huang, M., Ponnusamy, S., Wang, X. 2021. Coarsely bilipschitz continuity of inversions with respect to distance ratio metrics in metric spaces. *Results in Mathematics* 76 (1). doi: 10.1007/s00025-021-01352-2. ISSN-14226383
- 1298.Mahalingam, K., Maity, A., Pandoh, P., Raghavan, R. 2021. Block reversal on finite words. *Theoretical Computer Science* 894, pp 135-151. doi: 10.1016/j.tcs.2021.06.046. ISSN-03043975
- 1299.Sarkar, S., Uma, V. 2021. Equivariant K-theory of toric orbifolds. *Journal of the Mathematical Society of Japan* 73 (3): 735-752. doi: 10.2969/JMSJ/83548354. ISSN-00255645
- 1300.Choudhury, P.N., Sivakumar, K.C. 2021. Matrices with positive semidefinite real part. *Linear and Multilinear Algebra* 69 (3): 448-470. doi: 10.1080/03081087.2019.1602588. ISSN-03081087
- 1301.Jha, S., Majumdar, D., Shekhar, S. 2021. p -Selmer companion modular forms. *Annales de l'Institut Fourier* 71 (1): 53-87. doi: 10.5802/aif.3392. ISSN-03730956
- 1302.Pasupathi, R., Chand, A.K.B., Navascués, M.A. 2021. Cyclic Meir-Keeler contraction and its fractals. *Numerical Functional Analysis and Optimization* 42 (9): 1053-1072. doi: 10.1080/01630563.2021.1937215. ISSN-01630563
- 1303.Nair, M.T. 2021. On truncated spectral regularization for an ill-posed evolution equation. *Proceedings of the Indian Academy of Sciences: Mathematical Sciences* 131 (2). doi: 10.1007/s12044-021-00632-9. ISSN-02534142
- 1304.Pandit, S.U.H.A.S., Selvakumar, S. 2021. A note on open book embeddings of 3-manifolds in S^5 . *Bulletin of the Australian Mathematical Society*. doi: 10.1017/S0004972721000745. ISSN-00049727
- 1305.Ghara, S., Kumar, S., Pramanick, P. 2021. K -homogeneous tuple of operators on bounded symmetric domains. *Israel Journal of Mathematics*. doi: 10.1007/s11856-021-2268-0. ISSN-00212172
- 1306.Sikaria, S., Sen, R., Upadhye, N.S. 2021. Bayesian filtering for multi-period mean-variance portfolio selection. *Journal of Statistical Theory and Practice* 15 (2). doi: 10.1007/s42519-021-00175-2. ISSN-15598608
- 1307.Luo, Q., Ponnusamy, S. 2021. One parameter family of univalent polyharmonic mappings. *Bulletin of the Malaysian Mathematical Sciences Society* 44 (2): 839-856. doi: 10.1007/s40840-020-00984-x. ISSN-01266705
- 1308.Ponnusamy, S., Sugawa, T. 2021. Sharp inequalities for logarithmic coefficients and their applications. *Bulletin des Sciences Mathématiques* 166. doi: 10.1016/j.bulsci.2020.102931. ISSN-00074497
- 1309.Biswas, M.D.H.A., Radha, R. 2021. Characterization of fourier transform of H -valued functions on the real line. *Rocky Mountain Journal of Mathematics* 51 (1): 43-53. doi: 10.1216/RMJ.2021.51.43. ISSN-00357596
- 1310.Ponnusamy, S., Vijayakumar, R. 2021. Generalized versions of Lipschitz conditions on the modulus of holomorphic functions. *Comptes Rendus Mathématique* 359 (5): 609-615. doi: 10.5802/CRMATH.200. ISSN-1631073X
- 1311.Chatterjee, M., Sivakumar, K.C. 2021. Intervals of H -matrices and inverse M -matrices. *Linear Algebra and Its Applications* 614, pp 24-43. doi: 10.1016/j.laa.2019.12.001. ISSN-00243795
- 1312.Mishra, S., Krishna, B.A., Rajakrishnan, S. 2021. Approximability of open k -monopoly problems. *Theory of Computing Systems* 65 (5): 798-814. doi: 10.1007/s00224-020-10027-4. ISSN-14324350
- 1313.Pasupathi, R., Chand, A.K.B., Navascués, M.A., Sebastián, M.V. 2021. Cyclic generalized iterated function systems. *Computational and Mathematical Methods* 3 (6). doi: 10.1002/cmm4.1202. ISSN-25777408
- 1314.Marri, G.K., Balaji, C. 2021. Experimental and numerical investigations on the effect of porosity and PPI gradients of metal foams on the thermal performance of a composite phase change material heat sink. *International Journal of Heat and Mass Transfer* 164. doi: 10.1016/j.ijheatmasstransfer.2020.120454. ISSN-00179310
- 1315.Bembalge, O.B., Panigrahi, S.K. 2021. Hot deformation behavior and processing map development of cryorolled AA6063 alloy under compression and tension. *International Journal of Mechanical Sciences* 191. doi: 10.1016/j.ijmecsci.2020.106100. ISSN-00207403
- 1316.Mishra, S., Bukkarapu, K.R., Krishnasamy, A. 2021. A composition based approach to predict density, viscosity and surface tension of biodiesel fuels. *Fuel* 285. doi: 10.1016/j.fuel.2020.119056. ISSN-00162361
- 1317.Panda, K., Ramesh, A. 2021. Diesel injection strategies for reducing emissions and enhancing the performance of a methanol based dual fuel stationary engine. *Fuel* 289. doi: 10.1016/j.fuel.2020.119809. ISSN-00162361
- 1318.Hirshikesh, Martínez-Pañeda, E., Natarajan, S. 2021. Adaptive phase field modelling of crack propagation in orthotropic functionally graded materials. *Defence Technology* 17 (1): 185-195. doi: 10.1016/j.dt.2020.03.004. ISSN-22149147
- 1319.Bukkarapu, K.R., Krishnasamy, A. 2021. A study on the effects of compositional variations of biodiesel fuel on its physiochemical properties. *Biofuels* 12 (5): 523-535. doi: 10.1080/17597269.2018.1501638. ISSN-17597269
- 1320.Mahata, S., Shakya, P., Babu, N.R. 2021. A robust condition monitoring methodology for grinding wheel wear identification using Hilbert Huang transform. *Precision Engineering* 70, pp 77-91. doi: 10.1016/j.precisioneng.2021.01.009. ISSN-01416359
- 1321.Gamdha, D., Unnikrishnakurup, S., Balasubramaniam, K., et al. 2021. Automated defect recognition on x-ray radiographs of solid propellant using deep learning based on convolutional neural networks. *Journal of Nondestructive Evaluation* 40 (1). doi: 10.1007/s10921-021-00750-4. ISSN-01959298

- 1322.Majhy, B., Priyadarshini, P., Sen, A.K. 2021. Effect of surface energy and roughness on cell adhesion and growth-facile surface modification for enhanced cell culture. *RSC Advances* 11 (25): 15467-15476. doi: 10.1039/d1ra02402g. ISSN-20462069
- 1323.Jain, A., Krishnasamy, A., Pradeep, V. 2021. Computational optimization of reactivity controlled compression ignition combustion to achieve high efficiency and clean combustion. *International Journal of Engine Research* 22 (7): 2213-2232. doi: 10.1177/1468087420931730. ISSN-14680874
- 1324.Naik, H., Tiwari, S. 2021. Thermal performance analysis of fin-tube heat exchanger with staggered tube arrangement in presence of rectangular winglet pairs. *International Journal of Thermal Sciences* 161. doi: 10.1016/j.ijthermalsci.2020.106723. ISSN-12900729
- 1325.Vidhya, Y.E.B., Pattamatta, A., Manivannan, A., Vasa, N.J. 2021. Influence of fluence, beam overlap and aging on the wettability of pulsed Nd³⁺:YAG nanosecond laser-textured Cu and Al sheets. *Applied Surface Science* 548. doi: 10.1016/j.apsusc.2021.149259. ISSN-01694332
- 1326.Sreejith, P., Kannan, K., Rajagopal, K.R. 2021. A thermodynamic framework for additive manufacturing, using amorphous polymers, capable of predicting residual stress, warpage and shrinkage. *International Journal of Engineering Science* 159. doi: 10.1016/j.iengsci.2020.103412. ISSN-00207225
- 1327.Tomy, A., Hiremath, S.S. 2021. Machining and characterization of multidirectional hybrid silica glass fiber reinforced composite laminates using abrasive jet machining. *Silicon* 13 (4): 1151-1164. doi: 10.1007/s12633-020-00504-3. ISSN-1876990X
- 1328.Sakthivel, M., Anupindi, K. 2021. An off-lattice Boltzmann method for blood flow simulation through a model irregular arterial stenosis: The effects of amplitude and frequency of the irregularity. *Physics of Fluids* 33 (3). doi: 10.1063/5.0044948. ISSN-10706631
- 1329.Vikraman, V., Anand, K., Ramesh, A. 2021. Novel strategies to overcome the limitations of a low compression ratio light duty diesel engine. *International Journal of Engine Research* 22 (9): 2830-2851. doi: 10.1177/1468087420961983. ISSN-14680874
- 1330.Gaikwad, R., Thangaraj, P.R., Sen, A.K. 2021. Direct and rapid measurement of hydrogen peroxide in human blood using a microfluidic device. *Scientific Reports* 11 (1). doi: 10.1038/s41598-021-82623-4. ISSN-20452322
- 1331.Patel, A., Shakya, P. 2021. Spur gear crack modelling and analysis under variable speed conditions using variational mode decomposition. *Mechanism and Machine Theory* 164. doi: 10.1016/j.mechmachtheory.2021.104357. ISSN-0094114X
- 1332.Chowdhury, I.U., Mahapatra, P.S., Sen, A.K. 2021. Shape evolution of drops on surfaces of different wettability gradients. *Chemical Engineering Science* 229. doi: 10.1016/j.ces.2020.116136. ISSN-00092509
- 1333.Koodalil, D., Rajagopal, P., Balasubramaniam, K. 2021. Quantifying adhesive thickness and adhesion parameters using higher-order SH guided waves. *Ultrasonics* 114. doi: 10.1016/j.ultras.2021.106429. ISSN-0041624X
- 1334.Mouvanal, S., Burkhardt, A., Bakshi, S., Chatterjee, D. 2021. Numerical study of purging of a gasoline direct injection nozzle at the end of injection. *International Journal of Engine Research* 22 (5): 1670-1684. doi: 10.1177/1468087420916658. ISSN-14680874
- 1335.Koodalil, D., Rajagopal, P., Balasubramaniam, K. 2021. Bond stiffness estimation with shear horizontal guided waves generated using PPM-EMATs. *International Journal of Adhesion and Adhesives* 104. doi: 10.1016/j.ijadhadh.2020.102761. ISSN-01437496
- 1336.Dsouza, S.M., Hirshikesh, Mathew, T.V., Singh, I.V., Natarajan, S. 2021. A non-intrusive stochastic phase field method for crack propagation in functionally graded materials. *Acta Mechanica* 232 (7): 2555-2574. doi: 10.1007/s00707-021-02956-z. ISSN-00015970
- 1337.Bukkarapu, K.R., Krishnasamy, A. 2021. A relative assessment of chromatographic and spectroscopic based approaches to predict engine fuel properties of biodiesel. *Fuel Processing Technology* 222. doi: 10.1016/j.fuproc.2021.106960. ISSN-03783820
- 1338.Akula, R., Gopinath, A., Rangarajan, S., Balaji, C. 2021. Experimental and numerical studies on heat transfer from a PCM based heat sink with baffles. *International Journal of Thermal Sciences* 159. doi: 10.1016/j.ijthermalsci.2020.106525. ISSN-12900729
- 1339.Suraj, C.K., Sudarshan, G., Anand, K., Sundararajan, T. 2021. Effects of autooxidation on the fuel spray characteristics of Karanja biodiesel. *Biomass and Bioenergy* 149. doi: 10.1016/j.biombioe.2021.106084. ISSN-09619534
- 1340.Hilarydoss, S., Delhiraja, K., Reddy, K.S., Philip, L., Chand, D., Benny, B. 2021. Thermal modeling, characterization, and enviro-economic investigations on inclined felt sheet solar distiller for seawater desalination. *Environmental Science and Pollution Research* 28 (45): 63572-63588. doi: 10.1007/s11356-020-10831-y. ISSN-09441344
- 1341.Hirshikesh, H., Pramod, A.L.N., Waisman, H., Natarajan, S. 2021. Adaptive phase field method using novel physics based refinement criteria. *Computer Methods in Applied Mechanics and Engineering* 383. doi: 10.1016/j.cma.2021.113874. ISSN-00457825
- 1342.Reddy, K.S., Pradeep, N. 2021. Stability analysis of the thermocline thermal energy storage system during high flow rates for solar process heating applications. *Solar Energy* 226, pp 40-53. doi: 10.1016/j.solener.2021.08.026. ISSN-0038092X
- 1343.Sankar, V., Balasubramaniam, K., Sundara, R. 2021. Insights into the effect of polymer functionalization of multiwalled carbon nanotubes in the design of flexible strain sensor. *Sensors and Actuators, A: Physical* 322. doi: 10.1016/j.sna.2021.112605. ISSN-09244247
- 1344.Tiwari, J., Pratheesh, P., Bembalge, O.B., Krishnaswamy, H., Amirthalingam, M., Panigrahi, S.K.

2021. Microstructure dependent electroplastic effect in AA 6063 alloy and its nanocomposites. *Journal of Materials Research and Technology* 12, pp 2185-2204. doi: 10.1016/j.jmrt.2021.03.112. ISSN-22387854
- 1345.Raut, A.A., Mallikarjuna, J.M. 2021. Effect of in-cylinder air-water interaction on water evaporation and performance characteristics of a direct water injected GDI engine. *Engineering Science and Technology, an International Journal* 24 (2): 480-492. doi: 10.1016/j.jestch.2020.09.003. ISSN-22150986
- 1346.Kakka, P., Anupindi, K. 2021. Flow and thermal characteristics of three-dimensional turbulent wall jet. *Physics of Fluids* 33 (2). doi: 10.1063/5.0031138. ISSN-10706631
- 1347.Rajaguru, J., Arunachalam, N. 2021. Effect of machined surface integrity on the stress corrosion cracking behaviour of super duplex stainless steel. *Engineering Failure Analysis* 125. doi: 10.1016/j.engfailanal.2021.105411. ISSN-13506307
- 1348.Naik, H., Tiwari, S. 2021. Thermodynamic performance analysis of an inline fin-tube heat exchanger in presence of rectangular winglet pairs. *International Journal of Mechanical Sciences* 193. doi: 10.1016/j.ijmecsci.2020.106148. ISSN-00207403
- 1349.Bhagavathi, L.R., Deshpande, A.P., Janaki Ram, G.D., Panigrahi, S.K. 2021. Hydrothermal aging, fatigue and dynamic mechanical behavior of cellulosic particles reinforced one-component moisture curable polyurethane adhesive joints. *International Journal of Adhesion and Adhesives* 105. doi: 10.1016/j.ijadhadh.2020.102771. ISSN-01437496
- 1350.Josyula, T., Mahapatra, P.S., Pattamatta, A. 2021. Insights into the evolution of the thermal field in evaporating sessile pure water drops. *Colloids and Surfaces A: Physicochemical and Engineering Aspects* 611. doi: 10.1016/j.colsurfa.2020.125855. ISSN-09277757
- 1351.Mohan, L., Kar, S., Mahapatra, P.S., Nagai, M., Santra, T.S. 2021. Fabrication of TiO₂ microspikes for highly efficient intracellular delivery by pulse laser-assisted photoporation. *RSC Advances* 11 (16): 9336-9348. doi: 10.1039/d0ra09785c. ISSN-20462069
- 1352.Chandan, Dey, S., Iqbal, S.M., Reddy, K.S., Pesala, B. 2021. Numerical modeling and performance assessment of elongated compound parabolic concentrator based LCPVT system. *Renewable Energy* 167, pp 199-216. doi: 10.1016/j.renene.2020.11.076. ISSN-09601481
- 1353.Balan, A.S.S., Chidambaram, K., Nadolny, K., et al. 2021. Effect of cryogenic grinding on fatigue life of additively manufactured maraging steel. *Materials* 14 (5), p 16 January 2022. doi: 10.3390/ma14051245. ISSN-19961944
- 1354.Maliackal, A.K., Ganesan, A.R., Mani, A. 2021. Interferometric analysis of flow around a horizontal tube falling film evaporator for MED systems. *International Journal of Thermal Sciences* 161. doi: 10.1016/j.ijthermalsci.2020.106745. ISSN-12900729
- 1355.Akula, R., Balaji, C. 2021. Thermal performance of a phase change material-based heat sink subject to constant and power surge heat loads: A numerical study. *Journal of Thermal Science and Engineering Applications* 13 (3). doi: 10.1115/1.4047944. ISSN-19485085
- 1356.Baskaran, K., Srinivasan, K. 2021. Aeroacoustic modal analysis of underexpanded pipe jets with and without an upstream cavity. *Physics of Fluids* 33 (1). doi: 10.1063/5.0035133. ISSN-10706631
- 1357.Dass, A., Gedupudi, S. 2021. Numerical investigation on the heat transfer coefficient jump in tilted single-phase natural circulation loop and coupled natural circulation loop. *International Communications in Heat and Mass Transfer* 120. doi: 10.1016/j.icheatmasstransfer.2020.104920. ISSN-07351933
- 1358.Prasad, K., Venkatesh, B., Krishnaswamy, H., Banerjee, D.K., Chakkingal, U. 2021. On the interplay of friction and stress relaxation to improve stretch-flangeability of dual phase (DP600) steel. *CIRP Journal of Manufacturing Science and Technology* 32, p 154-169. doi: 10.1016/j.cirpj.2020.11.014. ISSN-17555817
- 1359.Mishra, P., Penchaliah, R. 2021. Synergistic effect of surface texturing and coating on the friction between piston ring and cylinder liner contact. *Proceedings of the Institution of Mechanical Engineers, Part J: Journal of Engineering Tribology* 235 (7): 1298-1311. doi: 10.1177/1350650120951289. ISSN-13506501
- 1360.Varma, A., Gokhale, A., Krishnaswamy, H., Banerjee, D.K., Jain, J. 2021. Grain boundary sliding and non-constancy strain during stress relaxation of pure Mg. *Materials Science and Engineering A* 817. doi: 10.1016/j.msea.2021.141349. ISSN-09215093
- 1361.Simhan, D.R., Ghosh, A. 2021. High vacuum active brazing of cBN with improved composite filler: Microstructure, interfaces and performance evaluation. *Vacuum* 183. doi: 10.1016/j.vacuum.2020.109803. ISSN-0042207X
- 1362.Panbiharwala, Y., Harish, A.V., Feng, Y., Venkitesh, D., Nilsson, J., Srinivasan, B. 2021. Stimulated Brillouin scattering mitigation using optimized phase modulation waveforms in high power narrow linewidth Yb-doped fiber amplifiers. *Optics Express* 29 (11): 17183-17200. doi: 10.1364/OE.425159. ISSN-10944087
- 1363.Roychowdhury, S., Mukthar Ali, M., Dhua, S., Sundararajan, T., Ranga Rao, G. 2021. Thermochemical hydrogen production using Rh/CeO₂/γ-Al₂O₃ catalyst by steam reforming of ethanol and water splitting in a packed bed reactor. *International Journal of Hydrogen Energy* 46 (37): 19254-19269. doi: 10.1016/j.ijhydene.2021.03.079. ISSN-03603199
- 1364.Peeketi, A.R., Swaminathan, N., Annabattula, R.K. 2021. Modeling the combined photo-chemo/thermo-mechanical actuation in azobenzene-doped liquid crystal thin films. *Journal of Applied Physics* 129 (14). doi: 10.1063/5.0042652. ISSN-00218979
- 1365.Sharma, D., Hiremath, S.S. 2021. Additively manufactured mechanical metamaterials based on triply periodic minimal surfaces: Performance, challenges,

- and application. *Mechanics of Advanced Materials and Structures*. doi: 10.1080/15376494.2021.1948151. ISSN-15376494
- 1366.Guggilla, G., Narayanaswamy, R., Stephan, P., Pattamatta, A. 2021. Influence of flow rate and surface thickness on heat transfer characteristics of two consecutively impinging droplets on a heated surface. *International Journal of Heat and Mass Transfer* 165. doi: 10.1016/j.ijheatmasstransfer.2020.120688. ISSN-00179310
- 1367.Mahalingam, I., Padmanabhan, C. 2021. A novel alternate multibody model for the longitudinal and ride dynamics of a tracked vehicle. *Vehicle System Dynamics* 59 (3): 433-457. doi: 10.1080/00423114.2019.1693048. ISSN-00423114
- 1368.Chandan, Suresh, V., Iqbal, S.M., Reddy, K.S., Pesala, B. 2021. 3-D numerical modelling and experimental investigation of coupled photovoltaic thermal and flat plate collector. *Solar Energy* 224, pp 195-209. doi: 10.1016/j.solener.2021.05.079. ISSN-0038092X
- 1369.Manoj Kumar, K., Ghosh, A. 2021. On grinding force ratio, specific energy, G-ratio and residual stress in SQCL assisted grinding using aerosol of MWCNT nanofluid. *Machining Science and Technology* 25 (4): 585-607. doi: 10.1080/10910344.2021.1903920. ISSN-10910344
- 1370.Kashyap, V., Ramkumar, P. 2021. Comprehensive analysis of geometrical parameters of crosshatched texture for enhanced tribological performance under biological environment. *Proceedings of the Institution of Mechanical Engineers, Part J: Journal of Engineering Tribology* 235 (2): 434-452. doi: 10.1177/1350650120915136. ISSN-13506501
- 1371.Sabapathy, K.A., Gedupudi, S. 2021. In situ thermal characterization of rice straw envelope of an outdoor test room. *Journal of Building Engineering* 33. doi: 10.1016/j.jobbe.2020.101416. ISSN-23527102
- 1372.Mishra, S.K., Shakya, P., Babureddy, V., Ajay Vignesh, S. 2021. An approach to improve high-frequency resonance technique for bearing fault diagnosis. *Measurement: Journal of the International Measurement Confederation* 178. doi: 10.1016/j.measurement.2021.109318. ISSN-02632241
- 1373.Bukkarapu, K.R., Krishnasamy, A. 2021. Fourier-transform-infrared-spectroscopy-based approach to predict engine fuel properties of biodiesel. *Energy and Fuels* 35 (9): 7993-8005. doi: 10.1021/acs.energyfuels.0c03927. ISSN-08870624
- 1374.Pujari, A.K., Prasad, B.V.S.S.S., Sitaram, N. 2021. Effect of thermal conductivity on nozzle guide vane internal surface temperature distribution. *International Journal of Turbo and Jet Engines* 38 (2): 135-151. doi: 10.1515/tjj-2017-0061. ISSN-03340082
- 1375.Surendran, M., Lee, C., Nguyen-Xuan, H., Liu, G.R., Natarajan, S. 2021. Cell-based smoothed finite element method for modelling interfacial cracks with non-matching grids. *Engineering Fracture Mechanics* 242. doi: 10.1016/j.engfracmech.2020.107476. ISSN-00137944
- 1376.Jena, J., Singh, S.K., Gaur, V., Singh, I.V., Natarajan, S. 2021. A new framework based on XFEM for cracked semipermeable piezoelectric material. *Engineering Fracture Mechanics* 253. doi: 10.1016/j.engfracmech.2021.107874. ISSN-00137944
- 1377.Tabjula, J.L., Kanakambaran, S., Kalyani, S., Rajagopal, P., Srinivasan, B. 2021. Outlier analysis for defect detection using sparse sampling in guided wave structural health monitoring. *Structural Control and Health Monitoring* 28 (3). doi: 10.1002/stc.2690. ISSN-15452255
- 1378.Manchi, V., Sujatha, C. 2021. Torsional vibration reduction of rotating shafts for multiple orders using centrifugal double pendulum vibration absorber. *Applied Acoustics* 174. doi: 10.1016/j.apacoust.2020.107768. ISSN-0003682X
- 1379.Prasad, R., Sarkar, A. 2021. Broadband seismic isolation of periodic ladder frame structure. *Journal of Vibration and Acoustics, Transactions of the ASME* 143 (1). doi: 10.1115/1.4047704. ISSN-10489002
- 1380.Lee, H., Chae, H., Lee, S.Y., et al. 2021. Viscoplastic lattice strain during repeated relaxation of age-hardened Al alloy. *Mechanics of Materials* 158. doi: 10.1016/j.mechmat.2021.103899. ISSN-01676636
- 1381.Mani Kalyani, A., Jaganathan, V.M., Varunkumar, S. 2021. Mechanisms governing the "gasification to char oxidation transition" in counter-current flame propagation in packed beds: insights from single-particle experiments. *Particulate Science and Technology* 39 (4): 490-494. doi: 10.1080/02726351.2020.1767245. ISSN-02726351
- 1382.Sujatha, S., Bapat, G.M., Dash, S.S. 2021. GRID: a model for the development of assistive devices in developing countries. *Disability and Rehabilitation: Assistive Technology* 16 (3): 317-323. doi: 10.1080/17483107.2019.1673838. ISSN-17483107
- 1383.Chandel, A., Das, S.P. 2021. Wake of transversely rotating and translating sphere in quiescent water at low Reynolds number. *Acta Mechanica* 232 (3): 949-966. doi: 10.1007/s00707-020-02889-z. ISSN-00015970
- 1384.Ghose, B., Panda, R.S., Balasubramaniam, K. 2021. Phase velocity measurement of dispersive wave modes by Gaussian peak-tracing in the f-k transform domain. *Measurement Science and Technology* 32 (12). doi: 10.1088/1361-6501/ac261b. ISSN-09570233
- 1385.Sahoo, D.R., Chaudhuri, P., Swaminathan, N. 2021. A molecular dynamics study of displacement cascades and radiation induced amorphization in Li₂TiO₃. *Computational Materials Science* 200. doi: 10.1016/j.commatsci.2021.110783. ISSN-09270256
- 1386.Vikraman, V., Anand, K., Ramesh, A. 2021. A novel strategy of extremely delayed intake valve opening to improve the cold-start characteristics of a low compression ratio diesel engine. *International Journal of Engine Research*. doi: 10.1177/14680874211034691. ISSN-14680874
- 1387.Kirthiga, S.M., Narasimhan, B., Balaji, C. 2021. A multi-physics ensemble approach for short-term precipitation forecasts at convective permitting scales based on sensitivity experiments over southern parts of peninsular

- India. *Journal of Earth System Science* 130 (2). doi: 10.1007/s12040-021-01556-8. ISSN-23474327
- 1388.Vikraman, V., Krishnasamy, A., Ramesh, A. 2021. Regulated intake air boosting and engine downspeeding as a viable solution for performance improvement and emission reduction of a single-cylinder diesel engine. *SAE International Journal of Engines* 15 (2). doi: 10.4271/03-15-02-0009. ISSN-19463936
- 1389.Thomas, T.M., Chowdhury, I.U., Dhivyaraja, K., Mahapatra, P.S., Pattamatta, A., Tiwari, M.K. 2021. Droplet dynamics on a wettability patterned surface during spray impact. *Processes* 9 (3). doi: 10.3390/pr9030555. ISSN-22279717
- 1390.Kidangan, R.T., Krishnamurthy, C.V., Balasubramaniam, K. 2021. Identification of the fiber breakage orientation in carbon fiber reinforced polymer composites using induction thermography. *NDT and E International* 122. doi: 10.1016/j.ndteint.2021.102498. ISSN-09638695
- 1391.Gaikwad, R., Sen, A.K. 2021. An optomicrofluidic device for the detection and isolation of drop-encapsulated target cells in single-cell format. *Analyst* 146 (1): 95-108. doi: 10.1039/d0an00160k. ISSN-00032654
- 1392.Dsouza, S.M., Khajah, T., Antoine, X., Bordas, S.P.A., Natarajan, S. 2021. Non Uniform Rational B-Splines and Lagrange approximations for time-harmonic acoustic scattering: accuracy and absorbing boundary conditions. *Mathematical and Computer Modelling of Dynamical Systems* 27 (1): 290-321. doi: 10.1080/13873954.2021.1902355. ISSN-13873954
- 1393.Deb, S., Panigrahi, S.K., Weiss, M. 2021. Understanding material behaviour of ultrafine-grained aluminium nanocomposite sheets with emphasis on stretch and bending deformation. *Journal of Materials Processing Technology* 293. doi: 10.1016/j.jmatprotec.2021.117082. ISSN-09240136
- 1394.Dhal, A., Prathyusha, B., Kumar, R., Panigrahi, S.K. 2021. Twin evolution and work-hardening phenomenon of a bulk ultrafine grained copper with high thermal stability and strength-ductility synergy. *Materials Science and Engineering A* 802. doi: 10.1016/j.msea.2020.140622. ISSN-09215093
- 1395.Prashanth, W.S., Thotarath, S.L., Sarkar, S., Anand, T.N.C., Bakshi, S. 2021. Experimental investigation on the effect of melt delivery tube position on liquid metal atomization. *Advanced Powder Technology* 32 (3): 693-701. doi: 10.1016/j.apt.2021.01.017. ISSN-09218831
- 1396.Jose, J.V., Mittal, M., Ramesh, A. 2021. Development of a small-bore gasoline direct-injection engine, and enhancement of its performance using multiple-injection strategies. *SAE International Journal of Engines* 14 (1): 115-133. doi: 10.4271/03-14-01-0008. ISSN-19463936
- 1397.Natraj, Rao, B.N., Reddy, K.S. 2021. Wind load and structural analysis for standalone solar parabolic trough collector. *Renewable Energy* 173, pp 688-703. doi: 10.1016/j.renene.2021.04.007. ISSN-09601481
- 1398.Baki, H., Chinta, S., Balaji, C., Srinivasan, B. 2021. A sensitivity study of WRF model microphysics and cumulus parameterization schemes for the simulation of tropical cyclones using GPM radar data. *Journal of Earth System Science* 130 (4). doi: 10.1007/s12040-021-01682-3. ISSN-23474327
- 1399.Thomas, T.M., Sinha Mahapatra, P. 2021. Condensation of humid air on superhydrophobic surfaces: Effect of nanocoatings on a hierarchical interface. *Langmuir* 37 (44): 12767-12780. doi: 10.1021/acs.langmuir.1c01012. ISSN-07437463
- 1400.Ramakrishnan, B., Hoang, C.H., Sammakia, B., et al. 2021. Experimental characterization of two-phase cold plates intended for high-density data center servers using a dielectric fluid. *Journal of Electronic Packaging, Transactions of the ASME* 143 (2). doi: 10.1115/1.4049928. ISSN-10437398
- 1401.M Manish, Sahu, S. 2021. Optical characterization of droplet clusters and group combustion in spray diffusion flames. *Proceedings of the Combustion Institute* 38 (2): 3409-3416. doi: 10.1016/j.proci.2020.08.016. ISSN-15407489
- 1402.Sandeep Kumar S R, Krishnadas V. K., Balasubramaniam, K., Rajagopal, P. 2021. Waveguide metamaterial rod as mechanical acoustic filter for enhancing nonlinear ultrasonic detection. *APL Materials* 9 (6). doi: 10.1063/5.0051412. ISSN-2166532X
- 1403.Lee, C., Natarajan, S., Kee, S.-H., Yee, J.-J. 2021. Smoothed-strain approach to topology optimization-a numerical study for optimal control parameters. *Journal of Computational Design and Engineering* 8 (5): 1267-1289. doi: 10.1093/jcde/qwab045. ISSN-22884300
- 1404.Gantala, T., Balasubramaniam, K. 2021. Automated defect recognition for welds using simulation assisted TFM imaging with artificial intelligence. *Journal of Nondestructive Evaluation* 40 (1). doi: 10.1007/s10921-021-00761-1. ISSN-01959298
- 1405.Sahu, S., Chakraborty, A., Maurya, D. 2021. Coriolis-induced liquid breakup and spray evolution in a rotary slinger atomizer: Experiments and analysis. *International Journal of Multiphase Flow* 135. doi: 10.1016/j.ijmultiphaseflow.2020.103532. ISSN-03019322
- 1406.Datta, A., Raj, V., Sankar, V., Kalyani, S., Srinivasan, B. 2021. Measurement accuracy enhancement with multi-event detection using the deep learning approach in Raman distributed temperature sensors. *Optics Express* 29 (17): 26745-26764. doi: 10.1364/OE.433690. ISSN-10944087
- 1407.Hirshikesh Pramod, A.L.N., Ooi, E.T., Song, C., Natarajan, S. 2021. An adaptive scaled boundary finite element method for contact analysis. *European Journal of Mechanics, A/ Solids* 86. doi: 10.1016/j.euromechsol.2020.104180. ISSN-09977538
- 1408.Gupta, M.V.N.S., Ameen, E., Unnikrishnakurup, S., Balasubramaniam, K., Veeraragavan, A., Pesala, B. 2021. Spectral filtering of sub-bandgap radiation using all-dielectric gratings for thermophotovoltaic applications. *Journal of Photonics for Energy* 11 (1). doi: 10.1117/1.JPE.11.015501. ISSN-19477988

1409. Murugesan, S., Amalanathan, A.J., Sarathi, R., Srinivasan, B., Samikannu, R. 2021. Investigation on impact of magnetic field on the corona discharge activity in pungo oil using fluorescent fiber and uhf sensor techniques. *IEEE Access* 9, pp 129218-129228. doi: 10.1109/ACCESS.2021.3113332. ISSN-21693536
1410. Prithiviraajan, R.N., Somasundharam, S., Reddy, K.S. 2021. Development of experimental methodology for estimation of thermo-physical properties of engineering materials using inverse method. *Thermal Science and Engineering Progress* 22. doi: 10.1016/j.tsep.2020.100832. ISSN-24519049
1411. Abraham, S., Takawale, A., Stephan, P., Pattamatta, A. 2021. Thermal characteristics of a three-dimensional coil type pulsating heat pipe at different heating modes. *Journal of Thermal Science and Engineering Applications* 13 (4). doi: 10.1115/1.4048760. ISSN-19485085
1412. Chitnaduku Thippeswamy, M., Kuchibhatla, S.A.R., Rajagopal, P. 2021. Concentric shell gradient index metamaterials for focusing ultrasound in bulk media. *Ultrasonics* 114. doi: 10.1016/j.ultras.2021.106424. ISSN-0041624X
1413. Johnson, P.N., Lavadera, M.L., Konnov, A.A., Narayanaswamy, K. 2021. Oxidation kinetics of methyl crotonate: A comprehensive modeling and experimental study. *Combustion and Flame* 229. doi: 10.1016/j.combustflame.2021.111409. ISSN-00102180
1414. Mikhail, S., Bakshi, S., Anand, T.N.C. 2021. A computational model for the evaporation of urea-water-resolution droplets exposed to a hot air stream. *International Journal of Heat and Mass Transfer* 168. doi: 10.1016/j.ijheatmasstransfer.2020.120878. ISSN-00179310
1415. Adak, D., Mora, D., Natarajan, S., Silgado, A. 2021. A virtual element discretization for the time dependent Navier-Stokes equations in stream-function formulation. *ESAIM: Mathematical Modelling and Numerical Analysis* 55 (5): 2535-2566. doi: 10.1051/m2an/2021058. ISSN-28227840
1416. Ravi, R.R., Srinivasu, D.S., Behera, P.K. 2021. Machining thin-walled 2 1/2 D structure in a novel aluminium carbon fiber composite material by the abrasive waterjets—an experimental investigation. *Advances in Materials and Processing Technologies*. doi: 10.1080/2374068X.2021.1927650. ISSN-2374068X
1417. Kukutla, P.R., Prasad, B.V.S.S.S., Tarigonda, H., Reddy, D.R. 2021. Optimization of film hole row locations of a nozzle guide vane using network approach. *Journal of Thermal Analysis and Calorimetry* 145 (5): 2661-2674. doi: 10.1007/s10973-020-09841-2. ISSN-13886150
1418. Puthiyaveetil, N., Rajagopal, P., Balasubramaniam, K. 2021. Influence of absorptivity of the material surface in crack detection using laser spot thermography. *NDT and E International* 120. doi: 10.1016/j.ndteint.2021.102438. ISSN-09638695
1419. Jayakrishnan, R., Tiwari, S. 2021. On three-dimensional flow structures and oscillatory instability due to free surface heat loss in half-floating zones under microgravity. *Advances in Space Research* 67 (10): 3354-3377. doi: 10.1016/j.asr.2021.02.006. ISSN-02731177
1420. Prattipati, R., Prasad, B.V.S.S.S. 2021. Behavior of slip ratio during subcooled flow boiling in a vertical tube: A CFD approach. *International Journal of Thermal Sciences* 160. doi: 10.1016/j.ijthermalsci.2020.106670. ISSN-12900729
1421. Chinta, S., Yaswanth Sai, J., Balaji, C. 2021. Assessment of WRF model parameter sensitivity for high-intensity precipitation events during the Indian summer monsoon. *Earth and Space Science* 8 (6). doi: 10.1029/2020EA001471. ISSN-23335084
1422. Abinaya, R., Mani Rahulan, K., Baskar, B., et al. 2021. Visible light mediated selective oxidation of alcohols and oxidative dehydrogenation of N-heterocycles using scalable and reusable La-doped NiWO₄ nanoparticles. *Green Chemistry* 23 (16): 5990-6007. doi: 10.1039/d1gc01729b. ISSN-14639262
1423. Syam, B.K., Sarkar, A. 2021. Wave analysis for in-plane vibration of angular and curved frames. *Journal of Vibration and Acoustics, Transactions of the ASME* 143 (6). doi: 10.1115/1.4049627. ISSN-10489002
1424. Raj, M., Thakre, S., Annabattula, R.K., Kanjarla, A.K. 2021. Estimation of local strain fields in two-phase elastic composite materials using unet-based deep learning. *Integrating Materials and Manufacturing Innovation* 10 (3): 444-460. doi: 10.1007/s40192-021-00227-2. ISSN-21939764
1425. Singh, A., Chakravarthy, B., Prasad, B.V.S.S.S. 2021. Numerical simulations and optimization of impinging jet configuration. *International Journal of Numerical Methods for Heat and Fluid Flow* 31 (1): 25 January 2022. doi: 10.1108/HFF-01-2020-0053. ISSN-09615539
1426. Jacob, K.S., Samuel, G.L. 2021. Effect of micro double helical grooved tools on performance of electric discharge drilling of Ti-6Al-4V. *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture* 235 (11): 1832-1847. doi: 10.1177/0954405421995605. ISSN-09544054
1427. Adak, D., Natarajan, S. 2021. On the H1 conforming virtual element method for time dependent Stokes Equation. *Mathematics in Computer Science* 15 (1): 135-154. doi: 10.1007/s11786-020-00473-1. ISSN-16618270
1428. Hoque, S.Z., Nath, A., Sen, A.K. 2021. Dynamical motion of a pair of microparticles at the acoustic pressure nodal plane under the combined effect of axial primary radiation and interparticle forces. *Journal of the Acoustical Society of America* 150 (1): 307-320. doi: 10.1121/10.0005521. ISSN-00014966
1429. Guntreddi, B., Ghosh, A. 2021. Anti-frictional role of diamond and graphite suspended bio-oil based nano-aerosols at sliding interface of Al-SiCp and WC-6Co. *Tribology International* 153. doi: 10.1016/j.triboint.2020.106596. ISSN-0301679X
1430. Somasundharam, S., Reddy, K.S. 2021. Estimation of spatially distributed thermal properties of heterogeneous media with non-intrusive measurement.

- Heat Transfer Engineering* 42 (1): 61-87. doi: 10.1080/01457632.2019.1685250. ISSN-01457632
1431. Anjali, P.S., Srivastava, M., Srinivasan, B., Venkitesh, D. 2021. Numerical studies of the operating regimes of a passively mode-locked Thulium doped fiber laser. *OSA Continuum* 4 (8): 2193-2209. doi: 10.1364/OSAC.431551. ISSN-25787519
1432. Kolliyil, J.J., Yarramsetty, N., Balaji, C. 2021. Numerical modeling of a wicked heat pipe using lumped parameter network incorporating the Marangoni Effect. *Heat Transfer Engineering* 42 (9): 787-801. doi: 10.1080/01457632.2020.1735799. ISSN-01457632
1433. Dass, A., Gedupudi, S. 2021. Fourier series based 1-D numerical modelling of the dynamics of inclined closed loop buoyancy driven heat exchangers with conjugate effect. *International Journal of Thermal Sciences* 167. doi: 10.1016/j.ijthermalsci.2021.106987. ISSN-12900729
1434. Gupta, P., Kar, S., Kumar, A., Tseng, F.-G., Pradhan, S., Mahapatra, P.S., Santra, T.S. 2021. Pulsed laser assisted high-Throughput intracellular delivery in hanging drop based three dimensional cancer spheroids. *Analyst* 146 (15): 4756-4766. doi: 10.1039/d0an02432e. ISSN-00032654
1435. Harikrishnan, S., Tiwari, S. 2021. Effect of top wall configuration on unsteady flow and heat transfer characteristics of sinusoidal wavy channels. *Heat Transfer Engineering* 43 (5 March 2022): 423-436. doi: 10.1080/01457632.2021.1875167. ISSN-01457632
1436. Saini, A., Unnikrishnakurup, S., Krishnamurthy, C.V., Balasubramanian, K., Sundararajan, T. 2021. Numerical study using finite element method for heat conduction on heterogeneous materials with varying volume fraction, shape and size of fillers. *International Journal of Thermal Sciences* 159. doi: 10.1016/j.ijthermalsci.2020.106545. ISSN-12900729
1437. Pozo, M.D., Sol, J.A.H.P., Debije, M.G., et al. 2021. Patterned actuators via direct ink writing of liquid crystals. *ACS Applied Materials and Interfaces* 13 (49): 59381-59391. doi: 10.1021/acsmi.1c20348. ISSN-19448244
1438. Naik, H., Tiwari, S. 2021. Numerical investigations on fluid flow and heat transfer characteristics of different locations of winglets mounted in fin-tube heat exchangers. *Thermal Science and Engineering Progress* 22. doi: 10.1016/j.tsep.2020.100795. ISSN-24519049
1439. Prattipati, R., Pendyala, S., Prasad, B.V.S.S. 2021. Void fraction in helical coils during flow boiling with inlet subcooling. *International Journal of Heat and Mass Transfer* 168. doi: 10.1016/j.ijheatmasstransfer.2021.120904. ISSN-00179310
1440. Dusane, A.R., Budarapu, P.R., Pradhan, A.K., Natarajan, S., Reinoso, J., Paggi, M. 2021. Simulation of bridging mechanisms in complex laminates using a hybrid PF-CZM method. *Mechanics of Advanced Materials and Structures*. doi: 10.1080/15376494.2021.2006835. ISSN-15376494
1441. Loganathan, S., Santhanakrishnan, S., Bathe, R., Arunachalam, M. 2021. FTIR and Raman as a noninvasive probe for predicting the femtosecond laser ablation profile on heterogeneous human teeth. *Journal of the Mechanical Behavior of Biomedical Materials* 115. doi: 10.1016/j.jmbbm.2020.104256. ISSN-17516161
1442. Rapaka, S.D., Pandey, M., Annabattula, R.K. 2021. Theoretical analysis on the dynamic compressive behavior of cellular solids with non-linear variation in cross-sectional area. *International Journal of Impact Engineering* 155. doi: 10.1016/j.ijimpeng.2021.103921. ISSN-0734743X
1443. Kuppili, S.K., Dheeraj Alshetty, V., De Vito, L., et al. 2021. Characteristics of real-world gaseous exhaust emissions from cars in heterogeneous traffic conditions. *Transportation Research Part D: Transport and Environment* 95. doi: 10.1016/j.trd.2021.102855. ISSN-13619209
1444. Patil, S., Sahu, S. 2021. Air swirl effect on spray characteristics and droplet dispersion in a twin-jet crossflow airblast injector. *Physics of Fluids* 33 (7). doi: 10.1063/5.0054430. ISSN-10706631
1445. Ghose, B., Panda, R.S., Balasubramanian, K. 2021. Guided A0 wave mode interaction with interfacial disbands in an elastic-viscoelastic bilayer structure. *NDT and E International* 124. doi: 10.1016/j.ndteint.2021.102543. ISSN-09638695
1446. Injeti, S.S., Vyas, N., Kumar Annabattula, R. 2021. Modified Stoney's equation with anisotropic substrates undergoing large deformations. *Mechanics Research Communications* 113. doi: 10.1016/j.mechrescom.2021.103685. ISSN-00936413
1447. Jaggannagari, S.R., Desu, R.K., Reimann, J., Gan, Y., Moscardini, M., Annabattula, R.K. 2021. DEM simulations of vibrated sphere packings in slender prismatic containers. *Powder Technology* 393, pp 31-59. doi: 10.1016/j.powtec.2021.06.033. ISSN-00325910
1448. Kalichetty, S.S., Sundararajan, T., Pattamatta, A. 2021. Effect of wall proximity on the lateral thermocapillary migration of droplet rising in a quiescent liquid. *Physics of Fluids* 33 (2). doi: 10.1063/5.0032803. ISSN-10706631
1449. Cholake, S., Sundararajan, T., Venkateshan, S.P. 2021. Onset of natural convection in a differentially heated layer of gray and non-gray gas mixtures. *Sadhana - Academy Proceedings in Engineering Sciences* 46 (1). doi: 10.1007/s12046-020-01542-8. ISSN-02562499
1450. Pabbisetty, M.R., Prasad, B.V.S.S. 2021. Effect of blowing ratio on mist-assisted air film cooling of a flat plate: An experimental study. *Journal of Thermal Science and Engineering Applications* 13 (3). doi: 10.1115/1.4048209. ISSN-19485085
1451. Maity, R.K., Sundararajan, T., Velusamy, K. 2021. An accurate interface reconstruction method using piecewise circular arcs. *International Journal for Numerical Methods in Fluids* 93 (1): 93-126. doi: 10.1002/flid.4876. ISSN-02712091
1452. Niketh, S., Samuel, G.L. 2021. Surface textured drill tools-an effective approach for minimizing chip evacuation force and burr formation during high aspect ratio machining of titanium alloy. *Journal of Manufacturing Science and Engineering, Transactions of the ASME* 143 (4). doi: 10.1115/1.4048432. ISSN-10871357

- 1453.Pothukuchi, H., B. S. V, P.P., Prasad, B.V.S.S.S. 2021. A simple model to identify dryout location: Validation and computational fluid dynamics predictions. *Heat Transfer Engineering* 43 (2): 141-156. doi: 10.1080/01457632.2020.1860523. ISSN-01457632
- 1454.Jayaramu, P., Jain, S., Gedupudi, S., Das, S.K. 2021. Experimental investigation on the change in flow boiling characteristics due to boiling-induced copper ageing. *Journal of Heat Transfer* 143 (7). doi: 10.1115/1.4051124. ISSN-00221481
- 1455.Singh, S., Hafner, A., Maiya, M.P., Banasiak, K., Neksa, P. 2021. Multiejector CO₂ cooling system with evaporative gascooler for a supermarket application in tropical regions. *Applied Thermal Engineering* 190. doi: 10.1016/j.applthermaleng.2021.116766. ISSN-13594311
- 1456.González-Estrada, O.A., Natarajan, S., Ródenas, J.J., Bordas, S.P.A. 2021. Error estimation for the polygonal finite element method for smooth and singular linear elasticity. *Computers and Mathematics with Applications* 92, pp 109-119. doi: 10.1016/j.camwa.2021.03.017. ISSN-08981221
- 1457.Ramgopal, A., Peeketi, A.R., Annabattula, R.K. 2021. Numerical analysis and design of a light-driven liquid crystal polymer-based motorless miniature cart. *Soft Matter* 17 (33): 7714-7728. doi: 10.1039/d1sm00411e. ISSN-1744683X
- 1458.Manikandan, D., Nandigana, V.V.R. 2021. Overlimiting current near a nanochannel a new insight using molecular dynamics simulations. *Scientific Reports* 11 (1). doi: 10.1038/s41598-021-94477-x. ISSN-20452322
- 1459.Mantripragada, V.T., Sahu, S., Sarkar, S. 2021. Morphology and flow behavior of buoyant bubble plumes. *Chemical Engineering Science* 229. doi: 10.1016/j.ces.2020.116098. ISSN-00092509
- 1460.Shankar, S., Balasubramaniam, K. 2021. Characterising the beam formation of SH waves using double-row Staggered Halbach EMAT configurations. *NDT and E International* 121. doi: 10.1016/j.ndteint.2021.102465. ISSN-09638695
- 1461.Sharma, S., Meena, A. 2021. Microstructure induced shear instability criterion during high-speed machining of Ti-6Al-4V. *Journal of Manufacturing Science and Engineering, Transactions of the ASME* 143 (6): 25 January 2022. doi: 10.1115/1.4048638. ISSN-10871357
- 1462.Sahu, G.P., Raja, N., Balasubramaniam, K. 2021. Surface temperature mapping of a metal plate using ultrasound-guided wave technique. *Journal of Nondestructive Evaluation, Diagnostics and Prognostics of Engineering Systems* 4 (4). doi: 10.1115/1.4051175. ISSN-25723901
- 1463.Vijayan, A., Joy, B., Annabattula, R.K. 2021. Fluid flow assisted mixing of binary granular beds using CFD-DEM. *Powder Technology* 383, pp 183-197. doi: 10.1016/j.powtec.2021.01.040. ISSN-00325910
- 1464.Suchita, Srinivasan, B., Agrawal, G.P., Venkitesh, D. 2021. Role of the modal composition of pump in the multi-peak Brillouin gain spectrum in a few-mode fiber. *Optics Communications* 494. doi: 10.1016/j.optcom.2021.127052. ISSN-00304018
- 1465.Narayani, B., Ravichandran, S., Rajagopal, P. 2021. Design optimization of a novel screw conveyor based system to scoop oil sludge from floor of storage tanks. *Upstream Oil and Gas Technology* 6. doi: 10.1016/j.upstre.2020.100029. ISSN-26662604
- 1466.Singh, G., Santhanakrishnan, S. 2021. Fabrication and characterization of composite PMMA/HA scaffold using freeze casting method. *Materials Technology*. doi: 10.1080/10667857.2021.1978640. ISSN-10667857
- 1467.Sudeepthi, A., Nath, A., Yeo, L.Y., Sen, A.K. 2021. Coalescence of droplets in a microwell driven by surface acoustic waves. *Langmuir* 37 (4): 1578-1587. doi: 10.1021/acs.langmuir.0c03292. ISSN-07437463
- 1468.Sharma, D., Pandey, V.B., Singh, I.V., Natarajan, S., Kumar, J., Ahmad, S. 2021. A polygonal FEM and continuum damage mechanics based framework for stochastic simulation of fatigue life scatter in duplex microstructure titanium alloys. *Mechanics of Materials* 163. doi: 10.1016/j.mechmat.2021.104071. ISSN-01676636
- 1469.Pandian, M.M., Krishnasamy, A. 2021. Homogeneous charge with direct injection strategy to achieve high efficiency and clean combustion in diesel engines. *SAE International Journal of Engines* 14 (3): 319-334. doi: 10.4271/03-14-03-0019. ISSN-19463936
- 1470.Balaramakrishnan, T.M., Natarajan, S., Sujatha, S. 2021. Biomechanical design framework for prosthetic feet: Experimentally validated non-linear finite element procedure. *Medical Engineering and Physics* 92, pp 64-70. doi: 10.1016/j.medengphy.2021.04.006. ISSN-13504533
- 1471.Nath, A., Malik, L., Sen, A.K. 2021. Combined acoustic relocation and acoustophoretic migration for particle transfer between co-flowing fluids in a microchannel. *Physical Review Fluids* 6 (4). doi: 10.1103/PhysRevFluids.6.044201. ISSN-2469990X
- 1472.Gupta, S.K., Mittal, M. 2021. Predicting the methane number of gaseous fuels using an artificial neural network. *Biofuels* 12 (10): 1191-1198. doi: 10.1080/17597269.2019.1600455. ISSN-17597269
- 1473.Singh, P., Khanna, S., Khusainov, R., et al. 2021. Three dimensional analysis of dye-sensitized, perovskite and monocrystalline silicon solar photovoltaic cells under non uniform solar flux. *Applied Thermal Engineering* 182. doi: 10.1016/j.applthermaleng.2020.115613. ISSN-13594311
- 1474.Lee, C., Natarajan, S., Hale, J.S., Taylor, Z.A., Yee, J.-J., Bordas, S.P.A. 2021. Bubble-enriched smoothed finite element methods for nearly-incompressible solids. *CMES - Computer Modeling in Engineering and Sciences* 127 (2): 411-436. doi: 10.32604/cmescs.2021.014947. ISSN-15261492
- 1475.Pramod, A.L.N., Hirshikesh, Natarajan, S., Ooi, E.T. 2021. Application of adaptive phase-field scaled boundary finite element method for functionally graded materials. *International Journal of Computational Methods* 18 (3). doi: 10.1142/S0219876220410078. ISSN-02198762
- 1476.Raj, S.P., Srinivas, M., Sravya, B., O'donovan, T.S., Reddy, K.S. 2021. Design of tunnel drier for the non-centrifugal sugar industry. *International Journal of Low-*

- Carbon Technologies* 16 (2): 407-416. doi: 10.1093/ijlct/ctaa075. ISSN-17481317
1477. Ajay, A.P., DasGupta, A., Chatterjee, D. 2021. Fabrication of monolithic SU-8 microneedle arrays having different needle geometries using a simplified process. *International Journal of Advanced Manufacturing Technology* 114 (12 Nov): 3615-3626. doi: 10.1007/s00170-021-07038-x. ISSN-02683768
1478. Chowdhury, I.U., Mahapatra, P.S., Sen, A.K., Pattamatta, A., Tiwari, M.K. 2021. Autonomous transport and splitting of a droplet on an open surface. *Physical Review Fluids* 6 (9). doi: 10.1103/PhysRevFluids.6.094003. ISSN-2469990X
1479. Kumar, P., Tiwari, S. 2021. Effect of axis ratio on unsteady wake of surface mounted elliptic cylinder immersed in shear flow. *Fluid Dynamics Research* 53 (4). doi: 10.1088/1873-7005/ac105e. ISSN-01695983
1480. Kumaran, S.M., Shanmugasundaram, D., Narayanaswamy, K., Raghavan, V. 2021. Reduced mechanism for flames of propane, n-butane, and their mixtures for application to burners: Development and validation. *International Journal of Chemical Kinetics* 53 (6): 731-750. doi: 10.1002/kin.21477. ISSN-05388066
1481. Kumar S, S., Hiremath, S.S. 2021. Temperature-dependent rheological properties of viscoelastic polymer based flexible abrasive media for finishing process. *Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engineering* 235 (03-Jan): 973-985. doi: 10.1177/0954408920987904. ISSN-09544089
1482. Karunakaran, E., Mulye, S., Mallikarjuna, J.M. 2021. Effect of housing surface roughness on the performance of a centrifugal compressor for turbocharger: Experimental and numerical study. *International Journal of Engine Research*. doi: 10.1177/146808742111047526. ISSN-14680874
1483. Mudgal, V., Singh, P., Reddy, K.S., et al. 2021. Optimization of a novel hybrid wind bio battery solar photovoltaic system integrated with phase change material. *Energies* 14 (19). doi: 10.3390/en14196373. ISSN-19961073
1484. Rishi Ramakrishnan L., Jayaramu, P., Gedupudi, S., Das, S.K. 2021. Experimental investigation of the influence of boiling-induced ageing on high heat flux flow boiling in a copper microchannel. *International Journal of Heat and Mass Transfer* 181. doi: 10.1016/j.ijheatmasstransfer.2021.121862. ISSN-00179310
1485. Muthuselvan, G., Rao, M.S., Iyengar, V.S., Pulumathi, M., Thirumalachari, S., Srinivasan, K. 2021. Effect of lean primary-zone operation on emissions and stability of non-premixed combustors. *Journal of Propulsion and Power* 37 (1): 47-58. doi: 10.2514/1.B37942. ISSN-07484658
1486. Chandel, A., Das, S.P. 2021. Effect of wall proximity on the wake of a rotating and translating sphere. *Acta Mechanica* 232 (12): 4833-4846. doi: 10.1007/s00707-021-03097-z. ISSN-00015970
1487. Harikrishnan, S., Mahapatra, P.S. 2021. Effect of liquid-air interface on particle cloud dynamics in viscous liquids. *Physics of Fluids* 33 (6). doi: 10.1063/5.0048895. ISSN-10706631
1488. Paul, L., Hiremath, S.H., Babu, J., Libin, V.K. 2021. Effect of sensing mechanism on machining performance of ECDM process. *Advances in Materials and Processing Technologies*. doi: 10.1080/2374068X.2021.1945285. ISSN-2374068X
1489. Vijay Kumar, S., Sarkar, A., Padmanabhan, C. 2021. Dynamics of a beam with multiple spring/mass attachments using binary asymptotic admissible functions. *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science* 235 (8): 1317-1328. doi: 10.1177/0954406220941562. ISSN-09544062
1490. Gorain, J., Padmanabhan, C. 2021. Broadband low-frequency noise reduction using Helmholtz resonator-based metamaterial. *Noise Control Engineering Journal* 69 (4): 351-363. doi: 10.3397/1/376932. ISSN-07362501
1491. Suresh, P.S., Sura, N.K., Shankar, K., Radhakrishnan, G. 2021. Synthesis of landing dynamics on land-base high performance aircraft considering multi-variate landing conditions. *Mechanics Based Design of Structures and Machines*. doi: 10.1080/15397734.2021.1946406. ISSN-15397734
1492. Adak, D., Manzini, G., Natarajan, S. 2021. Virtual element approximation of two-dimensional parabolic variational inequalities. *Computers and Mathematics with Applications*. doi: 10.1016/j.camwa.2021.09.007. ISSN-08981221
1493. Manimaran, A., Hiremath, S.S. 2021. Simulation of cryogenic high pressure regulator dynamics. *Advances in Materials and Processing Technologies* 7 (1): 54-70. doi: 10.1080/2374068X.2020.1747782. ISSN-2374068X
1494. Natarajan, S., Padmanabhan, C. 2021. Scaled boundary finite element method for mid-frequency acoustics of cavities. *Journal of Theoretical and Computational Acoustics* 29 (1). doi: 10.1142/S2591728521500018. ISSN-25917285
1495. Naveen Raj, R., Shankar, K. 2021. A two stage neural network for choosing optimal ejection parameters in low altitude seat ejection based on novel injury parameter. *Optimization and Engineering*. doi: 10.1007/s11081-021-09607-1. ISSN-13894420
1496. Arunachalam, N., Suya Prem Anand, P., Vijayaraghavan, L. 2021. Investigation of tribological conditions on grinding of bioceramic material using diamond grinding wheel under different cooling and lubrication environment. *Journal of Manufacturing Processes* 71, pp 550-564. doi: 10.1016/j.jmapro.2021.09.004. ISSN-15266125
1497. Dwivedi, V., Hari, S., Kumaran, S.M., Prasad, B.V.S.S., Raghavan, V. 2021. Experimental and numerical study of flame structure and emissions in a micro gas turbine combustor. *International Journal of Turbo and Jet Engines*. doi: 10.1515/tjj-2021-0070. ISSN-03340082
1498. Suresh, P.R., Sundararajan, T., Srinivasan, K., Das, S.K. 2021. Experimental investigation of the influence of Reynolds number and buoyancy on the flow development of a plane jet in the transitional regime. *Journal of Turbulence* 22 (1): 26-47. doi: 10.1080/14685248.2020.1849710. ISSN-14685248

1499. Muthu Kumaran, S., Raghavan, V. 2021. Characteristics and soot formation in laminar liquefied petroleum gas flames in air crossflow. *Progress in Computational Fluid Dynamics* 21 (5): 305-315. doi: 10.1504/PCFD.2021.117458. ISSN-14684349
1500. Patil, S., Sahu, S. 2021. Liquid jet core characterization in a model crossflow airblast atomizer. *International Journal of Multiphase Flow* 141. doi: 10.1016/j.ijmultiphaseflow.2021.103688. ISSN-03019322
1501. Delhiraja, K., Sharon, H., Reddy, K.S., Philip, L. 2021. Performance evaluation of solar thermal systems as an alternative for human waste treatment. *Sustainable Energy Technologies and Assessments* 47. doi: 10.1016/j.seta.2021.101393. ISSN-22131388
1502. Sreeraj, K., Maheshwari, H.K., Rajagopal, P., Ramkumar, P. 2021. Non-contact monitoring and evaluation of subsurface white etching area (WEA) formation in bearing steel using Rayleigh surface waves. *Tribology International* 162. doi: 10.1016/j.triboint.2021.107134. ISSN-0301679X
1503. Mishra, S., Khan, F., Panigrahi, S.K. 2021. A crystal plasticity based approach to establish role of grain size and crystallographic texture in the tension-compression yield asymmetry and strain hardening behavior of a Magnesium-Silver-Rare Earth alloy. *Journal of Magnesium and Alloys*. doi: 10.1016/j.jma.2021.08.021. ISSN-22139567
1504. Nandal, V., Hariharan, K., Jain, J., et al. 2021. Aging temperature role on precipitation hardening in a non-equiatomic AlCoCrFeNiTi high-entropy alloy. *Materials Science and Technology (United Kingdom)* 37 (15): 1270-1279. doi: 10.1080/02670836.2021.1996104. ISSN-02670836
1505. Agrawal, N.K., Mahapatra, P.S. 2021. Alignment-mediated segregation in an active-passive mixture. *Physical Review E* 104 (4). doi: 10.1103/PhysRevE.104.044610. ISSN-24700045
1506. Bukkarapu, K.R., Suraj, C.K., Krishnasamy, A. 2021. A novel reference property-based approach to predict properties of diesel blended with biodiesel produced from different feedstocks. *SAE International Journal of Fuels and Lubricants* 15 (1). doi: 10.4271/04-15-01-0004. ISSN-19463952
1507. Lathika, S., Raj, A., Sen, A.K. 2021. LSPR based on-chip detection of dengue NS1 antigen in whole blood. *RSC Advances* 11 (53): 33770-33780. doi: 10.1039/d1ra05009e. ISSN-20462069
1508. Kanakambaran, K.V., Balasubramaniam, K. 2021. Observing dual-mode second-harmonic generation in an isotropic nonlinear elastic plate. *Ultrasonics* 117. doi: 10.1016/j.ultras.2021.106525. ISSN-0041624X
1509. Chilukuri, A., Raja, N., Balasubramaniam, K. 2021. In-situ pitting corrosion detection using high-frequency T(0,1) guided wave mode in gas distribution tubes at operating temperatures. *Journal of Structural Integrity and Maintenance* 6 (4): 247-256. doi: 10.1080/24705314.2021.1892573. ISSN-24705314
1510. Singh, N.P., Srinivasu, D.S., Ramesh Babu, N. 2021. Modelling of abrasive waterjet kerf in a double-layered structure. *Journal of Manufacturing Processes* 69, pp 514-531. doi: 10.1016/j.jmapro.2021.07.053. ISSN-15266125
1511. Adhithya, T.B., Venkatarathnam, G. 2021. New pressure and density based methods for isothermal-isobaric flash calculations. *Fluid Phase Equilibria* 537. doi: 10.1016/j.fluid.2021.112980. ISSN-03783812
1512. Sai, M., Sethy, D., Francis, S., Kumar, M.S.Y., Varghese, F.V., Balasubramaniam, K. 2021. Optical properties of multilayer graphene nanoplatelet (mGNP)/poly(methyl methacrylate) (PMMA) composite flexible thin films prepared by solvent casting. *Journal of Materials Science: Materials in Electronics* 32 (22): 26750-26757. doi: 10.1007/s10854-021-07052-5. ISSN-09574522
1513. Magham, H.S.R., Maheswari, N., Dinesh, K., Vijayaraghavan, L., Sankaran, S., Padmanabhan, K.A. 2021. on a new two-step air cooling method following thermomechanically controlled rolling: microstructural evolution and mechanical properties of a high-strength multiphase medium carbon microalloyed steel. *Steel Research International* 92 (5). doi: 10.1002/srin.202000563. ISSN-16113683
1514. Jayakrishnan, S., Suresh, N., Koodalil, D., Balasubramaniam, K. 2021. Coded excitation for low-power guided ultrasonic wave inspection in safety-critical industries: Case studies. *Insight: Non-Destructive Testing and Condition Monitoring* 63 (12): 712-720. doi: 10.1784/insi.2021.63.12.712. ISSN-13542575
1515. Loganathan, S., Santhanakrishnan, S., Bathe, R., Arunachalam, M. 2021. Physiochemical characteristics: A robust tool to overcome teeth heterogeneity on predicting laser ablation profile. *Journal of Biomedical Materials Research - Part B Applied Biomaterials* 109 (4): 486-495. doi: 10.1002/jbm.b.34717. ISSN-15524973
1516. Kumar, S., Phani, R., Mukhopadhyay, P., Balaji, C. 2021. An assessment of radiative flux biases in the climate forecast system model CFSv2. *Climate Dynamics* 56 (06-May): 1541-1569. doi: 10.1007/s00382-020-05546-2. ISSN-09307575
1517. Sethy, D., Sai, M., Varghese, F.V., Balasubramaniam, K. 2021. Improved thermal signature of composite beams with GNP smart skin for defect investigation. *Journal of Nondestructive Evaluation* 40 (3). doi: 10.1007/s10921-021-00817-2. ISSN-01959298
1518. Pillala, V.K.Y., Prasad, B.V.S.S.S., Sitaram, N., Mahendran, M., Biswas, D., Jimbo, T. 2021. A linear cascade tunnel for flow investigations of steam turbine rotor tip blades in subsonic nucleating flows. *SN Applied Sciences* 3 (2). doi: 10.1007/s42452-021-04291-3. ISSN-25233971
1519. Pothukuchi, H., Patnaik, B.S.V., Prasad, B.V.S.S.S. 2021. Sub-channel analysis of a hexagonal sub-Assembly: Influence of blockage and axial power distribution on critical heat flux. *Journal of Thermal Science and Engineering Applications* 13 (6). doi: 10.1115/1.4050325. ISSN-19485085
1520. Joseph, E., Swaminathan, N. 2021. Investigation of mechanical properties and dispersion in silica/Styrene

- Butadiene Rubber (SBR) nanocomposites: A ReaxFF molecular dynamics study. *Computational Materials Science* 200. doi: 10.1016/j.commatsci.2021.110751. ISSN-09270256
- 1521.Iyyer, S., Babu, V. 2021. Numerical simulations of the transverse injection and mixing with a Mach 3 supersonic cross-flow. *Progress in Computational Fluid Dynamics* 21 (5): 283-295. doi: 10.1504/PCFD.2021.117455. ISSN-14684349
- 1522.Kumar, A., Md, F.K., Panigrahi, S.K., Chaudhari, G.P. 2021. Microstructural evolution and corrosion behaviour of friction stir-processed QE22 magnesium alloy. *Corrosion Reviews* 39 (4): 351-360. doi: 10.1515/correv-2020-0083. ISSN-03346005
- 1523.Kumar, P., Tiwari, S. 2021. Effect of cross-confinement on unsteady wake characteristics of circular cylinder immersed in shear flow. *Progress in Computational Fluid Dynamics* 21 (4): 195-208. doi: 10.1504/PCFD.2021.116525. ISSN-14684349
- 1524.Nair, H.M., Sujatha, C. 2021. Vehicle tip-over prevention using gain-scheduled State-dependent Riccati Equation-based anti-rollover controller. *Proceedings of the Institution of Mechanical Engineers, Part D: Journal of Automobile Engineering* 235 (03-Feb): 807-828. doi: 10.1177/0954407020948317. ISSN-09544070
- 1525.Gaur, R., Ganesan, S., Prasad, B.V.S.S.S. 2021. Comparative performance of new surface roughness element and pin-fin in converging channel for gas turbine application. *Defence Science Journal* 71 (4): 429-435. doi: 10.14429/DSJ.71.15394. ISSN-0011748X
- 1526.Kumar, K.E.S., Rakshit, S. 2021. Design of pelvic prosthesis using topology optimization for loads in running gait cycle. *Journal of The Institution of Engineers (India): Series C* 102 (5): 1119-1128. doi: 10.1007/s40032-021-00734-3. ISSN-22500545
- 1527.Raja, D.K., Das, S.P. 2021. Effect of liquid depth on dynamics and collapse of large cavities generated by standing waves. *Physics of Fluids* 33 (1). doi: 10.1063/5.0034560. ISSN-10706631
- 1528.Ranjan, P., Hiremath, S.S. 2021. Investigation of coated tool performance on the machinability, surface residual stress and chip morphology of martensitic AISI 420 steel. *Arabian Journal for Science and Engineering*. doi: 10.1007/s13369-021-06303-1. ISSN-2193567X
- 1529.Harikrishnan, S., Kumar, P., Tiwari, S. 2021. Flow transition in periodically fully developed wavy channels. *Physics of Fluids* 33 (7). doi: 10.1063/5.0053003. ISSN-10706631
- 1530.Guggilla, G., Narayanaswamy, R., Stephan, P., Pattamatta, A. 2021. Heat transfer characteristics of a train of droplets impinging over a hot surface: From film evaporation to leidenfrost point. *Journal of Heat Transfer* 143 (6). doi: 10.1115/1.4050718. ISSN-00221481
- 1531.Kumar Marri, G., Balaji, C. 2021. Experimental and numerical investigations on a phase change material based heat sink with symbiotically joined heat pipe. *Heat Transfer Engineering* 42 (1): 23-40. doi: 10.1080/01457632.2019.1685241. ISSN-01457632
- 1532.Kumar, P., Tiwari, S. 2021. Effects of size ratio and inter-cylinder spacing on wake transition in flow past finite inline circular cylinders mounted on plane surface. *Physics of Fluids* 33 (2). doi: 10.1063/5.0037712. ISSN-10706631
- 1533.Ravikanth, G.S.G., Sujatha, C. 2021. Simulation and experiments on three-wheeled vehicle on different tracks. *International Journal of Vehicle Performance* 7 (02-Jan): 120-135. doi: 10.1504/IJVP.2021.113419. ISSN-17453194
- 1534.Karunakaran, E., Mallikarjuna, J.M. 2021. Effect of housing size on the performance of a centrifugal compressor for turbocharger application: An experimental and numerical study. *Proceedings of the Institution of Mechanical Engineers, Part D: Journal of Automobile Engineering* doi: 10.1177/09544070211050527. ISSN-09544070
- 1535.Nema, J.K., Gupta, S., Thakkar, R., Rajagopal, P. 2021. Novel hermetically sealed device to realize unconventional phonon blockade at near-micron dimensions and milliKelvin temperatures. *AIP Advances* 11 (1). doi: 10.1063/5.0028996. ISSN-21583226
- 1536.Jayakrishnan, R., Tiwari, S. 2021. Dynamic mode decomposition of oscillatory thermo-capillary flow in curved liquid bridges of high Prandtl number liquids under microgravity. *Advances in Space Research* 68 (10): 4252-4273. doi: 10.1016/j.asr.2021.07.033. ISSN-02731177
- 1537.Satpathi, N.S., Malik, L., Ramasamy, A.S., Sen, A.K. 2021. Drop impact on a superhydrophilic spot surrounded by a superhydrophobic surface. *Langmuir* 37 (48): 14195-14204. doi: 10.1021/acs.langmuir.1c02654. ISSN-07437463
- 1538.Kannan, K., Mansutti, D., Rajagopal, K.R. 2021. Computational corroboration of the flow of rock glaciers against borehole measurements. *International Journal of Non-Linear Mechanics* 132. doi: 10.1016/j.ijnonlinmec.2021.103710. ISSN-00207462
- 1539.Nishad, W., Subbiah, S., Swaminathan, N. 2021. A qualitative understanding of high intensity mechanical shearing and exfoliation of graphite nanoplatelets in a three-body contact using molecular dynamic simulations. *Journal of Manufacturing Processes* 71, pp 645-652. doi: 10.1016/j.jmapro.2021.09.051. ISSN-15266125
- 1540.Reddy, S.H.K., Vasudevan, A., Rajagopal, P., Balasubramanian, K. 2021. Scattering of Higher Order Mode Clusters (HOMC) from surface breaking notches in plates with application to higher temperature gradients. *NDT and E International* 120. doi: 10.1016/j.ndteint.2021.102441. ISSN-09638695
- 1541.Dsouza, S.M., Pramod, A.L.N., Ooi, E.T., Song, C., Natarajan, S. 2021. Robust modelling of implicit interfaces by the scaled boundary finite element method. *Engineering Analysis with Boundary Elements* 124, pp 266-286. doi: 10.1016/j.enganabound.2020.12.025. ISSN-09557997
- 1542.Muthukaruppan, A., Pandey, M., Rajagopal, A. 2021. Testing Weibull as a viable statistical strength distribution for Nacre. *Mechanics of Materials* 158. doi: 10.1016/j.mechmat.2021.103855. ISSN-01676636

1543. Tiwari, K., Arunachalam, N. 2021. Monte Carlo method-based tool life prediction during the end milling of Ti-6Al-4V alloy for smart manufacturing. *Smart and Sustainable Manufacturing Systems* 5 (1): 264-289. doi: 10.1520/SSMS20210013. ISSN-25206478
1544. Nair, S., Pavan, D., Mittal, M., Schock, H. 2021. Visualization and pod analysis of spray variations in a gasoline direct-injection engine at different fuel injection pressures including split injection and macroscopic spray characteristics. *Journal of Flow Visualization and Image Processing* 28 (3): 21-Jan. doi: 10.1615/JFLOWVISIMAGEPROC.2021036244. ISSN-10653090
1545. Dsouza, S.M., Varghese, T.M., Ooi, E.T., Natarajan, S., Bordas, S.P.A. 2021. Treatment of multiple input uncertainties using the scaled boundary finite element method. *Applied Mathematical Modelling* 99, pp 538-554. doi: 10.1016/j.apm.2021.06.021. ISSN-0307904X
1546. Joseph Shibu, K., Shankar, K., Babu, C.K., Degaonkar, G.K. 2021. Multi-objective optimization of a maneuvering small aircraft turbine engine rotor system. *Journal of Intelligent and Robotic Systems: Theory and Applications* 103 (4). doi: 10.1007/s10846-021-01511-1. ISSN-09210296
1547. Nandakumar, P., Shankar, K. 2021. Crack damage detection of structures using spectral transfer matrix. *Structural Health Monitoring* 20 (6): 3036-3055. doi: 10.1177/1475921720979286. ISSN-14759217
1548. Verma, V., Cozza, R.C., Cheverikin, V., Kondratiev, A., Penchaliah, R. 2021. Mechanical and tribological behavior of Al composites containing varying beryllium aluminum silicate and constant CeO₂. *SN Applied Sciences* 3 (10). doi: 10.1007/s42452-021-04790-3. ISSN-25233971
1549. Singh, A., Pujari, A.K., Prasad, B.V.S.S.S. 2021. Conjugate heat transfer analysis of a rotor blade with coolant channels. *Heat Transfer* 50 (7): 6816-6846. doi: 10.1002/htj.22205. ISSN-26884534
1550. Banerjee, U., Jain, S.K., Sen, A.K. 2021. Particle encapsulation in aqueous ferrofluid drops and sorting of particle-encapsulating drops from empty drops using a magnetic field. *Soft Matter* 17 (24): 6020-6028. doi: 10.1039/d1sm00530h. ISSN-1744683X
1551. Mathew, R., Hiremath, S.S. 2021. Control of stepper motor driven differential drive robot for tracking waypoint trajectories: modeling, simulation, optimization and experimental investigations. *International Journal of Modelling and Simulation* 41 (3): 176-194. doi: 10.1080/02286203.2019.1700347. ISSN-02286203
1552. Srikanth, K., Pandey, M., Kannan, K. 2021. On the explicit dynamics implementation and validation of partitioned rate-type constitutive relation for dampers. *Mechanics of Advanced Materials and Structures*. doi: 10.1080/15376494.2021.2012854. ISSN-15376494
1553. Hunyadi-Gall, M., Narayanaswamy, K., Williams, F.A., et al. 2021. Experimental and computational investigation of extinction and autoignition of propane and n-heptane in nonpremixed flows. *Proceedings of the Combustion Institute* 38 (2): 2257-2263. doi: 10.1016/j.proci.2020.06.027. ISSN-15407489
1554. Kshirsagar, S., Lee, C., Natarajan, S. 2021. α -Finite element method for frictionless and frictional contact including large deformation. *International Journal of Computational Methods* 18 (7). doi: 10.1142/S021987622150002X. ISSN-02198762
1555. Ramkumar, J., Krishnasamy, A., Ramesh, A. 2021. A novel method to overcome the shortcomings of turbocharging a single cylinder diesel engine. *International Journal of Engine Research*. doi: 10.1177/14680874211066744. ISSN-14680874
1556. Kumar, V.S., Rajagopal, P. 2021. Modelling and analysis of turning motion of a subsurface mapping auv with split-hull design. *Journal of Marine Science and Application* 20 (2): 284-301. doi: 10.1007/s11804-021-00211-4. ISSN-16719433
1557. Loganathan, R., Mohiuddin, A., Gedupudi, S. 2021. Experimental and numerical investigation of the effect of bypass injection on wall temperature distribution of a single-phase mini/micro-channel. *Heat Transfer Engineering* 43 (2): 101-125. doi: 10.1080/01457632.2020.1860509. ISSN-01457632
1558. Bembalge, O.B., Panigrahi, S.K. 2021. Exploring a hybrid manufacturing process to develop high performance age hardenable ultrafine grained AA6063/SiC nanocomposite sheets. *Journal of Manufacturing Processes* 70, pp 508-517. doi: 10.1016/j.jmapro.2021.09.003. ISSN-15266125
1559. Karmakar, N., Subbiah, S. 2021. A comprehensive numerical model for kerf width prediction in hot wire cutting of expanded polystyrene. *Journal of Manufacturing Processes* 61, pp 322-333. doi: 10.1016/j.jmapro.2020.08.056. ISSN-15266125
1560. Loganathan, R., Gedupudi, S. 2021. Numerical study of single-phase heat transfer performance of a mini/micro-channel integrated with multiple bypass micro-nozzles. *Journal of Thermal Science and Engineering Applications* 13 (4). doi: 10.1115/1.4049430. ISSN-19485085
1561. Prashanth, P., Hiremath, S.S. 2021. Quality improvement in mechanical micro-drilling of titanium alloy under dry conditions. *International Journal of Machining and Machinability of Materials* 23 (06-May): 527-561. doi: 10.1504/IJMMM.2021.121165. ISSN-17485711
1562. Dwivedi, M., Silvestri, A.T., Franchitti, S., Krishnaswamy, H., Narayanaperumal, A., Astarita, A. 2021. Friction welding: An effective joining process for hybrid additive manufacturing. *CIRP Journal of Manufacturing Science and Technology* 35, pp 460-473. doi: 10.1016/j.cirpj.2021.07.016. ISSN-17555817
1563. Shankar, S., Balasubramaniam, K. 2021. Characterizing Halbach EMAT Configurations for SH0 Ultrasonic Waves. *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control* 68 (5): 1866-1875. doi: 10.1109/TUFFC.2021.3049507. ISSN-08853010
1564. Giridhar, D., Sakthivel, G., Kannan, T., et al. 2021. Characterization of single-grit grooving process of silicon carbide ceramic using multisensory approach. *Silicon*. doi: 10.1007/s12633-021-01331-w. ISSN-1876990X

1565. Anish, R., Shankar, K. 2021. Non-linear structural parameter identification using instantaneous power flow balance approach. *Inverse Problems in Science and Engineering* 29 (5): 636-662. doi: 10.1080/17415977.2020.1800685. ISSN-17415977
1566. Vallabhuni, S.K., Johnson, P.N., Shu, B., Narayanaswamy, K., Fernandes, R.X. 2021. Experimental and kinetic modeling studies on the auto-ignition of methyl crotonate at high pressures and intermediate temperatures. *Proceedings of the Combustion Institute* 38 (1): 223-231. doi: 10.1016/j.proci.2020.06.083. ISSN-15407489
1567. Passi, A., Shiva Nagendra, S.M., Maiya, M.P. 2021. Assessment of indoor and outdoor exposure to airborne particles in subway metro stations and their associated health risks. *WIT Transactions on Ecology and the Environment* 252 (2021): 85-96. doi: 10.2495/AIR210081. ISSN-1746448X
1568. Goutham, K.B., Mathew, N.T., Vijayaraghavan, L. 2021. Delamination and tool wear in drilling of carbon fabric reinforced epoxy composite laminate. *Materials Today: Proceedings* 50, pp 823-829. doi: 10.1016/j.matpr.2021.06.030. ISSN-22147853
1569. Krishnasamy, A., Gupta, S.K., Reitz, R.D. 2021. Prospective fuels for diesel low temperature combustion engine applications: A critical review. *International Journal of Engine Research* 22 (7): 2071-2106. doi: 10.1177/1468087420960857. ISSN-14680874
1570. Krishnasamy, A., Bukkarapu, K.R. 2021. A comprehensive review of biodiesel property prediction models for combustion modeling studies. *Fuel* 302. doi: 10.1016/j.fuel.2021.121085. ISSN-00162361
1571. Passi, A., Nagendra, S.M.S., Maiya, M.P. 2021. Characteristics of indoor air quality in underground metro stations: A critical review. *Building and Environment* 198. doi: 10.1016/j.buildenv.2021.107907. ISSN-03601323
1572. Sharma, D., Hiremath, S.S. 2021. Review on tools and tool wear in EDM. *Machining Science and Technology* 25 (5): 802-873. doi: 10.1080/10910344.2021.1971711. ISSN-10910344
1573. Meghwal, A., Anupam, A., Ang, A.S.M., et al. 2021. Multiscale mechanical performance and corrosion behaviour of plasma sprayed AlCoCrFeNi high-entropy alloy coatings. *Journal of Alloys and Compounds* 854. doi: 10.1016/j.jallcom.2020.157140. ISSN-09258388
1574. Yuan, Y., Adimi, S., Yang, M., et al. 2021. Co₃Mo₃N—An efficient multifunctional electrocatalyst. *The Innovation* 2 (2). doi: 10.1016/j.xinn.2021.100096. ISSN-26666758
1575. Rashad, M., Logesh, G., Sabu, U., Balasubramanian, M. 2021. A novel monolithic mullite microfiltration membrane for oil-in-water emulsion separation. *Journal of Membrane Science* 620. doi: 10.1016/j.memsci.2020.118857. ISSN-03767388
1576. Parakh, A., Vaidya, M., Kumar, N., Chetty, R., Murty, B.S. 2021. Effect of crystal structure and grain size on corrosion properties of AlCoCrFeNi high entropy alloy. *Journal of Alloys and Compounds* 863. doi: 10.1016/j.jallcom.2020.158056. ISSN-09258388
1577. Qu, F., Zhang, S., Yang, M., et al. 2021. Surface functionalized sensors for humidity-independent gas detection. *Angewandte Chemie - International Edition* 60 (12): 6561-6566. doi: 10.1002/anie.202015856. ISSN-14337851
1578. Wolff-Goodrich, S., Marshal, A., Pradeep, K.G., Dehm, G., Schneider, J.M., Liebscher, C.H. 2021. Combinatorial exploration of B2/L21 precipitation strengthened AlCrFeNiTi compositionally complex alloys. *Journal of Alloys and Compounds* 853. doi: 10.1016/j.jallcom.2020.156111. ISSN-09258388
1579. Wang, A., Hu, Y., Wang, H., Cheng, Y., Thomas, T., Ma, R., Wang, J. 2021. Activating inverse spinel NiCo₂O₄ embedded in N-doped carbon nanofibers via Fe substitution for bifunctional oxygen electrocatalysis. *Materials Today Physics* 17. doi: 10.1016/j.mtphys.2021.100353. ISSN-25425293
1580. Mangiseti, S.R., Kamaraj, M., Sundara, R. 2021. Large-scale single-step synthesis of wrinkled N-S doped 3D graphene like nanosheets from Tender palm shoots for high energy density supercapacitors. *International Journal of Hydrogen Energy* 46 (1): 403-415. doi: 10.1016/j.ijhydene.2020.09.161. ISSN-03603199
1581. Liang, S., Pan, L., Yang, M., et al. 2021. Ni₃N-V₂O₃ enables highly efficient 5-(Hydroxymethyl) furfural oxidation enabling membrane free hydrogen production. *Chemical Engineering Journal* 415. doi: 10.1016/j.cej.2021.128864. ISSN-13858947
1582. Talluri, B., Aparna, M.L., Sreenivasulu, N., Bhattacharya, S.S., Thomas, T. 2021. High entropy spinel metal oxide (CoCrFeMnNi)₃O₄ nanoparticles as a high-performance supercapacitor electrode material. *Journal of Energy Storage* 42. doi: 10.1016/j.est.2021.103004. ISSN-2352152X
1583. Ranjan, N., Shende, R.C., Kamaraj, M., Ramaprabhu, S. 2021. Utilization of TiO₂/gC₃N₄ nanoadditive to boost oxidative properties of vegetable oil for tribological application. *Friction* 9 (2): 273-287. doi: 10.1007/s40544-019-0336-9. ISSN-22237690
1584. Sukkurji, P.A., Cui, Y., Breitung, B., et al. 2021. Mechanochemical synthesis of novel rutile-type high entropy fluorides for electrocatalysis. *Journal of Materials Chemistry A* 9 (14): 8998-9009. doi: 10.1039/d0ta10209a. ISSN-20507488
1585. Mahato, D., Kharwar, Y.P., Ramanujam, K., Haridoss, P., Thomas, T. 2021. S, N co-doped graphene quantum dots decorated TiO₂ and supported with carbon for oxygen reduction reaction catalysis. *International Journal of Hydrogen Energy* 46 (41): 21549-21565. doi: 10.1016/j.ijhydene.2021.04.013. ISSN-03603199
1586. Shen, H., Peng, H., Yang, M., et al. 2021. Oxygen coordination on Fe-N-C to boost oxygen reduction catalysis. *Journal of Physical Chemistry Letters* 12 (1): 517-524. doi: 10.1021/acs.jpcclett.0c02812. ISSN-19487185
1587. Bhaumik, S., Kamaraj, M., Paleu, V. 2021. Tribological analyses of a new optimized gearbox biodegradable lubricant blended with reduced graphene oxide

- nanoparticles. *Proceedings of the Institution of Mechanical Engineers, Part J: Journal of Engineering Tribology* 235 (5): 901-915. doi: 10.1177/1350650120925590. ISSN-13506501
- 1588.Shah, N., Rahul, M.R., Phanikumar, G. 2021. Accelerated design of eutectic high entropy alloys by icme approach. *Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science* 52 (5): 1574-1580. doi: 10.1007/s11661-021-06218-4. ISSN-10735623
- 1589.Ghosh, S., Rao, G.R., Thomas, T. 2021. Machine learning-based prediction of supercapacitor performance for a novel electrode material: Cerium oxynitride. *Energy Storage Materials* 40, pp 426-438. doi: 10.1016/j.ensm.2021.05.024. ISSN-24058297
- 1590.Sujith, R., Jothi, S., Zimmermann, A., Aldinger, F., Kumar, R. 2021. Mechanical behaviour of polymer derived ceramics—a review. *International Materials Reviews* 66 (6): 426-449. doi: 10.1080/09506608.2020.1784616. ISSN-09506608
- 1591.Chawake, N., Raman, L., Eckert, J., et al. 2021. Composite of medium entropy alloys synthesized using spark plasma sintering. *Scripta Materialia* 191, pp 46-51. doi: 10.1016/j.scriptamat.2020.09.015. ISSN-13596462
- 1592.Behara, S., Poonawala, T., Thomas, T. 2021. Crystal structure classification in ABO_3 perovskites via machine learning. *Computational Materials Science* 188. doi: 10.1016/j.commatsci.2020.110191. ISSN-09270256
- 1593.Patra, A.K., Athreya, C.N., Mandal, S., Hari Kumar, K.C., Subramanya Sarma, V. 2021. High strength-high ductility medium Mn steel obtained through CALPHAD based alloy design and thermomechanical processing. *Materials Science and Engineering A* 810. doi: 10.1016/j.msea.2021.140756. ISSN-09215093
- 1594.Shah, N., Rahul, M.R., Bysakh, S., Phanikumar, G. 2021. Microstructure stability during high temperature deformation of CoCrFeNiTa eutectic high entropy alloy through nano-scale precipitation. *Materials Science and Engineering A* 824. doi: 10.1016/j.msea.2021.141793. ISSN-09215093
- 1595.Saad, A., Cheng, Z., Yang, M., et al. 2021. Interface engineering of mesoporous triphasic cobalt-copper phosphides as active electrocatalysts for overall water splitting. *Sustainable Energy and Fuels* 5 (5): 1366-1373. doi: 10.1039/d0se01745k. ISSN-23984902
- 1596.Tiwari, J., Pratheesh, P., Bembalge, O.B., Krishnaswamy, H., Amirthalingam, M., Panigrahi, S.K. 2021. Microstructure dependent electroplastic effect in AA 6063 alloy and its nanocomposites. *Journal of Materials Research and Technology* 12, pp 2185-2204. doi: 10.1016/j.jmrt.2021.03.112. ISSN-22387854
- 1597.Logesh, G., Sabu, U., Balasubramanian, M., et al. 2021. Tunable microwave absorption performance of carbon fiber-reinforced reaction bonded silicon nitride composites. *Ceramics International* 47 (16): 22540-22549. doi: 10.1016/j.ceramint.2021.04.265. ISSN-02728842
- 1598.Swaroop, A., Himasree, V., Thomas, T. 2021. Machine learning based a priori prediction on powder samples of sintering-driven abnormal grain growth. *Computational Materials Science* 187. doi: 10.1016/j.commatsci.2020.110117. ISSN-09270256
- 1599.Pujari, A., Thomas, T. 2021. Aluminium nanoparticles alloyed with other earth-abundant plasmonic metals for light trapping in thin-film a-Si solar cells. *Sustainable Materials and Technologies* 28. doi: 10.1016/j.susmat.2021.e00250. ISSN-22149937
- 1600.Bhagavathi, L.R., Deshpande, A.P., Janaki Ram, G.D., Panigrahi, S.K. 2021. Hygrothermal aging, fatigue and dynamic mechanical behavior of cellulosic particles reinforced one-component moisture curable polyurethane adhesive joints. *International Journal of Adhesion and Adhesives* 105. doi: 10.1016/j.ijadhadh.2020.102771. ISSN-01437496
- 1601.K., V., Gorle, R., S, A., Bakshi, S.R. 2021. Novel single phase $(Ti_{0.2}W_{0.2}Ta_{0.2}Mo_{0.2}V_{0.2})C_{0.8}$ high entropy carbide using ball milling followed by reactive spark plasma sintering. *Journal of the European Ceramic Society* 41 (13): 6756-6762. doi: 10.1016/j.jeurceramsoc.2021.06.009. ISSN-09552219
- 1602.Karthick, G., Raman, L., Murty, B.S. 2021. Phase evolution and mechanical properties of novel nanocrystalline $Y_2(TiZrHfMoV)_2O_7$ high entropy pyrochlore. *Journal of Materials Science and Technology* 82, pp 214-226. doi: 10.1016/j.jmst.2020.12.025. ISSN-10050302
- 1603.Nair, N.M., Khanra, I., Ray, D., Swaminathan, P. 2021. Silver nanowire-based printable electrochromic ink for flexible touch-display applications. *ACS Applied Materials and Interfaces* 13 (29): 34550-34560. doi: 10.1021/acsami.1c09115. ISSN-19448244
- 1604.Balu, S.K., Sampath, V., Andra, S., Alagar, S., Manisha Vidyavathy, S. 2021. Fabrication of carbon and silver nanomaterials incorporated hydroxyapatite nanocomposites: Enhanced biological and mechanical performances for biomedical applications. *Materials Science and Engineering C* 128. doi: 10.1016/j.msec.2021.112296. ISSN-09284931
- 1605.Choudhury, S.S., Marya, S.K., Amirthalingam, M. 2021. Improving arc stability during wire arc additive manufacturing of thin-walled titanium components. *Journal of Manufacturing Processes* 66, pp 53-69. doi: 10.1016/j.jmapro.2021.03.033. ISSN-15266125
- 1606.Prasad, K., Venkatesh, B., Krishnaswamy, H., Banerjee, D.K., Chakkingal, U. 2021. On the interplay of friction and stress relaxation to improve stretch-flangeability of dual phase (DP600) steel. *CIRP Journal of Manufacturing Science and Technology* 32, pp 154-169. doi: 10.1016/j.cirpj.2020.11.014. ISSN-17555817
- 1607.Jaiswal, U.K., Vamsi Krishna, Y., Rahul, M.R., Phanikumar, G. 2021. Machine learning-enabled identification of new medium to high entropy alloys with solid solution phases. *Computational Materials Science* 197. doi: 10.1016/j.commatsci.2021.110623. ISSN-09270256
- 1608.Mookara, R.K., Seman, S., Jayaganthan, R., Amirthalingam, M. 2021. Influence of droplet transfer behaviour on the microstructure, mechanical properties

- and corrosion resistance of wire arc additively manufactured Inconel (IN) 625 components. *Welding in the World* 65 (4): 573-588. doi: 10.1007/s40194-020-01043-6. ISSN-00432288
- 1609.Thota, H., Jeyaraam, R., Vadlamani, S.S., et al. 2021. Grain boundary engineering and its implications on corrosion behavior of equiatomic CoCrFeMnNi high entropy alloy. *Journal of Alloys and Compounds* 888. doi: 10.1016/j.jallcom.2021.161500. ISSN-09258388
- 1610.Raman, L., Anupam, A., Kottada, R.S., et al. 2021. Strengthening mechanisms in CrMoNbTiW refractory high entropy alloy. *Materials Science and Engineering A* 819. doi: 10.1016/j.msea.2021.141503. ISSN-09215093
- 1611.Malek, A., Ganta, A., Divyapriya, G., Nambi, I.M., Thomas, T. 2021. Hydrogen production from human and cow urine using in situ synthesized aluminium nanoparticles. *International Journal of Hydrogen Energy* 46 (54): 27319-27329. doi: 10.1016/j.ijhydene.2021.06.024. ISSN-03603199
- 1612.Anupam, A., Ang, A.S.M., Kottada, R.S., et al. 2021. Evaluating the influence of microstructural attributes: Fraction, composition, size and spatial distribution of phases on the oxidation behaviour of high-entropy alloys. *Corrosion Science* 184. doi: 10.1016/j.corsci.2021.109381. ISSN-0010938X
- 1613.Anitha, S., Thomas, T., Parthiban, V., Pichumani, M. 2021. Modeling of Newtonian and non-Newtonian-based coolants for deployment in industrial length-scale shell and tube heat exchanger. *International Journal of Modern Physics C* 32 (6). doi: 10.1142/S0129183121500856. ISSN-01291831
- 1614.Harish, S., Sivaprahasam, D., Jayachandran, B., Gopalan, R., Sundararajan, G. 2021. Performance of bismuth telluride modules under thermal cycling in an automotive exhaust thermoelectric generator. *Energy Conversion and Management* 232. doi: 10.1016/j.enconman.2021.113900. ISSN-01968904
- 1615.Shen, H., Liang, S., Yang, M., et al. 2021. Supporting nickel on vanadium nitride for comparable hydrogen evolution performance to platinum in alkaline solution. *Journal of Materials Chemistry A* 9 (35): 19669-19674. doi: 10.1039/d1ta02760c. ISSN-20507488
- 1616.Balisetty, V., Chakkingal, U., Venugopal, S. 2021. Evaluation of stretch flangeability of dual-phase steels by hole expansion test. *International Journal of Advanced Manufacturing Technology* 114 (02-Jan): 205-217. doi: 10.1007/s00170-021-06850-9. ISSN-02683768
- 1617.Shanmugam, V., Natarajan, S., G., Gopalan, R., et al. 2021. Surface oxygen vacancy engineering and physical protection by in-situ carbon coating process of lithium rich layered oxide. *Journal of Power Sources* 515. doi: 10.1016/j.jpowsour.2021.230623. ISSN-03787753
- 1618.Mani, N., Haridoss, P., George, B. 2021. A wearable ultrasonic-based ankle angle and toe clearance sensing system for gait analysis. *IEEE Sensors Journal* 21 (6): 8593-8603. doi: 10.1109/JSEN.2020.3047900. ISSN-1530437X
- 1619.Sharma, S., Narayanan, M., Gautam, R., Gopalan, R., Swaminathan, P. 2021. Effect of processing route on the structural and functional properties of manganese doped zinc oxide. *Materials Chemistry and Physics* 261. doi: 10.1016/j.matchemphys.2020.124206. ISSN-02540584
- 1620.Barode, J., Aravind, U., Bhogi, S., Muduli, B., Mukherjee, M. 2021. Mg and Mg-Based blowing agents for aluminum foam. *Metallurgical and Materials Transactions B: Process Metallurgy and Materials Processing Science* 52 (1): 292-304. doi: 10.1007/s11663-020-02008-2. ISSN-10735615
- 1621.Dharmendra, C., Gururaj, K., Pradeep, K.G., Mohammadi, M. 2021. Characterization of κ -precipitates in wire-arc additive manufactured nickel aluminum bronze: A combined transmission Kikuchi diffraction and atom probe tomography study. *Additive Manufacturing* 46. doi: 10.1016/j.addma.2021.102137. ISSN-22148604
- 1622.Stelzer, B., Pinggen, K., Schneider, J.M., et al. 2021. Phase formation and thermal stability of reactively sputtered $\text{YTaO}_4\text{-ZrO}_2$ coatings. *Materials* 14 (3), 15-Jan. doi: 10.3390/ma14030692. ISSN-19961944
- 1623.Banerjee, P., Roy, C., De, S.K., Santos, A.J., Morales, F.M., Bhattacharyya, S. 2021. Atomically resolved tomographic reconstruction of nanoparticles from single projection: Influence of amorphous carbon support. *Ultramicroscopy* 221. doi: 10.1016/j.ultramic.2020.113177. ISSN-03043991
- 1624.Gopinath, V.K., Soumya, S., Yogeshwar Chakrapani, V., Sampath Kumar, T.S. 2021. Odontogenic differentiation of inflamed dental pulp stem cells (IDPSCs) on polycaprolactone (PCL) nanofiber blended with hydroxyapatite. *Dental Materials Journal* 40 (2): 312-321. doi: 10.4012/dmj.2020-005. ISSN-02874547
- 1625.Behara, S., Ikeda, K., Thomas, T. 2021. Amphoteric behavior of Dy^{3+} in $\text{Na}_{0.5}\text{Bi}_{0.5}\text{TiO}_3$: Neutron diffraction and Raman studies. *Ceramics International* 47 (9): 12870-12878. doi: 10.1016/j.ceramint.2021.01.149. ISSN-02728842
- 1626.Jain, R., Rahul, M.R., Chakraborty, P., Sabat, R.K., Samal, S., Phanikumar, G., Tewari, R. 2021. Design and deformation characteristics of single-phase Co-Cr-Fe-Ni-V high entropy alloy. *Journal of Alloys and Compounds* 888. doi: 10.1016/j.jallcom.2021.161579. ISSN-09258388
- 1627.Dhal, A., Prathyusha, B., Kumar, R., Panigrahi, S.K. 2021. Twin evolution and work-hardening phenomenon of a bulk ultrafine grained copper with high thermal stability and strength-ductility synergy. *Materials Science and Engineering A* 802. doi: 10.1016/j.msea.2020.140622. ISSN-09215093
- 1628.Tiwari, J.K., Mandal, A., Sathish, N., Yadav, V., Pradeep, K.G., Singh, A.K., Srivastava, A.K. 2021. Novel approach for micrographical investigation of graphene in additively manufactured graphene/ $\text{AlSi}_{10}\text{Mg}$ composite. *Materials Letters* 284. doi: 10.1016/j.matlet.2020.128923. ISSN-0167577X
- 1629.Misra, D., Yadav, S.K. 2021. On the origin of precipitation of transition metals implanted in MgO. *European Physical Journal B* 94 (4). doi: 10.1140/epjb/s10051-021-00085-z. ISSN-14346028

1630. Usharani, N.J., Sanghavi, H., Bhattacharya, S.S. 2021. Factors influencing phase formation and band gap studies of a novel multicomponent high entropy (Co,Cu,Mg,Ni,Zn)₂TiO₄ orthotitanate spinel. *Journal of Alloys and Compounds* 888. doi: 10.1016/j.jallcom.2021.161390. ISSN-09258388
1631. Zhang, S., Wang, Y., Qu, F., Thomas, T., Yang, M. 2021. In₂O₃ nanocubes modified with RuO₂ for detection of TXM vapors containing benzyl group. *Sensors and Actuators, B: Chemical* 338. doi: 10.1016/j.snb.2021.129731. ISSN-09254005
1632. Trivedi, V., Battabyal, M., Gopalan, R., et al. 2021. Effect of refractory tantalum metal filling on the microstructure and thermoelectric properties of Co₄Sb₁₂ Skutterudites. *ACS Omega* 6 (5): 3900-3909. doi: 10.1021/acsomega.0c05740. ISSN-24701343
1633. Bhuyan, P., Paliwal, M., Sarma, V.S., de Boer, B., Mitra, R., Mandal, S. 2021. Precipitate evolution during aging and its individual role on high-temperature hot corrosion response in Alloy 617. *Journal of Alloys and Compounds* 871. doi: 10.1016/j.jallcom.2021.159499. ISSN-09258388
1634. Huang, C., Adimi, S., Yang, M., et al. 2021. Mesoporous titanium niobium nitrides supported Pt nanoparticles for highly selective and sensitive formaldehyde sensing. *Journal of Materials Chemistry A* 9 (35): 19840-19846. doi: 10.1039/d1ta02433g. ISSN-20507488
1635. Koundinya, N.T.B.N., Kottada, R.S. 2021. Synergetic influence of microconstituents on the damage accumulation and consequent effect on the flow behaviour in cast Mg-Ca-Sn alloys. *Materials Science and Engineering A* 799. doi: 10.1016/j.msea.2020.140167. ISSN-09215093
1636. Palak, Sathyanath, R., Kalpathy, S.K., Bandyopadhyay, R. 2021. Emergent patterns and stable interfaces during radial displacement of a viscoelastic fluid. *Colloids and Surfaces A: Physicochemical and Engineering Aspects* 629. doi: 10.1016/j.colsurfa.2021.127405. ISSN-09277757
1637. Damodaram, R., Rai, P., Cyril Joseph Daniel, S., Bauri, R., Yadav, D. 2021. Friction surfacing: A tool for surface crack repair. *Surface and Coatings Technology* 422. doi: 10.1016/j.surfcoat.2021.127482. ISSN-02578972
1638. Parthiban, R., Ray, R.K., Hari kumar, K.C., Sankaran, S. 2021. Influence of rolling temperature and strain on the microstructural evolution and mechanical properties in quench and partition (Q&P) steels. *Materials Science and Engineering A* 825. doi: 10.1016/j.msea.2021.141893. ISSN-09215093
1639. Thakre, S., Harshith, V., Kanjarla, A.K. 2021. Intrinsic dimensionality of microstructure data. *Integrating Materials and Manufacturing Innovation* 10 (1): 44-57. doi: 10.1007/s40192-021-00200-z. ISSN-21939764
1640. M Nair, N., Jahanara, M.M., Ray, D., Swaminathan, P. 2021. Photoresponse of a printed transparent silver nanowire-zinc oxide nanocomposite. *Flexible and Printed Electronics* 6 (4). doi: 10.1088/2058-8585/ac2e48. ISSN-20588585
1641. Nagar, A., Kumar, R., Srikrishnarka, P., Thomas, T., Pradeep, T. 2021. Scalable drop-to-film condensation on a nanostructured hierarchical surface for enhanced humidity harvesting. *ACS Applied Nano Materials* 4 (2): 1540-1550. doi: 10.1021/acsanm.0c03032. ISSN-25740970
1642. Chavan, N.M., Phani, P.S., Ramakrishna, M., Venkatesh, L., Pant, P., Sundararajan, G. 2021. Role of stacking fault energy (SFE) on the high strain rate deformation of cold sprayed Cu and Cu-Al alloy coatings. *Materials Science and Engineering A* 814. doi: 10.1016/j.msea.2021.141242. ISSN-09215093
1643. Prasad, S.R., Kumar, T.S.S., Jayakrishnan, A. 2021. Nanocarrier-based drug delivery systems for bone cancer therapy: A review. *Biomedical Materials (Bristol)* 16 (4). doi: 10.1088/1748-605X/abf7d5. ISSN-17486041
1644. Gorle, R., K, V., Bakshi, S.R. 2021. Reactive spark plasma sintering of B₄C composite at low temperature using mechanically milled B₄C-Ti-B mixtures. *Ceramics International* 47 (18): 26134-26143. doi: 10.1016/j.ceramint.2021.06.021. ISSN-02728842
1645. Raj, M., Thakre, S., Annabattula, R.K., Kanjarla, A.K. 2021. Estimation of local strain fields in two-phase elastic composite materials using unet-based deep learning. *Integrating Materials and Manufacturing Innovation* 10 (3): 444-460. doi: 10.1007/s40192-021-00227-2. ISSN-21939764
1646. Georgy, K., Neelakantan, L., Kumar, K.C.H., Mukherjee, M. 2021. Influence of Cu, Zn and Si alloying elements on Al alloy foams produced using Mg blowing agent. *Journal of Materials Science* 56 (3): 2612-2630. doi: 10.1007/s10853-020-05381-0. ISSN-00222461
1647. Sundaram, S., Ram, G.D.J., Amirthalingam, M. 2021. Development of shielded metal arc welding electrodes to achieve carbide-free bainitic weld microstructures. *Welding in the World* 65 (1): 11-Jan. doi: 10.1007/s40194-020-00987-z. ISSN-00432288
1648. Santhy, K., Hari Kumar, K.C. 2021. Thermodynamic modelling of magnetic laves phase in Fe-Ti system using first principle method. *Intermetallics* 128. doi: 10.1016/j.intermet.2020.106978. ISSN-09669795
1649. Jarugula, R., Koppoju, S., Jeyaraam, R., Ganesh Sundara Raman, S., Sundararajan, G. 2021. On the understanding of microstructural evolution during hot deformation of n-ODS-18Cr ferritic steel containing heterogeneous microstructure. *Materials Science and Engineering A* 800. doi: 10.1016/j.msea.2020.140343. ISSN-09215093
1650. Gupta, R.K., Kumar, V.A., Raj, J.N., Singh, B.K., Kanjarla, A.K. 2021. Hot deformation studies on β_0 stabilized TiAl alloy made through ingot metallurgy route. *Transactions of the Indian Institute of Metals* 74 (12): 2977-2989. doi: 10.1007/s12666-021-02366-8. ISSN-09722815
1651. Rasaki, S.A., Chen, Z., Thomas, T., Yang, M. 2021. Anti-perovskite metal carbides: A new family of promising electrocatalysts for oxygen reduction in alkaline solution. *Materials Research Bulletin* 133. doi: 10.1016/j.materresbull.2020.111014. ISSN-00255408
1652. Erekaath, S., Kalpathy, S.K. 2021. Light-assisted self-organization and pattern formation in thin films

- of azobenzene-containing polyurea. *Optics and Laser Technology* 143. doi: 10.1016/j.optlastec.2021.107288. ISSN-00303992
- 1653.Swaminathan, G., Sampath, V., Adarsh, S.H. 2021. Influence of aging temperature on functional fatigue behavior of a $Ti_{50}Ni_{45}Cu_5$ shape memory alloy. *Transactions of the Indian Institute of Metals* 74 (10): 2435-2446. doi: 10.1007/s12666-021-02209-6. ISSN-09722815
- 1654.Borra, C.R., Vlugt, T.J., Offerman, S.E., et al. 2021. Recovery of rare earths from glass polishing waste for the production of aluminium-rare earth alloys. *Resources, Conservation and Recycling* 174. doi: 10.1016/j.resconrec.2021.105766. ISSN-09213449
- 1655.Kavitha, R., Nirmala, S., Sampath, V., Shanmugavalli, V., Latha, B. 2021. Studies of synthesis, crystal structure and antidiabetic activity of quinolinium 2-carboxylate 2-chloroacetic acid. *Journal of Molecular Structure* 1240. doi: 10.1016/j.molstruc.2021.130572. ISSN-00222860
- 1656.Dai, C., Li, R., Yang, M., et al. 2021. Nitrogen, sulfur co-doped carbon coated zinc sulfide for efficient hydrogen peroxide electrosynthesis. *Dalton Transactions* 50 (16): 5416-5419. doi: 10.1039/d0dt04348f. ISSN-14779226
- 1657.Bandi, A., Bakshi, S.R. 2021. Friction stir lap welding of AZ31B and AA6061 alloys using tin as an inter-layer. *Metals and Materials International*. doi: 10.1007/s12540-021-01039-x. ISSN-15989623
- 1658.Awin, E.W., Sridar, S., Kumar, R., et al. 2021. Low frequency dielectric behavior and AC conductivity of polymer derived $SiC(O)/HfC,N_{1-x}$ ceramic nanocomposites. *Materials Chemistry and Physics* 260. doi: 10.1016/j.matchemphys.2020.124122. ISSN-02540584
- 1659.Ghosh, S., Tippireddy, S., Mallik, R.C., et al. 2021. InSb nanoparticles dispersion in Yb-filled Co_4Sb_{12} improves the thermoelectric performance. *Journal of Alloys and Compounds* 880. doi: 10.1016/j.jallcom.2021.160532. ISSN-09258388
- 1660.Sajan, M., Amirthalingam, M., Chakkingal, U. 2021. A novel method for the spring-back analysis of a hot stamping steel. *Journal of Materials Research and Technology* 11, pp 227-234. doi: 10.1016/j.jmrt.2021.01.017. ISSN-22387854
- 1661.Mantripragada, V.T., Sahu, S., Sarkar, S. 2021. Morphology and flow behavior of buoyant bubble plumes. *Chemical Engineering Science* 229. doi: 10.1016/j.ces.2020.116098. ISSN-00092509
- 1662.Sathyanath, R., Kalpathy, S.K. 2021. Thickness regimes of power law liquids dip coated onto permeable substrates. *International Communications in Heat and Mass Transfer* 123. doi: 10.1016/j.icheatmasstransfer.2021.105186. ISSN-07351933
- 1663.Kumar, K., Kavuri, M., Swaminathan, P. 2021. Effect of nanoparticles on the dewetting of bismuth films. *Surface Engineering* 37 (4): 406-413. doi: 10.1080/02670844.2020.1744925. ISSN-02670844
- 1664.Banerjee, P., Roy, C., Jiménez, J.J., Morales, F.M., Bhattacharyya, S. 2021. Atomically resolved 3D structural reconstruction of small quantum dots. *Nanoscale* 13 (16): 7550-7557. doi: 10.1039/d1nr00466b. ISSN-20403364
- 1665.Bhaskar, L.K., Kumar, G., Srinivasan, N., Kumar, R. 2021. Design and development of a miniaturized multiaxial test setup for in situ x-ray diffraction experiments. *Review of Scientific Instruments* 92 (1). doi: 10.1063/5.0031805. ISSN-00346748
- 1666.Sabu, U., Kumar, C.N.S., Balasubramanian, M., et al. 2021. On the formation of α -alumina single crystal platelets through eggshell membrane bio-templating. *Scripta Materialia* 195. doi: 10.1016/j.scriptamat.2020.113716. ISSN-13596462
- 1667.Stenzel, D., Issac, I., Breitung, B., et al. 2021. High entropy and low symmetry: Triclinic high-entropy molybdates. *Inorganic Chemistry* 60 (1): 115-123. doi: 10.1021/acs.inorgchem.0c02501. ISSN-00201669
- 1668.Liu, D., Pervaiz, E., Yang, M., et al. 2021. Theoretical study on $W-Co_3O_4$ (1 1 1) surface: Acetone adsorption and sensing mechanism. *Applied Surface Science* 566. doi: 10.1016/j.apsusc.2021.150642. ISSN-01694332
- 1669.Misra, D., Yadav, S.K. 2021. Nb-Implanted BaO as a Support for Gold Single Atoms. *Journal of Physical Chemistry C* 125 (51): 28059-28066. doi: 10.1021/acs.jpcc.1c07859. ISSN-19327447
- 1670.Abraham, L., Thomas, T., Pichumani, M. 2021. Ionic amphiphile stabilized reverse micellar systems and their implications for nanoencapsulation. *Colloids and Surfaces A: Physicochemical and Engineering Aspects* 620. doi: 10.1016/j.colsurfa.2021.126591. ISSN-09277757
- 1671.Dora, T.R.K., Goud, R., Gollapudi, S., et al. 2021. Investigations into sample geometry effects on the superelastic and fatigue behavior of Nitinol: Modeling and experiments. *Materialia* 20. doi: 10.1016/j.mtla.2021.101256. ISSN-25891529
- 1672.Jarugula, R., Channagiri, S., Raman, S.G.S., Sundararajan, G. 2021. Strengthening mechanisms in nano oxide dispersion-strengthened Fe-18Cr ferritic steel at different temperatures. *Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science* 52 (5): 1901-1912. doi: 10.1007/s11661-021-06200-0. ISSN-10735623
- 1673.Sahu, M.R., Kumar, T.S.S., Chakkingal, U. 2021. Tailoring the properties of biodegradable Mg-Ca alloy by groove pressing technique. *Transactions of the Indian Institute of Metals* 74 (4): 791-798. doi: 10.1007/s12666-021-02187-9. ISSN-09722815
- 1674.Mannava, V.R., Koundinya, N.T.B.N., Sambasiva Rao A., Paulose, N., Kamaraj, M., Kottada, R.S. 2021. Hot corrosion-creep interaction in IN718 under simulated marine environment: Introducing strain-associated-time (SAT) plots for comprehensive understanding. *Corrosion Science* 190. doi: 10.1016/j.corsci.2021.109667. ISSN-0010938X
- 1675.Swaroop, A., Pujari, A., Thomas, T. 2021. Modelling core-shell plasmonic nanoparticles as homogenous systems: An effective refractive index approach. *Materialia* 19. doi: 10.1016/j.mtla.2021.101183. ISSN-25891529
- 1676.Sachin Kumar, B., Dhanasekhar, C., Anandhan, S.,

- Kalpathy, S.K. 2021. Magnetic behavior of polymorph composite nickel titanate nanofibers. *New Journal of Chemistry* 45 (37): 17438-17446. doi: 10.1039/d1nj01714d. ISSN-11440546
- 1677.Sathyanath, R., Aarthi, A., Kalpathy, S.K. 2021. Features of colloidal silica deposits dip coated onto porous alumina membranes from aqueous suspensions. *Colloids and Interface Science Communications* 45. doi: 10.1016/j.colcom.2021.100526. ISSN-22150382
- 1678.Bhaumik, S., Kamaraj, M. 2021. Artificial neural network and multi-criterion decision making approach of designing a blend of biodegradable lubricants and investigating its tribological properties. *Proceedings of the Institution of Mechanical Engineers, Part J: Journal of Engineering Tribology* 235 (8): 1575-1589. doi: 10.1177/1350650120965754. ISSN-13506501
- 1679.Omprakash, C.M., Kumar, A., Kamaraj, M., Satyanarayana, D.V.V. 2021. Creep behaviour of directionally solidified nickel-base superalloy CM 247: A three-dimensional representation of creep curves. *Transactions of the Indian Institute of Metals* 74 (7): 1787-1797. doi: 10.1007/s12666-021-02275-w. ISSN-09722815
- 1680.Bondarenko, V.B., Filimonov, A.V., Kumar, R. 2021. A chaotic potential of charged dislocations in Group III-nitride heterojunctions. *Technical Physics Letters* 47 (1): 10-Aug. doi: 10.1134/S1063785021010053. ISSN-10637850
- 1681.Maheswari, N., Amirthalingam, M., Sankaran, S., et al. 2021. Temperature dependent partitioning mechanisms and its associated microstructural evolution in a CMnSiAl quenching and partitioning (Q&P) steel. *Materials Today Communications* 29. doi: 10.1016/j.mtcomm.2021.102918. ISSN-23524928
- 1682.Thiruselvam, N.I., Jeyaraam, R., Subramanian, S.J., Sankaran, S. 2021. Deformation heterogeneity in copper oligocrystals using high-resolution stereo DIC. *Materialia* 18. doi: 10.1016/j.mtla.2021.101164. ISSN-25891529
- 1683.Priya, G.K., Deepu, M.J., Venkatesh, P., Phanikumar, G. 2021. Integrated computational materials engineering-based simulation of detrimental precipitates in power plant steel weld. *Journal of Materials Engineering and Performance* 30 (3): 1994-2001. doi: 10.1007/s11665-021-05502-z. ISSN-10599495
- 1684.Ravi, R., Bakshi, S.R. 2021. Microstructural evolution and wear behavior of carbon added CoCrFeMnNi multi-component alloy fabricated by mechanical alloying and spark plasma sintering. *Journal of Alloys and Compounds* 883. doi: 10.1016/j.jallcom.2021.160879. ISSN-09258388
- 1685.Magham, H.S.R., Maheswari, N., Dinesh, K., Vijayaraghavan, L., Sankaran, S., Padmanabhan, K.A. 2021. On a new two-step air cooling method following thermomechanically controlled rolling: Microstructural evolution and mechanical properties of a high-strength multiphase medium carbon microalloyed steel. *Steel Research International* 92 (5). doi: 10.1002/srin.202000563. ISSN-16113683
- 1686.Swaminathan, G., Sampath, V. 2021. Observation of transformation strain arrest during partial thermomechanical cycling of an NiTi shape memory alloy. *Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science* 52 (7): 3182-3189. doi: 10.1007/s11661-021-06317-2. ISSN-10735623
- 1687.Sampath, V., Gayathri Ayyagari, S.V., Srinithi, R., Rajam, A.G.D., Andra, S., Anusha, A. 2021. Theoretical analysis of hysteresis and characteristic transition temperatures of iron-based memory metals. *Transactions of the Indian Institute of Metals* 74 (3): 611-618. doi: 10.1007/s12666-020-02147-9. ISSN-09722815
- 1688.Cinitha, A., Sampath, V. 2021. Behaviour of axially-restrained tubular compression members exposed to varying thermal loads. *Journal of Constructional Steel Research* 179. doi: 10.1016/j.jcsr.2021.106525. ISSN-0143974X
- 1689.Kovtun, O., Karbayev, M., Korobeinikov, I., Srishilan, C., Shukla, A.K., Volkova, O. 2021. Phosphorus partition between liquid crude steel and high-basicity basic oxygen furnace slags. *Steel Research International* 92 (8). doi: 10.1002/srin.202000607. ISSN-16113683
- 1690.De, P.S., Vuppuluri, A., Vadlamani, S.S., Vedantam, S. 2021. A physically based model of the effect of recovery and clustering on recrystallization kinetics. *Journal of Materials Science* 56 (11): 7082-7093. doi: 10.1007/s10853-020-05630-2. ISSN-00222461
- 1691.Sahoo, L.K., Sarkar, S. 2021. Experimental study of bubble behavior in a two-dimensional gas-solid tapered fluidized bed. *Industrial and Engineering Chemistry Research* 60 (34): 12740-12751. doi: 10.1021/acs.iecr.1c01496. ISSN-08885885
- 1692.Sharma, A., Usharani, N.J., Bhattacharya, S.S. 2021. Dielectric and ferroelectric properties of multicomponent equiatomic calcium lead strontium titanate ($\text{Ca}_{0.33}\text{Pb}_{0.33}\text{Sr}_{0.33}$) TiO_3 . *Open Ceramics* 6. doi: 10.1016/j.oceram.2021.100130. ISSN-26665395
- 1693.Adimi, S., Qi, W., Thomas, T., Gebauer, R., Yang, M., Ruan, S. 2021. Surface oxidation for enhancing the hydrogen evolution reaction of metal nitrides: A theoretical study on vanadium nitride. *Materials Advances* 2 (10): 3394-3404. doi: 10.1039/d1ma00231g. ISSN-26335409
- 1694.Narayanan, M., Harsha, A., Chakraborty, A., Swaminathan, P. 2021. Reactive bilayers by self-activated electroless nickel-phosphorous deposition on pure aluminum. *JOM* 73 (2): 574-579. doi: 10.1007/s11837-020-04520-x. ISSN-10474838
- 1695.Mantripragada, V.T., Kumar, K., Kumar, P., Sarkar, S. 2021. Modeling of powder production during centrifugal atomization. *Journal of Sustainable Metallurgy* 7 (2): 620-629. doi: 10.1007/s40831-021-00370-2. ISSN-21993823
- 1696.Sikdar, S., Thomas, T., Rao, M.S.R., Bhattacharya, S.S. 2021. Effect of calcination atmosphere on structural, optical and photocatalytic activity of $\text{TiO}_2/\text{SnS}_2$ core-shell nanostructures in the reduction of aqueous Cr(VI) to Cr(III). *Processing and Application of Ceramics* 15 (1): 58-68. doi: 10.2298/PAC2101058S. ISSN-18206131
- 1697.Settem, M., Srivastav, A.K., Kanjarla, A.K. 2021.

- Understanding the strain-dependent structure of Cu nanocrystals in Ag-Cu nanoalloys. *Physical Chemistry Chemical Physics* 23 (46): 26165-26177. doi: 10.1039/d1cp04145b. ISSN-14639076
- 1698.Ghosh, S., Shankar, G., Chandra Mallik, R., et al. 2021. Thermoelectric properties enhancement of $Ba_{0.2}Co_4Sb_{12}$ through dispersion of GaSb inclusions. *Physica B: Condensed Matter* 606. doi: 10.1016/j.physb.2020.412440. ISSN-09214526
- 1699.Mani Kanta, P.L., Priya, N.L., Gopalan, R., et al. 2021. Unusual case of higher cyclic stability at a wider voltage window in sodium vanadium phosphate. *ACS Applied Energy Materials* 4 (11): 12581-12592. doi: 10.1021/acsaem.1c02367. ISSN-25740962
- 1700.Cheng, Z., Qi, W., Yang, M., et al. 2021. Recent advances in transition metal nitride-based materials for photocatalytic applications. *Advanced Functional Materials* 31 (26). doi: 10.1002/adfm.202100553. ISSN-1616301X
- 1701.Saad, A., Cheng, Z., Shen, H., Thomas, T., Yang, M. 2021. Recent advances in nanocasting cobalt-based mesoporous materials for energy storage and conversion. *Electrocatalysis* 11 (5): 465-484. doi: 10.1007/s12678-020-00608-9. ISSN-18682529
- 1702.Malek, A., Rao, G.R., Thomas, T. 2021. Waste-to-wealth approach in water economy: The case of beneficiation of mercury-contaminated water in hydrogen production. *International Journal of Hydrogen Energy* 46 (52): 26677-26692. doi: 10.1016/j.ijhydene.2021.05.133. ISSN-03603199
- 1703.Manikandan, S.G.K., Kamaraj, M., Jebasiamony, C. 2021. Review on self-healing thermal barrier coatings for space applications. *Materials Performance and Characterization* 10 (1): 791-818. doi: 10.1520/MPC20210062. ISSN-21653992
- 1704.Aravind, U., Chakkingal, U., Venugopal, P. 2021. A review of fine blanking: Influence of die design and process parameters on edge quality. *Journal of Materials Engineering and Performance* 30 (1). doi: 10.1007/s11665-020-05339-y. ISSN-10599495
- 1705.Rajasekhar, B., Nambi, I.M., Govindarajan, S.K. 2021. Investigating the degradation of nC_{12} to nC_{23} alkanes and PAHs in petroleum-contaminated water by electrochemical advanced oxidation process using an inexpensive Ti/Sb-SnO₂/PbO₂ anode. *Chemical Engineering Journal* 404. doi: 10.1016/j.cej.2020.125268. ISSN-13858947
- 1706.Jha, N.K., Ivanova, A., Sarmadivaleh, M., et al. 2021. Interaction of low salinity surfactant nanofluids with carbonate surfaces and molecular level dynamics at fluid-fluid interface at ScCO₂ loading. *Journal of Colloid and Interface Science* 586, pp 315-325. doi: 10.1016/j.jcis.2020.10.095. ISSN-00219797
- 1707.Sriram, V., Agarwal, S., Schlurmann, T. 2021. Laboratory study on steep wave interactions with fixed and moving cylinder. *International Journal of Offshore and Polar Engineering* 31 (1): 19-26. doi: 10.17736/ijope.2021.jc808. ISSN-10535381
- 1708.Behera, U.S., Sangwai, J.S. 2021. Nanofluids of kaolinite and silica in low saline seawater (LowSal) with and without surfactant: Interfacial tension and wettability alteration of oil-water-rock system for low salinity-enhanced oil recovery. *Industrial and Engineering Chemistry Research* 60 (1): 291-313. doi: 10.1021/acs.iecr.0c04853. ISSN-08885885
- 1709.Medhi, S., Chowdhury, S., Bhatt, N., Gupta, D.K., Rana, S., Sangwai, J.S. 2021. Analysis of high performing graphene oxide nanosheets based non-damaging drilling fluids through rheological measurements and CFD studies. *Powder Technology* 377, pp 379-395. doi: 10.1016/j.powtec.2020.08.053. ISSN-00325910
- 1710.Naga Babu, A., Raja Sree, T., Srinivasa Reddy, D., Suresh Kumar, G., Krishna Mohan, G.V. 2021. Experimental and statistical analysis of As(III) adsorption from contaminated water using activated red mud doped calcium-alginate beads. *Environmental Technology (United Kingdom)* 42 (12): 1810-1825. doi: 10.1080/09593330.2019.1681520. ISSN-09593330
- 1711.Sricharan, V.V.S., Chandrasekaran, S. 2021. Time-domain analysis of a bean-shaped multi-body floating wave energy converter with a hydraulic power take-off using WEC-Sim. *Energy* 223. doi: 10.1016/j.energy.2021.119985. ISSN-03605442
- 1712.Perumalsamy, J., Gupta, P., Sangwai, J.S. 2021. Performance evaluation of esters and graphene nanoparticles as additives on the rheological and lubrication properties of water-based drilling mud. *Journal of Petroleum Science and Engineering* 204. doi: 10.1016/j.petrol.2021.108680. ISSN-09204105
- 1713.Gaikwad, N., Bhattacharjee, G., Sangwai, J.S., Kumar, R., Linga, P. 2021. Kinetic and morphology study of equimolar CO₂-CH₄ hydrate formation in the presence of cyclooctane and L-tryptophan. *Energy and Fuels* 35 (1): 636-648. doi: 10.1021/acs.energyfuels.0c03665. ISSN-08870624
- 1714.Medhi, S., Gupta, D.K., Sangwai, J.S. 2021. Impact of zinc oxide nanoparticles on the rheological and fluid-loss properties, and the hydraulic performance of non-damaging drilling fluid. *Journal of Natural Gas Science and Engineering* 88. doi: 10.1016/j.jngse.2021.103834. ISSN-18755100
- 1715.Sriram, V., Agarwal, S., Han, Bo., et al. 2021. A comparative study on the nonlinear interaction between a focusing wave and cylinder using state-of-the-art solvers: Part A. *International Journal of Offshore and Polar Engineering* 31 (1): 10-Jan. doi: 10.17736/ijope.2021.jc820. ISSN-10535381
- 1716.Seetharaman, G.R., Jadhav, R.M., Sangwai, J.S. 2021. Effect of monovalent and divalent alkali [NaOH and Ca(OH)₂] on the interfacial tension of pure hydrocarbon-water systems relevant for enhanced oil recovery. *Journal of Petroleum Science and Engineering* 197. doi: 10.1016/j.petrol.2020.107892. ISSN-09204105
- 1717.Lechthaler, S., Waldschläger, K., Schüttrumpf, H., et al. 2021. Baseline study on microplastics in Indian rivers under different anthropogenic influences. *Water (Switzerland)* 13 (12). doi: 10.3390/w13121648. ISSN-20734441

- 1718.Suneela, J., Krishnankutty, P., Anantha Subramanian, V. 2021. Numerical investigation on the hydrodynamic performance of high-speed planing hull with transom interceptor. *Ships and Offshore Structures* 15 (1): S134-S142. doi: 10.1080/17445302.2020.1738134. ISSN-17445302
- 1719.Meshram, S.B., Sardar, H., Kushwaha, O.S., Sangwai, J., Kumar, R. 2021. A systematic molecular investigation on Sodium Dodecyl Benzene Sulphonate (SDBS) as a Low Dosage Hydrate Inhibitor (LDHI) and the role of Benzene Ring in the structure. *Journal of Molecular Liquids* 337. doi: 10.1016/j.molliq.2021.116374. ISSN-01677322
- 1720.Bhawangirkar, D.R., Nair, V.C., Prasad, S.K., Sangwai, J.S. 2021. Natural gas hydrates in the Krishna-Godavari Basin sediments under marine reservoir conditions: Thermodynamics and dissociation kinetics using thermal stimulation. *Energy and Fuels* 35 (10): 8685-8698. doi: 10.1021/acs.energyfuels.1c00162. ISSN-08870624
- 1721.Shukla, S., Singh, S.N., Sinha, S.S., Vijayakumar, R. 2021. Comparative assessment of URANS, SAS and DES turbulence modeling in the predictions of massively separated ship airwake characteristics. *Ocean Engineering* 229. doi: 10.1016/j.oceaneng.2021.108954. ISSN-00298018
- 1722.Agarwal, S., Sriram, V., Yan, S., Murali, K. 2021. Improvements in MLPG formulation for 3D wave interaction with fixed structures. *Computers and Fluids* 218. doi: 10.1016/j.compfluid.2020.104826. ISSN-00457930
- 1723.Rellegadla, S., Jain, S., Agrawal, A., et al. 2021. Wettability alteration of the oil-wet carbonate by viscosity-augmented guar galactomannan for enhanced oil recovery. *ACS Applied Polymer Materials* 3 (4): 1983-1994. doi: 10.1021/acsapm.1c00059. ISSN-26376105
- 1724.Rao, M.J., Nallayarasu, S., Bhattacharyya, S.K. 2021. CFD approach to heave damping of spar with heave plates with experimental validation. *Applied Ocean Research* 108. doi: 10.1016/j.apor.2020.102517. ISSN-01411187
- 1725.Behera, U.S., Sangwai, J.S. 2021. Nanofluids of silica nanoparticles in low salinity water with surfactant and polymer (SMART LowSal) for enhanced oil recovery. *Journal of Molecular Liquids* 342. doi: 10.1016/j.molliq.2021.117388. ISSN-01677322
- 1726.Gaikwad, N., Sangwai, J., Linga, P., Kumar, R. 2021. Separation of coal mine methane gas mixture via sII and sH hydrate formation. *Fuel* 305. doi: 10.1016/j.fuel.2021.121467. ISSN-00162361
- 1727.Gupta, P., Nair, V.C., Sangwai, J.S. 2021. Polymer-assisted chemical inhibitor flooding: A novel approach for energy recovery from hydrate-bearing sediments. *Industrial and Engineering Chemistry Research* 60 (22): 8043-8055. doi: 10.1021/acs.iecr.1c00551. ISSN-08885885
- 1728.Govindarajan, G., Sharma, R. 2021. Experimental investigation on a flapping beam with smart material actuation for underwater application. *Mechanics of Advanced Materials and Structures* 28 (10): 1020-1034. doi: 10.1080/15376494.2019.1629047. ISSN-15376494
- 1729.Agarwal, S., Saincher, S., Sithik, A. et al. 2021. A comparative study on the nonlinear interaction between a focusing wave and cylinder using state-of-the-art solvers: Part B. *International Journal of Offshore and Polar Engineering* 31 (1): 18-Nov. doi: 10.17736/ijope.2021.jc832. ISSN-10535381
- 1730.Bhawangirkar, D.R., Sangwai, J.S. 2021. Phase equilibrium of methane hydrates in the presence of MgBr₂, CaBr₂, and ZnBr₂ aqueous solutions. *Journal of Chemical and Engineering Data* 66 (6): 2519-2530. doi: 10.1021/acs.jced.1c00121. ISSN-00219568
- 1731.Subbulakshmi, A., Sundaravadivelu, R. 2021. Effects of damping plate position on heave and pitch responses of spar platform with single and double damping plates under regular waves. *Ocean Engineering* 224. doi: 10.1016/j.oceaneng.2021.108719. ISSN-00298018
- 1732.Ravindar, R., Sriram, V., Schimmels, S., Stagonas, D. 2021. Approaches in scaling small-scale experiments on the breaking wave interactions with a vertical wall attached with recurved parapets. *Journal of Waterway, Port, Coastal and Ocean Engineering* 147 (6). doi: 10.1061/(ASCE)WW.1943-5460.0000674. ISSN-0733950X
- 1733.Nasar, T., Sannasiraj, S.A., Sundar, V. 2021. Performance assessment of porous baffle on liquid sloshing dynamics in a barge carrying liquid tank. *Ships and Offshore Structures* 16 (7): 773-786. doi: 10.1080/17445302.2020.1781746. ISSN-17445302
- 1734.William, J.K.M., Gupta, P., Sangwai, J.S. 2021. Interaction of lubricants on the rheological and filtration loss properties of water-based drilling fluids. *Petroleum Science and Technology* 39 (08-Jul): 235-248. doi: 10.1080/10916466.2021.1892757. ISSN-10916466
- 1735.Karthik Ramnarayan, S., Sundar, V., Sannasiraj, S.A. 2021. Hydrodynamic performance characteristics of an oscillating water column device integrated with a pile breakwater. *Journal of Ocean Engineering and Marine Energy* 7 (3): 229-241. doi: 10.1007/s40722-021-00199-7. ISSN-21986444
- 1736.Lawrence, J., Mohanadhas, B., Narayanan, N., Kumar, A.V., Mangottiri, V., Govindarajan, S.K. 2021. Numerical modelling of nitrate transport in fractured porous media under non-isothermal conditions. *Environmental Science and Pollution Research*. doi: 10.1007/s11356-021-15691-8. ISSN-09441344
- 1737.Venkateswarlu, V., Vijay, K.G., Nishad, C.S. 2021. Iterative dual boundary element analysis of a wavy porous plate near an inclined seawall. *Ocean Engineering* 235. doi: 10.1016/j.oceaneng.2021.109242. ISSN-00298018
- 1738.Banerjee, S., Shanmugam, P. 2021. Novel method for reconstruction of hyperspectral resolution images from multispectral data for complex coastal and inland waters. *Advances in Space Research* 67 (1): 266-289. doi: 10.1016/j.asr.2020.09.045. ISSN-02731177
- 1739.Ravindar, R., Sriram, V. 2021. Impact pressure and forces on a vertical wall with different types of parapet. *Journal of Waterway, Port, Coastal and Ocean Engineering* 147 (3). doi: 10.1061/(ASCE)WW.1943-5460.0000635. ISSN-0733950X

- 1740.Rajeswari, K., Nallayarasu, S. 2021. Hydrodynamic response of three- and four-column semi-submersibles supporting a wind turbine in regular and random waves. *Ships and Offshore Structures* 16 (10): 1050-1060. doi: 10.1080/17445302.2020.1806681. ISSN-17445302
- 1741.Berlin, M., Natarajan, N., Vasudevan, M., Kumar, G.S. 2021. Impact of skin on the movement of nitrates in a fractured porous media: Numerical investigations. *Arabian Journal for Science and Engineering* 46 (5): 4811-4824. doi: 10.1007/s13369-020-05174-2. ISSN-2193567X
- 1742.Berlin, M., Natarajan, N., Vasudevan, M., Suresh Kumar, G. 2021. Influence of transient porosity in a coupled fracture-skin-matrix system at the scale of a single fracture. *Environmental Science and Pollution Research* 28 (15): 18632-18650. doi: 10.1007/s11356-020-11489-2. ISSN-09441344
- 1743.Harish, S., Sriram, V., Schüttrumpf, H., Sannasiraj, S.A. 2021. Tsunami-like flow induced force on the structure: Prediction formulae for the horizontal force in quasi-steady flow phase. *Coastal Engineering* 168. doi: 10.1016/j.coastaleng.2021.103938. ISSN-03783839
- 1744.Masilamani, R., Nallayarasu, S. 2021. Experimental and numerical investigation of ultimate strength of ring-stiffened tubular T-joints under axial compression. *Applied Ocean Research* 109. doi: 10.1016/j.apor.2021.102576. ISSN-01411187
- 1745.Chandrasekaran, S., Sricharan, V.V.S. 2021. Numerical study of beam-float wave energy converter with float number parametrization using WEC-Sim in regular waves with the Levelized Cost of Electricity assessment for Indian sea states. *Ocean Engineering* 237. doi: 10.1016/j.oceaneng.2021.109591. ISSN-00298018
- 1746.Chandrasekaran, S., Kiran, G.V. 2021. Effects of failure severity and critical failure modes on reliability and availability. *International Review of Mechanical Engineering* 15 (2): 79-88. doi: 10.15866/ireme.v15i2.19831. ISSN-19708734
- 1747.Sangwai, J.S., Prasad, S.K., Nair, V.C. 2021. Effect of asphaltene on the kinetics of methane hydrate formation and dissociation in oil-in-water dispersion systems containing light saturated and aromatic hydrocarbons. *Energy and Fuels* 35 (21): 17410-17423. doi: 10.1021/acs.energyfuels.1c02252. ISSN-08870624
- 1748.Ezhilsabareesh, K., Suchithra, R., Thandayutham, K., Samad, A. 2021. Surrogate based optimization of a Bi-Directional impulse turbine for OWC-WEC: Effect of guide vane lean and stagger angle for pseudo-sinusoidal wave conditions. *Ocean Engineering* 226. doi: 10.1016/j.oceaneng.2021.108843. ISSN-00298018
- 1749.Kumar, P.M., Halder, P., Samad, A. 2021. radiused edge blade tip for a wider operating range in wells turbine. *Arabian Journal for Science and Engineering* 46 (3): 2663-2676. doi: 10.1007/s13369-020-05185-z. ISSN-2193567X
- 1750.Vignesh Chellappan, N., Nallayarasu, S. 2021. Experimental and numerical investigation on axial load transfer across cracked tubular joint strengthened with grouted clamps of a jacket in under water condition. *Ships and Offshore Structures*. doi: 10.1080/17445302.2021.1937879. ISSN-17445302
- 1751.Ravikumar, S., Anandanarayanan, R., Samad, A., et al. 2021. Experimental investigation of a bidirectional impulse turbine for oscillating flows at various resistive loads. *IEEE Journal of Oceanic Engineering* 46 (1): 115-131. doi: 10.1109/JOE.2020.2977179. ISSN-03649059
- 1752.Rao, M.J., Nallayarasu, S., Bhattacharyya, S.K. 2021. Numerical and experimental studies of heave damping and added mass of spar with heave plates using forced oscillation. *Applied Ocean Research* 111. doi: 10.1016/j.apor.2021.102667. ISSN-01411187
- 1753.Gudala, M., Naiya, T.K., Govindarajan, S.K. 2021. Remediation of heavy oil transportation problems via pipelines using biodegradable additives: An experimental and artificial intelligence approach. *SPE Journal* 26 (2): 1050-1071. doi: 10.2118/203824-PA. ISSN-1086055X
- 1754.Karthik Ramnarayan, S., Sannasiraj, S.A., Sundar, V. 2021. Hydrodynamic characteristics of curved front face pile-supported breakwaters in random waves. *Applied Ocean Research* 117. doi: 10.1016/j.apor.2021.102922. ISSN-01411187
- 1755.Martin, A.K., Anathakrishnan, P., Krishnankutty, P. 2021. Ship hull wake effect on the hydrodynamic performance of a heave-pitch combined oscillating fin. *Ships and Offshore Structures* 16 (7): 714-724. doi: 10.1080/17445302.2020.1777925. ISSN-17445302
- 1756.Relekar, H., Shanmugam, P. 2021. Transfer learning based ship classification in Sentinel-1 images incorporating scale variant features. *Advances in Space Research* 68 (11): 4594-4615. doi: 10.1016/j.asr.2021.08.042. ISSN-02731177
- 1757.Suneela, J., Krishnankutty, P., Subramanian, V.A. 2021. Hydrodynamic performance of planing craft with interceptor-flap hybrid combination. *Journal of Ocean Engineering and Marine Energy* 7 (4): 421-438. doi: 10.1007/s40722-021-00211-0. ISSN-21986444
- 1758.Vishnu, M., Surendran, S. 2021. Life-cycle cost (LCC) based design procedure to determine the optimal design parameters and target reliability under nonlinear deformation for marine installations. *Ships and Offshore Structures* 16 (4): 397-409. doi: 10.1080/17445302.2020.1735833. ISSN-17445302
- 1759.Varunan, T., Shanmugam, P. 2021. Modelling the optical properties of coral reefs and its implication for optical remote sensing. *Estuarine, Coastal and Shelf Science* 249. doi: 10.1016/j.ecss.2020.107054. ISSN-02727714
- 1760.Thomas, D., Surendran, S., Vasa, N.J. 2021. A simplified approach for voyage analysis of fouled hull in a tropical marine environment. *Ships and Offshore Structures* 16 (7): 762-772. doi: 10.1080/17445302.2020.1781745. ISSN-17445302
- 1761.Jaiswal, A.K., Siddique, M.H., Paul, A.R., Samad, A. 2021. Surrogate-based design optimization of a centrifugal pump impeller. *Engineering Optimization*. doi: 10.1080/0305215X.2021.1932867. ISSN-0305215X
- 1762.Gudala, M., Govindarajan, S.K. 2021. Numerical

- investigations on two-phase fluid flow in a fractured porous medium fully coupled with geomechanics. *Journal of Petroleum Science and Engineering* 199. doi: 10.1016/j.petrol.2020.108328. ISSN-09204105
- 1763.Masilamani, R., Nallayarasu, S. 2021. Development of parametric equations for ultimate capacity of internally ring-stiffened tubular T/Y-joints under axial and moment load. *Ships and Offshore Structures*. doi: 10.1080/17445302.2021.1884810. ISSN-17445302
- 1764.Tiwari, K., Krishnankutty, P. 2021. Dynamic positioning of an oceanographic research vessel using fuzzy logic controller in different sea states. *Marine Systems and Ocean Technology* 16 (04-Mar): 221-236. doi: 10.1007/s40868-021-00105-8. ISSN-1679396X
- 1765.Vivek, R., Suresh Kumar, G. 2021. Evolution of hysteresis relative permeability of wetting brine phase using contact angle hysteresis in a partially saturated CO₂-brine system. *Energy Sources, Part A: Recovery, Utilization and Environmental Effects* 43 (11): 1290-1306. doi: 10.1080/15567036.2019.1636163. ISSN-15567036
- 1766.Mahadasu, N.B., Ambati, V., Nair, R.R. 2021. Seismic lithofacies distribution modeling using the single normal equation simulation (SNESIM) algorithm of multiple-point geostatistics in upper Assam Basin, India. *International Journal of Mathematical, Engineering and Management Sciences* 6(3):805-823. doi:10.33889/ijmems.2021.6.3.048. ISSN-24557749
- 1767.Natarajan, N., Suresh Kumar, G., Vasudevan, M. 2021. Impact of coupling terms on the thermal transport mechanism in a fracture matrix coupled system. *Modeling Earth Systems and Environment* 7 (1): 417-432. doi: 10.1007/s40808-020-00863-1. ISSN-23636203
- 1768.Prasad, S.K., Sangwai, J.S. 2021. Chemical and structural characterisation of nC₇ asphaltenes extracted from atmospheric tower bottom and low waxy crude oil from Indian reservoir. *International Journal of Oil, Gas and Coal Technology* 26 (2): 157-183. ISSN-17533309
- 1769.Gudala, M., Govindarajan, S.K. 2021. Numerical investigations on a geothermal reservoir using fully coupled thermo-hydro-geomechanics with integrated RSM-machine learning and ARIMA models. *Geothermics* 96. doi: 10.1016/j.geothermics.2021.102174. ISSN-03756505
- 1770.Aliyar, S., Meyer, J., Sriram, V., Hildebrandt, A. 2021. Experimental investigation of offshore crane load during installation of a wind turbine jacket substructure in regular waves. *Ocean Engineering* 241. doi: 10.1016/j.oceaneng.2021.109979. ISSN-00298018
- 1771.Santosh Kumar, B., Sannasiraj, S.A., Murali, K. 2021. Effect of climate change in the deterioration of a berthing structure in a tropical environment. *Journal of The Institution of Engineers (India): Series A* 102 (3): 697-703. doi: 10.1007/s40030-021-00532-1. ISSN-22502149
- 1772.Ambati, V., Sharma, S., Babu, M.N., Nair, R.R. 2021. Laboratory measurements of ultrasonic wave velocities of rock samples and their relation to log data: A case study from Mumbai offshore. *Journal of Earth System Science* 130 (3). doi: 10.1007/s12040-021-01696-x. ISSN-23474327
- 1773.Natarajan, N., Vasudevan, M., Kumar, G.S. 2021. Confronting heterogeneous sorption and hydrodynamic dispersion on solute transport in a fracture-skin-matrix system using spatial moment analysis. *Environmental Science and Pollution Research*. doi: 10.1007/s11356-021-17712-y. ISSN-09441344
- 1774.Raj, R., Anandanarayanan, R., Ravikumar, S., Dudhgaonkar, P., Samad, A. 2021. Wave energy harvesting impulse turbine having ring type blade: Experiments with unsteady flow. *Ocean Engineering* 236. doi: 10.1016/j.oceaneng.2021.109553. ISSN-00298018
- 1775.Satish, S., Leontini, J.S., Manasseh, R., Sannasiraj, S.A., Sundar, V. 2021. Three-dimensional direct numerical simulation of flow induced by an oscillating sphere close to a plane boundary. *Physics of Fluids* 33 (9). doi: 10.1063/5.0065651. ISSN-10706631
- 1776.Tripathy, S.C., Varunan, T., Gauns, M., et al. 2021. Summer variability in bio-optical properties and phytoplankton pigment signatures in two adjacent high Arctic fjords, Svalbard. *International Journal of Environmental Science and Technology*. doi: 10.1007/s13762-021-03767-4. ISSN-17351472
- 1777.Sundar, V., Sannasiraj, S.A., Babu, S.R. 2021. Sustainable hard and soft measures for coastal protection—Case studies along the Indian Coast. *Marine Georesources and Geotechnology*. doi: 10.1080/1064119X.2021.1920650. ISSN-1064119X
- 1778.Rayaprolu, V.S.S., Vijayakumar, R. 2021. Sensitivity analysis of the turning motion of an underwater glider on the viscous hydrodynamic coefficients. *Defence Science Journal* 71 (5): 709-717. doi: 10.14429/DSJ.71.16905. ISSN-0011748X
- 1779.Chowdhury, A.D., Bhattacharyya, S.K., Vendhan, C.P. 2021. A computationally efficient Rayleigh–Ritz model for heterogeneous oceanic waveguides using Fourier series of sound speed profile. *Journal of Theoretical and Computational Acoustics*. doi: 10.1142/S2591728521500158. ISSN-25917285
- 1780.Ambati, V., Mahadasu, N.B., Koehn, D., Nair, R.R. 2021. Construction of a 3D geomechanical model using integrated workflow to study zones causing subsidence and wellbore instabilities. *Geomechanics and Geophysics for Geo-Energy and Geo-Resources* 7 (3). doi: 10.1007/s40948-021-00280-3. ISSN-23638419
- 1781.Sundar, V., Murali, K., Ramesh Babu, S., Arun Rajasekar, A. 2021. Tidal inlet morphodynamics through numerical prediction and measurements. *Marine Georesources and Geotechnology*. doi: 10.1080/1064119X.2021.1992548. ISSN-1064119X
- 1782.Rajeswari, K., Nallayarasu, S. 2021. Experimental and numerical investigation on the suitability of semi-submersible floaters to support vertical axis wind turbine. *Ships and Offshore Structures* doi: 10.1080/17445302.2021.1938800. ISSN-17445302
- 1783.Tiwari, B.K., Sharma, R. 2021. Study on system design and integration of variable buoyancy systems for underwater operation. *Defence Science Journal* 71 (1): 124-133. doi: 10.14429/DSJ.71.15557. ISSN-0011748X

- 1784.Tothova, D., Manasseh, R., Sannasiraj, S.A. 2021. Identification of an initial non-linear transition in reciprocating finite-length pipe flow. *Physics of Fluids* 33 (12). doi: 10.1063/5.0065775. ISSN-10706631
- 1785.Nainar, S., Govindarajan, S.K. 2021. Numerical modeling the injection of Super-Critical CO₂ in non-dewatered coal bed methane formation. *Journal of Petroleum Science and Engineering* 198. doi: 10.1016/j.petrol.2020.108208. ISSN-09204105
- 1786.Govindarajan, S.K., Mishra, A., Kumar, A. 2021. Oil spill in a marine environment: Requirements following an offshore oil spill. *Rudarsko Geolosko Naftni Zbornik* 36 (4): 09-Jan. doi: 10.17794/rgn.2021.4.1. ISSN-03534529
- 1787.Paramesh, S., Rajendran, S. 2021. A unified seakeeping and manoeuvring model with a PID controller for path following of a KVLCC2 tanker in regular waves. *Applied Ocean Research* 116. doi: 10.1016/j.apor.2021.102860. ISSN-01411187
- 1788.Nishad, C.S., Vijay, K.G., Neelamani, S., Raja Sekhar, G.P. 2021. Dual boundary element analysis for a pair of inverted T-type porous barriers having nonlinear pressure drop. *Waves in Random and Complex Media*. doi: 10.1080/17455030.2021.1948145. ISSN-17455030
- 1789.Chandrasekaran, S., Uddin, S.A., Wahab, M. 2021. Dynamic analysis of semi-submersible under the postulated failure of restraining system with buoy. *International Journal of Steel Structures* 21 (1): 118-131. doi: 10.1007/s13296-020-00420-7. ISSN-15982351
- 1790.Naga Babu, A., Srinivasa Reddy, D., Krishna Mohan, G.V., Suresh Kumar, G., Dora, T.K. 2021. Mathematical investigation into the sequential adsorption of silver ions and brilliant green dye using biochar derived from *Gracilaria Rhodophyta* algae. *Biomass Conversion and Biorefinery*. doi: 10.1007/s13399-021-01897-w. ISSN-21906815
- 1791.Ambati, V., Mahadasu, N.B., Nair, R.R. 2021. Seismic driven geomechanical modeling of uplifted and subsided wells in mumbai offshore and its engineering implications. *International Journal of Mathematical, Engineering and Management Sciences* 6 (4): 1025-1043. doi: 10.33889/IJMEMS.2021.6.4.060. ISSN-24557749
- 1792.Jemi Jeya, T.J., Sriram, V., Sundar, V. 2021. Flared front pile supported breakwater in oblique waves. *ISH Journal of Hydraulic Engineering*. doi: 10.1080/09715010.2021.1989631. ISSN-09715010
- 1793.Kunasekaran, M., Rhee, S.H., Venkatesan, N., Samad, A. 2021. Design optimization of a marine current turbine having winglet on blade. *Ocean Engineering* 239. doi: 10.1016/j.oceaneng.2021.109877. ISSN-00298018
- 1794.Nishad, C.S., Vijay, K.G., Neelamani, S., Chen, J.T. 2021. Dual BEM for wave scattering by an H-type porous barrier with nonlinear pressure drop. *Engineering Analysis with Boundary Elements* 131, pp 280-294: doi: 10.1016/j.enganabound.2021.06.011. ISSN-09557997
- 1795.Balagopalan, A., Krishnankutty, P. 2021. Manoeuvring prediction of a containership in shallow water using numerical planar motion mechanism. *Ship Technology Research* 68 (3): 147-165. doi: 10.1080/09377255.2021.1883799. ISSN-09377255
- 1796.Sriram, V., Ma, Q.W. 2021. Review on the local weak form-based meshless method (MLPG): Developments and applications in ocean engineering. *Applied Ocean Research* 116. doi: 10.1016/j.apor.2021.102883. ISSN-01411187
- 1797.Sahu, S.K., Shanmugam, P. 2021. Improving the link availability of an underwater wireless optical communication system using chirped pulse compression technique. *IEEE Journal of Oceanic Engineering* 46 (2): 687-703. doi: 10.1109/JOE.2020.2985555. ISSN-03649059
- 1798.Gurusamy, S., Kumar, D. 2021. Frequency-bounds of sloshing wave systems in a square-base liquid tank. *Ocean Engineering* 220. doi: 10.1016/j.oceaneng.2020.108478. ISSN-00298018
- 1799.Sahaj, K.V., Nasar, T., Vijay, K.G. 2021. Experimental study on liquid sloshing with dual vertical porous baffles in a sway excited tank. *Ocean Systems Engineering* 11 (4): 353-371. doi: 10.12989/ose.2021.11.4.353. ISSN-20936702
- 1800.Uma, G., Sannasiraj, S.A. 2021. Swell and sea characteristics along the south-west coast of India during the monsoon. *Ocean Engineering* 237. doi: 10.1016/j.oceaneng.2021.109572. ISSN-00298018
- 1801.Nainar, S., Govindarajan, S.K. 2021. Semi-analytic analysis and optimization of stress-dependent permeability model for the coal bed methane gas reservoir. *Environmental Earth Sciences* 80 (7). doi: 10.1007/s12665-021-09500-1. ISSN-18666280
- 1802.Sundar, V., Sannasiraj, S.A., Ramesh Babu, S., Rajakan, G.M.M. 2021. Shoreline changes due to construction of groyne field in north of Chennai Port, India. *Environmental Monitoring and Assessment* 193 (12). doi: 10.1007/s10661-021-09590-1. ISSN-01676369
- 1803.Solomon, K., Kumar, D. 2021. Optimal control for response reduction of single hinged articulated tower using an MR damper. *International Journal of Offshore and Polar Engineering* 31 (4): 462-471. doi: 10.17736/ijope.2021.mk73. ISSN-10535381
- 1804.Vineesh, P., Sriram, V. 2021. Numerical investigation of wave actions on two side by side boxes in close proximity using IMLPG_R method. *Applied Ocean Research* 116. doi: 10.1016/j.apor.2021.102892. ISSN-01411187
- 1805.Sindagi, S., Vijayakumar, R., Saxena, B.K. 2021. Experimental parametric investigation to reduce drag of a scaled model of bulk carrier using BDR/ALS Technique. *Journal of Ship Research* 65 (3): 257-265. doi: 10.5957/JOSR.02190009. ISSN-00224502
- 1806.George, A., Thandayutham, K., Samad, A. 2021. Numerical analysis of damping induced by impulse turbines for wave energy conversion. *Proceedings of the Institution of Mechanical Engineers Part M: Journal of Engineering for the Maritime Environment* 235 (2): 448-462. doi: 10.1177/1475090220976799. ISSN-14750902
- 1807.Patil, N., Rajendran, S. 2021. A time-domain method for analyzing the ship roll stabilization based on active fin

- control. *Ocean Systems Engineering* 11 (3): 275-299. doi: 10.12989/ose.2021.11.3.275. ISSN-20936702
- 1808.Sindagi, S., Vijayakumar, R., Saxena, B.K. 2021. Experimental investigation on ship's model in carrying out energy economics of BDR/ALS methodology. *Ships and Offshore Structures*. doi: 10.1080/17445302.2021.1926147. ISSN-17445302
- 1809.Mathew, MP and Singh, SN and Sinha, SS and Vijayakumar, R. 2021. Modeling of air flow over a generic aircraft carrier with and without island structure. *IJME* 163 A3: A93-A110. doi: 10.5750/ijme.v163iA3.803
- 1810.Kumar, A and Vijayakumar, R and Subramanian, VA. 2021. Numerical fluid structure interaction analysis for a flexible marine propeller using co-simulation method. *IJME* 163 A2: 81-89. doi: 10.5750/ijme.v163iA2.759
- 1811.K Raed, C Guedes Soares, K Murali. 2021. Experimental and numerical analysis of a spar platform subjected to regular waves. *Developments in Maritime Technology and Engineering*, pp 607-615. doi: 10.1201/9781003216599-64
- 1812.Abbott, R., Abbott, T.D., Altin, et al. 2021. GWTC-2: Compact binary coalescences observed by LIGO and Virgo during the first half of the third observing run. *Physical Review X* 11 (2). doi: 10.1103/PhysRevX.11.021053. ISSN-21603308
- 1813.Abbott, R., Abbott, T.D., Ama, et al. 2021. Population properties of compact objects from the second LIGO-Virgo gravitational-wave transient catalog. *Astrophysical Journal Letters* 913 (1). doi: 10.3847/2041-8213/abe949. ISSN-20418205
- 1814.Abbott, R., Abbott, T.D., Aleman, K.M., et al. 2021. Observation of gravitational waves from two neutron star-black hole coalescences. *Astrophysical Journal Letters* 915 (1). doi: 10.3847/2041-8213/ac082e. ISSN-20418205
- 1815.Abbott, R., Abbott, T.D., Amato, A., et al. 2021. Open data from the first and second observing runs of Advanced LIGO and Advanced Virgo. *SoftwareX* 13. doi: 10.1016/j.softx.2021.100658. ISSN-23527110
- 1816.Abbott, R., Abbott, T.D., Allocca, A., et al. 2021. Tests of general relativity with binary black holes from the second LIGO-Virgo gravitational-wave transient catalog. *Physical Review D* 103 (12). doi: 10.1103/PhysRevD.103.122002. ISSN-24700010
- 1817.Abbott, B.P., Abbott, R., Aloy, M.A., et al. 2021. A gravitational-wave measurement of the Hubble Constant following the second observing run of Advanced LIGO and Virgo. *Astrophysical Journal* 909 (2). doi: 10.3847/1538-4357/abdc7. ISSN-0004637X
- 1818.Abbott, R., Abbott, T.D., Allen, G., et al. 2021. Upper limits on the isotropic gravitational-wave background from Advanced LIGO and Advanced Virgo's third observing run. *Physical Review D* 104 (2). doi: 10.1103/PhysRevD.104.022004. ISSN-24700010
- 1819.1Wehle, S., Adachi, I., Chen, A., et al. 2021. Test of Lepton-Flavor Universality in $B \rightarrow k^* \ell^+ \ell^-$ decays at Belle. *Physical Review Letters* 126 (16). doi: 10.1103/PhysRevLett.126.161801. ISSN-00319007
- 1820.Sirunyan, A.M., Tumasyan, A., Templ, S., et al. 2021. Evidence for Higgs boson decay to a pair of muons. *Journal of High Energy Physics* 2021 (1). doi: 10.1007/JHEP01(2021)148. ISSN-10298479
- 1821.Choudhury, S., Sandilya, S., Bhardwaj, V. et al. 2021. Test of lepton flavor universality and search for lepton flavor violation in $B \rightarrow K \ell \ell$ decays. *Journal of High Energy Physics* 2021 (3). doi: 10.1007/JHEP03(2021)105. ISSN-10298479
- 1822.Wu, X., Schwemmer, T., Thomale, R., et al. 2021. Nature of unconventional pairing in the kagome superconductors. *Physical Review Letters* 127 (17). doi: 10.1103/PhysRevLett.127.177001. ISSN-00319007
- 1823.Sirunyan, A.M., Tumasyan, A., M. Spanring, et al. 2021. Search for resonant and nonresonant new phenomena in high-mass dilepton final states at $\sqrt{s} = 13$ TeV. *Journal of High Energy Physics* 2021 (7). doi: 10.1007/JHEP07(2021)208. ISSN-10298479
- 1824.Sirunyan, A.M., Tumasyan, A., W. Waltenberger, et al. 2021. Electron and photon reconstruction and identification with the CMS experiment at the CERN LHC. *Journal of Instrumentation* 16 (5). doi: 10.1088/1748-0221/16/05/P05014. ISSN-17480221
- 1825.Sirunyan, A.M., Tumasyan, A., Walten, Waltenberge, W., et al. 2021. Search for supersymmetry in final states with two oppositely charged same-flavor leptons and missing transverse momentum in proton-proton collisions at $\sqrt{s} = 13$ TeV. *Journal of High Energy Physics* 2021 (4). doi: 10.1007/JHEP04(2021)123. ISSN-10298479
- 1826.Abbott, R., Abbott, T.D., Aleman, K.M., et al. 2021. Constraints on cosmic strings using data from the third advanced LIGO-Virgo observing run. *Physical Review Letters* 126 (24). doi: 10.1103/PhysRevLett.126.241102. ISSN-00319007
- 1827.Sirunyan, A.M., Tumasyan, A., Spanring, M., et al. 2021. Precision luminosity measurement in proton-proton collisions at $\sqrt{s}=13$ TeV in 2015 and 2016 at CMS. *European Physical Journal C* 81 (9). doi: 10.1140/epjc/s10052-021-09538-2. ISSN-14346044
- 1828.Ragavendra, H.V., Saha, P., Sriramkumar, L., Silk, J. 2021. Primordial black holes and secondary gravitational waves from ultraslow roll and punctuated inflation. *Physical Review D* 103 (8). doi: 10.1103/PhysRevD.103.083510. ISSN-24700010
- 1829.Sirunyan, A.M., Tumasyan, A., Schöfbeck, R., et al. 2021. Evidence for electroweak production of four charged leptons and two jets in proton-proton collisions at $\sqrt{s}=13$ TeV. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics* 812. doi: 10.1016/j.physletb.2020.135992. ISSN-03702693
- 1830.Sirunyan, A.M., Tumasyan, A., Templ, S., et al. 2021. Search for singly and pair-produced leptoquarks coupling to third-generation fermions in proton-proton collisions at $\sqrt{s}=13$ TeV. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics* 819. doi: 10.1016/j.physletb.2021.136446. ISSN-03702693
- 1831.Sirunyan, A.M., Tumasyan, A., Templ, S., et al. 2021.

- Measurements of production cross sections of polarized same-sign W boson pairs in association with two jets in proton-proton collisions at $\sqrt{s}=13$ TeV. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics* 812. doi: 10.1016/j.physletb.2020.136018. ISSN-03702693
- 1832.Sirunyan, A.M., Tumasyan, A., Waltenberger, W., *et al.* 2021. Measurement of the Higgs boson production rate in association with top quarks in final states with electrons, muons, and hadronically decaying tau leptons at $\sqrt{s}=13$ TeV. *European Physical Journal C* 81 (4). doi: 10.1140/epjc/s10052-021-09014-x. ISSN-14346044
- 1833.Sirunyan, A.M., Tumasyan, A., Waltenberger, W., *et al.* 2021. Search for new physics in top quark production with additional leptons in proton-proton collisions at $\sqrt{s} = 13$ TeV using effective field theory. *Journal of High Energy Physics* 2021 (3). doi: 10.1007/JHEP03(2021)095. ISSN-10298479
- 1834.Abbott, R., Abbott, T.D., Al, *et al.* 2021. All-sky search in early O3 LIGO data for continuous gravitational-wave signals from unknown neutron stars in binary systems. *Physical Review D* 103 (6). doi: 10.1103/PhysRevD.103.064017. ISSN-24700010
- 1835.Sirunyan, A.M., Tumasyan, A., Schöfbeck, R., *et al.* 2021. Measurement of the inclusive and differential Higgs boson production cross sections in the leptonic WW decay mode at $\sqrt{s} = 13$ TeV. *Journal of High Energy Physics* 2021 (3). doi: 10.1007/JHEP03(2021)003. ISSN-10298479
- 1836.Sirunyan, A.M., Tumasyan, A., Spanring, M., *et al.* 2021. Search for top squark pair production using dilepton final states in pp collision data collected at $\sqrt{s}=13$ TeV. *European Physical Journal C* 81 (1). doi: 10.1140/epjc/s10052-020-08701-5. ISSN-14346044
- 1837.Abbott, R., Abbott, T.D., Zimmerman, A. B., *et al.* 2021. Search for anisotropic gravitational-wave backgrounds using data from Advanced LIGO and Advanced Virgo's first three observing runs. *Physical Review D* 104 (2). doi: 10.1103/PhysRevD.104.022005. ISSN-24700010
- 1838.Sirunyan, A.M., Tumasyan, A., Waltenberger, W., *et al.* 2021. Search for nonresonant Higgs boson pair production in final states with two bottom quarks and two photons in proton-proton collisions at $\sqrt{s} = 13$ TeV. *Journal of High Energy Physics* 2021 (3). doi: 10.1007/JHEP03(2021)257. ISSN-10298479
- 1839.Sirunyan, A.M., Tumasyan, A., Spanring, M., T, *et al.* 2021. Measurements of production cross sections of the Higgs boson in the four-lepton final state in proton-proton collisions at $\sqrt{s}=13$ TeV. *European Physical Journal C* 81 (6). doi: 10.1140/epjc/s10052-021-09200-x. ISSN-14346044
- 1840.Sirunyan, A.M., Tumasyan, A., Schöf, *et al.* 2021. Measurements of Higgs boson production cross sections and couplings in the diphoton decay channel at $\sqrt{s} = 13$ TeV. *Journal of High Energy Physics* 2021 (7). doi: 10.1007/JHEP07(2021)027. ISSN-10298479
- 1841.Sirunyan, A.M., Tumasyan, A., Schöfbeck, R. *et al.* 2021. Search for long-lived particles using displaced jets in proton-proton collisions at $\sqrt{s}=13$ TeV. *Physical Review D* 104 (1). doi: 10.1103/PhysRevD.104.012015. ISSN-24700010
- 1842.Manikandan, G., Murali, A., Kumar, R., Satapathy, D.K. 2021. Rapid moisture-responsive silk fibroin actuators. *ACS Applied Materials and Interfaces* 13 (7): 8880-8888. doi: 10.1021/acsami.0c17525. ISSN-19448244
- 1843.Abbott, R., Abbott, T.D., Aleman, K.M., *et al.* 2021. Diving below the spin-down limit: Constraints on gravitational waves from the energetic young pulsar PSR J0537-6910. *Astrophysical Journal Letters* 913 (2). doi: 10.3847/2041-8213/abffcd. ISSN-20418205
- 1844.Muthusamy, S., Charles, J., Renganathan, B., Ganesan, A.R. 2021. Ternary polypyrrole/prussian blue/TiO₂ nanocomposite wrapped poly-methyl methacrylate fiber optic gas sensor to detect volatile gas analytes. *Optik* 230. doi: 10.1016/j.ijleo.2021.166289. ISSN-00304026
- 1845.Thirugnanam, L., Palanisamy, M., Kaveri, S., Ramaprabhu, S., Pol, V.G., Dutta, M. 2021. TiO₂ nanoparticle embedded nitrogen doped electrospun helical carbon nanofiber-carbon nanotube hybrid anode for lithium-ion batteries. *International Journal of Hydrogen Energy* 46 (2): 2464-2478. doi: 10.1016/j.ijhydene.2020.10.149. ISSN-03603199
- 1846.Li, Y.B., Shen, C.P., Browder, T.E., *et al.* 2021. Measurements of the branching fractions of the semileptonic decays $\Xi_c^0 \rightarrow \Xi \ell^+ \nu_\ell$ and the asymmetry parameter of $\Xi_c^0 \rightarrow \Xi \pi^+$. *Physical Review Letters* 127 (12). doi: 10.1103/PhysRevLett.127.121803. ISSN-00319007
- 1847.Sirunyan, A.M., Tumasyan, A., Spanring, M., *et al.* 2021. Search for top squark production in fully hadronic final states in proton-proton collisions at $\sqrt{s}=13$ TeV. *Physical Review D* 104 (5). doi: 10.1103/PhysRevD.104.052001. ISSN-24700010
- 1848.Dey, S., Roy, S.C. 2021. Hydrothermal temperature-controlled size and distribution of CeO₂ nanoparticles over TiO₂ nanorods: Heterojunction characteristics and photoelectrochemical performance. *Ceramics International* 47 (10): 14603-14611. doi: 10.1016/j.ceramint.2021.02.043. ISSN-02728842
- 1849.Sirunyan, A.M., Tumasyan, A., Schöfbeck, R., *et al.* 2021. Search for lepton-flavor violating decays of the Higgs boson in the $\mu\tau$ and $e\tau$ final states in proton-proton collisions at $\sqrt{s}=13$ TeV. *Physical Review D* 104 (3). doi: 10.1103/PhysRevD.104.032013. ISSN-24700010
- 1850.Sirunyan, A.M., Tumasyan, A., Templ, S., *et al.* 2021. Search for dark matter produced in association with a leptonically decaying Z boson in proton-proton collisions at $\sqrt{s}=13$ TeV. *European Physical Journal C* 81 (1). doi: 10.1140/epjc/s10052-020-08739-5. ISSN-14346044
- 1851.Sirunyan, A.M., Tumasyan, A., Schöfbeck, R., *et al.* 2021. First measurement of large area jet transverse momentum spectra in heavy-ion collisions. *Journal of High Energy Physics* 2021 (5). doi: 10.1007/JHEP05(2021)284. ISSN-10298479
- 1852.Cao, L., Sutcliffe, W., Bonvicini, G., *et al.* 2021. Measurements of partial branching fractions of inclusive $B \rightarrow X_u \ell^+ \nu_\ell$ decays with hadronic tagging. *Physical Review D* 104 (1). doi: 10.1103/PhysRevD.104.012008. ISSN-24700010

1853. Tumasyan, A., Adam, W., Schwarz, D., *et al.* 2021. Search for new particles in events with energetic jets and large missing transverse momentum in proton-proton collisions at $\sqrt{s} = 13$ TeV. *Journal of High Energy Physics* 2021 (11). doi: 10.1007/JHEP11(2021)153. ISSN-10298479
1854. Gayathri, R., Monika, K., Murukeshan, V.M., Vijayan, C. 2021. Low threshold incoherent random lasing with spectral overlap optimization of size-tuned plasmonic nanorods. *Optics and Laser Technology* 139. doi: 10.1016/j.optlastec.2021.106959. ISSN-00303992
1855. Sirunyan, A.M., Tumasyan, A., Schöf, *et al.* 2021. Constraints on anomalous Higgs boson couplings to vector bosons and fermions in its production and decay using the four-lepton final state. *Physical Review D* 104 (5). doi: 10.1103/PhysRevD.104.052004. ISSN-24700010
1856. Sirunyan, A.M., Tumasyan, A., Spanring, M., *et al.* 2021. MUSiC: a model-unspecific search for new physics in proton-proton collisions at $\sqrt{s} = 13$ TeV. *European Physical Journal C* 81 (7). doi: 10.1140/epjc/s10052-021-09236-z. ISSN-14346044
1857. Abbott, R., Abbott, T.D., Aleman, K.M., *et al.* 2021. All-sky search for continuous gravitational waves from isolated neutron stars in the early O3 LIGO data. *Physical Review D* 104 (8). doi: 10.1103/PhysRevD.104.082004. ISSN-24700010
1858. Sirunyan, A.M., Tumasyan, A., Schöfbeck, *et al.* 2021. Measurement of the CP-violating phase ϕ_s in the $B_s^0 \rightarrow J/\psi \phi(1020) \rightarrow \mu^+ \mu^- K^+ K^-$ channel in proton-proton collisions at $\sqrt{s} = 13$ TeV. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics* 816. doi: 10.1016/j.physletb.2021.136188. ISSN-03702693
1859. Sirunyan, A.M., Tumasyan, A., Templ, S., *et al.* 2021. Search for dark photons in Higgs boson production via vector boson fusion in proton-proton collisions at $\sqrt{s} = 13$ TeV. *Journal of High Energy Physics* 2021 (3). doi: 10.1007/JHEP03(2021)011. ISSN-10298479
1860. Tumasyan, A., Adam, W., Spanring, M., *et al.* 2021. Combined searches for the production of supersymmetric top quark partners in proton-proton collisions at $\sqrt{s} = 13$ TeV. *European Physical Journal C* 81 (11). doi: 10.1140/epjc/s10052-021-09721-5. ISSN-14346044
1861. Mohapatra, A., Das, S., Majumdar, K., Ramachandra Rao, M.S., Jaiswal, M. 2021. Thermal transport across wrinkles in few-layer graphene stacks. *Nanoscale Advances* 3 (6): 1708-1716. doi: 10.1039/d0na00944j. ISSN-25160230
1862. Tiadi, M., Battabyal, M., Jain, P.K., Chauhan, A., Satapathy, D.K., Gopalan, R. 2021. Enhancing the thermoelectric efficiency in p-type Mg_3Sb_2 via Mg site co-doping. *Sustainable Energy and Fuels* 5 (16): 4104-4114. doi: 10.1039/d1se00656h. ISSN-23984902
1863. Sirunyan, A.M., Tumasyan, A., Schöfbeck, *et al.* 2021. Development and validation of HERWIG 7 tunes from CMS underlying-event measurements. *European Physical Journal C* 81 (4). doi: 10.1140/epjc/s10052-021-08949-5. ISSN-14346044
1864. Kajli, S.K., Ray, D., Roy, S.C. 2021. Morphology dependent electrical conduction and breakdown in single TiO_2 nanotubes. *Nanoscale Advances* 3 (2): 432-445. doi: 10.1039/d0na00713g. ISSN-25160230
1865. Sirunyan, A.M., Tumasyan, A., Spanr, *et al.* 2021. Search for top squarks in final states with two top quarks and several light-flavor jets in proton-proton collisions at $\sqrt{s} = 13$ TeV. *Physical Review D* 104 (3). doi: 10.1103/PhysRevD.104.032006. ISSN-24700010
1866. Mishra, S.B., Roy, S.C., Nanda, B.R.K. 2021. Electronic structure of graphene/ TiO_2 interface: Design and functional perspectives. *Applied Surface Science* 542. doi: 10.1016/j.apsusc.2020.148709. ISSN-01694332
1867. Mishra, S.B., Marutheeswaran, S., Roy, S.C., Natarajan, V., Rai, P.K., Nanda, B.R.K. 2021. Adsorption and degradation mechanism of 2,4,6-trinitrotoluene on TiO_2 (110) surface. *Surface Science* 713. doi: 10.1016/j.susc.2021.121902. ISSN-00396028
1868. Singh, M.P., Mandal, M., Sethupathi, K., Rao, M.S.R., Nayak, P.K. 2021. Study of thermometry in two-dimensional Sb_2Te_3 from temperature-dependent Raman spectroscopy. *Nanoscale Research Letters* 16 (1). doi: 10.1186/s11671-020-03463-1. ISSN-19317573
1869. Abbott, R., Abbott, T.D., Aleman, K.M., *et al.* 2021. Searches for continuous gravitational waves from young supernova remnants in the early third observing run of advanced LIGO and Virgo. *Astrophysical Journal* 921 (1). doi: 10.3847/1538-4357/ac17ea. ISSN-0004637X
1870. Dey, S., Roy, S.C. 2021. Influence of Ce doping on morphology, crystallinity and photoelectrochemical charge transfer characteristics of TiO_2 nanorod arrays grown on conductive glass substrate. *Journal of Alloys and Compounds* 881. doi: 10.1016/j.jallcom.2021.160481. ISSN-09258388
1871. Aravinda, S., Rather, S.A., Lakshminarayan, A. 2021. From dual-unitary to quantum Bernoulli circuits: Role of the entangling power in constructing a quantum Ergodic Hierarchy. *Physical Review Research* 3 (4). doi: 10.1103/PhysRevResearch.3.043034. ISSN-26431564
1872. Abbott, R., Abbott, T.D., Amato, A., *et al.* 2021. Search for gravitational waves associated with Gamma-Ray bursts detected by Fermi and Swift during the LIGO-Virgo Run O3a. *Astrophysical Journal* 915 (2). doi: 10.3847/1538-4357/abee15. ISSN-0004637X
1873. Li, S.X., Shen, C.P., Browder, T., *et al.* 2021. Measurements of the branching fractions of $\Lambda_c^+ \rightarrow p\eta$ and $\Lambda_c^+ \rightarrow p\pi^0$ decays at Belle. *Physical Review D* 103 (7). doi: 10.1103/PhysRevD.103.072004. ISSN-24700010
1874. Kajli, S.K., Ray, D., Roy, S.C. 2021. Anomalous diameter dependent electrical transport in individual CuO nanowire. *Journal of Physics D: Applied Physics* 54 (25). doi: 10.1088/1361-6463/abeeb8. ISSN-00223727
1875. Sharma, V., Ilaiyaraja, P., Dakshinamurthy, A.C., Sudakar, C. 2021. One step thermolysis of Sb-Mercaptopropionic acid complex in ambient air atmosphere for growing Sb_2S_3 thin films with controlled microstructure. *Materials Science in Semiconductor Processing* 121. doi: 10.1016/j.mssp.2020.105330. ISSN-13698001

- 1876.C. Dakshinamurthy, A., Sudakar, C. 2021. Bandgap engineering and sublattice distortion driven bandgap bowing in $\text{Cs}_2\text{Ag}_{1-x}\text{Na}_x\text{BiCl}_6$ double perovskites. *Applied Physics Letters* 118 (13). doi: 10.1063/5.0046423. ISSN-00036951
- 1877.Das, A., Chauhan, A., Satapathy, D.K., *et al.* 2021. Effect of iodine doping on the electrical, thermal and mechanical properties of SnSe for thermoelectric applications. *Physical Chemistry Chemical Physics* 23 (7): 4230-4239. doi: 10.1039/d0cp06130a. ISSN-14639076
- 1878.Teramoto, Y., Uehara, S., Bračko, M., *et al.* 2021. Evidence for $X(3872) \rightarrow j/\psi\pi^+\pi^-$ produced in single-tag two-photon interactions. *Physical Review Letters* 126 (12). doi: 10.1103/PhysRevLett.126.122001. ISSN-00319007
- 1879.Chithra Lekha, P., Ram Babu, Y., Fidal Kumar, V.T., Chandra, T.S., Roy, S.C. 2021. Investigation of Photo-induced enhancement of sensitivity and electrochemical surface phenomenon of multileg TiO_2 nanotubes sensor device towards H_2O_2 . *Journal of Electroanalytical Chemistry* 895. doi: 10.1016/j.jelechem.2021.115399. ISSN-15726657
- 1880.Chutani, M., Tadić, B., Gupte, N. 2021. Hysteresis and synchronization processes of Kuramoto oscillators on high-dimensional simplicial complexes with competing simplex-encoded couplings. *Physical Review E* 104 (3). doi: 10.1103/PhysRevE.104.034206. ISSN-24700045
- 1881.Sirunyan, A.M., Tumasyan, A., Schöfbeck, *et al.* 2021. Measurement of the azimuthal anisotropy of [Formula presented] and [Formula presented] mesons in PbPb collisions at $\sqrt{s_{\text{NN}}}=5.02$ TeV. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics* 819. doi: 10.1016/j.physletb.2021.136385. ISSN-03702693
- 1882.Ragavendra, H.V., Sriramkumar, L., Silk, J. 2021. Could PBHs and secondary GWs have originated from squeezed initial states?. *Journal of Cosmology and Astroparticle Physics* 2021 (5). doi: 10.1088/1475-7516/2021/05/010. ISSN-14757516
- 1883.Sirunyan, A.M., Tumasyan, A., Spanr, *et al.* 2021. Search for W' bosons decaying to a top and a bottom quark at $\sqrt{s}=13\text{TeV}$ in the hadronic final state. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics* 820. doi: 10.1016/j.physletb.2021.136535. ISSN-03702693
- 1884.Pal, S., Muthukrishnan, S., Sadhukhan, B., N. V., S., Murali, D., Murugavel, P. 2021. Bulk photovoltaic effect in BaTiO_3 -based ferroelectric oxides: An experimental and theoretical study. *Journal of Applied Physics* 129 (8). doi: 10.1063/5.0036488. ISSN-00218979
- 1885.Abudín, F., Adachi, I., Behera, *et al.* 2021. Search for decays using an inclusive tagging method at Belle II. *Physical Review Letters* 127 (18). doi: 10.1103/PhysRevLett.127.181802. ISSN-00319007
- 1886.Sarkar, M., Gupte, N. 2021. Phase synchronization in the two-dimensional Kuramoto model: Vortices and duality. *Physical Review E* 103 (3). doi: 10.1103/PhysRevE.103.032204. ISSN-24700045
- 1887.Mukherjee, J., Suraj, T.S., Basumatary, H., Sethupathi, K., Raman, K.V. 2021. Sign reversal of anomalous Hall conductivity and magnetoresistance in cubic noncollinear antiferromagnet Mn_3Pt thin films. *Physical Review Materials* 5 (1). doi: 10.1103/PhysRevMaterials.5.014201. ISSN-24759953
- 1888.Sirunyan, A.M., Tumasyan, A., Walten, *et al.* 2021. Angular analysis of the decay $B^+ \rightarrow K^*(892)^+ \mu^+ \mu^-$ in proton-proton collisions at $\sqrt{s}=8$ TeV. *Journal of High Energy Physics* 2021 (4). doi: 10.1007/JHEP04(2021)124. ISSN-10298479
- 1889.Sirunyan, A.M., Tumasyan, A., Spanr, *et al.* 2021. Observation of a new excited beauty strange baryon decaying to $\Xi b \pi^+ \pi^-$. *Physical Review Letters* 126 (25). doi: 10.1103/PhysRevLett.126.252003. ISSN-00319007
- 1890.Arora, A., Nayak, P.K., Rao, M.S.R., *et al.* 2021. Interlayer excitonic states in $\text{MoSe}_2/\text{MoS}_2$ van der Waals heterostructures. *Physical Review B* 103 (20). doi: 10.1103/PhysRevB.103.205406. ISSN-24699950
- 1891.Kashikar, R., Gupta, M., Nanda, B.R.K. 2021. A generic Slater-Koster description of the electronic structure of centrosymmetric halide perovskites. *Journal of Chemical Physics* 154 (10). doi: 10.1063/5.0044338. ISSN-00219606
- 1892.Das, S.K., Padhan, P. 2021. The effect of mechanical strain on the Dirac surface states in the (0001) surface and the cohesive energy of the topological insulator Bi_2Se_3 . *Nanoscale Advances* 3 (16): 4816-4825. doi: 10.1039/d1na00139f. ISSN-25160230
- 1893.Mukherjee, J., Nanda, B.R.K., Ramachandra Rao, M.S. 2021. Metal-insulator transition in epitaxial Ga-doped ZnO films via controlled thickness. *Journal of Physics Condensed Matter* 33 (10). doi: 10.1088/1361-648X/abc800. ISSN-09538984
- 1894.Tumasyan, A., Adam, W., Spanri, *et al.* 2021. Search for a heavy Higgs boson decaying into two lighter Higgs bosons in the $\tau\tau b\bar{b}$ final state at 13 TeV. *Journal of High Energy Physics* 2021 (11). doi: 10.1007/JHEP11(2021)057. ISSN-10298479
- 1895.Ugendar, K., Markandeyulu, G., Mallesh, S. 2021. Polaron conduction mechanism in Nickel ferrite and its rare-earth derivatives. *Physica B: Condensed Matter* 606. doi: 10.1016/j.physb.2021.412819. ISSN-09214526
- 1896.Gummaluri, V.S., Gayathri, R., Vijayan, C., Matham, M.V. 2021. Bio-inspired wrinkle microstructures for random lasing governed by surface roughness. *Optics Letters* 46 (5): 1033-1036. doi: 10.1364/OL.417148. ISSN-01469592
- 1897.Sirunyan, A.M., Tumasyan, A., Spanr, *et al.* 2021. Measurement of the $W\gamma$ production cross section in proton-proton collisions at $\sqrt{s}=13$ TeV and constraints on effective field theory coefficients. *Physical Review Letters* 126 (25). doi: 10.1103/PhysRevLett.126.252002. ISSN-00319007
- 1898.Živković, I., Favre, V., Iqbal, Y., *et al.* 2021. Magnetic field induced quantum spin liquid in the two coupled trillium lattices of $\text{K}_2\text{Ni}_2(\text{SO}_4)_3$. *Physical Review Letters* 127 (15). doi: 10.1103/PhysRevLett.127.157204. ISSN-00319007
- 1899.Kumar, S., M., G., Vaippully, R., Banerjee, A., Roy, B. 2021. Breaking the diffraction limit in absorption spectroscopy using upconverting nanoparticles. *Nanoscale*

- 13(27): 11856-11866. doi: 10.1039/d1nr02103f. ISSN-20403364
- 1900.Sirunyan, A.M., Tumasyan, A., Schöfbeck, R., *et al.* 2021. Search for charged Higgs bosons produced in vector boson fusion processes and decaying into vector boson pairs in proton–proton collisions at $\sqrt{s}=13$ TeV. *European Physical Journal C* 81 (8). doi: 10.1140/epjc/s10052-021-09472-3. ISSN-14346044
- 1901.Khatua, J., Arh, T., Khuntia, P., *et al.* 2021. Development of short and long-range magnetic order in the double perovskite based frustrated triangular lattice antiferromagnet $\text{Ba}_2\text{MnTeO}_6$. *Scientific Reports* 11 (1). doi: 10.1038/s41598-021-84876-5. ISSN-20452322
- 1902.Jia, S., Tang, S.S., Bračko, M., *et al.* 2021. Measurements of branching fractions and asymmetry parameters of $\Xi_c^0 \rightarrow \Lambda K^{*0}$, $\Xi_c^0 \rightarrow \Sigma^0 K^{*0}$, and $\Xi_c^0 \rightarrow \Sigma^+ K^{*-}$ decays. *Journal of High Energy Physics* 2021 (6). doi: 10.1007/JHEP06(2021)160. ISSN-10298479
- 1903.Abbott, R., Abbott, T.D., Allocca, A., *et al.* 2021. All-sky search for short gravitational-wave bursts in the third Advanced LIGO and Advanced Virgo run. *Physical Review D* 104 (12). doi: 10.1103/PhysRevD.104.122004. ISSN-24700010
- 1904.Ezhilmaran, V., Vasa, N.J., Krishnan, S., Vijayaraghavan, L. 2021. Femtosecond pulsed Ti: sapphire laser-assisted surface texturing on piston ring and its tribology characterization. *Journal of Tribology* 143 (4). doi: 10.1115/1.4048385. ISSN-07424787
- 1905.Abbott, R., Abbott, T.D., Aleman, K.M., *et al.* 2021. Constraints from LIGO O3 Data on gravitational-wave emission due to R-modes in the Glitching Pulsar PSR J0537-6910. *Astrophysical Journal* 922 (1). doi: 10.3847/1538-4357/ac0d52. ISSN-0004637X
- 1906.Kidangan, R.T., Krishnamurthy, C.V., Balasubramaniam, K. 2021. Identification of the fiber breakage orientation in carbon fiber reinforced polymer composites using induction thermography. *NDT and E International* 122. doi: 10.1016/j.ndteint.2021.102498. ISSN-09638695
- 1907.Haque, M.R., Maity, D., Paul, T., Sriramkumar, L. 2021. Decoding the phases of early and late time reheating through imprints on primordial gravitational waves. *Physical Review D* 104 (6). doi: 10.1103/PhysRevD.104.063513. ISSN-24700010
- 1908.Moon, T.J., Tanida, K., Biswal, J., *et al.* 2021. First determination of the spin and parity of the charmed-strange baryon $\Xi_c(2970)^+$. *Physical Review D* 103 (11). doi: 10.1103/PhysRevD.103.L111101. ISSN-24700010
- 1909.Omanakuttan, S., Lakshminarayan, A. 2021. Quantum walks with quantum chaotic coins: Loschmidt echo, classical limit, and thermalization. *Physical Review E* 103 (1). doi: 10.1103/PhysRevE.103.012207. ISSN-24700045
- 1910.Dey, S., Bongu, S.R., Sagar, V.K., Bisht, P.B. 2021. Investigation of thermal nonlinearity due to nJ high repetition rate fs pulses on wrinkled graphene. *Journal of the Optical Society of America B: Optical Physics* 38 (6): 2019-2026. doi: 10.1364/JOSAB.420119. ISSN-07403224
- 1911.Iqbal, Y., Ferrari, F., Chauhan, A., Parola, A., Poilblanc, D., Becca, F. 2021. Gutzwiller projected states for the Heisenberg model on the Kagome lattice: Achievements and pitfalls. *Physical Review B* 104 (14). doi: 10.1103/PhysRevB.104.144406. ISSN-24699950
- 1912.Tumasyan, A., Adam, W., Schwar, *et al.* 2021. Search for long-lived particles decaying in the CMS end cap muon detectors in proton-proton collisions at $\sqrt{s}=13$ TeV. *Physical Review Letters* 127 (26). doi: 10.1103/PhysRevLett.127.261804. ISSN-00319007
- 1913.Tumasyan, A., Adam, W., Spanring, M., *et al.* 2021. Search for chargino-neutralino production in events with Higgs and W bosons using 137 fb⁻¹ of proton-proton collisions at $\sqrt{s}=13$ TeV. *Journal of High Energy Physics* 2021 (10). doi: 10.1007/JHEP10(2021)045. ISSN-10298479
- 1914.Sirunyan, A.M., Tumasyan, A., Templ, S., *et al.* 2021. Search for the rare decay of the W boson into a pion and a photon in proton-proton collisions at $\sqrt{s}=13$ TeV. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics* 819. doi: 10.1016/j.physletb.2021.136409. ISSN-03702693
- 1915.Sirunyan, A.M., Tumasyan, A., Spanring, *et al.* 2021. Measurement of differential $t\bar{t}$ production cross sections using top quarks at large transverse momenta in pp collisions at $\sqrt{s}=13$ TeV measurement of differential $t\bar{t}$... Sirunyan A. M. *et al. Physical Review D* 103 (5). doi: 10.1103/PhysRevD.103.052008. ISSN-24700010
- 1916.Mizuk, R., Bondar, A., Bračko, M., *et al.* 2021. Measurement of the energy dependence of the $e^+e^- \rightarrow B\bar{B}$, $B\bar{B}^*$ and $B^*\bar{B}^*$ exclusive cross sections. *Journal of High Energy Physics* 2021 (6). doi: 10.1007/JHEP06(2021)137. ISSN-10298479
- 1917.Nandy, S., Mocherla, P.S.V., Abdelhamid, E., Nadgorny, B., Naik, R., Sudakar, C. 2021. Coexistence of large negative and positive magnetodielectric response in $\text{Bi}_{1-x}\text{Ca}_x\text{Fe}_{1-y}\text{Ti}_y\text{O}_{3-\delta}$ nanoparticle ceramics. *Physical Review B* 103 (18). doi: 10.1103/PhysRevB.103.184406. ISSN-24699950
- 1918.Sirunyan, A.M., Tumasyan, A., Waltenberger, W., *et al.* 2021. Performance of the CMS muon trigger system in proton-proton collisions at $\sqrt{s}=13$ TeV. *Journal of Instrumentation* 16 (7). doi: 10.1088/1748-0221/16/07/P07001. ISSN-17480221
- 1919.Trivedi, V., Battabyal, M., Gopalan, R., *et al.* 2021. Effect of refractory tantalum metal filling on the microstructure and thermoelectric properties of $\text{Co}_4\text{Sb}_{12}$ skutterudites. *ACS Omega* 6 (5): 3900-3909. doi: 10.1021/acsomega.0c05740. ISSN-24701343
- 1920.Abbott, R., Abbott, T.D., Allocca, A., *et al.* 2021. All-sky search for long-duration gravitational-wave bursts in the third Advanced LIGO and Advanced Virgo run. *Physical Review D* 104 (10). doi: 10.1103/PhysRevD.104.102001. ISSN-24700010
- 1921.Sirunyan, A.M., Tumasyan, A., J. Schieck, *et al.* 2021. Studies of charm and beauty hadron long-range correlations in pp and pPb collisions at LHC energies. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics* 813. doi: 10.1016/j.physletb.2020.136036. ISSN-03702693

- 1922.Lee, J.Y., Tanida, K., G. Bonvicini, *et al.* 2021. Measurement of branching fractions of $\Lambda_c^+ \rightarrow \eta \Lambda \pi^+$, $\eta \zeta^0 \pi^+$, $\Lambda(1670) \pi^+$, and $\eta \zeta(1385)^+$. *Physical Review D* 103 (5). doi: 10.1103/PhysRevD.103.052005. ISSN-24700010
- 1923.Sirunyan, A.M., Tumasyan, A., M. Spanring, *et al.* 2021. Measurement of differential cross sections for Z bosons produced in association with charm jets in pp collisions at $\sqrt{s} = 13$ TeV. *Journal of High Energy Physics* 2021 (4). doi: 10.1007/JHEP04(2021)109. ISSN-10298479
- 1924.Divyajyoti, Baxi, P., Mishra, C.K., Arun, K.G. 2021. Detectability of gravitational higher order modes in the third-generation era. *Physical Review D* 104 (8). doi: 10.1103/PhysRevD.104.084080. ISSN-24700010
- 1925.Mitra, T., Mukhopadhyay, A., Soloviev, A. 2021. Hydrodynamic attractor and novel fixed points in superfluid Bjorken flow. *Physical Review D* 103 (7). doi: 10.1103/PhysRevD.103.076014. ISSN-24700010
- 1926.Sahoo, S., Dhar, R., Dutta, S., Bhattacharyya, J. 2021. Investigation of internal fields in organic semiconductors in the presence of traps. *Journal of Applied Physics* 130 (8). doi: 10.1063/5.0058515. ISSN-00218979
- 1927.Tumasyan, A., Adam, W., Spanri, *et al.* 2021. Measurement of the electroweak production of $Z\gamma$ and two jets in proton-proton collisions at $\sqrt{s} = 13$ TeV and constraints on anomalous quartic gauge couplings. *Physical Review D* 104 (7). doi: 10.1103/PhysRevD.104.072001. ISSN-24700010
- 1928.Guan, Y., Schwartz, A.J., Bozek, A., *et al.* 2021. Measurement of branching fractions and CP asymmetries for $D_s^+ \rightarrow k^+ (\eta, \pi^0)$ and $D_s^+ \rightarrow \pi^+ (\eta, \pi^0)$ decays at Belle. *Physical Review D* 103 (11). doi: 10.1103/PhysRevD.103.112005. ISSN-24700010
- 1929.Beleño, C., Frey, A., Červenkov, D., *et al.* 2021. Measurement of the branching fraction of the decay $B^+ \rightarrow \pi^+ \pi^0 \ell^+ \nu_\ell$ in fully reconstructed events at Belle. *Physical Review D* 103 (11). doi: 10.1103/PhysRevD.103.112001. ISSN-24700010
- 1930.Sirunyan, A.M., Tumasyan, A., Waltenberger, W., *et al.* 2021. Search for a heavy vector resonance decaying to a Z boson and a Higgs boson in proton-proton collisions at $\sqrt{s}=13$ TeV. *European Physical Journal C* 81 (8). doi: 10.1140/epjc/s10052-021-09348-6. ISSN-14346044
- 1931.Tumasyan, A., Adam, W., Spanri, *et al.* 2021. Measurement of differential $t \bar{t}$ production cross sections in the full kinematic range using lepton+jets events from proton-proton collisions at $\sqrt{s}=13$ TeV measurement of differential... A. Tumasyan *et al.* *Physical Review D* 104 (9). doi: 10.1103/PhysRevD.104.092013. ISSN-24700010
- 1932.Sirunyan, A.M., Tumasyan, A., Waltenberger, W., *et al.* 2021. Search for long-lived particles decaying to jets with displaced vertices in proton-proton collisions at $\sqrt{s}=13$ TeV. *Physical Review D* 104 (5). doi: 10.1103/PhysRevD.104.052011. ISSN-24700010
- 1933.Acar, B., Adamov, G., Banerjee, S., *et al.* 2021. The DAQ system of the 12,000 channel CMS high granularity calorimeter prototype. *Journal of Instrumentation* 16 (4). doi: 10.1088/1748-0221/16/04/T04001. ISSN-17480221
- 1934.Chakrabarti, S., Govindarajan, S., Shanmugapriya, P., Srivastava, Y.K., Virmani, A. 2021. Black hole hair removal for $N = 4$ CHL models. *Journal of High Energy Physics* 2021 (2). doi: 10.1007/JHEP02(2021)125. ISSN-10298479
- 1935.Li, L.K., Schwartz, A.J., Bonvicini, G., *et al.* 2021. Measurement of branching fractions and search for CP violation in $D^0 \rightarrow \pi^+ \pi^- \eta$, $D^0 \rightarrow K^+ K^- \eta$, and $D^0 \rightarrow \phi \eta$ at Belle. *Journal of High Energy Physics* 2021 (9). doi: 10.1007/JHEP09(2021)075. ISSN-10298479
- 1936.Sirunyan, A.M., Tumasyan, A., Schöfbeck, R. *et al.* 2021. Measurements of the differential cross sections of the production of Z + jets and γ + jets and of Z boson emission collinear with a jet in pp collisions at $\sqrt{s} = 13$ TeV. *Journal of High Energy Physics* 2021 (5). doi: 10.1007/JHEP05(2021)285. ISSN-10298479
- 1937.Tumasyan, A., Adam, W., Spanring, M. *et al.* 2021. Measurements of the $pp \rightarrow W^\pm \gamma \gamma$ and $pp \rightarrow Z \gamma \gamma$ cross sections at $\sqrt{s} = 13$ TeV and limits on anomalous quartic gauge couplings. *Journal of High Energy Physics* 2021 (10). doi: 10.1007/JHEP10(2021)174. ISSN-10298479
- 1938.Renganathan, B., Rao, S.K., Ganesan, A.R., Deepak, A. 2021. High proficient sensing response in clad modified ceria doped tin oxide fiber optic toxic gas sensor application. *Sensors and Actuators A: Physical* 332. doi: 10.1016/j.sna.2021.113114. ISSN-09244247
- 1939.Ranu, S.K., Prabhakar, A., Mandayam, P. 2021. Differential phase encoded measurement-device-independent quantum key distribution. *Quantum Information Processing* 20 (2). doi: 10.1007/s11128-021-03006-2. ISSN-15700755
- 1940.Tumasyan, A., Adam, W., Spanring, M., *et al.* 2021. Measurements of the electroweak diboson production cross sections in proton-proton collisions at $\sqrt{s}=5.02$ TeV using leptonic decays. *Physical Review Letters* 127 (19). doi: 10.1103/PhysRevLett.127.191801. ISSN-00319007
- 1941.Saini, A., Unnikrishnakurup, S., Krishnamurthy, C.V., Balasubramanian, K., Sundararajan, T. 2021. Numerical study using finite element method for heat conduction on heterogeneous materials with varying volume fraction, shape and size of fillers. *International Journal of Thermal Sciences* 159. doi: 10.1016/j.ijthermalsci.2020.106545. ISSN-12900729
- 1942.Lokeswararao, Y., Sudarshan, C., Sudakar, C. 2021. Optimizing carbon coating to synthesize phase pure LiVPO_4F cathode through a combined sol-gel and PTFE reaction. *Materials Chemistry and Physics* 263. doi: 10.1016/j.matchemphys.2021.124362. ISSN-02540584
- 1943.Jana, S., Bhat, S.G., Behera, B.C., Patra, L., Kumar, P.S.A., Nanda, B.R.K., Samal, D. 2021. Evidence for weak-antilocalization–weak-localization crossover and metal-insulator transition in $\text{CaCu}_3\text{Ru}_4\text{O}_{12}$ thin films. *EPL* 133 (1). doi: 10.1209/0295-5075/133/17005. ISSN-02955075
- 1944.Van Tonder, R., Cao, L., Bodr, *et al.* 2021. Measurements of q^2 moments of inclusive $B \rightarrow X_c \ell^+ \nu_\ell$ decays with hadronic tagging. *Physical Review D* 104 (11). doi: 10.1103/PhysRevD.104.112011. ISSN-24700010

- 1945.2029. Abbott, R., Abbott, T.D., Zweizig, J., et al. 2021. Search for lensing signatures in the gravitational-wave observations from the first half of LIGO-Virgo's third observing run. *Astrophysical Journal* 923 (1). doi: 10.3847/1538-4357/ac23db. ISSN-0004637X
- 1946.Park, S.-H., Kwon, Y.-J., Browder, T.E. et al. 2021. Search for the dark photon in $B^0 \rightarrow A'A', A' \rightarrow e^+e^-, \mu^+\mu^-$, and $\pi^+\pi^-$ decays at Belle. *Journal of High Energy Physics* 2021 (4). doi: 10.1007/JHEP04(2021)191. ISSN-10298479
- 1947.Mondkar, S., Mukhopadhyay, A., Rebhan, A., Soloviev, A. 2021. Quasinormal modes of a semi-holographic black brane and thermalization. *Journal of High Energy Physics* 2021 (11). doi: 10.1007/JHEP11(2021)080. ISSN-10298479
- 1948.Behera, P.S., Nirmala, R. 2021. Magnetic and magnetocaloric properties of multiferroic oxides $Gd_{0.5}Y_{0.5}MnO_3$ and $Eu_{0.5}Dy_{0.5}MnO_3$. *IEEE Transactions on Magnetics* 57 (2). doi: 10.1109/TMAG.2020.3020422. ISSN-00189464
- 1949.Boya, K., Nam, K., Koteswararao, B., et al. 2021. Magnetic properties of the $S = 5/2$ anisotropic triangular chain compound $Bi_3FeMo_2O_{12}$. *Physical Review B* 104 (18). doi: 10.1103/PhysRevB.104.184402. ISSN-24699950
- 1950.Sirunyan, A.M., Tumasyan, A., Schöfbeck, R., et al. 2021. Hard color-singlet exchange in dijet events in proton-proton collisions at $\sqrt{s}=13$ TeV. *Physical Review D* 104 (3). doi: 10.1103/PhysRevD.104.032009. ISSN-24700010
- 1951.Sharma, V., C. Dakshinamurthy, A., Pandey, B., Roy, S.C., Sudakar, C. 2021. Highly efficient photoelectrochemical ZnO and TiO_2 nanorod/ Sb_2S_3 heterostructured photoanodes through one step thermolysis of Sb-MPA complex. *Solar Energy* 225, pp 333-343: doi: 10.1016/j.solener.2021.07.045. ISSN-0038092X
- 1952.Tumasyan, A., Adam, W., Spanring, M., et al. 2021. Study of Z boson plus jets events using variables sensitive to double-parton scattering in pp collisions at 13 TeV. *Journal of High Energy Physics* 2021 (10). doi: 10.1007/JHEP10(2021)176. ISSN-10298479
- 1953.Kang, K.H., Park, H., Bhardwaj, V., et al. 2021. Measurement of time-dependent CP violation parameters in $B^0 \rightarrow K_S^0 K_S^0 K_S^0$ decays at Belle. *Physical Review D* 103 (3). doi: 10.1103/PhysRevD.103.032003. ISSN-24700010
- 1954.McNeil, J.T., Yelton, J., Bonvicini, G., et al. 2021. Measurement of the resonant and nonresonant branching ratios in $\Xi_c^0 \rightarrow \Xi^0 K^+ K^-$. *Physical Review D* 103 (11). doi: 10.1103/PhysRevD.103.112002. ISSN-24700010
- 1955.Atmacan, H., Schwartz, A.J., Bhardwaj, V., et al. 2021. Search for $B^0 \rightarrow \tau^\pm \ell^\mp$ ($\ell=e, \mu$) with a hadronic tagging method at Belle search for $B^0 \rightarrow \tau^\pm \ell^\mp$ ($\ell=e, \mu$) with A ... H. Atmacan et al. *Physical Review D* 104 (9). doi: 10.1103/PhysRevD.104.L091105. ISSN-24700010
- 1956.Sirunyan, A.M., Tumasyan, A., Waltenberger, W, et al. 2021. First measurement of the cross section for top quark pair production with additional charm jets using dileptonic final states in pp collisions at $\sqrt{s}=13$ TeV. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics* 820. doi: 10.1016/j.physletb.2021.136565. ISSN-03702693
- 1957.Kumar, A., Gunaseelan, M., Vaidya, G., Vaipully, R., Roy, B. 2021. Estimation of motional parameters using emission from upconverting particles optically trapped at the pump wavelength. *European Physical Journal: Special Topics*. doi: 10.1140/epjs/s11734-021-00399-0. ISSN-19516355
- 1958.Pg, S., Varikuti, N.D., Madhok, V. 2021. Exponential speedup in measuring out-of-time-ordered correlators and gate fidelity with a single bit of quantum information. *Physics Letters, Section A: General, Atomic and Solid State Physics* 397. doi: 10.1016/j.physleta.2021.127257. ISSN-03759601
- 1959.Sirunyan, A.M., Tumasyan, A., Schöfbeck, et al. 2021. Search for the lepton flavor violating decay $\tau \rightarrow 3\mu$ in proton-proton collisions at $\sqrt{s} = 13$ TeV. *Journal of High Energy Physics* 2021 (1). doi: 10.1007/JHEP01(2021)163. ISSN-10298479
- 1960.Ganapathi, K.L., Bhat, N., Mohan, S. 2021. Optimization and integration of ultrathin e-beam grown HfO_2 gate dielectrics in MoS_2 transistors. *Journal of Physics D: Applied Physics* 54 (44). doi: 10.1088/1361-6463/ac19e0. ISSN-00223727
- 1961.Astrakhantsev, N., Ferrari, F., Iqbal, Y., et al. 2021. Pinwheel valence bond crystal ground state of the spin-12 Heisenberg antiferromagnet on the shuriken lattice. *Physical Review B* 104 (22). doi: 10.1103/PhysRevB.104.L220408. ISSN-24699950
- 1962.Medina, C., Schomas, D., Heidenreich, A. et al. 2021. Single-shot electron imaging of dopant-induced nanoplasmas. *New Journal of Physics* 23 (5). doi: 10.1088/1367-2630/abf7f9. ISSN-13672630
- 1963.Sirunyan, A.M., Tumasyan, A., Madlener, T., et al. 2021. Correlations of azimuthal anisotropy Fourier harmonics with subevent cumulants in pPb collisions at $\sqrt{s_{NN}}=8.16$ TeV. *Physical Review C* 103 (1). doi: 10.1103/PhysRevC.103.014902. ISSN-24699985
- 1964.Agrawal, T., Bhattacharya, S., Sagar, V.K., Bisht, P.B. 2021. Radiative rate inhibition in fluorescent nanodiamond-microcavity system. *Journal of Luminescence* 234. doi: 10.1016/j.jlum.2021.117963. ISSN-00222313
- 1965.Sirunyan, A.M., Tumasyan, A., Spanring, M., et al. 2021. Measurement of prompt D^0 and \bar{D}^0 meson azimuthal anisotropy and search for strong electric fields in PbPb collisions at $\sqrt{s_{NN}}=5.02$ TeV. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics* 816. doi: 10.1016/j.physletb.2021.136253. ISSN-03702693
- 1966.Douçot, B., Mukhopadhyay, A., Policastro, G., Samanta, S. 2021. Linear-in-resistivity from semiholographic non-Fermi liquid models. *Physical Review D* 104 (8). doi: 10.1103/PhysRevD.104.L081901. ISSN-24700010
- 1967.Li, S.X., Li, L.K., Branchini, P., et al. 2021. Measurement of the branching fraction of decay at Belle. *Physical Review D* 104 (7). doi: 10.1103/PhysRevD.104.072008. ISSN-24700010
- 1968.2052. Vishvakarma, S., Srinivas, V. 2021. Weak itinerant ferromagnetism and non-Fermi liquid behavior in Ni-TM

- (TM = Cr, Nb) alloys near critical concentration. *Journal of Physics Condensed Matter* 33 (20). doi: 10.1088/1361-648X/abe514. ISSN-09538984
- 1969.Malles, S., Srinivas, V. 2021. Evolution of structure and magnetic properties in MnZn ferrite-silica nanocomposites fabricated by sol-gel method. *Journal of Materials Science: Materials in Electronics* 32 (4): 4862-4871. doi: 10.1007/s10854-020-05225-2. ISSN-09574522
- 1970.Nakul, U., Gopalakrishnan, M. 2021. Frictional drag produced by motor proteins during cargo transport. *EPL* 133 (6). doi: 10.1209/0295-5075/133/68002. ISSN-02955075
- 1971.Rajalekshmi, T.R., Dixit, T., Rao, M.S.R., Sethupathi, K. 2021. Pair-emission-induced near-infrared lasing from ceramic Ga:LaCrO₃ microcrystals at room temperature. *Physica Status Solidi - Rapid Research Letters* 15 (4). doi: 10.1002/pssr.202000519. ISSN-18626254
- 1972.Sirunyan, A.M., Tumasyan, A., Schöfbeck, R., et al. 2021. Constraints on the initial state of Pb-Pb collisions via measurements of Z-boson yields and azimuthal anisotropy at $\sqrt{s_{NN}}=5.02$ TeV. *Physical Review Letters* 127 (10). doi: 10.1103/PhysRevLett.127.102002. ISSN-00319007
- 1973.Kesavan, H., Sahoo, S., Jena, S., Bhattacharyya, J., Ray, D. 2021. Spatial extent of interaction between excitons and polarons in a bilayer organic field-effect transistor. *ACS Photonics*. doi: 10.1021/acsp Photonics.0c01693. ISSN-23304022
- 1974.Viji, M., Budumuru, A.K., Hebbar, V., Gautam, S., Chae, K.H., Sudakar, C. 2021. Influence of morphology and compositional mixing on the electrochemical performance of Li-rich layered oxides derived from nanoplatelet-shaped transition metal oxide-hydroxide precursors. *Energy and Fuels* 35 (5): 4533-4549. doi: 10.1021/acs.energyfuels.0c04061. ISSN-08870624
- 1975.Li, Y., Tang, S.S., Branchini, P., Browder, T. E., et al. 2021. Evidence for the decay $\omega_c^0 \rightarrow \pi^+ \omega$ (2012) $\rightarrow \pi^+ (K^- \Xi^-)$ evidence for the decay $\omega_c^0 \rightarrow \pi^+ \omega$ (2012) $\rightarrow \pi^+ (K^- \Xi^-)$... Li Y, et al.. *Physical Review D* 104 (5). doi: 10.1103/PhysRevD.104.052005. ISSN-24700010
- 1976.Jia, S., Shen, C.P., Bračko, M., Branchini, P., et al. 2021. Search for the in at near 10.6 GeV at Belle. *Physical Review D* 104 (1). doi: 10.1103/PhysRevD.104.012012. ISSN-24700010
- 1977.Banerjee, S., Aarathi, G., Saha, S., Aravind, G., Deshmukh, P.C. 2021. Time delay in negative ion photodetachment. *Physica Scripta* 96 (11). doi: 10.1088/1402-4896/ac14e4. ISSN-00318949
- 1978.Ramshanker, N., Ganapathi, K.L., Varun, N., Bhat, M.S., Mohan, S. 2021. Development of CeO₂-HfO₂ mixed oxide thin films for high performance oxygen sensors. *IEEE Sensors Journal* 21 (16): 18326-18333. doi: 10.1109/JSEN.2021.3085857. ISSN-1530437X
- 1979.Govindarajan, S., Sharma, S.S., Viswanath, S. 2021. The Brylinski Filtration for Affine Kac-Moody algebras and representations of W-algebras. *Algebras and Representation Theory*. doi: 10.1007/s10468-021-10101-6. ISSN-1386923X
- 1980.Kothawala, D. 2021. BGV theorem, geodesic deviation, and quantum fluctuations. *Classical and Quantum Gravity* 38 (4). doi: 10.1088/1361-6382/abd146. ISSN-02649381
- 1981.Murali, A., Ganesan, M., Satapathy, D.K., Kumar, P.B.S. 2021. Penetrant-induced glass-like transition in thin chitosan films. *Journal of Physical Chemistry B* 125 (45): 12617-12626. doi: 10.1021/acs.jpcc.1c07903. ISSN-15206106
- 1982.Sanikop, R., Arya, N., Balakrishnan, V., Sudakar, C. 2021. Charge pumping by contact electrification using electrostatic force microscopy in bi- and trilayered MoS₂ nanosheets. *Journal of Physical Chemistry C* 125 (22): 12155-12165. doi: 10.1021/acs.jpcc.1c02347. ISSN-19327447
- 1983.Sanikop, R., Gautam, S., Chae, K.H., Sudakar, C. 2021. Robust ferromagnetism in Mn and Co doped 2D-MoS₂ nanosheets: Dopant and phase segregation effects. *Journal of Magnetism and Magnetic Materials* 537. doi: 10.1016/j.jmmm.2021.168226. ISSN-03048853
- 1984.Urban, M., Ramanan, S. 2021. Low-momentum interactions for ultracold Fermi gases. *Physical Review A* 103 (6). doi: 10.1103/PhysRevA.103.063306. ISSN-24699926
- 1985.Dey, S., Rallabandi, S., Singh, S., Bisht, P.B. 2021. Study of a dark core beam generated by nonlinear thermo-optical effect. *Optics and Laser Technology* 134. doi: 10.1016/j.optlastec.2020.106652. ISSN-00303992
- 1986.Sreeram, P.G., Madhok, V. 2021. Quantum tomography with random diagonal unitary maps and statistical bounds on information generation using random matrix theory. *Physical Review A* 104 (3). doi: 10.1103/PhysRevA.104.032404. ISSN-24699926
- 1987.Sreeram, P. G., Madhok, V., Lakshminarayan, A. 2021. Out-of-time-ordered correlators and the Loschmidt echo in the quantum kicked top: How low can we go? *Journal of Physics D: Applied Physics* 54 (27). doi: 10.1088/1361-6463/abf8f3. ISSN-00223727
- 1988.Hari, K., Kothawala, D. 2021. Effect of tidal curvature on dynamics of accelerated probes. *Physical Review D* 104 (6). doi: 10.1103/PhysRevD.104.064032. ISSN-24700010
- 1989.Stargen, D.J., Sreenath, V., Sriramkumar, L. 2021. Quantum-to-classical transition and imprints of continuous spontaneous localization in classical bouncing universes. *International Journal of Modern Physics D* 30 (7). doi: 10.1142/S0218271821500498. ISSN-02182718
- 1990.Lokesh, M., Vaippully, R., Roy, B., et al. 2021. Estimation of rolling work of adhesion at the nanoscale with soft probing using optical tweezers. *RSC Advances* 11 (55): 34636-34642. doi: 10.1039/d1ra06960h. ISSN-20462069
- 1991.Bhattacharya, S., Agrawal, T., Veluthandath, A.V., Bisht, P.B. 2021. Optical properties of different crystal structures under evaporative crystallization. *Optical Materials* 114. doi: 10.1016/j.optmat.2021.110895. ISSN-09253467
- 1992.Abudinén, F., Adachi, I., Barret, M., et al. 2021. Precise measurement of the D⁰ and D⁺ lifetimes at Belle II. *Physical Review Letters* 127 (21). doi: 10.1103/PhysRevLett.127.211801. ISSN-00319007
- 1993.Mitra, A., Mandayam, P. 2021. On optimal cloning

- and incompatibility. *Journal of Physics A: Mathematical and Theoretical* 54 (40). doi: 10.1088/1751-8121/ac20b7. ISSN-17518113
- 1994.Pal, S., Biswas, P.P., Murugavel, P., *et al.* 2021. Large electrocaloric effect and energy storage performance of site-engineered lead-free $\text{Ba}_{1-x}(\text{Bi}_{0.5}\text{Li}_{0.5})\text{TiO}_3$ ferroelectric oxides. *Journal of Physics D: Applied Physics* 54 (4). doi: 10.1088/1361-6463/abb6b4. ISSN-00223727
- 1995.Sirunyan, A.M., Tumasyan, A., Schöfbeck, R., *et al.* 2021. Study of Drell-Yan dimuon production in proton-lead collisions at $\sqrt{s_{\text{NN}}} = 8.16$ TeV. *Journal of High Energy Physics* 2021 (5). doi: 10.1007/JHEP05(2021)182. ISSN-10298479
- 1996.Samatham, S.S., Patel, A.K., Lukoyanov, A.V., Suresh, K.G., Nirmala, R. 2021. Non-collinear antiferromagnetism to compensated ferrimagnetism in $\text{Ti}(\text{Fe}_{1-x}\text{Co}_x)_2$ ($x = 0, 0.5$ and 1) alloys: experiment and theory. *Physical Chemistry Chemical Physics* 23 (9): 5607-5614. doi: 10.1039/d0cp06368a. ISSN-14639076
- 1997.Vishvakarma, S., Srinivas, V. 2021. Non-Fermi liquid behavior and signature of Griffiths phase in Ni-Cr binary alloy. *Journal of Applied Physics* 129 (14). doi: 10.1063/5.0045159. ISSN-00218979
- 1998.Ltaief, L.B., Shcherbinin, M., Mudrich, M., *et al.* 2021. Photoelectron spectroscopy of coronene molecules embedded in helium nanodroplets. *Journal of Low Temperature Physics* 202 (44687): 444-455. doi: 10.1007/s10909-020-02553-9. ISSN-00222291
- 1999.Sirunyan, A.M., Tumasyan, A., Waltenberger, W., *et al.* 2021. Measurement of the Z boson differential production cross section using its invisible decay mode ($Z \rightarrow \nu\nu$) in proton-proton collisions at $\sqrt{s} = 13$ TeV. *Journal of High Energy Physics* 2021 (5). doi: 10.1007/JHEP05(2021)205. ISSN-10298479
- 2000.Acar, B., Adamov, G., Banerjee, S., *et al.* 2021. Construction and commissioning of CMS CE prototype silicon modules. *Journal of Instrumentation* 16 (4). doi: 10.1088/1748-0221/16/04/T04002. ISSN-17480221
- 2001.Tumasyan, A., Adam, W., Spanring, M., *et al.* 2021. Observation of tW production in the single-lepton channel in pp collisions at $\sqrt{s} = 13$ TeV. *Journal of High Energy Physics* 2021(11). doi: 10.1007/JHEP11(2021)111. ISSN-10298479
- 2002.Arya Gopal, S., Edathiparambil Poulouse, A., Sudakar, C., Muthukrishnan, A. 2021. Kinetic insights into the mechanism of oxygen reduction reaction on $\text{Fe}_2\text{O}_3/\text{C}$ composites. *ACS Applied Materials and Interfaces* 13 (37): 44195-44206. doi: 10.1021/acsami.1c10114. ISSN-19448244
- 2003.Harjwani, J., Baro, M., Ramaprabhu, S. 2021. Nitrogen-containing tubular hollow carbon frameworks: A nongraphitic carbon for a robust room temperature hydrogen gas sensing application. *IEEE Sensors Letters* 5 (2). doi: 10.1109/LSENS.2021.3050259. ISSN-24751472
- 2004.Vaipully, R., Lokesh, M., Roy, B. 2021. Continuous rotational motion in birefringent particles using two near-orthogonally polarized optical tweezers beams at different wavelengths with low ellipticity. *Journal of Optics (United Kingdom)* 23 (9). doi: 10.1088/2040-8986/ac16b5. ISSN-20408978
- 2005.Das, B., Padhan, P. 2021. The suppression of spin-orbit coupling effect by the ZnO layer of $\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3/\text{ZnO}$ heterostructures grown on (001) oriented Si restores the negative magnetoresistance. *Nanoscale* 13 (9): 4871-4879. doi: 10.1039/d0nr06769e. ISSN-20403364
- 2006.Govindarajan, S., Shabbir, M., Viswanath, S. 2021. $\text{SL}(2)$ decomposition of denominator formulae of some BKM Lie superalgebras. *Nuclear Physics B* 973. doi: 10.1016/j.nuclphysb.2021.115614. ISSN-05503213
- 2007.Nandy, S., Hegde, M., Sudakar, C. 2021. Photoconductivity and photovoltaic studies on polycrystalline $\text{Bi}_{1-x}\text{M}'_x\text{Fe}_{1-y}\text{M}''_y\text{O}_{3-6}$ ($\text{M}' = \text{K}^+$ and Cs^+ ; $\text{M}'' = \text{Ti}^{4+}$; $x = y = 0$ and 0.1) thin films. *Thin Solid Films* 733. doi: 10.1016/j.tsf.2021.138804. ISSN-00406090
- 2008.Nisar, N.K., Savinov, V., Bračko, M. *et al.* 2021. Search for the decay $B_s^0 \rightarrow \eta'\eta$. *Physical Review D* 104 (3). doi: 10.1103/PhysRevD.104.L031101. ISSN-24700010
- 2009.Lairenjam, P.D., Sukumaran, S.K., Satapathy, D.K. 2021. Modulation of optical anisotropy in chitosan thin films: Role of swelling. *Macromolecules* 54 (23): 10931-10942. doi: 10.1021/acs.macromol.1c00613. ISSN-00249297
- 2010.Kothawala, D. 2021. Varying without varying: Reparameterizations, diffeomorphisms, general covariance, Lie derivatives, and all that. *European Journal of Physics* 42 (5). doi: 10.1088/1361-6404/ac0105. ISSN-01430807
- 2011.2096. Choi, E.Y., Hong, S.H., Seo, J.W., *et al.* 2021. Current-controlled magnetization using interfacial localizations in heterostructures. *Applied Surface Science* 557. doi: 10.1016/j.apsusc.2021.149871. ISSN-01694332
- 2012.Dara, H.K., Babu, P.D., Markandeyulu, G. 2021. Cluster glass behaviour in $\text{MnMn}_{0.25}\text{Sb}$. *Intermetallics* 131. doi: 10.1016/j.intermet.2021.107113. ISSN-09669795
- 2013.Tumasyan, A., Adam, W., Spanring, M., *et al.* 2021. Measurement of prompt open-charm production cross sections in proton-proton collisions at $\sqrt{s} = 13$ TeV. *Journal of High Energy Physics* 2021 (11). doi: 10.1007/JHEP11(2021)225. ISSN-10298479
- 2014.Roychowdhury, S., Tripathy, P.K. 2021. Penrose limits in non-Abelian T dual of Klebanov-Tseytlin background. *Physical Review D* 104 (12). doi: 10.1103/PhysRevD.104.126016. ISSN-24700010
- 2015.Dara, H.K., Babu, P.D., Markandeyulu, G. 2021. Weak ferromagnetic – Antiferromagnetic transition in $\text{MnFe}_{0.25}\text{Sb}$. *Journal of Magnetism and Magnetic Materials* 539. doi: 10.1016/j.jmmm.2021.168380. ISSN-03048853
- 2016.Govindarajan, S., Samanta, S. 2021. Mathieu moonshine and Siegel Modular Forms. *Journal of High Energy Physics* 2021 (3). doi: 10.1007/JHEP03(2021)050. ISSN-10298479
- 2017.Sanjay, S., Ganapathi, K.L., Varrla, E., Bhat, N. 2021. Performance tunability of field-effect transistors using $\text{MoS}_{2(1-x)}\text{Se}_{2x}$ alloys. *Nanotechnology* 32 (43). doi: 10.1088/1361-6528/ac1717. ISSN-09574484

- 2018.Voma, U.K., Bhattacharya, S., Koteswararao, B., *et al.* 2021. Electronic structure and magnetic properties of the effective spin $J_{\text{eff}} = 1/2$ two-dimensional triangular lattice $K_3\text{Yb}(\text{VO}_4)_2$. *Physical Review B* 104 (14). doi: 10.1103/PhysRevB.104.144411. ISSN-24699950
- 2019.Tumasyan, A., Adam, W., Spanring, M., *et al.* 2021. Measurement of the top quark mass using events with a single reconstructed top quark in pp collisions at $\sqrt{s} = 13$ TeV. *Journal of High Energy Physics* 2021 (12). doi: 10.1007/JHEP12(2021)161. ISSN-10298479
- 2020.Kalikivayi, V., Kalikivayi, L., Ganesan, A. 2021. Analyses on the distribution and influence of higher-order aberrations both clinically and experimentally among varied refractive errors. *Saudi Journal of Ophthalmology* 35 (1): 21-28. doi: 10.4103/1319-4534.325777. ISSN-13194534
- 2021.Ilaiyaraaja, P., Sharma, V., C Dakshinamurthy, A., Das, T.K., Sudakar, C. 2021. Fabrication of metal chalcogenide thin films by a facile thermolysis process under air ambient using metal-3-mercaptopropionic acid complex. *Materials Research Bulletin* 141. doi: 10.1016/j.materresbull.2021.111346. ISSN-00255408
- 2022.Chauhan, A., Nanda, B.R.K. 2021. Induction of large magnetic anisotropy energy and formation of multiple Dirac states in SrIrO_3 films: Role of correlation and spin-orbit coupling. *Applied Physics Letters* 119 (26). doi: 10.1063/5.0076375. ISSN-00036951
- 2023.Sirunyan, A.M., Tumasyan, A., Spanring, M., *et al.* 2021. Observation of Forward Neutron Multiplicity Dependence of Dimuon Acoplanarity in Ultraperipheral Pb-Pb collisions at $\sqrt{s_{\text{NN}}} = 5.02$ TeV. *Physical Review Letters* 127 (12). doi: 10.1103/PhysRevLett.127.122001. ISSN-00319007
- 2024.Yelton, J., Adachi, I., Bozek, *et al.* 2021. Measurement of the masses and widths of the $\zeta_c(2455)^+$ and $\zeta_c(2520)^+$ baryons. *Physical Review D* 104 (5). doi: 10.1103/PhysRevD.104.052003. ISSN-24700010
- 2025.Yao, J., Malik, S.K., Yapaskurt, V.O., *et al.* 2021. Two-layer compounds in rare earth-{Fe, Co, Ni, Rh, Pd, Pt}-Te systems: crystal structure and magnetic properties. *Journal of Solid State Chemistry* 295. doi: 10.1016/j.jssc.2020.121923. ISSN-00224596
- 2026.Lokeswararao, Y., Viji, M., Budumuru, A.K., Sudakar, C. 2021. Enabling high-rate capability by combining sol-gel synthesis and solid-state reaction with PTFE of 4.2 V cathode material $\text{LiVPO}_4\text{F/C}$. *Materials Today Communications* 27. doi: 10.1016/j.mtcomm.2021.102435. ISSN-23524928
- 2027.Sirunyan, A.M., Tumasyan, A., Schöfbeck, *et al.* 2021. Measurement of b jet shapes in proton-proton collisions at $\sqrt{s} = 5.02$ TeV. *Journal of High Energy Physics* 2021 (5). doi: 10.1007/JHEP05(2021)054. ISSN-10298479
- 2028.Sirunyan, A.M., Tumasyan, A., Tem, *et al.* 2021. Measurements of angular distance and momentum ratio distributions in three-jet and Z^+ two-jet final states in pp collisions. *European Physical Journal C* 81 (9). doi: 10.1140/epjc/s10052-021-09570-2. ISSN-14346044
- 2029.Tumasyan, A., Adam, W., Spanring, M., *et al.* 2021. Measurement of the inclusive and differential $t\bar{t}\gamma$ cross sections in the single-lepton channel and EFT interpretation at $\sqrt{s} = 13$ TeV. *Journal of High Energy Physics* 2021 (12). doi: 10.1007/JHEP12(2021)180. ISSN-10298479
- 2030.Mohanty, S., Kaliyar, A.B., Biswal, J., *et al.* 2021. Measurement of branching fraction and search for CP violation in $B \rightarrow \phi\phi K$. *Physical Review D* 103 (5). doi: 10.1103/PhysRevD.103.052013. ISSN-24700010
- 2031.Dubey, S., Browder, T.E., Čer, *et al.* 2021. Search for $B_s0 \rightarrow \eta' X_s s^-$ at Belle using a semi-inclusive method SEARCH for <https://journals.aps.org/prd/abstract/10.1103/PhysRevD.104.012007...> Dubey *et al.* *Physical Review D* 104 (1). doi: 10.1103/PhysRevD.104.012007. ISSN-24700010
- 2032.Sirunyan, A.M., Tumasyan, A., Waltenberger, W., *et al.* 2021. Search for a heavy resonance decaying to a top quark and a W boson at $\sqrt{s} = 13$ TeV in the fully hadronic final state. *Journal of High Energy Physics* 2021 (12). doi: 10.1007/JHEP12(2021)106. ISSN-10298479
- 2033.Budumuru, A.K., Hebbar, V., Viji, M., Sudakar, C. 2021. Enhanced rate capability of interconnected $\text{LiNi}_{1/3}\text{Mn}_{1/3}\text{Co}_{1/3}\text{O}_2$ nanoparticle cathode. *Materials Letters: X* 11. doi: 10.1016/j.mlblux.2021.100089. ISSN-25901508
- 2034.Cao, L., Sutcliffe, W., Branchini, P., *et al.* 2021. Measurement of differential branching fractions of inclusive $B \rightarrow X_u \ell^+ \nu_\ell$ decays. *Physical Review Letters* 127 (26). doi: 10.1103/PhysRevLett.127.261801. ISSN-00319007
- 2035.Sonone, R., Gupte, N. 2021. Precursors of the El Niño phenomenon: A climate network analysis. *Physical Review E* 103 (4). doi: 10.1103/PhysRevE.103.L040301. ISSN-24700045
- 2036.Tonon, N., Aarup Petersen, H., Consuegra Rodríguez, *et al.* 2021. Probing effective field theory operators in the associated production of top quarks with a Z boson in multilepton final states at $\sqrt{s} = 13$ TeV. *Journal of High Energy Physics* 2021 (12). doi: 10.1007/JHEP12(2021)083. ISSN-10298479
- 2037.Mishra, S.B., V G, A., Ramaprabhu, S., Nanda, B.R.K. 2021. Graphdiyne - A two-dimensional cathode for aluminum dual-ion batteries with high specific capacity and diffusivity. *ACS Applied Energy Materials* 4 (8): 7786-7799. doi: 10.1021/acsaem.1c01164. ISSN-25740962
- 2038.Kovalenko, E., Garmash, A., Br, *et al.* 2021. Study of $e^+e^- \rightarrow D(1S, 2S)\eta$ and $e^+e^- \rightarrow D(1S)\eta'$ at $\sqrt{s} = 10.866$ GeV with the Belle detector. *Physical Review D* 104 (11). doi: 10.1103/PhysRevD.104.112006. ISSN-24700010
- 2039.Kashikar, R., Nanda, B.R.K. 2021. Feeble metallicity and robust semiconducting regime in structurally sensitive $\text{Ba}(\text{Pb}, \text{Sn})\text{O}_3$ alloys. *Applied Physics Letters* 119 (15). doi: 10.1063/5.0061216. ISSN-00036951
- 2040.Das, R.R., Lekshmi, P.N., Santhosh, P.N. 2021. Strong spin-phonon coupling and large dielectric constant observed in quasi-two-dimensional layered perovskite $\text{SrLaCo}_{0.5}\text{Mn}_{0.5}\text{O}_4$. *Journal of Alloys and Compounds* 874. doi: 10.1016/j.jallcom.2021.159736. ISSN-09258388
- 2041.Mandal, S., Gopal, R., Krishnan, S.R., *et al.* 2021. Coincident angle-resolved state-selective photoelectron

- spectroscopy of acetylene molecules: A candidate system for time-resolved dynamics. *Faraday Discussions* 228, pp 242-265: doi: 10.1039/d0fd00120a. ISSN-13596640
- 2042.Kashikar, R., Ghosh, P.S., Lisenkov, S., Nanda, B.R.K., Ponomareva, I. 2021. Chemically and electrically tunable spin polarization in ferroelectric Cd-based hybrid organic-inorganic perovskites. *Physical Review B* 104 (23). doi: 10.1103/PhysRevB.104.235132. ISSN-24699950
- 2043.Ghosh, S., Ranjan, A.D., Banerjee, A., *et al.* 2021. Directed self-assembly driven mesoscale lithography using laser-induced and manipulated microbubbles: Complex architectures and diverse applications. *Nano Letters* 21 (1), p 44859. doi: 10.1021/acs.nanolett.0c03839. ISSN-15306984
- 2044.Lodge, M.S., Yang, S.A., Mukherjee, S., Weber, B. 2021. Atomically thin quantum spin hall insulators. *Advanced Materials* 33 (22). doi: 10.1002/adma.202008029. ISSN-09359648
- 2045.Kottlilil, D., Babusenana, A., Vijayan, C., Ji, W. 2021. Strong light-matter interaction in organic microcavity polaritons: essential criteria, design principles and typical configurations. *European Physical Journal: Special Topics* 230 (23): 4091-4097. doi: 10.1140/epjs/s11734-021-00224-8. ISSN-19516355
- 2046.Ramanan, S., Urban, M. 2021. Pairing in pure neutron matter. *European Physical Journal: Special Topics* 230 (2): 567-577. doi: 10.1140/epjs/s11734-021-00008-0. ISSN-19516355
- 2047.Ablikim, M., Achasov, M.N., Bie, *et al.* 2021. Observation of a near-threshold structure in the K^+ recoil-mass spectra in $e^+e^- \rightarrow K^+ (D_s^- D^{*0} + D_s^{*-} D^0)$. *Physical Review Letters* 126 (10). doi: 10.1103/PhysRevLett.126.102001. ISSN-00319007
- 2048.Mahalik, M.K., Mallick, H., Padhan, H. 2021. Do educational levels influence the environmental quality? The role of renewable and non-renewable energy demand in selected BRICS countries with a new policy perspective. *Renewable Energy* 164, pp 419-432. doi: 10.1016/j.renene.2020.09.090. ISSN-09601481
- 2049.Egbuna, C., Awuchi, C.G., Mtewa, A., *et al.* 2021. Bioactive compounds effective against type 2 diabetes mellitus: A systematic review. *Current Topics in Medicinal Chemistry* 21 (12): 1067-1095. doi: 10.2174/1568026621666210509161059. ISSN-15680266
- 2050.Rajarshi, K., Khan, R., Singh, M.K., Ranjan, T., Ray, S., Ray, S. 2021. Essential functional molecules associated with SARS-CoV-2 infection: Potential therapeutic targets for COVID-19. *Gene* 768. doi: 10.1016/j.gene.2020.145313. ISSN-03781119
- 2051.Denner, M.M., Thomale, R., Neupert, T. 2021. Analysis of charge order in the kagome metal AV_3Sb_5 (A=K, Rb, Cs). *Physical Review Letters* 127 (21). doi: 10.1103/PhysRevLett.127.217601. ISSN-00319007
- 2052.Woiwode, C., Schöpke, N., Wamsler, C., *et al.* 2021. Inner transformation to sustainability as a deep leverage point: Fostering new avenues for change through dialogue and reflection. *Sustainability Science* 16 (3): 841-858. doi: 10.1007/s11625-020-00882-y. ISSN-18624065
- 2053.Pramanik, S., Sali, V. 2021. Connecting the dots in drug delivery: A tour d'horizon of chitosan-based nanocarriers system. *International Journal of Biological Macromolecules* 169, pp 103-121. doi: 10.1016/j.ijbiomac.2020.12.083. ISSN-01418130
- 2054.Ablikim, M., Achasov, M.N., Bloms, *et al.* 2021. Observation of a resonant structure in $e^+e^- \rightarrow \omega\eta$ and another in <https://journals.aps.org/prd/abstract/10.1103/PhysRevD.104.012007> at center-of-mass energies between 2.00 and 3.08 GeV. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics* 813. doi: 10.1016/j.physletb.2020.136059. ISSN-03702693
- 2055.Vijayaraghavan, K. 2021. The importance of mineral ingredients in biochar production, properties and applications. *Critical Reviews in Environmental Science and Technology* 51 (2): 113-139. doi: 10.1080/10643389.2020.1716654. ISSN-10643389
- 2056.Banerjee, S., Mohammed, A., Wong, H.R., Palaniyar, N., Kamaleswaran, R. 2021. Machine learning identifies complicated sepsis course and subsequent mortality based on 20 genes in peripheral blood immune cells at 24 H post-ICU admission. *Frontiers in Immunology* 12. doi: 10.3389/fimmu.2021.592303. ISSN-16643224
- 2057.Kumar, A., Kothari, R., Sahu, S.K., Kundalwal, S.I., Paulraj, M.P. 2021. Numerical investigation of cross plate fin heat sink integrated with phase change material for cooling application of portable electronic devices. *International Journal of Energy Research* 45 (6): 8666-8683. doi: 10.1002/er.6404. ISSN-0363907X
- 2058.Sivasankaran, S., Ramkumar, K.R., Al-Mufadi, F.A., Irfan, O.M. 2021. Effect of TiB_2/Gr hybrid reinforcements in Al 7075 matrix on sliding wear behavior analyzed by response surface methodology. *Metals and Materials International* 27 (6): 1739-1755. doi: 10.1007/s12540-019-00543-5. ISSN-15989623
- 2059.Benaissa, S., Adouane, B., Ali, S.M., Mohammad, A. 2021. Effect of hydrogen addition on the combustion characteristics of premixed biogas/hydrogen-air mixtures. *International Journal of Hydrogen Energy* 46 (35): 18661-18677. doi: 10.1016/j.ijhydene.2021.02.225. ISSN-03603199
- 2060.Ariharan, A., Ramesh, K., Nandhakumar, V., *et al.* 2021. Biomass derived phosphorous containing porous carbon material for hydrogen storage and high-performance supercapacitor applications. *Journal of Energy Storage* 35. doi: 10.1016/j.est.2020.102185. ISSN-2352152X
- 2061.Fang, J., Gozgor, G., Mahalik, M.K., Padhan, H., Xu, R. 2021. The impact of economic complexity on energy demand in OECD countries. *Environmental Science and Pollution Research* 28 (26): 33771-33780. doi: 10.1007/s11356-020-12089-w. ISSN-09441344
- 2062.Maji, K.J., Namdeo, A., Alshetty, D., *et al.* 2021. Analysis of various transport modes to evaluate personal exposure to PM2.5 pollution in Delhi. *Atmospheric Pollution Research* 12 (2): 417-431. doi: 10.1016/j.apr.2020.12.003. ISSN-13091042

2063. Ablikim, M., Achasov, M.N., Bianchi, F., *et al.* 2021. Measurement of proton electromagnetic form factors in the time-like region using initial state radiation at BESIII. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics* 817. doi: 10.1016/j.physletb.2021.136328. ISSN-03702693
2064. Ghosh, R., Biswas, U., Benito-León, J., *et al.* 2021. De Novo movement disorders and COVID-19: Exploring the interface. *Movement Disorders Clinical Practice* 8 (5): 669-680. doi: 10.1002/mdc3.13224. ISSN-23301619
2065. Ablikim, M., Achasov, M.N., Biernat, J., *et al.* 2021. Measurement of cross section for $e^+e^- \rightarrow \Xi^- \Xi^+$ near threshold at BESIII.. Measurement of cross section for ... M. Ablikim *et al. Physical Review D* 103 (1). doi: 10.1103/PhysRevD.103.012005. ISSN-24700010
2066. Gandhi, S., Sivasadas, V., Baire, B. 2021. Thiourea-tertiary amine promoted cascade catalysis: A tool for complexity generation. *European Journal of Organic Chemistry* 2021 (2): 220-234. doi: 10.1002/ejoc.202001114. ISSN-1434193X
2067. Ablikim, M., Achasov, M.N., Biernat, J., *et al.* 2021. Measurements of Σ^* and Σ^- time-like electromagnetic form factors for center-of-mass energies from 2.3864 to 3.0200 GeV. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics* 814. doi: 10.1016/j.physletb.2021.136110. ISSN-03702693
2068. Beaula Ruby Kamalam, M., Inbanathan, S.S.R., Renganathan, B., Sethuraman, K. 2021. Enhanced sensing of ethanol gas using fiber optics sensor by hydrothermally synthesized GO-WO₃ nanocomposites. *Materials Science and Engineering B: Solid-State Materials for Advanced Technology* 263. doi: 10.1016/j.mseb.2020.114843. ISSN-09215107
2069. Maji, K.J., Namdeo, A., Alshetty, D., *et al.* 2021. Unprecedented reduction in air pollution and corresponding short-term premature mortality associated with COVID-19 lockdown in Delhi, India. *Journal of the Air and Waste Management Association* 71 (9): 1085-1101. doi: 10.1080/10962247.2021.1905104. ISSN-10962247
2070. Ablikim, M., Achasov, M.N., Bie, *et al.* 2021. Measurement of the Born cross sections for $e^+e^- \rightarrow \eta' \pi^+ \pi^-$ At center-of-mass energies between 2.00 and 3.08 GeV measurement of the Born cross sections for ... Ablikim M. *et al. Physical Review D* 103 (7). doi: 10.1103/PhysRevD.103.072007. ISSN-24700010
2071. Abilarasu, A., Kumar, P.S., Prasannamedha, G., *et al.* 2021. Enhanced photocatalytic degradation of diclofenac by Sn_{0.15}Mn_{0.85}Fe₂O₄ catalyst under solar light. *Journal of Environmental Chemical Engineering* 9 (1). doi: 10.1016/j.jece.2020.104875. ISSN-22133437
2072. Lal, M.S., Badam, R., Matsumi, N., Ramaprabhu, S. 2021. Hydrothermal synthesis of single-walled carbon nanotubes/TiO₂ for quasi-solid-state composite-type symmetric hybrid supercapacitors. *Journal of Energy Storage* 40. doi: 10.1016/j.est.2021.102794. ISSN-2352152X
2073. Ali, L.F., Kuppuswamy, N., Soundararajan, R., Ramkumar, K.R., Sivasankaran, S. 2021. Microstructural evolutions and mechanical properties enhancement of AA 6063 alloy reinforced with Tungsten (W) nanoparticles processed by friction stir processing. *Materials Characterization* 172. doi: 10.1016/j.matchar.2021.110903. ISSN-10445803
2074. Krishnamurthy, S., Kapeleshh, Syed-Abdul, S., *et al.* 2021. Machine learning prediction models for chronic kidney disease using national health insurance claim data in Taiwan. *Healthcare (Switzerland)* 9 (5). doi: 10.3390/healthcare9050546. ISSN-22279032
2075. Guru, S., Kumar, S., Bellamkonda, S., Gangavarapu, R.R. 2021. Synthesis of CuTi-LDH supported on g-C₃N₄ for electrochemical and photoelectrochemical oxygen evolution reactions. *International Journal of Hydrogen Energy* 46 (30): 16414-16430: doi: 10.1016/j.ijhydene.2020.08.102. ISSN-03603199
2076. Ablikim, M., Achasov, M.N., Bianchi, F., *et al.* 2021. Measurement of cross-section for $e^+e^- \rightarrow \Xi^0 \Xi^0$ near threshold. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics* 820. doi: 10.1016/j.physletb.2021.136557. ISSN-03702693
2077. Samji, P., Rajendran, M.K., Warriar, V.P., Ganesh, A., Devarajan, K. 2021. Regulation of Hippo signaling pathway in cancer: A MicroRNA perspective. *Cellular Signalling* 78. doi: 10.1016/j.cellsig.2020.109858. ISSN-08986568
2078. Pramanik, S., Mohanto, S., Katari, O., *et al.* 2021. Nanoparticle-based drug delivery system: The magic bullet for the treatment of chronic pulmonary diseases. *Molecular Pharmaceutics* 18 (10): 3671-3718. doi: 10.1021/acs.molpharmaceut.1c00491. ISSN-15438384
2079. Ablikim, M., Achasov, M.N., Biernat, J., *et al.* 2021. Amplitude analysis and branching fraction measurement of. *Physical Review D* 104 (1). doi: 10.1103/PhysRevD.104.012016. ISSN-24700010
2080. Gupta, P.K., Gahtori, R., Bishi, D.K., *et al.* 2021. Recent trends in biodegradable polyester nanomaterials for cancer therapy. *Materials Science and Engineering C* 127. doi: 10.1016/j.msec.2021.112198. ISSN-09284931
2081. Parsekar, S.U., Haldar, P., Antharjanam, P.K.S., Kumar, M., Koley, A.P. 2021. Synthesis, characterization, crystal structure, DNA and human serum albumin interactions, as well as antiproliferative activity of a Cu(II) complex containing a Schiff base ligand formed in situ from the Cu(II)-induced cyclization of 1,5-bis(salicylidene) *Applied Organometallic Chemistry* 35 (4). doi: 10.1002/aoc.6152. ISSN-02682605
2082. Saleem, S. 2021. Apoptosis, autophagy, necrosis and their multi galore crosstalk in neurodegeneration. *Neuroscience* 469, pp 162-174. doi: 10.1016/j.neuroscience.2021.06.023. ISSN-03064522
2083. Sivasankaran, S., Ramkumar, K.R., Ammar, H.R., Al-Mufadi, F.A., Alaboodi, A.S., Irfan, O.M. 2021. Microstructural evolutions and enhanced mechanical performance of novel Al-Zn die-casting alloys processed by squeezing and hot extrusion. *Journal of Materials Processing Technology* 292. doi: 10.1016/j.jmatprotec.2021.117063. ISSN-09240136

- 2084.Saini, R.S.T., Chandramohan, S., Sujatha, S., Kumar, H. 2021. Design of bypass rotary vane magnetorheological damper for prosthetic knee application. *Journal of Intelligent Material Systems and Structures* 32 (9): 931-942. doi: 10.1177/1045389X20942577. ISSN-1045389X
- 2085.Navaneeth, P.V., Suraj, C.K., Mehta, P.S., Anand, K. 2021. Predicting the effect of biodiesel composition on the performance and emission of a compression ignition engine using a phenomenological model. *Fuel* 293. doi: 10.1016/j.fuel.2021.120453. ISSN-00162361
- 2086.Asirvatham-Jeyaraj, N., Gauthier, M.M., Osborn, J.W., et al. 2021. Renal denervation and celiac ganglionectomy decrease mean arterial pressure similarly in genetically hypertensive Schlager (BPH/2J) mice. *Hypertension*, pp 519-528. doi: 10.1161/HYPERTENSIONAHA.119.14069. ISSN-0194911X
- 2087.Saatçi, E., Natarajan, S. 2021. State-of-the-art colloidal particles and unique interfaces-based SARS-CoV-2 detection methods and COVID-19 diagnosis. *Current Opinion in Colloid and Interface Science* 55. doi: 10.1016/j.cocis.2021.101469. ISSN-13590294
- 2088.Balraj, C., Balaji, S., Karthikeyan, M. 2021. Systematic measurements of charge transfer complexes caused from 1-phenyl-1,2,3,4-tetrahydroisoquinoline and 4-aminoacetanilide with series of π -acceptors (BQ, DDQ, TCNQ). *Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy* 245. doi: 10.1016/j.saa.2020.118931. ISSN-13861425
- 2089.Sridhar, S.P., John, J., Holmqvist, P., Olsson, U., Chandran, S., Joseph, B. 2021. Adsorption of anionic dyes using a Poly(styrene- block-4-vinylpyridine) block copolymer organogel. *Langmuir* 37 (13): 3996-4006. doi: 10.1021/acs.langmuir.1c00288. ISSN-07437463
- 2090.Kandregula, G.R., Mandal, S., Ramanujam, K. 2021. Molecular engineering of near-infrared active boron dipyrromethene moiety with various donors and acceptors for tuning the absorption behavior and electron injection of the resultant dyes. *Journal of Photochemistry and Photobiology A: Chemistry* 410. doi: 10.1016/j.jphotochem.2021.113161. ISSN-10106030
- 2091.Sivakumar, S., Murali, R., Arathanaikotti, D., Gopinath, A., Senthilkumar, C., Kesavan, S., Madhan, B. 2021. Ferulic acid loaded microspheres reinforced in 3D hybrid scaffold for antimicrobial wound dressing. *International Journal of Biological Macromolecules* 177, pp 463-473. doi: 10.1016/j.ijbiomac.2021.02.124. ISSN-01418130
- 2092.Srikanth, H.V., G, S., Manne, B., Kumar, S.B. 2021. Niger seed oil biodiesel as an emulsifier in diesel-ethanol blends for compression ignition engine. *Renewable Energy* 163, pp 1467-1478. doi: 10.1016/j.renene.2020.07.010. ISSN-09601481
- 2093.Venkatesan Savunthari, K., Arunagiri, D., Ponnusamy, V.K., et al. 2021. Green synthesis of lignin nanorods/g-C₃N₄ nanocomposite materials for efficient photocatalytic degradation of triclosan in environmental water. *Chemosphere* 272. doi: 10.1016/j.chemosphere.2021.129801. ISSN-00456535
- 2094.Mirle, C., Medabalmi, V., Ramanujam, K. 2021. Electrode and conductive additive compatibility yielding excellent rate capability and long cycle life for sustainable organic aqueous Zn-ion batteries. *ACS Applied Energy Materials* 4 (2): 1218-1227. doi: 10.1021/acsaem.0c02511. ISSN-25740962
- 2095.Guru, S., G., R.R. 2021. Bismuth oxycarbonate grafted NiFe-LDH supported on g-C₃N₄ as bifunctional catalyst for photoelectrochemical water splitting. *International Journal of Hydrogen Energy* 46 (22): 12145-12157. doi: 10.1016/j.ijhydene.2020.04.116. ISSN-03603199
- 2096.Shri, K.M., Balamurugan, S., Ashika, S.A., Sana Fathima, T.K., Palanisami, N. 2021. Oxalic acid-derived combustion synthesis of multifunctional nanostructured copper oxide materials. *Emergent Materials* 4 (5): 1387-1398. doi: 10.1007/s42247-021-00269-4. ISSN-25225731
- 2097.Rajaraman, N., Vaze, R., Reddy, G. 2021. Not just age but age and quality of information. *IEEE Journal on Selected Areas in Communications* 39 (5): 1325-1338. doi: 10.1109/JSAC.2021.3065061. ISSN-07338716
- 2098.Ablikim, M., Achasov, M.N., Bianchi, F., et al. 2021. Measurement of the absolute branching fraction of inclusive semielectronic D_s⁺ decays. *Physical Review D* 104 (1). doi: 10.1103/PhysRevD.104.012003. ISSN-24700010
- 2099.Sandhu, S., Saharan, C., Mane, S.D., et al. 2021. Micro structurally engineered hysteresis-free high efficiency perovskite solar cell using Zr-doped TiO₂ electron transport layer. *Ceramics International* 47 (10): 14665-14672. doi: 10.1016/j.ceramint.2021.01.187. ISSN-02728842
- 2100.Jayaraju, R.M., Gaddam, K., Muniasamy, S.K., et al. 2021. Biochar from waste biomass as a biocatalyst for biodiesel production: An overview. *Applied Nanoscience (Switzerland)*. doi: 10.1007/s13204-021-01924-2. ISSN-21905509
- 2101.Ahmed, J., Datta, P., Das, A., Jomy, S., Mandal, S.K. 2021. Switching between mono and doubly reduced odd alternant hydrocarbon: designing a redox catalyst. *Chemical Science* 12 (8): 3039-3049. doi: 10.1039/d0sc05972b. ISSN-20416520
- 2102.Ablikim, M., Achasov, M.N., Bie, et al. 2021. Oscillating features in the electromagnetic structure of the neutron. *Nature Physics* 17 (11): 1200-1204. doi: 10.1038/s41567-021-01345-6. ISSN-17452473
- 2103.Vijay Prakash, K., Geetha Vimala, C.S., Preethi Latha, T., Jayaram, C., Nagamani, P.V., Laxmi, C.N.V. 2021. Assessment of water quality along the southeast coast of India during COVID-19 lockdown. *Frontiers in Marine Science* 8. doi: 10.3389/fmars.2021.659686. ISSN-22967745
- 2104.Ablikim, M., Achasov, M.N., Bloms, et al. 2021. Study of the process e⁺e⁻ → φη at center-of-mass energies between 2.00 and 3.08 GeV study of the process ... Ablikim M. et al. *Physical Review D* 104 (3). doi: 10.1103/PhysRevD.104.032007. ISSN-24700010
- 2105.Achu, A.L., Thomas, J., Aju, C.D., Gopinath, G., Kumar, S., Reghunath, R. 2021. Machine-learning modelling of fire susceptibility in a forest-agriculture mosaic landscape of

- southern India. *Ecological Informatics* 64. doi: 10.1016/j.ecoinf.2021.101348. ISSN-15749541
- 2106.Das, A., Das, S., Mansour, N.R., Vagenas, E.C. 2021. Bounds on GUP parameters from GW150914 and GW190521. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics* 819. doi: 10.1016/j.physletb.2021.136429. ISSN-03702693
- 2107.Pandey, S.N., Singh, M. 2021. Artificial neural network to predict the thermal drawdown of enhanced geothermal system. *Journal of Energy Resources Technology, Transactions of the ASME* 143 (1). doi: 10.1115/1.4048067. ISSN-01950738
- 2108.Anusha Thampi, V.V., Chukwuike, V.I., Shtansky, D.V., Subramanian, B. 2021. Biocompatibility study of nanocomposite titanium boron nitride (TiBN) thin films for orthopedic implant applications. *Surface and Coatings Technology* 410. doi: 10.1016/j.surfcoat.2021.126968. ISSN-02578972
- 2109.Athira, K., Gurralla, L., Kumar, D.V.R. 2021. Biosurfactant-mediated biosynthesis of CuO nanoparticles and their antimicrobial activity. *Applied Nanoscience (Switzerland)* 11 (4): 1447-1457. doi: 10.1007/s13204-021-01766-y. ISSN-21905509
- 2110.Dinesh Kumar, S., Gupta, S., Swain, A.B., Subramanian, V., Padmanabhan, M.K., Mahajan, R.L. 2021. Large converse magnetoelectric effect in Sm doped Pb(Mg_{1/3}Nb_{2/3})-PbTiO₃ and NiFe₂O₄ laminate composite. *Journal of Alloys and Compounds* 858. doi: 10.1016/j.jallcom.2020.157684. ISSN-09258388
- 2111.Carswell, G., De Neve, G., Ponnarasu, S. 2021. Good debts, bad debts: Microcredit and managing debt in rural south India. *Journal of Agrarian Change* 21 (1): 122-142. doi: 10.1111/joac.12365. ISSN-14710358
- 2112.Kulkarni, S.H., Ramesh, G. 2021. Absolutely minimum attaining closed operators. *Journal of Analysis* 29 (2): 473-492. doi: 10.1007/s41478-019-00189-x. ISSN-09713611
- 2113.Sanjeevi, S., Shanmugam, V., Das, O., et al. 2021. Effects of water absorption on the mechanical properties of hybrid natural fibre/phenol formaldehyde composites. *Scientific Reports* 11 (1). doi: 10.1038/s41598-021-92457-9. ISSN-20452322
- 2114.Pariyar, A., Perugu, C.S., Dash, K., Kailas, S.V. 2021. Microstructure and mechanical behavior of high toughness Al-based metal matrix composite reinforced with in-situ formed nickel aluminides. *Materials Characterization* 171. doi: 10.1016/j.matchar.2020.110776. ISSN-10445803
- 2115.Arun Pillai, K.V., Hariharan, P., Krishna Murthy, R. 2021. Micro ED milling of Ti-6Al-4V with SiC nano powder mixed dielectrics at different ranges of discharge energy. *Silicon* 13 (6): 1827-1837. doi: 10.1007/s12633-020-00578-z. ISSN-1876990X
- 2116.Somu, N., Sriram, A., Kowli, A., Ramamritham, K. 2021. A hybrid deep transfer learning strategy for thermal comfort prediction in buildings. *Building and Environment* 204. doi: 10.1016/j.buildenv.2021.108133. ISSN-03601323
- 2117.Kumar, A., Kumar, R., Sarkar, R. 2021. Certain algebraic invariants of edge ideals of join of graphs. *Journal of Algebra and its Applications* 20 (6). doi: 10.1142/S0219498821500997. ISSN-02194988
- 2118.Jayachandran, B., Prasanth, B., Gopalan, R., Dasgupta, T., Sivaprasasam, D. 2021. Thermally stable, low resistance Mg₂Si_{0.4}Sn_{0.6}/Cu thermoelectric contacts using SS 304 interlayer by one step sintering. *Materials Research Bulletin* 136. doi: 10.1016/j.materresbull.2020.111147. ISSN-00255408
- 2119.Ablikim, M., Achasov, M.N., Biernat, J., et al. 2021. Model-independent determination of the spin of the ω - and its polarization alignment in $\psi(3686) \rightarrow \omega\omega^-$. *Physical Review Letters* 126 (9). doi: 10.1103/PhysRevLett.126.092002. ISSN-00319007
- 2120.Dixit, D., Ramachandran, B., Chitra, M., Madhuri, K.V., Mangamma, G. 2021. Photochromic response of the PLD-grown nanostructured MoO₃ thin films. *Applied Surface Science* 553. doi: 10.1016/j.apsusc.2021.149580. ISSN-01694332
- 2121.Kumar, A. 2021. Binomial edge ideals and bounds for their regularity. *Journal of Algebraic Combinatorics* 53 (3): 729-742. doi: 10.1007/s10801-020-00939-2. ISSN-09259899
- 2122.Arjunan, M.S., Saxena, N., Mondal, A., Dixit, T., Adarsh, K.N.V.D., Manivannan, A. 2021. High-stability and low-noise multilevel switching in In₃SbTe₂ material for phase change photonic memory applications. *Physica Status Solidi - Rapid Research Letters* 15 (3). doi: 10.1002/pssr.202000354. ISSN-18626254
- 2123.Balasubramanian, P., Battabyal, M., Chandra Bose, A., Gopalan, R. 2021. Effect of ball-milling on the phase formation and enhanced thermoelectric properties in zinc antimonides. *Materials Science and Engineering B: Solid-State Materials for Advanced Technology* 271. doi: 10.1016/j.mseb.2021.115274. ISSN-09215107
- 2124.Dhanasekaran, P., Rajavarman, S., Selvaganesh, S.V., Bhat, S.D. 2021. Article insight towards nucleation mechanism and change in morphology for nanostructured platinum thin film directly grown on carbon substrate via electrochemical deposition. *Materials* 14 (9). doi: 10.3390/ma14092330. ISSN-19961944
- 2125.Abdul Salam, P.S., Bock, W., Klar, A., Tiwari, S. 2021. Disease contagion models coupled to crowd motion and mesh-free simulation. *Mathematical Models and Methods in Applied Sciences* 31 (6): 1277-1295. doi: 10.1142/S0218202521400066. ISSN-02182025
- 2126.Dwivedi, V., Parashar, N., Srinivasan, B. 2021. Distributed learning machines for solving forward and inverse problems in partial differential equations. *Neurocomputing* 420, pp 299-316. doi: 10.1016/j.neucom.2020.09.006. ISSN-09252312
- 2127.Kathiravan, B., Senthilkumar, C., Rajak, R., Jayaraman, K. 2021. Acoustic pressure oscillation effects on mean burning rates of plateau propellants. *Combustion and Flame* 226, pp 69-86. doi: 10.1016/j.combustflame.2020.11.018. ISSN-00102180

- 2128.Sharma, M., Narayanan Unni, S., Balasubramanian, S., Sundaram, S., Krishnamurthy, P., Hegde, A. 2021. Histopathological correlations of bulk tissue polarimetric images: Case study. *Journal of Biophotonics* 14 (5). doi: 10.1002/jbio.202000475. ISSN-1864063X
- 2129.Pandey, S.K., Manivannan, A. 2021. Direct evidence for structural transformation and higher thermal stability of amorphous insbte phase change material. *Scripta Materialia* 192, pp 73-77. doi: 10.1016/j.scriptamat.2020.10.014. ISSN-13596462
- 2130.Selvamani, S., Balamurugan, S., Ashika, S.A., Fathima, T.K.S. 2021. The remarkable enhancement in the solubility of Bi in the ZnO phase, $Zn_{1-x}Bi_xO$ ($0 \leq x \leq 0.1$), by high energy ball milling technique. *Emergent Materials* 4 (5): 1399-1411. doi: 10.1007/s42247-021-00286-3. ISSN-25225731
- 2131.Jeyaprakash, N., Yang, C.-H., Ramkumar, K.R. 2021. Microstructural, mechanical and wear behaviour of Inconel-718 produced through laser-powder bed-fused additive manufacturing. *Materials Science and Technology (United Kingdom)* 37 (3): 326-337. doi: 10.1080/02670836.2021.1893457. ISSN-02670836
- 2132.Kumar, G.B.V., Pramod R, Venkatesh Chowdary, G., Naresh, K., et al. 2021. Effects of addition of titanium diboride and graphite particulate reinforcements on physical, mechanical and tribological properties of Al6061 alloy based hybrid metal matrix composites. *Advances in Materials and Processing Technologies*. doi: 10.1080/2374068X.2021.1904370. ISSN-2374068X
- 2133.Panigrahi, S., Krishna, Y.S.S., Thondiyath, A. 2021. Design, analysis, and testing of a hybrid vtol tilt-rotor uav for increased endurance. *Sensors* 21 (18). doi: 10.3390/s21185987. ISSN-14248220
- 2134.Kishore, C. 2021. Epigenetic regulation and promising therapies in colorectal cancer. *Current Molecular Pharmacology* 14 (5): 838-852. doi: 10.2174/1874467214666210126105345. ISSN-18744672
- 2135.John, J., Shanmuganatan, S.P., Kiran, M.B., Senthil Kumar, V.S., Krishnamurthy, R. 2021. Friction stir processing combined with incremental forming effect on AA2014-T6. *Materials and Manufacturing Processes* 36 (8): 950-966. doi: 10.1080/10426914.2021.1885696. ISSN-10426914
- 2136.Jeyaprakash, N., Yang, C.-H., Ramkumar, K.R. 2021. Correlation of microstructural evolution with mechanical and tribological behaviour of SS 304 specimens developed through SLM technique. *Metals and Materials International* 27 (12): 5179-5190. doi: 10.1007/s12540-020-00933-0. ISSN-15989623
- 2137.Peter, A.E., Nagendra, S.M.S. 2021. Dynamics of PM2.5 pollution in the vicinity of the old municipal solid waste dumpsite. *Environmental Monitoring and Assessment* 193 (5). doi: 10.1007/s10661-021-09052-8. ISSN-01676369
- 2138.Ramasamy, S. 2021. Organic photosensitizers containing fused indole-imidazole ancillary acceptor with triphenylamine donor moieties for efficient dye-sensitized solar cells. *International Journal of Hydrogen Energy* 46 (5): 3475-3483. doi: 10.1016/j.ijhydene.2020.10.248. ISSN-03603199
- 2139.Cuccaro, A., Dell'aversano, A., Ruvio, G., Browne, J., Solimene, R. 2021. Incoherent radar imaging for breast cancer detection and experimental validation against 3d multimodal breast phantoms. *Journal of Imaging* 7 (2). doi: 10.3390/jimaging7020023. ISSN-2313433X
- 2140.Nivedha, L.K., Raja, M., Ramanujam, K. 2021. Interplay of the functional units of a binder in the oxygen reduction process of zinc-air battery. *Catalysis Today* 370, pp 66-74. doi: 10.1016/j.cattod.2020.09.022. ISSN-09205861
- 2141.Ablikim, M., Achasov, M.N., Bianchi, F., et al. 2021. Cross section measurement of $e^+e^- \rightarrow \pi^+\pi^-\psi$ (3686) from $\sqrt{s}=4.0076$ GeV to 4.6984 GeV cross section measurement of $e^+e^- \rightarrow \pi^+\pi^-\psi$ (3686) ... Ablikim M. et al. *Physical Review D* 104 (5). doi: 10.1103/PhysRevD.104.052012. ISSN-24700010
- 2142.Saini, G., Kalra, S., Kaur, U. 2021. The purification of wastewater on a small scale by using plants and sand filter. *Applied Water Science* 11 (4). doi: 10.1007/s13201-021-01406-4. ISSN-21905487
- 2143.Tatrari, G., Tewari, C., Sahoo, N.G., et al. 2021. Waste plastic derived graphene sheets as nanofillers to enhance mechanical strength of concrete mixture: An inventive approach to deal with universal plastic waste. *Cleaner Engineering and Technology* 5. doi: 10.1016/j.clet.2021.100275. ISSN-26667908
- 2144.Rohith, G. 2021. Fractional power rate reaching law for augmented sliding mode performance. *Journal of the Franklin Institute* 358 (1): 856-876. doi: 10.1016/j.jfranklin.2020.11.018. ISSN-00160032
- 2145.Balasubramaniyan, C., Rajkumar, K., Santosh, S. 2021. Wire-EDM machinability investigation on quaternary $Ni_{44}Ti_5OCu_4Zr_2$ shape memory alloy. *Materials and Manufacturing Processes* 36 (10): 1161-1170. doi: 10.1080/10426914.2021.1905833. ISSN-10426914
- 2146.Mahar, A.M., Jayachandran, S.A. 2021. A computational study on buckling behavior of cold-formed steel built-up columns using compound spline finite strip method. *International Journal of Structural Stability and Dynamics* 21 (5). doi: 10.1142/S0219455421500644. ISSN-02194554
- 2147.Zhang, J., Muralikrishna, G.M., Wilde, G., et al. 2021. Tracer diffusion in the σ phase of the CoCrFeMnNi system. *Acta Materialia* 203. doi: 10.1016/j.actamat.2020.116498. ISSN-13596454
- 2148.Kumar, A., Sivaprahasam, D., Thakur, A.D. 2021. Colossal seebeck coefficient in Aurivillius phase-perovskite oxide composite. *Journal of Alloys and Compounds* 853. doi: 10.1016/j.jallcom.2020.157001. ISSN-09258388
- 2149.Nithyadharan, M., Kalyanaraman, V. 2021. A new screw connection model and FEA of CFS shear wall panels. *Journal of Constructional Steel Research* 176. doi: 10.1016/j.jcsr.2020.106430. ISSN-0143974X
- 2150.Nair, S.R., Baire, B. 2021. Recent dearomatization strategies of benzofurans and benzothiophenes. *Asian Journal of Organic Chemistry* 10 (5): 932-948. doi: 10.1002/ajoc.202100025. ISSN-21935807

2151. Chundakkadan, R., Nedumparambil, E. 2021. In search of COVID-19 and stock market behavior. *Global Finance Journal*. doi: 10.1016/j.gfj.2021.100639. ISSN-10440283
2152. Keerthi Gowda, B.S., Naresh, K., Ilangovan, S., Sanjay, M.R., Siengchin, S. 2021. Effect of fiber volume fraction on mechanical and fire resistance properties of basalt/polyester and pineapple/polyester composites. *Journal of Natural Fibers*. doi: 10.1080/15440478.2021.1904479. ISSN-15440478
2153. Raja, M., Khan, H., Sankarasubramanian, S., Sonawat, D., Ramani, V., Ramanujam, K. 2021. Binder-free thin graphite fiber mat sandwich electrode architectures for energy-efficient vanadium redox flow batteries. *Catalysis Today* 370, pp 181-188. doi: 10.1016/j.cattod.2021.02.012. ISSN-09205861
2154. Sun, X., Duddu, R., Hirshikesh 2021. A poro-damage phase field model for hydrofracturing of glacier crevasses. *Extreme Mechanics Letters* 45. doi: 10.1016/j.eml.2021.101277. ISSN-23524316
2155. Ablikim, M., Achasov, M.N., Bianchi, F., et al. 2021. Measurement of the cross section for $e^+e^- \rightarrow \Lambda \Lambda^-$ and evidence of the decay $\psi(3770) \rightarrow \Lambda \Lambda^-$ measurement of the cross section for ... Ablikim M. et al. *Physical Review D* 104 (9). doi: 10.1103/PhysRevD.104.L091104. ISSN-24700010
2156. Dhanasekaran, P., Vinod Selvaganesh, S., Shukla, A., Bhat, S.D. 2021. Synergistic interaction of graphene-amorphous carbon nanohybrid with thin metal loading for enhanced polymer electrolyte fuel cell performance and durability. *Materials Letters* 282. doi: 10.1016/j.matlet.2020.128837. ISSN-0167577X
2157. Lavakumar, A., Sarangi, S.S., Chilla, V., Narsimhachary, D., Ray, R.K. 2021. A "new" empirical equation to describe the strain hardening behavior of steels and other metallic materials. *Materials Science and Engineering A* 802. doi: 10.1016/j.msea.2020.140641. ISSN-09215093
2158. Gautham, A.P., Calore, F., Yu, Q., et al. 2021. Reconciling hints on axion-like-particles from high-energy gamma rays with stellar bounds. *Journal of Cosmology and Astroparticle Physics* 2021 (11). doi: 10.1088/1475-7516/2021/11/036. ISSN-14757516
2159. Mukherjee, P., Punera, D., Mishra, M. 2021. Coupled flexural torsional analysis and buckling optimization of variable stiffness thin-walled composite beams. *Mechanics of Advanced Materials and Structures*. doi: 10.1080/15376494.2021.1878565. ISSN-15376494
2160. Maisto, M.A., Leone, G., Braccaccio, A., Solimene, R. 2021. Efficient Planar Near-Field Measurements for Radiation Pattern Evaluation by a Warping Strategy. *IEEE Access* 9, pp 62255-62265. doi: 10.1109/ACCESS.2021.3074786. ISSN-21693536
2161. Sahoo, M.K., Rao, G.R. 2021. A high energy flexible symmetric supercapacitor fabricated using N-doped activated carbon derived from palm flowers. *Nanoscale Advances* 3 (18): 5417-5429. doi: 10.1039/d1na00261a. ISSN-25160230
2162. Samji, S.K., Rao, M.S.R. 2021. How different are CZTS grain boundaries? *Scripta Materialia* 194. doi: 10.1016/j.scriptamat.2020.10.047. ISSN-13596462
2163. Babu, R.V., Fernandes, J.M., Joseph, D.P., et al. 2021. Investigation of structural, optical, electrical and mechanical properties of transparent conducting 'Ag' electrodes. *Physica B: Condensed Matter* 607. doi: 10.1016/j.physb.2020.412690. ISSN-09214526
2164. Thirugnanam, L., Ganguly, D., Sundara, R. 2021. PPy coated on SiO₂ encapsulated porous carbon nanofibers as a potential anode material for high rate capable and long-life Li-ion battery. *Materials Letters* 298. doi: 10.1016/j.matlet.2021.130029. ISSN-0167577X
2165. Ablikim, M., Achasov, M.N., Bettoni, D., B., et al. 2021. Measurements of $e^+e^- \rightarrow \eta_c \pi^+ \pi^- \pi^0$, $\eta_c \pi^+ \pi^-$, and $\eta_c \pi^0 \gamma$ at s from 4.18 to 4.60 GeV, and search for a Z^c state close to the $D\bar{D}$ threshold decaying to $\eta_c \pi$ at $\sqrt{s}=4.23$ GeV measurements of $e^+e^- \rightarrow \eta_c \pi^+ \pi^- \pi^0$... Ablikim M. et al. *Physical Review D* 103 (3). doi: 10.1103/PhysRevD.103.032006. ISSN-24700010
2166. Mirle, C., Medabalmi, V., Ramanujam, K. 2021. Crossover-free hydroxy-substituted quinone anolyte and potassium ferrocyanide catholyte for aqueous alkaline organic redox flow battery. *Catalysis Today* 370, pp 173-180. doi: 10.1016/j.cattod.2020.12.012. ISSN-09205861
2167. Mishra, S., Salaun, L., Sung, C.W., Chen, C.S. 2021. Downlink connection density maximization for NB-IoT networks using NOMA with perfect and partial CSI. *IEEE Internet of Things Journal* 8 (14): 11305-11319. doi: 10.1109/JIOT.2021.3051475. ISSN-23274662
2168. Deshmukh, P.C., Banerjee, S. 2021. Time delay in atomic and molecular collisions and photoionisation/photodetachment. *International Reviews in Physical Chemistry* 40 (1): 127-153. doi: 10.1080/0144235X.2021.1838805. ISSN-0144235X
2169. Jeshurun, A., Irfan Mohammad, Behara, S., Bogala, M.R. 2021. Structural and optical properties of (Y³⁺, Tb³⁺)-codoped sodium bismuth titanate nanoparticles. *Materials Today Chemistry* 20. doi: 10.1016/j.mtchem.2021.100476. ISSN-24685194
2170. Jayakumar, A., A, M. 2021. Image-based method for evaluation of effective thermal conductivity of metal foam with hollow ligaments. *International Journal of Heat and Mass Transfer* 164. doi: 10.1016/j.ijheatmasstransfer.2020.120490. ISSN-00179310
2171. Ablikim, M., Achasov, M.N., Bianchi, F., et al. 2021. Amplitude analysis and branching-fraction measurement of $D_s^+ \rightarrow K_s^0 \pi^+ \pi^0$. *Journal of High Energy Physics* 2021 (6). doi: 10.1007/JHEP06(2021)181. ISSN-10298479
2172. Chandrasekaran, K., Somayaji, A., Thondiyath, A. 2021. A novel design for a compliant mechanism based variable stiffness grasper through structure modulation. *Journal of Medical Devices, Transactions of the ASME* 15 (1). doi: 10.1115/1.4049309. ISSN-19326181
2173. Muthukumar, H., Palanirajan, S.K., Shanmugam, M.K., Arivalagan, P., Gummadi, S.N. 2021. Photocatalytic degradation of caffeine and E. coli inactivation using silver oxide nanoparticles obtained by a facile green co-reduction

- method. *Clean Technologies and Environmental Policy*. doi: 10.1007/s10098-021-02135-7. ISSN-1618954X
- 2174.Veeranki, Y.R., Kumar, H., Ganapathy, N., Natarajan, B., Swaminathan, R. 2021. A systematic review of sensing and differentiating dichotomous emotional states using audio-visual stimuli. *IEEE Access* 9, pp 124434-124451. doi: 10.1109/ACCESS.2021.3110773. ISSN-21693536
- 2175.Ashika, S.A., Balamurugan, S., Fathima, T.K.S., Shri, K.M., Palanisami, N. 2021. Combustion synthesis of cuo nanomaterials: Effect of different fuels on the structural, thermal, and optical properties. *ECS Journal of Solid State Science and Technology* 10 (11). doi: 10.1149/2162-8777/ac31ce. ISSN-21628769
- 2176.Chabattula, S.C., Gupta, P.K., Kesari, K.K., et al. 2021. Anticancer therapeutic efficacy of biogenic Am-ZnO nanoparticles on 2D and 3D tumor models. *Materials Today Chemistry* 22. doi: 10.1016/j.mtchem.2021.100618. ISSN-24685194
- 2177.Kattumannil, S.K., Dewan, I., N., S. 2021. Non-parametric estimation of Gini index with right censored observations. *Statistics and Probability Letters* 175. doi: 10.1016/j.spl.2021.109113. ISSN-01677152
- 2178.Singh, A. 2021. Numerical investigation on location of protrusions and dimples during slot jet impingement on a concave surface using hybrid ANN-GA. *Heat Transfer* 50 (2): 1171-1197. doi: 10.1002/htj.21922. ISSN-26884534
- 2179.Ghosh, R., Roy, D., Chatterjee, S., Dubey, S., Swaika, B.C., Mandal, A., Benito-León, J. 2021. Hemifacial spasm as the presenting manifestation of type 3c diabetes mellitus. *Tremor and Other Hyperkinetic Movements* 11. doi: 10.5334/tohm.611. ISSN-21608288
- 2180.Roy, D., Baire, B. 2021. Evidence for atropisomerism in polycyclic γ -butenolides: Synthesis, scope, and spectroscopic studies. *Chemistry - A European Journal* 27 (12): 4009-4015. doi: 10.1002/chem.202005174. ISSN-09476539
- 2181.Priya, S., Murali, A., Preeth, D.R., Dharanibalaji, K.C., Jeyajothi, G. 2021. Green synthesis of silver nanoparticle-embedded poly(methyl methacrylate-co-methacrylic acid) copolymer for fungal-free leathers. *Polymer Bulletin*. doi: 10.1007/s00289-021-03714-w. ISSN-01700839
- 2182.Sasikumar, M., Krishna, R.H., Sivakumar, P., et al. 2021. Titanium dioxide nano-ceramic filler in solid polymer electrolytes: Strategy towards suppressed dendrite formation and enhanced electrochemical performance for safe lithium ion batteries. *Journal of Alloys and Compounds* 882. doi: 10.1016/j.jallcom.2021.160709. ISSN-09258388
- 2183.Prithi, J.A., Vedarajan, R., Ranga Rao, G., Rajalakshmi, N. 2021. Functionalization of carbons for Pt electrocatalyst in PEMFC. *International Journal of Hydrogen Energy* 46 (34): 17871-17885. doi: 10.1016/j.ijhydene.2021.02.186. ISSN-03603199
- 2184.Labafi, S., Issac, A.C., Sheidaee, S. 2021. Is hiding something you know as important as knowing it? Understanding knowledge hiding in IT-enabled services of Iran. *Knowledge Management Research and Practice*. doi: 10.1080/14778238.2021.1992314. ISSN-14778238
- 2185.Fabitha, K., Ramachandra Rao, M.S. 2021. Biocompatible miniature temperature sensor based on whispering gallery modes of Sm³⁺ activated ZnO optical micro-resonators. *Applied Physics Letters* 118 (16). doi: 10.1063/5.0045298. ISSN-00036951
- 2186.Babu, G.A., Gowthami, S., Varadarajan, E., Rawal, B., Praveenkumar, B. 2021. Enhanced piezoelectric properties in Sm-doped 24Pb(In_{0.5}Nb_{0.5})O₃-42Pb(Mg_{0.335}Nb_{0.665})O₃-34PbTiO₃ piezoceramics. *Journal of Materials Science: Materials in Electronics* 32 (3): 3264-3272. doi: 10.1007/s10854-020-05075-y. ISSN-09574522
- 2187.Makaram, H., Swaminathan, R. 2021. Analysis on the effect of half angle on the displacement of pedicle screw during axial pull-out test in cancellous bone using 2d axisymmetric fe model. *Biomedical Sciences Instrumentation* 57 (2): 153-158. doi: 10.34107/YHPN9422.04153. ISSN-00678856
- 2188.Ablikim, M., Achasov, M.N., Bi, et al. 2021. Cross section measurement of $e^+e^- \rightarrow K_s^0 K_L^0$ at $\sqrt{s} = 2.00-3.08$ GeV. *Physical Review D* 104 (9). doi: 10.1103/PhysRevD.104.092014. ISSN-24700010
- 2189.Garapati, M.S., Sundara, R. 2021. Retracting interphasial stored Li₊ ions by transition metal/metal carbide nanoparticles for enhanced Li⁺ ion storage capacity. *Journal of Colloid and Interface Science* 582, pp 1213-1222. doi: 10.1016/j.jcis.2020.08.109. ISSN-00219797
- 2190.Ravishankar, J., Sharma, M., Gopalakrishnan, P. 2021. A flexible coding scheme based on block krylov subspace approximation for light field displays with stacked multiplicative layers. *Sensors* 21 (13). doi: 10.3390/s21134574. ISSN-14248220
- 2191.Nagarkatti, A., Kolar, A.K. 2021. Advanced coal technologies for sustainable power sector in India. *Electricity Journal* 34 (6). doi: 10.1016/j.tej.2021.106970. ISSN-10406190
- 2192.Samantaray, S.S., Putnam, S.T., Stadie, N.P. 2021. Volumetrics of hydrogen storage by physical adsorption. *Inorganics* 9 (6). doi: 10.3390/inorganics9060045. ISSN-23046740
- 2193.Dhanasekaran, P., Vinod Selvaganesh, S., Rathishkumar, A., Bhat, S.D. 2021. Designing self-humidified platinum anchored silica decorated carbon electrocatalyst for boosting the durability and performance of polymer electrolyte fuel cell stack. *International Journal of Hydrogen Energy* 46 (11): 8143-8155. doi: 10.1016/j.ijhydene.2020.11.262. ISSN-03603199
- 2194.Kothapalli, K.R., Ramteke, M.R., Suryawanshi, H.M., Reddi, N.K., Kalahasthi, R.B. 2021. A coupled inductor based high step-up converter for DC microgrid applications. *IEEE Transactions on Industrial Electronics* 68 (6): 4927-4940. doi: 10.1109/TIE.2020.2992019. ISSN-02780046
- 2195.Ablikim, M., Achasov, M.N., Biernat, et al. 2021. Study of $e^+e^- \rightarrow 2$ (pp⁻) at center-of-mass energies between 4.0 and 4.6 GeV study of $e^+e^- \rightarrow 2$ (pp⁻) at ... Ablikim M., et al. *Physical Review D* 103 (5). doi: 10.1103/PhysRevD.103.052003.

ISSN-24700010

2196. Misra, R., Das, M., Biswas, P., Nanda, A. 2021. EGFR targeted Mn-doped ZnO fluorescent nanocrystals for cancer theranostic application. *Materials Today Communications* 26. doi: 10.1016/j.mtcomm.2021.102170. ISSN-23524928
2197. Mathew, A., Anand, K. 2021. Comparison of engine characteristics with biodiesels produced from fresh and waste cooking oils. *Biofuels* 12 (6): 663-671. doi: 10.1080/17597269.2018.1519761. ISSN-17597269
2198. Ablikim, M., Achasov, M.N., Biernat, J., Bl, et al. 2021. Observation of $\eta' \rightarrow \pi^+ \pi^- \mu^+ \mu^-$. *Physical Review D* 103 (7). doi: 10.1103/PhysRevD.103.072006. ISSN-24700010
2199. Senguttuvan, N.B., Suman, F., Muralidharan, T.R., Mu, et al. 2021. Comparison of the effect of Morphine and Fentanyl in patients with acute coronary syndrome receiving Ticagrelor - The COMET (Comparison Morphine, Fentanyl and Ticagrelor) randomized controlled trial. *International Journal of Cardiology* 330, p 44567. doi: 10.1016/j.ijcard.2021.02.037. ISSN-01675273
2200. Samantaray, S.S., Anees, P., Bhaghavathi Parambath, V., S, R. 2021. Graphene supported MgNi alloy nanocomposite as a room temperature hydrogen storage material – Experiments and theoretical insights. *Acta Materialia* 215. doi: 10.1016/j.actamat.2021.117040. ISSN-13596454
2201. Venu, A., Archana, B., Venkatraman, G., et al. 2021. Clinical evaluation of P21 activated kinase 1 (PAK1) activation in gliomas and its effect on cell proliferation. *Cancer Investigation* 39 (1): 98-113. doi: 10.1080/07357907.2020.1858097. ISSN-07357907
2202. Mahesh, S. 2021. Exposure to fine particulate matter (PM_{2.5}) and noise at bus stops in Chennai, India. *Journal of Transport and Health* 22. doi: 10.1016/j.jth.2021.101105. ISSN-22141405
2203. Gosala, D.B., Raghukumar, H., Allen, C.M., Shaver, G.M., McCarthy, J.E., Lutz, T.P. 2021. Model-based design of dynamic firing patterns for supervisory control of diesel engine vibration. *Control Engineering Practice* 107. doi: 10.1016/j.conengprac.2020.104681. ISSN-09670661
2204. Kannan, P.P., Karthick, N.K., Sangeetha, T., Shanmugam, R., Elangovan, A., Arivazhagan, G. 2021. FTIR studies and DFT calculations on the associative nature of methyl cellosolve in binary solutions with acetonitrile. *Journal of Molecular Structure* 1227. doi: 10.1016/j.molstruc.2020.129572. ISSN-00222860
2205. Kumar, A. 2021. Lovász–Saks–Schrijver ideals and parity binomial edge ideals of graphs. *European Journal of Combinatorics* 93. doi: 10.1016/j.ejc.2020.103274. ISSN-01956698
2206. Sahay, A., Roy, A., Pawar, S.A., Sujith, R.I. 2021. Dynamics of coupled thermoacoustic oscillators under asymmetric forcing. *Physical Review Applied* 15 (4). doi: 10.1103/PhysRevApplied.15.044011. ISSN-23317019
2207. Das, D., Kandasami, A., Ramachandra Rao, M.S. 2021. Realization of highly conducting n-type diamond by phosphorus ion implantation. *Applied Physics Letters* 118 (10). doi: 10.1063/5.0039909. ISSN-00036951
2208. Sattar, M.A. 2021. Interface structure and dynamics in polymer-nanoparticle hybrids: A review on molecular mechanisms underlying the improved interfaces. *ChemistrySelect* 6 (20): 5068-5096. doi: 10.1002/slct.202100831. ISSN-23656549
2209. Kiranmye, T., Vadivelu, M., Sampath, S., Muthu, K., Karthikeyan, K. 2021. Ultrasound-assisted catalyst free synthesis of 1,4-/1,5-disubstituted-1,2,3-triazoles in aqueous medium. *Sustainable Chemistry and Pharmacy* 19. doi: 10.1016/j.scp.2020.100358. ISSN-23525541
2210. Shah, V., Dhandapani, Y., Scott, A. 2021. Pore structure characteristics of MgO–SiO₂ binder. *Journal of the American Ceramic Society* 104 (11): 6002-6014. doi: 10.1111/jace.17971. ISSN-00027820
2211. Ganesamoorthy, R., Vadivel, V.K., Kumar, R., Kushwaha, O.S., Mamane, H. 2021. Aerogels for water treatment: A review. *Journal of Cleaner Production* 329. doi: 10.1016/j.jclepro.2021.129713. ISSN-09596526
2212. 2299. Ablikim, M., Achasov, M.N., Biernat, J., et al. 2021. Search for the reaction $e^+e^- \rightarrow \chi_{c1} \pi^+ \pi^-$ And a charmoniumlike structure decaying to $\chi_{c0} \pi^+ \pi^-$ between 4.18 and 4.60 GeV search for the reaction $e^+e^- \rightarrow \chi_{c0} \pi^+ \pi^- \dots$ Ablikim M. et al.. *Physical Review D* 103 (5). doi: 10.1103/PhysRevD.103.052010. ISSN-24700010
2213. Ablikim, M., Achasov, M.N., Bettoni, D., B, et al. 2021. Measurement of the absolute branching fraction of $\Lambda_c^+ \rightarrow p K_s^0 \eta$ decays. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics* 817. doi: 10.1016/j.physletb.2021.136327. ISSN-03702693
2214. Uchimali, M. 2021. Effect of stress on the thermal hysteresis of martensitic transformations - A continuum based particle dynamics model. *Mechanics of Advanced Materials and Structures*. doi: 10.1080/15376494.2021.1909787. ISSN-15376494
2215. Tejasvi, K., Venkateshwara Rao, V., PydiSetty, Y., Jayaraman, K. 2021. Studies on aluminum agglomeration and combustion in catalyzed composite propellants. *Combustion, Explosion and Shock Waves* 57 (2): 203-214. doi: 10.1134/S001050822102009X. ISSN-00105082
2216. Kumar, B.K.S., Jagannatham, M., Venkateswarlu, B., Dumpala, R., Sunil, B.R. 2021. Synthesis, characterization, and antimicrobial properties of strontium-substituted hydroxyapatite. *Journal of the Australian Ceramic Society* 57 (1): 195-204. doi: 10.1007/s41779-020-00525-6. ISSN-25101560
2217. Ablikim, M., Achasov, M.N., Bloms, et al. 2021. Search for the decay $D_s^+ \rightarrow a_0(980)^0 e^+ \nu_e$. *Physical Review D* 103 (9). doi: 10.1103/PhysRevD.103.092004. ISSN-24700010
2218. Kundin, J., Farhandi, H., Ganesan, K.P., Almeida, R.S.M., Tushtev, K., Rezwan, K. 2021. Phase-field modeling of grain growth in presence of grain boundary diffusion and segregation in ceramic matrix mini-composites. *Computational Materials Science* 190. doi: 10.1016/j.commatsci.2021.110295. ISSN-09270256
2219. Dharbaneshwer, S.J., Thondiyath, A., Subramanian, S.J., Chen, I.-M. 2021. A finite element based simulation

- framework for robotic grasp analysis. *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science* 235 (13): 2482-2495. doi: 10.1177/0954406220951596. ISSN-09544062
2220. Mathur, A., Nayak, H.C., Rajput, S., Roy, S., Nagabooshanam, S., Wadhwa, S., Kumar, R. 2021. An enzymatic multiplexed impedimetric sensor based on α -MnO₂/GQD nano-composite for the detection of diabetes and diabetic foot ulcer using micro-fluidic platform. *Chemosensors* 9 (12). doi: 10.3390/chemosensors9120339. ISSN-22279040
2221. Naganathan, P., Srinivas, S. 2021. Voltage-injected PWM variants for a dual two-level inverter-fed open-end winding induction motor drive. *IEEE Journal of Emerging and Selected Topics in Power Electronics* 9 (2): 1532-1540. doi: 10.1109/JESTPE.2020.2972279. ISSN-21686777
2222. Edward Jeroa, S., Divya Bharathia K., Karthick P. A., Ramakrishnana, S. 2021. Muscle fatigue analysis in isometric contractions using geometric features of surface electromyography signals. *Biomedical Signal Processing and Control* 68. doi: 10.1016/j.bspc.2021.102603. ISSN-17468094
2223. Ariharan, S., Balani, K. 2021. Fretting wear behaviour and frictional force mapping of Al₂O₃ based thermal barrier coatings. *International Journal of Refractory Metals and Hard Materials* 98. doi: 10.1016/j.ijrmhm.2021.105525. ISSN-02634368
2224. Myilsamy, K., Kumar, M.S., Kumar, A.S. 2021. Optimal control of a rumor model with group propagation over complex networks. *International Journal of Modern Physics C* 32 (3). doi: 10.1142/S0129183121500352. ISSN-01291831
2225. Choudhary, A., Chaithanya, K.V.S., Michelin, S., Pushpavanam, S. 2021. Self-propulsion in 2D confinement: phoretic and hydrodynamic interactions. *European Physical Journal E* 44 (7). doi: 10.1140/epje/s10189-021-00101-1. ISSN-12928941
2226. 2313. Ablikim, M., Achasov, M.N., Bloms, *et al.* 2021. Study of BESIII trigger efficiencies with the 2018 J/ψ data. *Chinese Physics C* 45 (2). doi: 10.1088/1674-1137/abcfab. ISSN-16741137
2227. Kiranmye, T., Vadivelu, M., Karthikeyan, K., *et al.* 2021. Sunlight-assisted photocatalytic sustainable synthesis of 1,4-disubstituted 1,2,3-triazoles and benzimidazoles using TiO₂-Cu₂(OH)PO₄ under solvent-free condition. *ChemistrySelect* 6 (6): 1210-1215. doi: 10.1002/slct.202004427. ISSN-23656549
2228. Soares, R.R.G., Pettke, A., Madaboosi, N., *et al.* 2021. Circle-to-circle amplification coupled with microfluidic affinity chromatography enrichment for in vitro molecular diagnostics of Zika fever and analysis of anti-flaviviral drug efficacy. *Sensors and Actuators, B: Chemical* 336. doi: 10.1016/j.snb.2021.129723. ISSN-09254005
2229. Nandi, D. 2021. Stability of a viable non-minimal bounce. *Universe* 7 (3). doi: 10.3390/universe7030062. ISSN-22181997
2230. Ramavath, J.N., Potham, S., Ramanujam, K. 2021. Energy-dense aqueous carbon/carbon supercapacitor with a wide voltage window. *Journal of the Electrochemical Society* 168 (7). doi: 10.1149/1945-7111/ac1319. ISSN-00134651
2231. Shalini, S., Samuel, G.L. 2021. Ultrafast pulse laser inscription and surface quality characterization of micro-structured silicon wafer. *Journal of Manufacturing Processes* 62, pp 323-336. doi: 10.1016/j.jmapro.2020.12.034. ISSN-15266125
2232. Chakravarty, A., Biswas, N., Ghosh, K., Manna, N.K., Mukhopadhyay, A., Sen, S. 2021. Impact of side injection on heat removal from truncated conical heat-generating porous bed: thermal non-equilibrium approach. *Journal of Thermal Analysis and Calorimetry* 143 (5): 3741-3760. doi: 10.1007/s10973-020-09295-6. ISSN-13886150
2233. Sivaprasasam, D., Sujitha, T., Gowtham, U., Jayachandran, B., Gopalan, R. 2021. Microstructure and heat transfer characteristics of active brazed ceramic-metal joints. *Ceramics International* 47 (11): 16133-16140. doi: 10.1016/j.ceramint.2021.02.189. ISSN-02728842
2234. Ablikim, M., Achasov, M.N., Bianchi, F., *et al.* 2021. Measurement of the branching fraction of leptonic decay $D_s^+ \rightarrow \tau^+ \nu_\tau$ via $\tau^+ \rightarrow \pi^+ \pi^0 \nu_\tau^-$. *Physical Review D* 104 (3). doi: 10.1103/PhysRevD.104.032001. ISSN-24700010
2235. Dutta, S. 2021. Depth-aware blending of smoothed images for Bokeh effect generation. *Journal of Visual Communication and Image Representation* 77. doi: 10.1016/j.jvcir.2021.103089. ISSN-10473203
2236. Uno, K., Hayasaka, K., Červe, *et al.* 2021. Search for lepton-flavor-violating tau-lepton decays to $\ell \gamma$ at Belle. *Journal of High Energy Physics* 2021 (10). doi: 10.1007/JHEP10(2021)019. ISSN-10298479
2237. Shah, A.A., Shah, A., Chourasia, M.K., *et al.* 2021. Cyclodextrin based bone regenerative inclusion complex for resveratrol in postmenopausal osteoporosis. *European Journal of Pharmaceutics and Biopharmaceutics* 167, pp 127-139. doi: 10.1016/j.ejpb.2021.07.008. ISSN-09396411
2238. AlGhamdi, R., Aziz, A., Alshehri, M., Pardasani, K.R., Aziz, T. 2021. Deep learning model with ensemble techniques to compute the secondary structure of proteins. *Journal of Supercomputing* 77 (5): 5104-5119. doi: 10.1007/s11227-020-03467-9. ISSN-09208542
2239. Ablikim, M., Achasov, M.N., Bianchi, F., *et al.* 2021. Study of the decay and observation of the annihilation decay. *Physical Review D* 104 (7). doi: 10.1103/PhysRevD.104.L071101. ISSN-24700010
2240. Goel, S. 2021. On distance matrices of helm graphs obtained from wheel graphs with an even number of vertices. *Linear Algebra and Its Applications* 621, pp 86-104. doi: 10.1016/j.laa.2021.03.008. ISSN-00243795
2241. Saha, M., Mallik, M. 2021. Additive manufacturing of ceramics and cermets: present status and future perspectives. *Sadhana - Academy Proceedings in Engineering Sciences* 46 (3). doi: 10.1007/s12046-021-01685-2. ISSN-02562499
2242. Kothapalli, K.R., Ramteke, M.R., Suryawanshi, H.M.,

- Reddi, N.K., Kalahasthi, R.B. 2021. Soft-switched ultrahigh gain DC-DC converter with voltage multiplier cell for DC microgrid. *IEEE Transactions on Industrial Electronics* 68 (11): 11063-11075. doi: 10.1109/TIE.2020.3031453. ISSN-02780046
2243. Ablikim, M., Achasov, M.N., Bloms, *et al.* 2021. Search for new decay modes of the ψ_2 (3823) and the process $e^+e^- \rightarrow \pi^0\pi^0\psi_2$ (3823). *Physical Review D* 103 (9). doi: 10.1103/PhysRevD.103.L091102. ISSN-24700010
2244. Khond, A., Adil, S., Srivastav, A.K., *et al.* 2021. Kinetics and phase formation during crystallization of $\text{Hf}_{64}\text{Cu}_{18}\text{Ni}_{18}$ amorphous alloy. *Phase Transitions* 94 (2): 110-121. doi: 10.1080/01411594.2021.1900848. ISSN-01411594
2245. Sivaprakasam, P., Maheendera Prabu, P., Srinivasan, M., Balakrishnan, S., Karthikeyan, V.S., Pon Selvan, M.C. 2021. Analysis of ethanol to reduce solid particle pollution in SI engines. *Journal of Nanomaterials* 2021. doi: 10.1155/2021/2726645. ISSN-16874110
2246. Mahendran, R., Palanivel, J., Varadarajan, E. 2021. Influence of processing parameters and PYTHON based image analysis for quantification of carcinogenic acrylamide in potato chips. *Chemistry Africa* 4 (3): 669-675. doi: 10.1007/s42250-021-00237-9. ISSN-25225758
2247. Mahar, A.M., Jayachandran, S.A., Mahendran, M. 2021. Direct strength method for cold-formed steel unlippped channel columns subject to local buckling. *International Journal of Steel Structures* 21 (6): 1977-1987. doi: 10.1007/s13296-021-00547-1. ISSN-15982351
2248. Chatterjee, R., Rana, N., Simha, R.A., Perlekar, P., Ramaswamy, S. 2021. Inertia drives a flocking phase transition in viscous active fluids. *Physical Review X* 11 (3). doi: 10.1103/PhysRevX.11.031063. ISSN-21603308
2249. Antony, C.E., Gaana K., Praveen S. G., Jaiswal-Nagar, D., *et al.* 2021. Polyvinylpyrrolidone-stabilized palladium nanocrystals as chemiresistive sensors for low-concentration hydrogen gas detection. *ACS Applied Nano Materials* 4 (2): 1643-1653. doi: 10.1021/acsnm.0c03109. ISSN-25740970
2250. Vadivel, R., Nirmala, M., Raji, K., Siddaiah, B., Ramamurthy, P. 2021. Synthesis of highly luminescent carbon dots from postconsumer waste silk cloth and investigation of its electron transfer dynamics with methyl viologen dichloride. *Journal of the Indian Chemical Society* 98 (11). doi: 10.1016/j.jics.2021.100181. ISSN-00194522
2251. Lee, E., Vera, K., Asirvatham-Jeyaraj, N., Chantigian, D., Larson, M., Keller-Ross, M. 2021. Menstrual phase does not influence ventilatory responses to group III/IV afferent signaling in eumenorrhic young females. *Respiratory Physiology and Neurobiology* 292. doi: 10.1016/j.resp.2021.103712. ISSN-15699048
2252. Sakthivel, S., Velusamy, S. 2021. Effect of ammonium based ionic liquids on the rheological behavior of the heavy crude oil for high pressure and high temperature conditions. *Petroleum*. doi: 10.1016/j.petlm.2021.06.002. ISSN-24056561
2253. Ramavath, J.N., Raja, M., Balakumar, K., Kothandaraman, R. 2021. An energy and power dense aqueous zinc-ion hybrid supercapacitor with low leakage current and long cycle life. *Journal of the Electrochemical Society* 168 (1). doi: 10.1149/1945-7111/abdc7a. ISSN-00134651
2254. Soni, M., Chandel, A.S., Verma, S., Payra, S., Prakash, D., Holben, B. 2021. Aerosols properties over desert influenced locations situated in four different continents. *Atmospheric Environment* 248. doi: 10.1016/j.atmosenv.2021.118232. ISSN-13522310
2255. Karmakar, M., Ganesh, R. 2021. Disorder-induced currents as signatures of chiral superconductivity. *Physical Review B* 104 (9). doi: 10.1103/PhysRevB.104.094505. ISSN-24699950
2256. Arumugam, N., Shanmugam, M.K., Thangavelu, P. 2021. Purification and anticancer activity of glutaminase and urease-free L-asparaginase from novel endophyte *Chaetomium* sp. *Biotechnology and Applied Biochemistry*. doi: 10.1002/bab.2276. ISSN-08854513
2257. Vadivelu, M., Sampath, S., Muthu, K., Karthikeyan, K., Praveen, C. 2021. Mechanochemistry enabled construction of isoxazole skeleton via CuO nanoparticles catalyzed intermolecular dehydrohalogenative annulation. *Advanced Synthesis and Catalysis* 363 (21): 4941-4952. doi: 10.1002/adsc.202100730. ISSN-16154150
2258. Sreelakshmi, N., Kattumannil, S.K., Sen, R. 2021. Jackknife empirical likelihood-based inference for S-Gini indices. *Communications in Statistics: Simulation and Computation* 50 (6): 1645-1661. doi: 10.1080/03610918.2019.1586930. ISSN-03610918
2259. Pramod, R., Jain, V.K.S., Kumar, S.M., Girinath, B., Kannan, A.R., Shanmugam, N.S. 2021. Experimental studies on friction stir welding of aluminium alloy 5083 and prediction of temperature distribution using arbitrary Lagrangian-Eulerian-based finite element method. *Proceedings of the Institution of Mechanical Engineers, Part L: Journal of Materials: Design and Applications*. doi: 10.1177/14644207211068118. ISSN-14644207
2260. Moldabekov, Z.A., Aldakul, Y.K., Bastykova, N.K., Sundar, S., Cangi, A. 2021. Higher harmonics in complex plasmas with alternating screening. *Physical Review Research* 3 (4). doi: 10.1103/PhysRevResearch.3.043187. ISSN-26431564
2261. Nirmala, M., Vadivel, R., Chellappan, S., Malecki, J.G., Ramamurthy, P. 2021. Water-soluble pyrene-adorned imidazolium salts with multicolor solid-state fluorescence: Synthesis, structure, photophysical properties, and application on the detection of latent fingerprints. *ACS Omega* 6 (15). doi: 10.1021/acsomega.1c00679. ISSN-24701343
2262. Swaroop B, S.S., Kanumuri, R., Venkatraman, G., *et al.* 2021. KIBRA connects Hippo signaling and cancer. *Experimental Cell Research* 403 (2). doi: 10.1016/j.yexcr.2021.112613. ISSN-00144827
2263. Iyer, V.M., Gulur, S., Bhattacharya, S., Kikuchi, J., Sridharan, S., Zou, K., Chen, C. 2021. An active voltage stabilizer for a DC microgrid system. *IEEE Access* 9, pp

- 86786-86800. doi: 10.1109/ACCESS.2021.3087543. ISSN-21693536
- 2264.Sarkar, M. 2021. Synchronization transition in the two-dimensional Kuramoto model with dichotomous noise. *Chaos* 31 (8). doi: 10.1063/5.0056001. ISSN-10541500
- 2265.Ablikim, M., Achasov, M.N., Bianchi, F., et al. 2021. Search for the lepton number violating decay $\zeta^- \rightarrow pe^-$ And the rare inclusive decay $\zeta^- \rightarrow \zeta^* X$. *Physical Review D* 103 (5). doi: 10.1103/PhysRevD.103.052011. ISSN-24700010
- 2266.Chakravarty, K., Arun, N., Pandithurai, G., et al. 2021. Characteristics of precipitation microphysics during tropical cyclone Nisarga (2020) as observed over the orographic region of Western Ghats in the Indian sub-continent. *Atmospheric Research* 264. doi: 10.1016/j.atmosres.2021.105861. ISSN-01698095
- 2267.George, B., Hari, G., Alexander, C. 2021. Investigation on multi under reamed piles with small bulb diameter in clay. *International Journal of Geotechnical Engineering*. doi: 10.1080/19386362.2021.1959010. ISSN-19386362
- 2268.Yerrapragada, A.K., Eisman, T., Kelley, B. 2021. Physical layer security for beyond 5G: Ultra secure low latency communications. *IEEE Open Journal of the Communications Society* 2, pp 2232-2242. doi: 10.1109/OJCOMS.2021.3105185. ISSN-2644125X
- 2269.Echchur Rangarajan, S., Ramarathnam, K.K. 2021. Viscoelastic properties of natural rubber with fatigue damage. *International Journal of Fatigue* 150. doi: 10.1016/j.ijfatigue.2021.106344. ISSN-01421123
- 2270.Ablikim, M., Achasov, M.N., Bianchi, F., et al. 2021. Study of $e^+e^- \rightarrow \pi^0 X$ (3872) γ and search for $Z_c(4020)^0 \rightarrow X$ (3872) γ . *Physical Review D* 104 (1). doi: 10.1103/PhysRevD.104.012001. ISSN-24700010
- 2271.Sellamuthu, H., Sharma, R.K. 2021. Regularized luni-solar gravity dynamics on resident space objects. *Astrodynamics* 5 (2): 91-108, doi: 10.1007/s42064-020-0085-6. ISSN-25220098
- 2272.Ramesh, R., Arivazhagan, P., Prabakaran, K., Sanjay, S., Baskar, K. 2021. Influence of AlN interlayer on AlGaIn/GaN heterostructures grown by metal organic chemical vapour deposition. *Materials Chemistry and Physics* 259. doi: 10.1016/j.matchemphys.2020.124003. ISSN-02540584
- 2273.Chelladurai, M., Sahadevan, R., Balaji K C, D., et al. 2021. Anti-skin cancer activity of *Alpinia calcarata* ZnO nanoparticles: Characterization and potential antimicrobial effects. *Journal of Drug Delivery Science and Technology* 61. doi: 10.1016/j.jddst.2020.102180. ISSN-17732247
- 2274.Palraj, M., Rajamanickam, P. 2021. Motion control studies of a barge mounted offshore dynamic wind turbine using gyrostabilizer. *Ocean Engineering* 237. doi: 10.1016/j.oceaneng.2021.109578. ISSN-00298018
- 2275.Jebaraj, M., Pradeep Kumar, M., Anburaj, R. 2021. Investigations on milling SKT4 steel by using cryogenic carbon-dioxide. *Materials and Manufacturing Processes* 36 (12): 1414-1420. doi: 10.1080/10426914.2021.1914847. ISSN-10426914
- 2276.Ghosh, A., Ganguly, D., Sundara, R. 2021. A new approach to in-situ uniform growth of Fe₃O₄ nanoparticles over thermally exfoliated rGO sheet for the non-enzymatic and enzymatic detection of glucose. *Journal of Electroanalytical Chemistry* 895. doi: 10.1016/j.jelechem.2021.115386. ISSN-15726657
- 2277.Ramaswamy, R., Marimuthu, S., Ramarathnam, K., Vijayasekharan, S., Rao, K., Balakrishnan, K. 2021. Virtual reality-guided left ventricular assist device implantation in pediatric patient: Valuable presurgical tool. *Annals of Pediatric Cardiology* 14 (3): 388-392. doi: 10.4103/apc.apc_81_21. ISSN-09742069
- 2278.Rallapalli, S., Guhathakurta, S., Bishi, D.K., Subbarayan, R., Mathapati, S., Korrapati, P.S. 2021. A critical appraisal of humanized alternatives to fetal bovine serum for clinical applications of umbilical cord derived mesenchymal stromal cells. *Biotechnology Letters* 43 (10): 2067-2083. doi: 10.1007/s10529-021-03180-4. ISSN-01415492
- 2279.Rajesh, R., Giridharan, N.V., Kumar, K.R., Karthika, C. 2021. Effect of Mn doping on magnetodielectric properties of polycrystalline BiFeO₃ ceramics. *Journal of Alloys and Compounds* 854. doi: 10.1016/j.jallcom.2020.156981. ISSN-09258388
- 2280.M., J., Francis, F., R., M. 2021. Finite Element Method (FEM) computations in frequency domain and photonic band diagram: Applications to microcavity characterization. *Optik* 245. doi: 10.1016/j.ijleo.2021.167614. ISSN-00304026
- 2281.Veena Sangeetha, M., Radhakrishnan, M., Kar, S. 2021. On k-strong convexity in Banach spaces. *Journal of Convex Analysis* 28 (4). ISSN-09446532
- 2282.Sarvesha, R., Chalapathi, D., Yadava, M., Jain, J., Singh, S.S. 2021. In-situ studies on deformation and fracture characteristics of AZ91 Mg alloy. *Materialia* 18. doi: 10.1016/j.mtla.2021.101177. ISSN-25891529
- 2283.Bapat, G.M., Sujatha, S. 2021. A two-dimensional mathematical model to simulate the effects of knee center misalignment in lower-limb orthoses. *Journal of Prosthetics and Orthotics* 33 (1): 34-45. doi: 10.1097/JPO.0000000000000331. ISSN-10408800
- 2284.Jain, M., Goel, A., Sinha, S., Dhir, S. 2021. Employability implications of artificial intelligence in healthcare ecosystem: responding with readiness. *Foresight* 23 (1): 73-94. doi: 10.1108/FS-04-2020-0038. ISSN-14636689
- 2285.Ablikim, M., Achasov, M.N., Bianchi, F., et al. 2021. Amplitude analysis and branching fraction measurement of $D_s^+ \rightarrow K^* K^* \pi^+ \pi^0$. *Physical Review D* 104 (3). doi: 10.1103/PhysRevD.104.032011. ISSN-24700010
- 2286.Jain, I. 2021. Sino-Sri Lankan relations and their impact on India. *Asian Journal of Comparative Politics*. doi: 10.1177/2057891121997566. ISSN-20578911
- 2287.S, A., Maurya, R. 2021. Assessment of plasma sprayed carbon nanotube reinforced Al₂O₃-based nanocomposite with micro-scratching. *Surface and Coatings Technology* 418. doi: 10.1016/j.surfcoat.2021.127216. ISSN-02578972
- 2288.Sivakumar, M., Sinha, S.K., Dasgupta, A., Shaikh,

- S.M. 2021. Structure and texture of oxide dispersion strengthened alloy 617 for very high temperature applications. *Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science* 52 (11): 4974-4986. doi: 10.1007/s11661-021-06442-y. ISSN-10735623
- 2289.Mangu, S., Annamalai, T.R., Deep, A. 2021. Comparison of toll and annuity PPPs: a case study of highway projects in India. *Built Environment Project and Asset Management* 11 (1): 103-120. doi: 10.1108/BEPAM-12-2019-0138. ISSN-2044124X
- 2290.Sangeetha, E., Narayanan, A., Dhamodharan, R. 2021. Super water-absorbing hydrogel based on chitosan, itaconic acid and urea: preparation, characterization and reversible water absorption. *Polymer Bulletin*. doi: 10.1007/s00289-021-03641-w. ISSN-01700839
- 2291.Sivaprakasam, P., Kirubel, A., Elias, G., Maheendera Prabu, P., Balasubramani, P. 2021. Mathematical modeling and analysis of wear behavior of AlTiN coating on titanium alloy (Ti-6Al-4V). *Advances in Materials Science and Engineering* 2021. doi: 10.1155/2021/1098605. ISSN-16878434
- 2292.Chandrasekaran, K., Parameswaran, S., Annamraju, S., Chandra, S., Manickam, R., Thondiyath, A. 2021. A practical approach to the design and development of tele-operated surgical robots for resource constrained environments – a case study. *Journal of Medical Devices, Transactions of the ASME* 15 (1). doi: 10.1115/1.4049393. ISSN-19326181
- 2293.Dhakshinamoorthy, R., Singh, S.P. 2021. Evolution of reproductive division of labor – lessons learned from the social amoeba dictyostelium discoideum during its multicellular development. *Frontiers in Cell and Developmental Biology* 9. doi: 10.3389/fcell.2021.599525. ISSN-2296634X
- 2294.Babu Shinde, N., Deul Ryu, B., Hong, C.-H., Francis, B., Chandramohan, S., Kumar Eswaran, S. 2021. Growth behavior, nucleation control and excellent optical properties of atomically thin WS₂ thin films processed via Gas-phase chemical vapor deposition. *Applied Surface Science* 568. doi: 10.1016/j.apsusc.2021.150908. ISSN-01694332
- 2295.Ethiraj, J., Surya, V., Selvam, P., Vitillo, J.G. 2021. Water-driven structural transformation in cobalt trimesate metal-organic frameworks. *Energies* 14 (16). doi: 10.3390/en14164751. ISSN-19961073
- 2296.Khirid, S., Jangid, D.K., Dhayal, R.S., et al. 2021. Ferrocene decorated homoleptic silver(I) clusters: Synthesis, structure, and their electrochemical behaviour. *Journal of Organometallic Chemistry* 948. doi: 10.1016/j.jorganchem.2021.121923. ISSN-0022328X
- 2297.Dharbaneshwer, S.J., Thondiyath, A., Subramanian, S.J., Chen, I.-M. 2021. Finite element-based grasp analysis using contact pressure maps of a robotic gripper. *Journal of the Brazilian Society of Mechanical Sciences and Engineering* 43 (4). doi: 10.1007/s40430-021-02907-8. ISSN-16785878
- 2298.Tiwari, A., Sharma, P., Vishwamitra, B., Singh, G. 2021. Review on surface treatment for implant infection via gentamicin and antibiotic releasing coatings. *Coatings* 11 (8). doi: 10.3390/coatings11081006. ISSN-20796412
- 2299.Kolodkin, D.A., Popov, A.G., Gopalan, R., et al. 2021. Magnetic properties of Sm_{2+α}Fe₁₇N_x powders prepared from bulk and strip-cast alloys. *Journal of Magnetism and Magnetic Materials* 518. doi: 10.1016/j.jmmm.2020.167416. ISSN-03048853
- 2300.Bodapati, J.D. 2021. SAE-PD-Seq: sequence autoencoder-based pre-training of decoder for sequence learning tasks. *Signal, Image and Video Processing* 15 (7): 1453-1459. doi: 10.1007/s11760-021-01877-7. ISSN-18631703
- 2301.Veeranki, Y.R., Ganapathy, N., Swaminathan, R. 2021. Differentiation of dichotomous emotional states in electrodermal activity signals using higher-order crossing features and parametric classifiers. *Biomedical Sciences Instrumentation* 57 (2): 322-332. doi: 10.34107/YHPN9422.04322. ISSN-00678856
- 2302.Kumaran, R., Kumar, A.V., Ramaprabhu, S., Subramanian, V. 2021. Absorption-enhanced EMI shielding using silver decorated three-dimensional porous architected reduced graphene oxide in polybenzoxazine composites. *New Journal of Chemistry* 45 (36): 16939-16948. doi: 10.1039/d1nj03536c. ISSN-11440546
- 2303.Muralikrishna, G.M., Tas, B., Divinski, S.V., et al. 2021. Composition dependence of tracer diffusion coefficients in Fe–Ga alloys: A case study by a tracer-diffusion couple method. *Acta Materialia* 203. doi: 10.1016/j.actamat.2020.10.065. ISSN-13596454
- 2304.Jabeena, C.A., Govindaraju, G., Rajavelu, A., et al. 2021. Dynamic association of the H3K64 trimethylation mark with genes encoding exported proteins in Plasmodium falciparum. *Journal of Biological Chemistry* 296. doi: 10.1016/j.jbc.2021.100614. ISSN-00219258
- 2305.Ablikim, M., Achasov, M.N., Bloms, et al. 2021. Observation of D⁰→K₁(1270)e⁻v_e. *Physical review letters* 127 (13). doi: 10.1103/PhysRevLett.127.131801. ISSN-10797114
- 2306.Bhattacharya, S., Das, A., Dutta, K. 2021. Solar mass primordial black holes in moduli dominated universe. *Journal of Cosmology and Astroparticle Physics* 2021 (10). doi: 10.1088/1475-7516/2021/10/071. ISSN-14757516
- 2307.Karati, A., Parida, T., Gupta, J., Adigilli, H.K., Borse, P.H., Joardar, J. 2021. Band-gap engineering in novel delafossite-type multicomponent oxides for photocatalytic degradation of methylene blue. *Materials Research Bulletin* 137. doi: 10.1016/j.materresbull.2020.111181. ISSN-00255408
- 2308.Pazhani, S., Mendoza, A., Nambirajan, R., Narendran, T.T., Ganesh, K., Olivares-Benitez, E. 2021. Multi-period multi-product closed loop supply chain network design: A relaxation approach. *Computers and Industrial Engineering* 155. doi: 10.1016/j.cie.2021.107191. ISSN-03608352
- 2309.Ablikim, M., Achasov, M.N., Bianchi, F., B, et al. 2021. Search for the X (2370) and observation of ηc → ηηη' in J/ψ → γηηη'. *Physical Review D* 103 (1). doi: 10.1103/PhysRevD.103.012009. ISSN-24700010
- 2310.Bhattacharyya, A., Sarma, P., Medhi, B., et al. 2021. COVID-19-associated rhino-orbital-cerebral mucormycosis:

- A systematic review, meta-analysis, and meta-regression analysis. *Indian Journal of Pharmacology* 53 (6): 499-510. doi: 10.4103/ijp.ijp_839_21. ISSN-02537613
2311. Ablikim, M., Achasov, M.N., Bloms, *et al.* 2021. Study of the decay in. *Physical Review D* 104(1). doi: 10.1103/PhysRevD.104.012006. ISSN-24700010
2312. Vavilapalli, D.S., Peri, R.G., Banik, S., Muthuraaman, B., Rao, M.S.R., Singh, S. 2021. Electrochemical properties of brownmillerite structured KBiFe_2O_5 . *Applied Surface Science Advances* 6. doi: 10.1016/j.apsadv.2021.100162. ISSN-26665239
2313. Shetty, P.P., Maksimov, D.N., Babu, M., Bongu, S.R., Bingi, J. 2021. Thermo-optic refraction based switchable optical mode converter. *Journal of Quantitative Spectroscopy and Radiative Transfer* 274. doi: 10.1016/j.jqsrt.2021.107867. ISSN-00224073
2314. Nagarathinam, S., Vasan, A., Sarangan, V., Jayaprakash, R., Sivasubramaniam, A. 2021. User placement and optimal cooling energy for co-working building spaces. *ACM Transactions on Cyber-Physical Systems* 5 (2). doi: 10.1145/3432818. ISSN-2378962X
2315. Kumar, M., Vij, M., Goswami, R. 2021. Effect of real earnings management on firm performance: Evidence from India. *Vision*. doi: 10.1177/09722629211007577. ISSN-09722629
2316. Balu, S.K., Andra, S., Jeevanandam, J., S, Manisha Vidyavathy S., Sampath V. 2021. Emerging marine derived nanohydroxyapatite and their composites for implant and biomedical applications. *Journal of the Mechanical Behavior of Biomedical Materials* 119. doi: 10.1016/j.jmbbm.2021.104523. ISSN-17516161
2317. Kumar, A., Sivaprahasam, D., Thakur, A.D. 2021. Improved thermoelectric properties in $(1-x)\text{LaCoO}_3/(x)\text{La}_{0.7}\text{Sr}_{0.3}\text{CoO}_3$ composite. *Materials Chemistry and Physics* 269. doi: 10.1016/j.matchemphys.2021.124750. ISSN-02540584
2318. Sharma, V., Dash, S.K., Gupta, P., *et al.* 2021. Recent advances in cardiac tissue engineering for the management of myocardium infarction. *Cells* 10 (10). doi: 10.3390/cells10102538. ISSN-20734409
2319. Dinkar, D.K., Das, B., Gopalan, R., Dehiya, B.S. 2021. Magnetic and optical properties of green synthesized nickel ferrite nanoparticles and its application into photocatalysis. *Nanotechnology* 32 (50). doi: 10.1088/1361-6528/ac24c2. ISSN-09574484
2320. Anand, V., Verma, L., Aggarwal, A., Nanjundappa, P., Rai, H. 2021. COVID-19 and psychological distress: Lessons for India. *PLoS ONE* 16 (8). doi: 10.1371/journal.pone.0255683. ISSN-19326203
2321. Vincent, J.L., Manzorro, R., Crozier, P.A., *et al.* 2021. Developing and evaluating deep neural network-based denoising for nanoparticle TEM images with ultra-low signal-to-noise. *Microscopy and Microanalysis* 27 (6): 1431-1447. doi: 10.1017/S1431927621012678. ISSN-14319276
2322. Ablikim, M., Achasov, M.N., Bianchi, F., *et al.* 2021. Observation of a near-threshold enhancement in the $\Lambda\bar{\Lambda}^+$ mass spectrum from $e^+e^- \rightarrow \phi\Lambda\bar{\Lambda}^+$ at s from 3.51 to 4.60 GeV... Observation of a near-threshold enhancement in... M. Ablikim *et al.* *Physical Review D* 104 (5). doi: 10.1103/PhysRevD.104.052006. ISSN-24700010
2323. Vavilapalli, D.S., Banik, S., Kandasami, A., Rao, M.S.R., Singh, S. 2021. Nitrogen-ion implantation induced bandgap tailoring in multifunctional Brownmillerite KBiFe_2O_5 . *ECS Journal of Solid State Science and Technology* 10 (6). doi: 10.1149/2162-8777/ac0839. ISSN-21628769
2324. Veluppall, A., Sadhukhan, D., Gopinath, V., Swaminathan, R. 2021. Detection of mild cognitive impairment using kernel density estimation based texture analysis of the corpus callosum in brain MR images. *IRBM*. doi: 10.1016/j.irbm.2021.07.003. ISSN-19590318
2325. Manjunath, A.D.B., Khan, F., Ramanujam, S., *et al.* 2021. Investigation into variation of resistivity and permittivity of aqueous solutions and soils with frequency and current density. *IEEE Transactions on Electromagnetic Compatibility*. doi: 10.1109/TEM.2021.3127640. ISSN-00189375
2326. Das, P.K., Mallik, A.K., Aswal, V.K., *et al.* 2021. Experimental investigation for stability and surface properties of TiO_2 and Al_2O_3 water-based nanofluids. *Journal of Thermal Analysis and Calorimetry*. doi: 10.1007/s10973-021-10894-0. ISSN-13886150
2327. Prabakaran, R., Rawat, P., Kumar, S., Gromiha, M.M. 2021. Evaluation of in silico tools for the prediction of protein and peptide aggregation on diverse datasets. *Briefings in Bioinformatics* 22 (6). doi: 10.1093/bib/bbab240. ISSN-14774054
2328. Sathiyakumar, S., Selvam, P., Premkumar, T., *et al.* 2021. A first report on the synthesis of a complex of unsubstituted 1,2,3-triazolo[1,5-a]pyridine formed in situ via oxidative N-N bond coupling: Structural, photoluminescent, and biological properties of a new Cu(II) complex and its use as a single-source prec. *Journal of Physics and Chemistry of Solids* 148. doi: 10.1016/j.jpics.2020.109730. ISSN-00223697
2329. Ablikim, M., Achasov, M.N., Bianchi, F., *et al.* 2021. Measurement of the absolute branching fraction of $D_s^+ \rightarrow \tau^+ \nu_\tau$ via $\tau^+ \rightarrow e^+ \nu_e \nu_\tau^-$. *Physical Review Letters* 127 (17). doi: 10.1103/PhysRevLett.127.171801. ISSN-00319007
2330. Kumaravel, S., Thiruvengadam, P., Karthick, K., Sankar, S.S., Karmakar, A., Kundu, S. 2021. Green and sustainable route for oxidative depolymerization of lignin: New platform for fine chemicals and fuels. *Biotechnology Progress* 37 (2). doi: 10.1002/btpr.3111. ISSN-87567938
2331. Kumar, A., Kumar, R., Sarkar, R., Selvaraja, S. 2021. Symbolic powers of certain cover ideals of graphs. *Acta Mathematica Vietnamica* 46 (3): 599-611. doi: 10.1007/s40306-020-00409-8. ISSN-02514184
2332. Shankar, S., Balasubramanian, K. 2021. Beam forming of shear horizontal guided waves by multi-row staggered magnet configurations. *Ultrasonics* 114. doi: 10.1016/j.ultras.2021.106405. ISSN-0041624X
2333. Channagoudra, G., Saw, A.K., Dayal, V., *et al.* 2021. Substantial magnetoelectric response in $2/3[\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})$

- O₃]-1/3[PbTiO₃]-CoFe₂O₄ composites. *Journal of Alloys and Compounds* 863. doi: 10.1016/j.jallcom.2020.158504. ISSN-09258388
2334. Moses, W.K., Vaya, S. 2021. Deterministic protocols in the SINR model without knowledge of coordinates. *Journal of Computer and System Sciences* 115, pp 121-145. doi: 10.1016/j.jcss.2020.06.002. ISSN-00220000
2335. Rao, G.R., Ali, M.M., Roychowdhury, S., Prasad, L. 2021. Promising oxygen storage capacity of equimolar high entropy transition metal oxide (MgCoNiCuZn)O. *Materials Letters* 304. doi: 10.1016/j.matlet.2021.130635. ISSN-0167577X
2336. Gopinath, K., Sai, L.P. 2021. A study on the positioning of the brand variants by smartwatch manufacturers: a technometrics approach. *Technology Analysis and Strategic Management*. doi: 10.1080/09537325.2021.1980210. ISSN-09537325
2337. Esakkiraja, N., Dash, A., Mondal, A., Kumar, K.C.H., Paul, A. 2021. Correlation between estimated diffusion coefficients from different types of diffusion couples in multicomponent system. *Materialia* 16. doi: 10.1016/j.mtla.2021.101046. ISSN-25891529
2338. Verma, V.K., Gopalakrishnan, C.K., Hamada, S., Yokoi, T., Noguchi, H. 2021. Effect of strain localization on fatigue properties of precipitation-hardened steel with an arbitrarily length crack. *International Journal of Fatigue* 143. doi: 10.1016/j.ijfatigue.2020.106017. ISSN-01421123
2339. Thiyagarajan, G.B., Shanmugam, V., Wilhelm, M., Mathur, S., Moodakare, S.B., Kumar, R. 2021. TiNb₂O₇-Keratin derived carbon nanocomposites as novel anode materials for high-capacity lithium-ion batteries. *Open Ceramics* 6. doi: 10.1016/j.oceram.2021.100131. ISSN-26665395
2340. Alex, T.C., Mucsi, G., Venugopalan, T., Kumar, S. 2021. BOF Steel slag: Critical assessment and integrated approach for utilization. *Journal of Sustainable Metallurgy* 7 (4): 1407-1424. doi: 10.1007/s40831-021-00435-2. ISSN-21993823
2341. Shaikh-Mohammed, J., Dash, S.S., Sarda, V., Sujatha, S. 2021. Design journey of an affordable manual standing wheelchair. *Disability and Rehabilitation: Assistive Technology*. doi: 10.1080/17483107.2021.1892839. ISSN-17483107
2342. Battabyal, M., Ns, K., Rajesh, P., Gopalan, R. 2021. Pressure induced enhancement in the thermoelectric and mechanical properties of Ni-doped skutterudites during spark plasma sintering. *Materials Research Innovations* 25 (4): 227-232. doi: 10.1080/14328917.2020.1778152. ISSN-14328917
2343. Nampoothiri, K.N., Sen, P. 2021. Motion of generated dumbbell-shaped satellite droplets during liquid dielectrophoresis. *Journal of Micromechanics and Microengineering* 31 (9). doi: 10.1088/1361-6439/ac1845. ISSN-09601317
2344. Roy, D., Tharra, P., Baire, B. 2021. An approach for the generation of γ -Propenylidene- γ -butenolides and application to the total synthesis of Rubrolides. *Organic Letters* 23 (15): 5605-5610. doi: 10.1021/acs.orglett.1c01529. ISSN-15237060
2345. Holloway, C., Morgado Ramirez, D.Z., Kattel, R., et al. 2021. A review of innovation strategies and processes to improve access to AT: Looking ahead to open innovation ecosystems. *Assistive Technology* 33 (1): 68-86. doi: 10.1080/10400435.2021.1970653. ISSN-10400435
2346. Daniel, S., Subbiah, V.P., Ramagathan, B., Kanthapazham, R., Vanaraj, R. 2021. Upgrading the strategy of multistage torrefaction liquid by the selective oxidation reaction route using a reusable MgO-based Au/Al₂O₃ catalyst. *Energy and Fuels* 35 (19): 15831-15841. doi: 10.1021/acs.energyfuels.1c02362. ISSN-08870624
2347. Ablikim, M., Achasov, M.N., Bianchi, F., et al. 2021. Measurement of the absolute branching fractions for purely leptonic D_s⁺ decays. *Physical Review D* 104 (5). doi: 10.1103/PhysRevD.104.052009. ISSN-24700010
2348. Arumugam, D., Krishna Prasanna, P. 2021. Commonality and contrarian trading among algorithmic traders. *Journal of Behavioral and Experimental Finance* 30. doi: 10.1016/j.jbef.2021.100495. ISSN-22146350
2349. Perumalsamy, K., Ranganathan, S. 2021. Experimental study on pipe sheet pile wall berthing structure. *Indian Geotechnical Journal* 51 (5): 979-991. doi: 10.1007/s40098-020-00479-3. ISSN-09719555
2350. Ghazaryan, D.A., Misra, A., Novoselov, K.S., et al. 2021. Twisted monolayer and bilayer graphene for vertical tunneling transistors. *Applied Physics Letters* 118 (18). doi: 10.1063/5.0048191. ISSN-00036951
2351. Das, P., Samantaray, B., Dolai, S., Seshu, K.S., Prakash, A., Gollapudi, S. 2021. combined effect of sodium lauryl sulphate and saccharin on microstructure and corrosion performance of electrodeposited nickel prepared from modified Watts Bath. *Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science* 52 (5): 1913-1926. doi: 10.1007/s11661-021-06202-y. ISSN-10735623
2352. Ablikim, M., Achasov, M.N., Bloms, et al. 2021. Determination of the Λ_c^+ spin via the reaction $e^+e^- \rightarrow \Lambda_c^+ \Lambda_c^- \dots$. Determination of the Λ_c^+ spin via the \dots Ablikim M. et al.. *Physical Review D* 103 (9). doi: 10.1103/PhysRevD.103.L091101. ISSN-24700010
2353. Kaur, S., Sarma, P., Bhattacharyya, A., et al. 2021. Efficacy and safety of topical cysteamine in corneal cystinosis: A systematic review and meta-analysis. *American Journal of Ophthalmology* 223, pp 275-285. doi: 10.1016/j.ajo.2020.07.052. ISSN-00029394
2354. Faiyaz, M., Ganayee, M.A., Gupta, P.K., et al. 2021. Nanomaterials in Alzheimer's disease treatment: A comprehensive review. *Frontiers in Bioscience - Landmark* 26 (10): 851-865. doi: 10.52586/4992. ISSN-27686701
2355. Deshmukh, P.C., Ganesan, A., Banerjee, S., Mandal, A. 2021. Accidental degeneracy of the hydrogen atom and its non-accidental solution in parabolic coordinates. *Canadian Journal of Physics* 99 (10): 853-860. doi: 10.1139/cjp-2020-0258. ISSN-00084204

- 2356.Prasad, S., Meenakshi, M., Adhithiya, N., Rao, P.H., Krishna Ganti, R., Bhaumik, S. 2021. mmWave multibeam phased array antenna for 5G applications. *Journal of Electromagnetic Waves and Applications* 35 (13): 1802-1814. doi: 10.1080/09205071.2021.1917004. ISSN-09205071
- 2357.Sagar, R., Gandhi, A.S. 2021. Structural and electrical studies of Ni- and Co-substituted Mn_3O_4 . *Applied Physics A: Materials Science and Processing* 127 (2). doi: 10.1007/s00339-020-04254-2. ISSN-09478396
- 2358.Deshmukh, P.C., Banerjee, S., Mandal, A., Manson, S.T. 2021. Eisenbud–Wigner–Smith time delay in atom–laser interactions. *European Physical Journal: Special Topics* 230 (23): 4151-4164. doi: 10.1140/epjs/s11734-021-00225-7. ISSN-19516355
- 2359.Reena, P., Gobi, N., Chitralkha, P., Thenmuhil, D., Kamaraj, V. 2021. Mesoporous titania-embedded polyacrylonitrile composite nanofibrous membrane for particulate matter filtration. *Journal of Thermoplastic Composite Materials* 34 (8): 1052-1065. doi: 10.1177/0892705719859929. ISSN-08927057
- 2360.Mahar, A.M., Jayachandran, S.A., Mahendran, M. 2021. Global buckling strength of discretely fastened back-to-back built-up cold-formed steel columns. *Journal of Constructional Steel Research* 187. doi: 10.1016/j.jcsr.2021.106998. ISSN-0143974X
- 2361.Gopal, R., Krishnachandran, S. 2021. Flexural behaviour of RC beams substituted with GFRP reinforcement in aggressive environments. *Magazine of Concrete Research* 73 (17): 865-878. doi: 10.1680/jmacr.19.00285. ISSN-00249831
- 2362.Yadav, V., Ullah Irshad, I., Kumar, H., Sharma, A.K. 2021. Quantitative Modeling of Protein Synthesis Using Ribosome Profiling Data. *Frontiers in Molecular Biosciences* 8. doi: 10.3389/fmolb.2021.688700. ISSN-2296889X
- 2363.Ghosh, R., Dubey, S., Benito-León, J., et al. 2021. Antithyroid arthritis syndrome in a case of post-COVID-19 subacute thyroiditis. *Diabetes and Metabolic Syndrome: Clinical Research and Reviews* 15 (3): 683-686. doi: 10.1016/j.dsx.2021.03.015. ISSN-18714021
- 2364.Ramesh, K., Annamalai, T.R. 2021. Which cat to bell? Investment duration, exit type, and returns in venture investments. *Journal of Alternative Investments* 23 (4): 47-60. doi: 10.3905/JAI.2021.1.123. ISSN-15203255
- 2365.Vandarkuzhali, S.A.A., Karthikeyan, G., Pachamuthu, M.P. 2021. Microwave assisted biosynthesis of Borassus flabellifer fruit mediated silver and gold nanoparticles for dye reduction, antibacterial and anticancer activity. *Journal of Environmental Chemical Engineering* 9 (6). doi: 10.1016/j.jece.2021.106411. ISSN-22133437
- 2366.Govarthanan, K., Gupta, P.K., Zipporah, B., Gahtori, R., Pandit, S., Prasad, R. 2021. Epigenetic regulation–The guardian of cellular homeostasis and lineage commitment. *Biocell* 45 (3): 501-515. doi: 10.32604/BIOCELL.2021.014441. ISSN-03279545
- 2367.Gade, M., Nayek, P.S., Dhanya, J. 2021. A new neural network-based prediction model for Newmark's sliding displacements. *Bulletin of Engineering Geology and the Environment* 80 (1): 385-397. doi: 10.1007/s10064-020-01923-7. ISSN-14359529
- 2368.Roy, S., Nagabooshanam, S., Chauhan, N., Kumar, R., Wadhwa, S., Mathur, A. 2021. Design and development of a novel flexible molecularly imprinted electroanalytical sensor for the monitoring of diabetic foot ulcers. *Surfaces and Interfaces* 26. doi: 10.1016/j.surfin.2021.101310. ISSN-24680230
- 2369.Mondal, S., Dutta, A. 2021. Atomistic design of nanocrystalline samples: A Bayesian approach. *Materials Letters* 300. doi: 10.1016/j.matlet.2021.130203. ISSN-0167577X
- 2370.Thekkepat, A.A., Devadula, S., Law, M. 2021. Identifying joint dynamics in bolted cantilevered systems under varying tightening torques and torsional excitations. *Journal of Vibration Engineering and Technologies*. doi: 10.1007/s42417-021-00386-8. ISSN-25233920
- 2371.Dash, K., Dash, A. 2021. In-situ formation of 2D-TiC_x in Cu-Ti₂AlC composites: An interface reaction study. *Materials Letters* 284. doi: 10.1016/j.matlet.2020.128935. ISSN-0167577X
- 2372.Bhati, D., Kattumannil, S.K., Sreelakshmi, N. 2021. Jackknife empirical likelihood based inference for probability weighted moments. *Journal of the Korean Statistical Society* 50 (1): 98-116. doi: 10.1007/s42952-020-00062-9. ISSN-12263192
- 2373.Periasamy, G., Mouleeswaran, S., Venugopal, P.R., Perumal, C. 2021. Investigation of hydrodynamic flow characteristics in helical coils with ovality and wrinkles. *Strojnicki Vestnik/Journal of Mechanical Engineering* 67 (11): 1570-1579. doi: 10.5545/sv-jme.2021.7374. ISSN-00392480
- 2374.Jabeen, A., Vijayram, R., Ranganathan, S. 2021. BIO-GATS: A tool for automated GPCR template selection through a biophysical approach for homology modeling. *Frontiers in Molecular Biosciences* 8. doi: 10.3389/fmolb.2021.617176. ISSN-2296889X
- 2375.Khan, H., Raja, M., Kothandaraman, R. 2021. Bilayer micro-mesoporous membrane assembly offering lower pressure drop to realize high energy efficient vanadium redox flow battery. *Journal of the Electrochemical Society* 168 (10). doi: 10.1149/1945-7111/ac3114. ISSN-00134651
- 2376.Shivudu, G., Mohan, T.V.R., Khan, S., Chandraraj, K., Selvam, P. 2021. Xylooligosaccharides production from lignocellulosic biomass: Equilibrium kinetics and thermodynamic studies of endo-1,4-β-D-xylanase adsorbed onto periodic mesostructured materials. *Materials Science for Energy Technologies* 4, pp. 423-431: doi: 10.1016/j.mset.2021.08.004. ISSN-25892991
- 2377.Heidenreich, A., Mudrich, M. 2021. Efficient tampering of a coulomb exploding cluster embedded in a hydrogen shell. *European Physical Journal: Special Topics* 230 (23): 4025-4034. doi: 10.1140/epjs/s11734-021-00190-1. ISSN-19516355

- 2378.Ghosh, S., Hazra, J., Pal, K., Nelson, V.K., Pal, M. 2021. Prostate cancer: Therapeutic prospect with herbal medicine. *Current Research in Pharmacology and Drug Discovery* 2. doi: 10.1016/j.crphar.2021.100034. ISSN-25902571
- 2379.Rengaswamy, K., Asapu, V.K., Muthukaruppan, A., Sakthivel, D.K., Venkatachalam, S., Kannaiyan, D. 2021. Enhanced shielding of electromagnetic radiations with flexible, light-weight, and conductive Ag-Cu/MWCNT/rGO architected PVDF nanocomposite films. *Polymers for Advanced Technologies* 32 (9): 3759-3769. doi: 10.1002/pat.5395. ISSN-10427147
- 2380.Ablikim, M., Achasov, M.N., Bianchi, et al. 2021. Search for the reaction channel $e^+e^- \rightarrow \eta_c \eta \pi^+ \pi^-$ At center-of-mass energies from 4.23 to 4.60 GeV search for the reaction channel $e^+e^- \rightarrow \eta_c \eta \pi^+ \pi^-$... Ablikim M. et al. *Physical Review D* 103 (3). doi: 10.1103/PhysRevD.103.032004. ISSN-24700010
- 2381.Saxena, N., Raghunathan, R., Manivannan, A. 2021. A scheme for enabling the ultimate speed of threshold switching in phase change memory devices. *Scientific Reports* 11 (1). doi: 10.1038/s41598-021-85690-9. ISSN-20452322
- 2382.Kumar, T.S.S., Madhumathi, K. 2021. Selective delivery of antibiotics and protein by eggshell derived apatitic nanocarriers. *Trends in Biomaterials and Artificial Organs* 35 (1): 30-35. ISSN-09711198
- 2383.Balasubramanian, V., Saravanan, R., Venkatraman, G., et al. 2021. Molecular dysregulations underlying the pathogenesis of endometriosis. *Cellular Signalling* 88. doi: 10.1016/j.cellsig.2021.110139. ISSN-08986568
- 2384.Devika, K.B., Rohith, G., Subramanian, S.C. 2021. String stable control of electric heavy vehicle platoon with varying battery pack locations. *JVC/Journal of Vibration and Control*. doi: 10.1177/10775463211002619. ISSN-10775463
- 2385.Swamy, G.S.N.V.K.S.N. 2021. Development of an indoor air purification system to improve ventilation and air quality. *Heliyon* 7 (10). doi: 10.1016/j.heliyon.2021.e08153. ISSN-24058440
- 2386.Ojha, R., Kulkarni, K., Helander, T., Kumar, K.C.H. 2021. Diffusion couple experiments and calculations in Fe-Cr-Ni-Al system at 800–1000 °C. *Journal of Alloys and Compounds* 863. doi: 10.1016/j.jallcom.2020.158061. ISSN-09258388
- 2387.Soares, R.R.G., Madaboosi, N., Nilsson, M. 2021. Rolling circle amplification in integrated microsystems: An uncut gem toward massively multiplexed pathogen diagnostics and genotyping. *Accounts of Chemical Research* 54 (21): 3979-3990. doi: 10.1021/acs.accounts.1c00438. ISSN-00014842
- 2388.Aissa, A.B., Madaboosi, N., Nilsson, M., Pividori, M.I. 2021. Electrochemical genosensing of e. Coli based on padlock probes and rolling circle amplification. *Sensors* 21 (5): 44574. doi: 10.3390/s21051749. ISSN-14248220
- 2389.Ablikim, M., Achasov, M.N., Bianchi, F., et al. 2021. Amplitude analysis and branching-fraction measurement of $D_s^+ \rightarrow K_s^0 K \pi^+ \pi^+$. *Physical Review D* 103 (9). doi: 10.1103/PhysRevD.103.092006. ISSN-24700010
- 2390.Kumar, M., Rosenblum, M. 2021. Two mechanisms of remote synchronization in a chain of Stuart-Landau oscillators. *Physical Review E* 104 (5). doi: 10.1103/PhysRevE.104.054202. ISSN-24700045
- 2391.Pal, M.K. 2021. Liquid and vapor phase behavior of high pressure n-hexane spray. *Journal of Flow Visualization and Image Processing* 28 (1): 21-44. doi: 10.1615/JFLOWVISIMAGEPROC.2020034163. ISSN-10653090
- 2392.Sankarshan, B.M., Athrey, C.D., Umesh, T.K. 2021. Characterization of some stone samples of archaeological interest via Compton profile analysis. *Journal of Radioanalytical and Nuclear Chemistry* 329 (3): 1353-1360. doi: 10.1007/s10967-021-07882-x. ISSN-02365731
- 2393.Ravichandran, R., Purna, P., Vijayaraghavalu, S., Kalavakollu, R.T., Gaidhane, S., Kumar, R.K. 2021. Use of indomethacin in COVID-19 patients — experience from two medical centres. *Journal of the Indian Medical Association* 119 (7): 42-46. ISSN-00195847
- 2394.Padmanabhan, V., Namadurai, P., Swaminathan, R. 2021. Analysis of preterm pregnancies using empirical mode decomposition based fractal features. *Current Directions in Biomedical Engineering* 7 (2): 783-786. doi: 10.1515/cdbme-2021-2200. ISSN-23645504
- 2395.Ablikim, M., Achasov, M.N., Bianchi, F., Bloms, et al. 2021. Measurements of the branching fractions of $\psi(3686) \rightarrow \zeta^- 0 \Lambda^+ c. c.$ And $\chi_{c1}(J=0,1,2) \rightarrow \Lambda \Lambda^-$ Measurements of the Branching Fractions of... Ablikim M., et al.. *Physical Review D* 103 (11). doi: 10.1103/PhysRevD.103.112004. ISSN-24700010
- 2396.Ananth, S., Sivaprakasam, P., Kalusuraman, G., et al. 2021. Tribological behavior and surface characterization of gray cast iron-EN31 steel under lubricated sliding conditions. *Journal of Nanomaterials* 2021. doi: 10.1155/2021/7725959. ISSN-16874110
- 2397.Brancaccio, A., Leone, G., Pierri, R., Solimene, R. 2021. Experimental validation of a microwave imaging method for shallow buried target detection by under-sampled data and a non-cooperative source. *Sensors* 21 (15). doi: 10.3390/s21155148. ISSN-14248220
- 2398.Paulthangam, K.M., Som, A., Ahuja, T., Srikrishnarka, P., Nair, A.S., Pradeep, T. 2021. Role of zinc oxide in the compounding formulation on the growth of nonstoichiometric copper sulfide nanostructures at the brass-rubber interface. *ACS Omega*. doi: 10.1021/acsomega.1c06207. ISSN-24701343
- 2399.Gupta, A., Rai, V. 2021. Binary relation for tripled fixed point theorem in metric spaces. *Boletim da Sociedade Paranaense de Matematica* 39 (2) 44830. doi: 10.5269/bspm.38279. ISSN-00378712
- 2400.Barman, P.K., Sarma, P.V., Shaijumon, M.M., Kini, R.N. 2021. Resonant-Raman study of Fröhlich exciton-phonon interaction in WS2 nanostructures. *European Physical Journal: Special Topics*. doi: 10.1140/epjs/s11734-021-00389-2. ISSN-19516355

2401. Ablikim, M., Achasov, M.N., Bianchi, F., *et al.* 2021. Measurement of the $D \rightarrow K^- \pi^+ \pi^- \pi^-$ and $D \rightarrow K^- \pi^+ \pi^0$ coherence factors and average strong-phase differences in quantum-correlated DD^- decays. *Journal of High Energy Physics* 2021 (5). doi: 10.1007/JHEP05(2021)164. ISSN-10298479
2402. Moovendhan, M., Kavisri, M., Vairamani, S., Shanmugam, A. 2021. Valorization of cephalopod liver viscera for oil production: chemical characteristics, nutritional profile and pharmacological activities. *Biomass Conversion and Biorefinery*. doi: 10.1007/s13399-021-01650-3. ISSN-21906815
2403. Krishnamani, D.B., Karthick, P.A., Swaminathan, R. 2021. Variation of instantaneous spectral centroid across bands of surface electromyographic signals. *Biomedical Sciences Instrumentation* 57. 2 356-360: doi: 10.34107/YHPN9422.04356. ISSN-00678856
2404. Chandra, S.K., Sarkar, R., Ray, S.K., *et al.* 2021. Characterization of ductile crack growth resistance behaviour of interstitial-free steel sheet using energy dissipation rate parameter. *Theoretical and Applied Fracture Mechanics* 114. doi: 10.1016/j.tafmec.2021.102994. ISSN-01678442
2405. Rathna Prasad, S., Sekhar, A.S. 2021. Detection and localization of fatigue-induced transverse crack in a rotor shaft using principal component analysis. *Structural Health Monitoring* 20 (2): 513-531. doi: 10.1177/1475921720933581. ISSN-14759217
2406. Das, D., Rao, M.S.R. 2021. N⁺-ion implantation induced enhanced conductivity in polycrystalline and single crystal diamond. *RSC Advances* 11 (38): 23686-23699. doi: 10.1039/d1ra03846j. ISSN-20462069
2407. Ablikim, M., Achasov, M.N., Bianchi, F., *et al.* 2021. Observation of the electromagnetic Dalitz decay $D^*_0 \rightarrow d^0 e^+ e^-$. *Physical Review D* 104 (11). doi: 10.1103/PhysRevD.104.112012. ISSN-24700010
2408. Narayana Rao, K.V.L., Prasad, B.V.S.S.S., Kanna Babu, C.H., Degaonkar, G.K. 2021. Influence of inlet swirl on pattern factor and pressure loss in an aero engine combustor. *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*. doi: 10.1177/09544062211027209. ISSN-09544062
2409. Myilsamy, K., Satheesh Kumar, A., Muthukrishnan, S.K. 2021. Dynamics of trachoma epidemic in human contact network with seasonally varying infectious medium. *Proceedings of the National Academy of Sciences India Section A - Physical Sciences* 91 (4): 623-631. doi: 10.1007/s40010-021-00754-9. ISSN-03698203
2410. Lu, Z., Mahalik, M.K., Padhan, H., Gupta, M., Gozgor, G. 2021. Effects of age dependency and urbanization on energy demand in BRICS: Evidence from the machine learning estimator. *Frontiers in Energy Research* 9. doi: 10.3389/fenrg.2021.749065. ISSN-2296598X
2411. Jeyaseelan, A.S., Balaji, R. 2021. Spectral characteristics of laboratory-simulated wave groups. *ISH Journal of Hydraulic Engineering* 27 (1): 366-370. doi: 10.1080/09715010.2019.1658550. ISSN-09715010
2412. Srikar, A., Vijay Kumar, P., Chandrasekaran, K., Thondiyath, A. 2021. Passivity-based gain independent control for transparent sensing of remote environment. *IEEE Sensors Journal* 21 (5): 6942-6951: doi: 10.1109/JSEN.2020.3038636. ISSN-1530437X
2413. Thirmal, C., Rao, L.S., Swain, A.B., Srivastav, S.K. 2021. The effect of fluorine doping on structural and dielectric properties of molecular ferroelectric diisopropylammonium bromide. *Journal of The Institution of Engineers (India): Series E*. doi: 10.1007/s40034-020-00191-0. ISSN-22502483
2414. Sitaram, N., Sreekanth, R., Kalwan, M.K., Gajanan Tatpatti, C. 2021. High-temperature calibration facility for calibrating multihole pressure probes. *Journal of The Institution of Engineers (India): Series C*. doi: 10.1007/s40032-021-00699-3. ISSN-22500545
2415. Sawanny, R., Pramanik, S., Agarwal, U. 2021. Role of phytochemicals in the treatment of breast cancer: Natural swords battling cancer cells. *Current Cancer Therapy Reviews* 17 (3): 179-196. doi: 10.2174/1573394716666210106123255. ISSN-15733947
2416. Ali, L.F., Kuppuswamy, N., Soundararajan, R., Ramkumar, K.R., Sivasankaran, S. 2021. Microstructural and wear behaviour of Al 6063-W nanocomposites developed using friction stir processing. *Metals and Materials International* 27 (12): 5462-5473. doi: 10.1007/s12540-021-01029-z. ISSN-15989623
2417. Basheer, N., Madhubala, M., R, J., Mahalaxmi, S., Kumar, S. 2021. Effect of strontium substituted tetracalcium phosphate cement on proliferation and mineralization potential in human dental pulp stem cells. *European Endodontic Journal* 6 (3): 295-302. doi: 10.14744/ej.2021.98704. ISSN-25480839
2418. Kulkarni, S.H. 2021. Spectrum and related sets: a survey. *Journal of Analysis* 29 (2): 493-517. doi: 10.1007/s41478-019-00214-z. ISSN-09713611
2419. Arora, G., Singh, A., Bandhu, A.V. 2021. A neural network approach for solution of the schrödinger equation for a particle in the Pöschl-Teller potential. *Canadian Journal of Physics* 99 (8): 728-734. doi: 10.1139/cjp-2021-0006. ISSN-00084204
2420. Ablikim, M., Achasov, M.N., Bianchi, F., *et al.* 2021. Cross sections for the reactions $e^+e^- \rightarrow k^+K^-\pi^+\pi^-$ (π^0), $K^+K^-K^+K^-$ (π^0), $\pi^+\pi^-\pi^+\pi^-$ (π^0), $pp^- \pi^+\pi^-$ (π^0) in the energy region between 3.773 and 4.600 GeV Cross-sections for the reactions ... Ablikim M. *et al. Physical Review D* 104 (11). doi: 10.1103/PhysRevD.104.112009. ISSN-24700010
2421. Shashank, V.G., Mandal, S., Sil, S. 2021. Impact of varying landfall time and cyclone intensity on storm surges in the Bay of Bengal using ADCIRC model. *Journal of Earth System Science* 130 (4). doi: 10.1007/s12040-021-01695-y. ISSN-23474327
2422. Alshetty, D., Jaikumar, R., Nagendra, S.M.S., Akolkar, A.B. 2021. Impact assessment of short-term interventions on air quality in a megacity: A case study on Odd-Even Policy implemented in Delhi city. *Journal of The Institution of Engineers (India): Series A* 102 (4): 1151-1159. doi: 10.1007/s40030-021-00559-4. ISSN-22502149

- 2423.Santhar, D.T., Haq, M.A.B., Marudhupandi, T., Vaseeharan, B., Rajan, D.K., Moovendhan, M. 2021. Evaluation of chemical compositions and antioxidant potential of marine microalgae of the genus *Nannochloropsis*. *Biomass Conversion and Biorefinery*. doi: 10.1007/s13399-021-01929-5. ISSN-21906815
- 2424.Sarkar, R. 2021. Binomial edge ideals of unicyclic graphs. *International Journal of Algebra and Computation* 31 (7): 1293-1318. doi: 10.1142/S0218196721500466. ISSN-02181967
- 2425.Sazzad, F., Ganesh, G., Cheekoty, P., Veerappan, M., Kofidis, T. 2021. Impact of avoiding cardioplegic arrest on clinical outcome in patients undergoing CABG in Bangladesh: A systematic review and meta-analysis. *Indian Journal of Thoracic and Cardiovascular Surgery* 37 (2): 153-163. doi: 10.1007/s12055-020-01054-4. ISSN-09709134
- 2426.Rao Veeranki, Y., Ganapathy, N., Swaminathan, R. 2021. Electrodermal activity based emotion recognition using time-frequency methods and machine learning algorithms. *Current Directions in Biomedical Engineering* 7 (2): 863-866. doi: 10.1515/cdbme-2021-2220. ISSN-23645504
- 2427.Muralidharan, T.R., Ramesh, S., Balasubramanian, J.V., et al. 2021. Clinical profile and management of patients with acute pulmonary thromboembolism – a single centre, large observational study from India. *Pulmonary Circulation* 11 (1). doi: 10.1177/2045894021992678. ISSN-20458932
- 2428.Banerjee, S.S., Ananthan, S., Swaminathan, R. 2021. Study of the bilateral asymmetry of plantar mechanical properties as a biomarker for the differentiation of diabetic condition. *Biomedical Sciences Instrumentation* 57(2): 114-120. doi: 10.34107/YHPN9422.04114. ISSN-00678856
- 2429.Veluppal, A., Sadhukhan, D., Gopinath, V., Swaminathan, R. 2021. Automated differentiation of Alzheimer's condition using Kernel Density Estimation based texture analysis of single slice brain MR images. *Current Directions in Biomedical Engineering* 7 (2): 747-750. doi: 10.1515/cdbme-2021-2191. ISSN-23645504
- 2430.Tiwari, R.K., Khedlekar, N.K., Khedlekar, U.K. 2021. Optimal pricing policy for stock dependent demand with effective investment in preservation technology. *International Journal of Nonlinear Analysis and Applications* 12 (2): 249-264. doi: 10.22075/ijnaa.2020.17515.1943. ISSN-20086822
- 2431.Madhusudan, M., Shanmuganatan, S.P., Shridhar, K., John, J., Krishnamurthy, R., Sasikumar, B. 2021. Investigation on friction stir weldability characteristics of AA7075-T651 and AA6061-T6 based nanocomposites. *Advances in Materials Science and Engineering* 2021. doi: 10.1155/2021/3536353. ISSN-16878434
- 2432.Sampath, G., Anbazhagan, S., Lokhande, C.D. 2021. Analysis of central vaginal cuff HDR brachytherapy using various cylinder sizes-literature review. *Onkologia i Radioterapia* 15 (6): 44565. ISSN-18968961
- 2433.T., L.K., Leiva, L.A. 2021. Attentive sequence-to-sequence modeling of stroke gestures articulation performance. *IEEE Transactions on Human-Machine Systems* 51 (6): 663-672. doi: 10.1109/THMS.2021.3112961. ISSN-21682291
- 2434.Venkateswarlu, D., Swetha, T., Choutipalli, V.S.K., Subramanian, V., Singh, S.P. 2021. Hexyl dithiafulvalene (HDT) substituted bipyridine ancillary ligands for panchromatic sensitization. *Solar Energy* 226, pp 245-250. doi: 10.1016/j.solener.2021.08.029. ISSN-0038092X
- 2435.Ganguly, D., Ramanujam, K., Ramaprabhu, S. 2021. Platinum nanoparticle decorated expired drug-derived N-doped Ketjenblack carbon as efficient catalyst for PEM fuel cells. *Journal of the Electrochemical Society* 168 (6). doi: 10.1149/1945-7111/ac0bef. ISSN-00134651
- 2436.Suhas, B.N., Mazumdar, S., Singh, A.K. 2021. On the stability of kernel bundles over chain-like curves. *Journal of Geometry and Physics* 164. doi: 10.1016/j.geomphys.2021.104167. ISSN-03930440
- 2437.Ablikim, M., Achasov, M.N., Bianchi, F., et al. 2021. Search for the rare semi-leptonic decay $J/\psi \rightarrow D^- e^+ \nu_e + c.c..$ *Journal of High Energy Physics* 2021 (6). doi: 10.1007/JHEP06(2021)157. ISSN-10298479
- 2438.Ablikim, M., Achasov, M.N., Bianchi, F., et al. 2021. Measurement of the doubly Cabibbo-suppressed decay $D^+ \rightarrow K^+ \pi^+ \pi^0$ with semileptonic tags. *Physical Review D* 104 (7). doi: 10.1103/PhysRevD.104.072005. ISSN-24700010
- 2439.Harini, S.K., Mahendran, R., Palanivel, J., Varadarajan, E. 2021. Generation of electricity from pool wastewater using bio-mass based activated charcoal electrodes through microbial fuel cell. *Chemistry Africa* 4 (2): 323-331. doi: 10.1007/s42250-021-00226-y. ISSN-25225758
- 2440.Dharbaneshwer, S.J., Thondiyath, A. 2021. Contact area-based modeling of robotic grasps using deformable solid mechanics. *International Journal of Applied Mechanics* 13 (3). doi: 10.1142/S1758825121500381. ISSN-17588251
- 2441.Yadav, S.K., Ramesh, B., Jegannathan, M. 2021. Cobalt(III)-Catalyzed Chemo- and Regioselective [4 + 2]-Annulation of Aromatic Sulfoxonium Ylides with 1,3-Diynes. *Journal of Organic Chemistry*. doi: 10.1021/acs.joc.1c02967. ISSN-00223263
- 2442.Deepak, P., Abraham, S.S. 2021. FairLOF: Fairness in outlier detection. *Data Science and Engineering* 6 (4): 485-499. doi: 10.1007/s41019-021-00169-x. ISSN-23641185
- 2443.Ablikim, M., Achasov, M.N., Bloms, et al. 2021. Observation of $\psi(3686) \rightarrow \Xi(1530)0 \Xi^- (1530)0$ and $\Xi(1530)0 \Xi^- 0$ Observation of ... M. Ablikim et al. *Physical Review D* 104 (9). doi: 10.1103/PhysRevD.104.092012. ISSN-24700010
- 2444.Rathinasamy, V., Kandasamy, T., Ramaswamy, K.K., Balasubramanian, V., Kannan, S. 2021. Conversion of ethanol to higher alcohols on $Ni/M_xO_y-Al_2O_3$ (M=La, Ce, Zr, Mg and Ti) catalysts: Influence of support characteristics. *Indian Journal of Chemical Technology* 28 (1): 44826. ISSN-0971457X
- 2445.Droniou, J., Nataraj, N., Shylaja, D. 2021. Hessian discretisation method for fourth-order semi-linear elliptic equations: Applications to the von Kármán and Navier–Stokes models. *Advances in Computational Mathematics* 47 (2). doi: 10.1007/s10444-020-09837-4. ISSN-10197168

2446. Yeleswarapu, S., Chandra Khan, V., P., N.K., Gurusamy, B., Pandit, M.K. 2021. Performance assessment of polymeric composite wrap to repair damaged pipelines exposed under accelerated environment conditions. *Journal of Pipeline Systems Engineering and Practice* 12 (3). doi: 10.1061/(ASCE)PS.1949-1204.0000549. ISSN-19491190
2447. Anzar, S.M., Subheesh, N.P., Panthakkan, A., Malayil, S., Ahmad, H.A. 2021. Random Interval Attendance Management System (RIAMS): A novel multimodal approach for post-COVID virtual learning. *IEEE Access* 9, pp 91001-91016. doi: 10.1109/ACCESS.2021.3092260. ISSN-21693536
2448. Jithin, P., Sureshbabu, M. 2021. Are the determinants of foreign direct investment same within the service sector? Evidence from bootstrap based bias corrected fixed effects model. *Journal of Public Affairs*. doi: 10.1002/pa.2768. ISSN-14723891
2449. Sreenivasan, H., Krishna, S., Rao, M.H.V.R., Vij, R.K. 2021. Postulated failure analyses of tension leg platform (tlp) restraining system under the influence of varying sea-state conditions. *Structural Integrity and Life* 21, pp S29-S37. ISSN-14513749
2450. Cheramangalath Balan, R., Balla, R. 2021. Kinetics for the photo-chemical degradation of Methyl butyrate in presence of Cl atoms and OH radicals. *Journal of Atmospheric Chemistry* 78 (4): 219-238. doi: 10.1007/s10874-021-09417-w. ISSN-01677764
2451. Kumar, A. 2021. Regularity of parity binomial edge ideals. *Proceedings of the American Mathematical Society* 149 (7): 2727-2737. doi: 10.1090/proc/15434. ISSN-00029939
2452. Li, P., Luo, Q., Ponnusamy, S. 2021. Schwarz–Pick and Landau type theorems for solutions to the Dirichlet–Neumann Problem in the unit disk. *Computational Methods and Function Theory*. doi: 10.1007/s40315-021-00385-6. ISSN-16179447
2453. Kandregula, G.R., Mandal, S., Mirle, C., Ramanujam, K. 2021. A computational approach on engineering short spacer for carbazole-based dyes for dye-sensitized solar cells. *Journal of Photochemistry and Photobiology A: Chemistry* 419. doi: 10.1016/j.jphotochem.2021.113447. ISSN-10106030
2454. Tahmasseby, S., Reddipalayam Palaniappan Subramanian, P. 2021. Traffic impact assessment for the stadiums hosting FIFA 2022 World Cup in Qatar: A case study. *Iranian Journal of Science and Technology - Transactions of Civil Engineering*. doi: 10.1007/s40996-021-00723-7. ISSN-22286160
2455. Soorangkattan, S., Nalluchamy, K.D., Krishnasamy, M., et al. 2021. In situ conservation of endangered tree species (*Elaeocarpus venustus* Bedd.) habitated in Agasthiyamalai Biosphere Reserve, Southern Western Ghats, India. *Environmental Science and Pollution Research* 28 (26): 33958-33966: doi: 10.1007/s11356-021-13227-8. ISSN-09441344
2456. Arjunan, M.S., Durai, S., Manivannan, A. 2021. Multilevel switching in phase-change photonic memory devices. *Physica Status Solidi - Rapid Research Letters* 15 (11). doi: 10.1002/pssr.202100291. ISSN-18626254
- 2457.2544. Ablikim, M., Achasov, M.N., Bianchi, F., et al. 2021. Measurement of branching fractions of J/ψ and $\psi(3686)$ decays to Σ^+ and Σ^- . *Journal of High Energy Physics* 2021 (11). doi: 10.1007/JHEP11(2021)226. ISSN-10298479
2458. Ablikim, M., Achasov, M.N., Bianchi, F., et al. 2021. Observation of $e^+e^- \rightarrow \eta\psi(2S)$ at center-of-mass energies from 4.236 to 4.600 GeV. *Journal of High Energy Physics* 2021 (10). doi: 10.1007/JHEP10(2021)177. ISSN-10298479
2459. Sumathi, S., Rajesh, R. 2021. Comparative study on TCP SYN flood DDoS attack detection: A machine learning algorithm based approach. *WSEAS Transactions on Systems and Control* 16, pp 584-591. doi: 10.37394/23203.2021.16.54. ISSN-19918763
2460. Thannickal, V.M., Tharakan, T.J., Chakravarthy, S.R. 2021. Active control of combustion noise by a twin resonator trim adjustment system. *Combustion Science and Technology*. doi: 10.1080/00102202.2021.1929195. ISSN-00102202
2461. De, S., Bhattacharya, A., Mukhopadhyay, A., Sen, S. 2021. Early detection of lean blowout in a combustor using symbolic analysis of colour images. *Measurement: Journal of the International Measurement Confederation* 186. doi: 10.1016/j.measurement.2021.110113. ISSN-02632241
2462. Ablikim, M., Achasov, M.N., Bett, et al. 2021. Measurement of the branching fraction for $\psi(3686) \rightarrow \omega K_S^0 K_S^0$. *Physical Review D* 104 (9). doi: 10.1103/PhysRevD.104.092003. ISSN-24700010
2463. Ramu, Y.K., Sirivivatnanon, V., Thomas, P., Dhandapani, Y., Vessalas, K. 2021. Evaluating the impact of curing temperature in delayed ettringite formation using electrochemical impedance spectroscopy. *Construction and Building Materials* 282. doi: 10.1016/j.conbuildmat.2021.122726. ISSN-09500618
2464. Srikar, A., Vijay Kumar, P., Raj, S., Thondiyath, A. 2021. Quantitative estimation of dynamic modulation in remote environment sensing. *IEEE Sensors Journal* 21 (5): 7015-7023. doi: 10.1109/JSEN.2020.3041725. ISSN-1530437X
2465. Rino Nelson, N., Siva Prasad, N., Sekhar, A.S. 2021. Stress distribution and performance of threaded bolts in gasketed flange joints. *Materialwissenschaft und Werkstofftechnik* 52 (9): 982-990. doi: 10.1002/mawe.202000233. ISSN-09335137
2466. Chari, R., Moessner, R., Rau, J.G. 2021. Magnetoelectric generation of a Majorana-Fermi surface in Kitaev's honeycomb model. *Physical Review B* 103 (13). doi: 10.1103/PhysRevB.103.134444. ISSN-24699950
2467. Kongor, A., Athar, M., Jain, V., Bhatt, K. 2021. New views on the ingenious applications of Ag nanoparticles as a sensor for antibiotic detection and as a potent antimicrobial agent: A review. *Journal of Metals, Materials and Minerals* 31 (3): 44570. doi: 10.14456/jmmm.2021.33. ISSN-08576149
2468. Dey, S., Paul, S., Debsharma, K., Sinha, C. 2021. A highly emissive Zn(ii)-pyridyl-benzimidazolyl-phenolato-

- based chemosensor: Detection of $H_2PO_4^-$: Via "use" and "throw" device fabrication. *Analytical Methods* 13 (44): 5282-5292. doi: 10.1039/d1ay01575c. ISSN-17599660
2469. Ablikim, M., Achasov, M.N., Bloms, *et al.* 2021. Measurement of $e^+e^- \rightarrow \gamma\chi_{c0,c1,c2}$ cross sections at center-of-mass energies between 3.77 and 4.60 GeV Measurement of $e^+e^- \rightarrow \gamma\chi_{c0,c1,c2} \dots$ Ablikim M. *et al. Physical Review D* 104 (9). doi: 10.1103/PhysRevD.104.092001. ISSN-24700010
2470. Bharti, A., Natarajan, R. 2021. Robust co-embedded nitrogen doped carbon catalyst for oxygen reduction reaction in proton exchange membrane fuel cell. *ChemistrySelect* 6 (9): 2298-2305. doi: 10.1002/slct.202100055. ISSN-23656549
2471. Ramchandra Kiran, R., Patri, T. 2021. Influence of electric and magnetic poling on properties of Co/Nb codoped cobalt ferrite. *Journal of Materials Research and Technology* 10, pp 1169-1175. doi: 10.1016/j.jmrt.2020.12.082. ISSN-22387854
2472. Ablikim, M., Achasov, M.N., Bloms, *et al.* 2021. Observation of the decay $D_0 \rightarrow \rho^+ \mu^- \nu_\mu$. *Physical Review D* 104 (9). doi: 10.1103/PhysRevD.104.L091103. ISSN-24700010
2473. Dhabu, A.C., Singla, V.K., Stg, R. 2021. Seismic wave propagation through layered reduced micropolar medium. *Journal of Geophysical Research: Solid Earth* 126 (11). doi: 10.1029/2020JB020931. ISSN-21699313
2474. Siddhardha, K. 2021. Microgravity enabling multirotors: Compact like drop towers and programmable like parabolic flights. *Microgravity Science and Technology* 33 (3). doi: 10.1007/s12217-021-09889-1. ISSN-09380108
2475. Suresh, V., Dyaram, L. 2021. Diversity in disability: leaders' accounts on inclusive employment in the Indian context. *Equality, Diversity and Inclusion*. doi: 10.1108/EDI-05-2020-0133. ISSN-20407149
2476. Vasudevan, S., Manalaya, S.B. 2021. Trade effects of Eurasian Economic Union and Global Production Sharing: A gravity analysis. *International Economic Journal* 35 (2): 223-241. doi: 10.1080/10168737.2021.1901763. ISSN-10168737
2477. Amarnath, M., Krishna, I.R.P., Krishnamurthy, R. 2021. Experimental investigations to study the effectiveness of cepstral features to detect surface fatigue wear development in a FZG spur geared system subjected to accelerated tests. *Archives of Acoustics* 46 (3): 479-489. doi: 10.24425/aoa.2021.138140. ISSN-01375075
2478. Dadsena, R., Sadukhan, D., Swaminathan, R. 2021. Rotational moment shape feature extraction and decision tree based discrimination of mild cognitive impairment conditions using MR image processing. *Biomedical Sciences Instrumentation* 57 (2): 228-233. doi: 10.34107/YHPN9422.04228. ISSN-00678856
2479. Chakravarty, D., Laxman, N., Tiwary, C.S., *et al.* 2021. Ultrahigh transverse rupture strength in tungsten-based nanocomposites with minimal lattice misfit and dual microstructure. *International Journal of Refractory Metals and Hard Materials* 95. doi: 10.1016/j.ijrmhm.2020.105454. ISSN-02634368
2480. Oripov, B., Kumar, D., Anlage, S.M., *et al.* 2021. Large microwave inductance of granular boron-doped diamond superconducting films. *Applied Physics Letters* 118 (24). doi: 10.1063/5.0051227. ISSN-00036951
2481. Mondal, K., Balla, R. 2021. Investigation of kinetics of phenyl radicals with ethyl formate in the gas phase using cavity ring-down spectroscopy and theoretical methodologies. *Photochemical and Photobiological Sciences* 20 (7): 859-873. doi: 10.1007/s43630-021-00053-7. ISSN-1474905X
2482. Subetha, T., Chitrakala, S., Uday Theja, M. 2021. Fusion-based Gaussian mixture model for background subtraction from videos. *International Journal of Computer Applications in Technology* 66 (1): 63-73. doi: 10.1504/IJCAT.2021.119604. ISSN-09528091
2483. Ghosh, R., Mondal, S., Roy, D., Ray, A., Mandal, A., Benito-León, J. 2021. A case of primary disseminated rhinosporidiosis and dapsone-induced autoimmune hemolytic anemia: A therapeutic misadventure. *IDCases* 24. doi: 10.1016/j.idcr.2021.e01076. ISSN-22142509
2484. Kothiyal, P., Joshi, A., Mer, K.K.S., Verma, R. 2021. The evaluation of microstructure, grain boundary character and micro texture of $[Al/Si_3N_4/Al_2O_3]$ P nanocomposites fabricated through PM route and its influence on compressive and three-body wear properties. *Materials Research Express* 8 (12). doi: 10.1088/2053-1591/ac406b. ISSN-20531591
2485. Naganathan, P., Srinivas, S. 2021. MTPA associated DTC Methodologies for enhanced performance and energy savings in electric vehicle mobility with induction motor drive. *IEEE Transactions on Transportation Electrification*. doi: 10.1109/TTE.2021.3130178. ISSN-23327782
2486. Sethumadhavan, K., David, D. 2021. Seismic response of diagrid systems: ductility concerns in low- to midrise structures. *Practice Periodical on Structural Design and Construction* 26 (4). doi: 10.1061/(ASCE)SC.1943-5576.0000601. ISSN-10840680
2487. Damodhar, S.S. 2021. Novel models of power system components for implicit solution of the adjusted power flow problem. *International Journal of Emerging Electric Power Systems*. doi: 10.1515/ijeeps-2021-0123. ISSN-21945756
2488. Verma, A.H., Joshi, S.K., Singh, Y.K., Dubey, S. 2021. A neural network model of PV module temperature as a function of weather parameters prevailing in composite climate zone of India. *International Journal of Ambient Energy*. doi: 10.1080/01430750.2021.1909132. ISSN-01430750
2489. Sibuh, B.Z., Gupta, P.K., Roychoudhury, S., *et al.* 2021. Synthesis, in silico study, and anti-cancer activity of thiosemicarbazone derivatives. *Biomedicines* 9 (10). doi: 10.3390/biomedicines9101375. ISSN-22279059
2490. Maji, M., Mesnager, S., Sarkar, S., Hansda, K. 2021. On one-dimensional linear minimal codes over finite (commutative) rings. *IEEE Transactions on Information Theory*. doi: 10.1109/TIT.2021.3133959. ISSN-00189448
2491. Arh, T., Sana, B., Zorko, A., *et al.* 2021. The Ising triangular-

- lattice antiferromagnet neodymium heptatantalate as a quantum spin liquid candidate. *Nature Materials*. doi: 10.1038/s41563-021-01169-y. ISSN-14761122
2492. Biswal, J., Jayaprakash, P., Rayala, S.K., Venkatraman, G., Rangaswamy, R., Jeyaraman, J. 2021. WaterMap and molecular dynamic simulation-guided discovery of potential PAK1 Inhibitors using repurposing approaches. *ACS Omega* 6 (41): 26829-26845. doi: 10.1021/acsomega.1c02032. ISSN-24701343
2493. Singh Aidhen, I., Thoti, N. 2021. Natural products and bioactivity inspired synthetic pursuits interfacing with carbohydrates: Ongoing journey with C-glycosides. *Chemical Record* 21 (11): 3131-3177. doi: 10.1002/tcr.202100216. ISSN-15278999
2494. Dadsena, R., Sadhukhan, D., Swaminathan, R. 2021. Differentiation of mild cognitive impairment conditions in MR images using fractional order Jacobi Fourier moment features. *Current Directions in Biomedical Engineering* 7 (2): 724-727. doi: 10.1515/cdbme-2021-2185. ISSN-23645504
2495. Nehrujee, A., Andrew, H., Balasubramanian, S., et al. 2021. Plug-and-train robot (pluto) for hand rehabilitation: Design and preliminary evaluation. *IEEE Access* 9, pp 134957-134971. doi: 10.1109/ACCESS.2021.3115580. ISSN-21693536
2496. Raju, D.R.P., Rao, T.N. 2021. Gade Padmanabham (1964–2021). *Current Science* 121 (3): 439-440. ISSN-00113891
2497. Das, S.D., Basak, A., Dutta, S. 2021. A heuristic-driven uncertainty based ensemble framework for fake news detection in tweets and news articles. *Neurocomputing*. doi: 10.1016/j.neucom.2021.12.037. ISSN-09252312
2498. Kishore, C., Bhadra, P. 2021. Targeting brain cancer cells by nanorobot, a promising nanovehicle: New challenges and future perspectives. *CNS and Neurological Disorders - Drug Targets* 20 (6): 531-539. doi: 10.2174/1871527320666210526154801. ISSN-18715273
2499. Kanti, P., Sharma, K.V., Jamei, M., Kumar, H.G.P. 2021. Thermal performance of hybrid fly ash and copper nanofluid in various mixture ratios: Experimental investigation and application of a modern ensemble machine learning approach. *International Communications in Heat and Mass Transfer* 129. doi: 10.1016/j.icheatmasstransfer.2021.105731. ISSN-07351933
2500. Ablikim, M., Achasov, M.N., Bianchi, F., et al. 2021. Measurements of the center-of-mass energies of e+e-collisions at BESIII. *Chinese Physics C* 45 (10). doi: 10.1088/1674-1137/ac1575. ISSN-16741137
2501. Mondal, S., Mandal, P. 2021. Symmetry energy in the semi-empirical mass formula: A review. *Resonance* 26 (11): 1567-1578. doi: 10.1007/s12045-021-1263-4. ISSN-09718044
2502. Vavilapalli, D.S., Peri, R.G., Singh, S., et al. 2021. g-C₃N₄/Ca₂Fe₂O₅ heterostructures for enhanced photocatalytic degradation of organic effluents under sunlight. *Scientific Reports* 11 (1). doi: 10.1038/s41598-021-99020-6. ISSN-20452322
2503. Panda, A.K., Purohit, A.K., Upadhyay, A., Sahoo, M.K., Kar, P.K. 2021. Corrosion inhibition studies on mild steel in HCl by a newly synthesized benzil monohydrazone based Schiff base. *Journal of the Indian Chemical Society* 98 (12). doi: 10.1016/j.jics.2021.100245. ISSN-00194522
2504. Gupta, R., Kumar, K.C.H., Prasad, M.J.N.V., Pant, P. 2021. Compositionally graded nano-sized borides in a directionally solidified nickel-base superalloy. *Scripta Materialia* 201. doi: 10.1016/j.scriptamat.2021.113981. ISSN-13596462
2505. Janeesh, G.M., Meera, V., Sumangala, T.P., et al. 2021. Enhanced electrical conductivity and structural, mechanical characterization of standalone poly(vinyl alcohol)-graphite nanoplatelets composite films. *Journal of Applied Polymer Science* 138 (10). doi: 10.1002/app.49976. ISSN-00218995
2506. Rahulnath, S.R. 2021. Storytelling from the front lines. *Economic and Political Weekly* 53 (31): 64-65. ISSN-00129976
2507. Powar, O., Jayachandran, A. 2021. Learning from façade failures over urban landscape: aftermath of Cyclone Vardah. *Natural Hazards Review* 22 (1). doi: 10.1061/(ASCE)NH.1527-6996.0000424. ISSN-15276988
2508. Derayatifar, M., Sedaghati, R., Chandramohan, S., Packirisamy, M., Bhat, R. 2021. Dynamic analysis of a functionally graded piezoelectric energy harvester under magnetic interaction. *Journal of Intelligent Material Systems and Structures* 32 (9): 986-1000. doi: 10.1177/1045389X21990886. ISSN-1045389X
2509. Shaji, S., Swaminathan, R. 2021. Segmentation of brain structures in Alzheimer MR images using spatial fuzzy clustering level set. *Biomedical Sciences Instrumentation* 57 (2): 234-240. doi: 10.34107/YHPN9422.04234. ISSN-00678856
2510. Vijayakumar, R. 2021. Note on Weighted Bohr's Inequality. *Lobachevskii Journal of Mathematics* 42 (12): 3035-3042. doi: 10.1134/S1995080221120386. ISSN-19950802
2511. Jana, A., Dutta, S., Roy, M., Aravind, U., Das, M., Balla, V.K. 2021. Microstructure, mechanical, in vitro corrosion and biocompatibility response study of as-cast and as-rolled Mg–5Zn–0.5Zr alloy. *MRS Advances* 6 (18): 472-476. doi: 10.1557/s43580-021-00056-7. ISSN-20598521
2512. Ablikim, M., Achasov, M.N., Bianchi, F., et al. 2021. Measurements of Born cross sections of e⁺e⁻ → D_s⁺+ D_s⁻+ c. c. *Physical Review D* 104 (3). doi: 10.1103/PhysRevD.104.032012. ISSN-24700010
2513. Dutta, G., Veeramani, P. 2021. A short survey on open problems in metric fixed point theory and some related results for nonexpansive mappings. *Journal of Analysis* 29 (2): 369-381. doi: 10.1007/s41478-019-00200-5. ISSN-09713611
2514. Lahiry, S., Karmakar, R., Parameswaran, S. 2021. Using Health Belief Model, TriRisk Model, and Fatalism to predict COVID-19 social distancing compliance behavior. *Social Psychology and Society* 12 (4): 127-145. doi: 10.17759/SPS.2021120408. ISSN-22211527

2515. Dhivyaraja, K., Jegan, M., Vadivukkarasan, M. 2021. On the Rayleigh-Taylor instability induced atomization. *International Journal of Multiphase Flow* 142. doi: 10.1016/j.ijmultiphaseflow.2021.103735. ISSN-03019322
2516. Anoop, M.V., Panchapakesan, N.R. 2021. A computational study of a new design configuration for a turbulence tunnel. *Fluid Dynamics Research* 53 (4). doi: 10.1088/1873-7005/ac13bd. ISSN-01695983
2517. Du, G., Bao, X., Lin, S., Pang, H., Bannur Nanjunda, S., Bao, Q. 2021. Infrared polaritonic biosensors based on two-dimensional materials. *Molecules* 26 (15). doi: 10.3390/molecules26154651. ISSN-14203049
2518. Banerjee, A., Gurugubelli, P.S., Kumar, N., Jaiman, R.K. 2021. Influence of flexible fins on vortex-induced load over a circular cylinder at low Reynolds number. *Physics of Fluids* 33 (11). doi: 10.1063/5.0065562. ISSN-10706631
2519. Kumar, C., Inbakandan, D., Khan, S.A., et al. 2021. Proximate composition and fatty acid profile of Himantura marginata (Blackedge whipray) liver oil. *Biomass Conversion and Biorefinery*. doi: 10.1007/s13399-021-01984-y. ISSN-21906815
2520. Lasitha, P. 2021. Nature of the N-substituted alkyl chain influencing emission properties of naphthalene diimide (NDI) via excimer, and exciplex formation. *ChemistrySelect* 6 (31): 7936-7943. doi: 10.1002/slct.202100770. ISSN-23656549
2521. Ablikim, M., Achasov, M.N., Bianchi, F., et al. 2021. Search for the charged lepton flavor violating decay $J/\psi \rightarrow e\tau$. *Physical Review D* 103 (11). doi: 10.1103/PhysRevD.103.112007. ISSN-24700010
2522. Kharwar, Y.P., Gurusamy, T., Mandal, S., Ramanujam, K. 2021. Activation of oxygen reduction reaction on carbon supported Ni-based complexes. *ChemistrySelect* 6 (34): 9101-9111. doi: 10.1002/slct.202101231. ISSN-23656549
2523. Anjali, M., Stephen, L., Subramanian, V. 2021. Miniaturized metamaterial absorber based on a high permittivity substrate. *Journal of Applied Physics* 130 (11). doi: 10.1063/5.0060696. ISSN-00218979
2524. Thomas, T. 2021. Hindu Sampradayas that integrate Advaita and Dvaita and Catholicism: Creating a framework for interreligious dialogue. *Journal of Ecumenical Studies* 56 (4): 596-631. doi: 10.1353/ecu.2021.0034. ISSN-00220558
2525. Rao, C.P., Periyapatna, R., Haradanahalli, M. 2021. Effect of high aspect ratio flaky aluminum on mechanical properties of epoxy-based particulate composites. *Journal of Vinyl and Additive Technology* 27 (4): 711-721. doi: 10.1002/vnl.21844. ISSN-10835601
2526. Begum, A.F., Balasubramanian, K.K., Shanmugasundaram, B. 2021. Acid activated montmorillonite K-10 mediated intramolecular acylation: Simple and convenient synthesis of 4-chromanones. *Tetrahedron Letters* 82. doi: 10.1016/j.tetlet.2021.153372. ISSN-00404039
2527. Baire, B., Yadav, B. 2021. TfOH catalysed domino-double annulation of arenes with propargylic alcohols: A unified approach to indene polycyclic systems. *Chemical Communications* 57 (95): 12796-12799. doi: 10.1039/d1cc05253e. ISSN-13597345
2528. Mukkavilli, R.S., Papakollu, K., Kumar, R. 2021. Microstructural transitions in camphene-based freeze casted ceria: effect of primary building blocks. *Advances in Applied Ceramics* 120 (4): 248-253. doi: 10.1080/17436753.2021.1945850. ISSN-17436753
2529. Rallapalli, S., Guhathakurta, S., Korrapati, P.S. 2021. Isolation, growth kinetics, and immunophenotypic characterization of adult human cardiac progenitor cells. *Journal of Cellular Physiology* 236 (3): 1840-1853. doi: 10.1002/jcp.29965. ISSN-00219541
2530. Hemachandran, E., Hoque, S.Z., Laurell, T., Sen, A.K. 2021. Reversible stream drop transition in a microfluidic coflow system via on demand exposure to acoustic standing waves. *Physical Review Letters* 127 (13). doi: 10.1103/PhysRevLett.127.134501. ISSN-00319007
2531. Jesuwanth Sugesh, R.G., Sivasubramanian, A., Balaji, S., Chitra, K., Liaw, S.-K. 2021. Carrier depletion type PIN phase shifter in silicon MZM for 200 Gbps operation. *International Journal of Nanotechnology* 18 (44689): 740-750. doi: 10.1504/IJNT.2021.116186. ISSN-14757435
2532. Krishna, G., Maji, V.B. 2021. Numerical simulation of EPBM induced ground settlement. *Indian Geotechnical Journal*. doi: 10.1007/s40098-021-00568-x. ISSN-09719555
2533. Sarda, V., Dash, S.S., Mohan Varma, D.S., Shaikh-Mohammed, J., Sujatha, S. 2021. Design of a low-cost, reconfigurable, standing wheelchair with easy and stable sit-stand-sit transition capability. *Disability and Rehabilitation: Assistive Technology*. doi: 10.1080/17483107.2021.1978564. ISSN-17483107
2534. Ablikim, M., Achasov, M.N., Bloms, et al. 2021. Measurement of the absolute branching fractions of $J/\psi \rightarrow \eta\eta$ and η decay modes. *Physical Review D* 104 (9). doi: 10.1103/PhysRevD.104.092004. ISSN-24700010
2535. Kasim, M.P. 2021. Men, capital and hegemony: Male-male axis of Mappila Muslim masculinities. *Journal of Men's Studies*. doi: 10.1177/10608265211050680. ISSN-10608265
2536. Achari, H. 2021. A brief note on deoxyribozyme. *Journal of RNA and Genomics* 17 (4): 661-662. ISSN-25917781
2537. Irfan, M., Sultana, S.N., Venkateswarlu, B., Jagannatham, M., Dumpala, R., Sunil, B.R. 2021. Zinc-substituted hydroxyapatite: Synthesis, structural analysis, and antimicrobial behavior. *Transactions of the Indian Institute of Metals* 74 (9): 2335-2344. doi: 10.1007/s12666-021-02290-x. ISSN-09722815
2538. Balakrishnan, R., Dixit, A., Rao, M.S.R., Naik, R. 2021. Influence of Ca doping on X-ray photoelectron core-level spectra of magnetoelectric bulk BiFeO₃. *Surface and Interface Analysis* 53 (9): 798-807. doi: 10.1002/sia.6981. ISSN-01422421
2539. Unny, D., Kandregula, G.R., Ramanujam, K. 2021. Computational study of 4,4'-dimethoxy triphenylamine donor linked with low band gap π -spacers by single and

- double bonds for DSSC applications. *New Journal of Chemistry* 45 (36): 16989-17001. doi: 10.1039/d1nj02714j. ISSN-11440546
- 2540.Kandasami, R.K., Singh, S., Murthy, T.G. 2021. Experimental investigations of the stress path dependence of weakly cemented sand. *Journal of Geotechnical and Geoenvironmental Engineering* 147 (4). doi: 10.1061/(ASCE)GT.1943-5606.0002475. ISSN-10900241
- 2541.C. Sankaran, G., Sivalingam, K.M. 2021. A minimal resource high-speed routing lookup mechanism for servers with NetFPGAs. *Transactions on Emerging Telecommunications Technologies* doi: 10.1002/ett.4429. ISSN-21615748
- 2542.Pradhan, S., Rath, M., David, A., Kumar, D., Prellier, W., Rao, M.S.R. 2021. Thickness-dependent domain relaxation dynamics study in epitaxial $K_{0.5}Na_{0.5}NbO_3$ ferroelectric thin films. *ACS Applied Materials and Interfaces* 13 (30): 36407-36415. doi: 10.1021/acsmi.1c05699. ISSN-19448244
- 2543.Kumar, M., Goswami, R. 2021. Managerial ability and real earnings management among Indian listed firms. *Vision*. doi: 10.1177/09722629211046065. ISSN-09722629
- 2544.Saha, A., Saleem, S., Kumar, P.R., Biswas, S.C. 2021. BH_3 -only proteins Puma and Beclin1 regulate autophagic death in neurons in response to Amyloid- β . *Cell Death Discovery* 7 (1). doi: 10.1038/s41420-021-00748-x. ISSN-20587716
- 2545.Moharana, G.P., Singh, S.K., Narayanan, H.K. 2021. Ferromagnetism in Mn doped 3C-SiC: A variable temperature ESR study. *Journal of Magnetism and Magnetic Materials* 527. doi: 10.1016/j.jmmm.2020.167707. ISSN-03048853
- 2546.Jin, X., He, X., Pan, D., et al. 2021. Comprehensive vector radiative transfer model for estimating sea surface salinity from L-band microwave radiometry. *IEEE Transactions on Geoscience and Remote Sensing* 59 (6): 4888-4903. doi: 10.1109/TGRS.2020.3007878. ISSN-01962892
- 2547.Arumugam, D., Sivasailam, K. 2021. Experimental study of characteristics of pressure fluctuation in an electrical submersible pump under different flow rates and speeds using time and frequency domain. *Journal of the Brazilian Society of Mechanical Sciences and Engineering* 43 (6). doi: 10.1007/s40430-021-02983-w. ISSN-16785878
- 2548.Narayanan, J., Senkamalam Periyasamy, D. 2021. The musical language of piety: the semiotics of visual media in shaping the divine status of Karnatik music. *Quarterly Review of Film and Video* 38 (8): 747-765. doi: 10.1080/10509208.2020.1796180. ISSN-10509208
- 2549.Chandrasekaran, N.I., Harshiny, M., Thangasamy, P., Matheswaran, M. 2021. A robust enzymeless glucose sensor based on tin nickel sulfide nanocomposite modified electrodes. *Applied Physics A: Materials Science and Processing* 127 (1). doi: 10.1007/s00339-020-04163-4. ISSN-09478396
- 2550.Banerjee, S., Balamurugan, V., Krishna Kumar, R. 2021. Vibration control of a military vehicle weapon platform under the influence of integrated ride and cornering dynamics. *Proceedings of the Institution of Mechanical Engineers, Part K: Journal of Multi-body Dynamics* 235 (2): 197-216. doi: 10.1177/1464419320963997. ISSN-14644193
- 2551.Bao, X., Sun, T., Shao, H., et al. 2021. A graphene-Mo₂C heterostructure for a highly responsive broadband photodetector. *Physical Chemistry Chemical Physics* 23 (40): 23024-23031. doi: 10.1039/d1cp03536c. ISSN-14639076
- 2552.Visser, P., Ranade, S., Mol, J.M.C., et al. 2021. Li leaching from Li carbonate-primer: Transport pathway development from the scribe edge of a primer/topcoat system. *Progress in Organic Coatings* 158. doi: 10.1016/j.porgcoat.2021.106284. ISSN-03009440
- 2553.Marotta, F., Thandavan, S.P., Banerjee, A., et al. 2021. Vitagenic effect of specific bioactive fractions of rhodiola with trachurus sp. extract against oxidative stress-induced aging in human amnion derived epithelial cell line: In view of a novel senolytic. *Current Aging Science* 14 (2): 139-153. doi: 10.2174/1874609814666210114094030. ISSN-18746128
- 2554.Li, Q., Han, L., Zhao, L., Hou, Y., Sharma, R. 2021. Importance of ynamides in heterocyclic synthesis. *Synthetic Communications* 51 (18): 2754-2781. doi: 10.1080/00397911.2021.1955932. ISSN-00397911
- 2555.Reddy, D.S.K., Kumar, P., Makhija, J., Pasha, A.A., Hameed, A.Z. 2021. CFD of flow dynamic and heat transfer characteristics of dual step cylinders at Re = 2100. *Arabian Journal for Science and Engineering* 46 (12): 12667-12683. doi: 10.1007/s13369-021-06029-0. ISSN-2193567X
- 2556.Singh, V., Sridar, P., Kim, J., Krishnakumar, R., et al. 2021. Semantic segmentation of cerebellum in 2D fetal ultrasound brain images using convolutional neural networks. *IEEE Access* 9, pp 85864-85873. doi: 10.1109/ACCESS.2021.3088946. ISSN-21693536
- 2557.Paul, S., Ranjan, K. 2021. Results on vertex-edge and independent vertex-edge domination. *Journal of Combinatorial Optimization*. doi: 10.1007/s10878-021-00832-z. ISSN-13826905
- 2558.Hernandez-Tamargo, C., Silverwood, I.P., O'Malley, A.J., de Leeuw, N.H. 2021. Quasielastic neutron scattering and molecular dynamics simulation study on the molecular behaviour of catechol in zeolite beta. *Topics in Catalysis* 64 (44816): 707-721. doi: 10.1007/s11244-020-01400-1. ISSN-10225528
- 2559.Srivathsan, S., Raman, S.G.S. 2021. Fretting fatigue behaviour of Ti-6Al-4V in contact with Alloy 718. *Tribology - Materials, Surfaces and Interfaces*. doi: 10.1080/17515831.2021.1930343. ISSN-17515831
- 2560.Jammi, A., Jayachandran, S.A. 2021. Experimental studies on screw connections between cold-formed steel framing and sandwich sheathing. *Structures* 32, pp 2048-2059. doi: 10.1016/j.istruc.2021.02.066. ISSN-23520124
- 2561.Sumith, S., Ramesh Kumar, R. 2021. Thermo-structural analysis of cryogenic tanks with common bulkhead configuration. *Proceedings of the Institution of Mechanical Engineers, Part G: Journal of Aerospace Engineering*. doi: 10.1177/09544100211024789. ISSN-09544100

2562. Paresi, P.R., Narayanan, A., Lou, Y., Yoon, J.W. 2021. Finite element modeling for orthogonal machining of AA2024-T351 alloy with an advanced fracture criterion. *Journal of Manufacturing Science and Engineering, Transactions of the ASME* 143 (11). doi: 10.1115/1.4051057. ISSN-10871357
2563. Pediredla, V.K., Chandrasekaran, K., Annamraju, S., Thondiyath, A. 2021. Design, analysis, and control of a 3-DOF novel haptic device displaying stiffness, texture, shape, and shear. *IEEE Access* 9, pp 72055-72065. doi: 10.1109/ACCESS.2021.3079175. ISSN-21693536
2564. Srinivas, S.T.P., Shanti Swarup, K. 2021. A new iterative linear programming approach to find optimal protective relay settings. *International Transactions on Electrical Energy Systems* 31 (1). doi: 10.1002/2050-7038.12639. ISSN-20507038
2565. Makaram, H., Swaminathan, R. 2021. Influence of pedicle screw thread width and recovery time after surgery on fixation strength. *Current Directions in Biomedical Engineering* 7 (2): 751-754. doi: 10.1515/cdbme-2021-2192. ISSN-23645504
2566. Kushwaha, H., Kotagi, V., Murthy, S.R. 2021. On the effects of transmit power control on multi carrier LAA-WiFi coexistence. *IEEE Transactions on Sustainable Computing*. doi: 10.1109/TSUSC.2021.3132951. ISSN-23773782
2567. Tang, D., Mandal, B., Maitra, S. 2021. Construction of balanced vectorial Boolean functions with almost optimal nonlinearity and very low differential-linear uniformity. *Finite Fields and their Applications* 76. doi: 10.1016/j.ffa.2021.101903. ISSN-10715797
2568. Bodapati, J.D. 2021. Modified self-training based statistical models for image classification and speaker identification. *International Journal of Speech Technology* 24 (4): 1007-1015. doi: 10.1007/s10772-021-09861-9. ISSN-13812416
2569. Mushahary, S.K., Singh, K.D., Jayachandran, S.A. 2021. Mechanical properties of E350 steel during heating and cooling. *Thin-Walled Structures* 160. doi: 10.1016/j.tws.2020.107351. ISSN-02638231
2570. Duraisamy, S., Reddy, R.M. 2021. Stimulus paradigm for an asynchronous concurrent SVEP and EOG based BCI speller system. *IEEE Access* 9, pp 127484-127495. doi: 10.1109/ACCESS.2021.3112257. ISSN-21693536
2571. Kumar, M., Singh, A., Mishra, S. 2021. Enriching mean-field self-consistent texture simulations using the full-field FFT model. *Materials Science and Technology (United Kingdom)* 37 (17): 1343-1352. doi: 10.1080/02670836.2021.2007455. ISSN-02670836
2572. Konstantinou, C., Kandasami, R.K., Wilkes, C., Biscontin, G. 2021. Fluid injection under differential confinement. *Transport in Porous Media* 139 (3): 627-650. doi: 10.1007/s11242-021-01692-1. ISSN-01693913
2573. Swaminathan, G., Sampath, V. 2021. Effect of mode of heating on cyclic temperature range during partial thermal cycling under constant stress of a near-equiatomic Ni-Ti shape memory alloy. *Journal of Materials Engineering and Performance*. doi: 10.1007/s11665-021-06410-y. ISSN-10599495
2574. Rao, H.S.P., Poonguzhali, E., Muthukumaran, J. 2021. Synthesis and conformational studies on 1-aryl-cis-2,6-diphenylpiperidines. *Journal of Molecular Structure* 1232. doi: 10.1016/j.molstruc.2021.130065. ISSN-00222860
2575. Ablikim, M., Achasov, M.N., Bianchi, et al. 2021. Measurement of the inclusive branching fraction for $\psi(3686) \rightarrow K_s^0 + \text{anything}$. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics* 820. doi: 10.1016/j.physletb.2021.136576. ISSN-03702693
2576. Ablikim, M., Achasov, M.N., Bianchi, F., et al. 2021. Determination of the absolute branching fractions of $D^0 \rightarrow K^0 e^+ \nu_e$ and $D^+ \rightarrow K^+ e^+ \nu_e$. Determination of the absolute branching fractions... Ablikim M., et al. *Physical Review D* 104 (5). doi: 10.1103/PhysRevD.104.052008. ISSN-24700010
2577. Maheandera Prabu, P., Sivaprakasam, P., Perumal, V., Kim, S.C., Balasubramani, P., Santosh Kumar, S. 2021. Emission measurement analysis of sapodilla seed oil blending fueled IC engine. *Journal of Nanomaterials* 2021. doi: 10.1155/2021/2385356. ISSN-16874110
2578. Delhi, V.S.K., Devkar, G., Narayanan, S., Devaraj, R., Ayyangar, A., Rajan, A. 2021. WASH for all: A systematic review of Physiological and Sociological Characterization Framework segmentation in WASH policies, programmes, and projects. *Development Policy Review*. doi: 10.1111/dpr.12585. ISSN-09506764
2579. Chavda, J.T., Dodagoudar, G.R. 2021. Experimental studies on a circular open caisson. *International Journal of Physical Modelling in Geotechnics*. doi: 10.1680/jphmg.20.00050. ISSN-1346213X
2580. Vasudevan, L., Jayanthi V., Srinivas, M., Chandra, T.S. 2021. Mucosa-adherent *Pediococcus Pentosaceus* I44 isolated from healthy human and effect of oleic acid on its probiotic properties. *Current Research in Microbial Sciences* 2. doi: 10.1016/j.crmicr.2021.100058. ISSN-26665174
2581. Anbu Anjugam Vandarkuzhali, S., Karthikeyan, G., Pachamuthu, M.P. 2021. Efficient oxidation of 5-Hydroxymethylfurfural to 2,5-furandicarboxylic acid over FeNPs@NH₂-SBA-15 catalyst in water. *Molecular Catalysis* 516. doi: 10.1016/j.mcat.2021.111951. ISSN-24688231
2582. Kansal, M., Dutta, R., Mukhopadhyay, S. 2021. Lattice-based nominative signature using pseudorandom function. *IET Information Security* 15 (4): 317-332. doi: 10.1049/ise2.12022. ISSN-17518709
2583. Ablikim, M., Achasov, M.N., Biernat, J., et al. 2021. Direct measurement of the branching fractions $B(\psi(3686) \rightarrow j/\psi X)$ and $B(\psi(3770) \rightarrow j/\psi X)$, and observation of the state $R(3760)$ in $e^+e^- \rightarrow j/\psi X$. *Physical Review Letters* 127 (8). doi: 10.1103/PhysRevLett.127.082002. ISSN-00319007
2584. Thangaraj, P.R. 2021. The physiological basis of clinical decision-making in venoarterial extracorporeal life support. *Indian Journal of Thoracic and Cardiovascular Surgery* 37, pp 210-220. doi: 10.1007/s12055-020-01064-2. ISSN-09709134

2585. Ablikim, M., Achasov, M.N., Bloms, et al. 2021. Search for the hyperon semileptonic decay. *Physical Review D* 104 (7). doi: 10.1103/PhysRevD.104.072007. ISSN-24700010
2586. Swarnkar, P., Sarfo, D.K., Pannu, A.S., Rainey, T., Sundararajan, T., O'Mullane, A.P. 2021. Co-Electrodeposition of nanostructured Ce-NiO_x on stainless-steel substrates for the oxygen evolution reaction under alkaline conditions. *Advanced Materials Technologies*. doi: 10.1002/admt.202100705. ISSN-2365709X
2587. Mohanan, S., G, R. 2021. Trajectory predictions of new lift separation sabots. *Defence Technology* 17. 4 1361-1373: doi: 10.1016/j.dt.2020.07.005. ISSN-22149147
2588. Krishna, M.C., Subramanian, S. 2021. The development of time-domain in vivo EPR imaging at NCI. *Applied Magnetic Resonance* 52 (10): 1291-1309. doi: 10.1007/s00723-021-01369-4. ISSN-09379347
2589. Bellarmine, F., Eswaran, S.K., Mannam, R., Rao, M.S.R. 2021. Size-dependent whispering gallery modes in Au-coated ZnO microrods. *Journal of Materials Science: Materials in Electronics*. doi: 10.1007/s10854-021-06223-8. ISSN-09574522
2590. Sadhukhan, D., Veluppai, A., Ramaniharan, A.K., Swaminathan, R. 2021. Lateral ventricle texture analysis in alzheimer brain mr images using kernel density estimation. *Biomedical Sciences Instrumentation* 57 (2): 241-246. doi: 10.34107/YHPN9422.04241. ISSN-00678856
2591. Chandra, S.K., Sarkar, R., Ray, S.K., et al. 2021. Determination of η_p factor for clamped SENT thin sheet specimens of an Interstitial Free steel. *International Journal of Fracture* 227 (2): 137-152. doi: 10.1007/s10704-020-00493-9. ISSN-03769429
2592. Salih, K., Elamin, B.K., Al-Faifi, J.A., Khalid, T.B.A., Miskeen, E., Abbas, M. 2021. Application of different standard settings in an innovative curriculum of college of medicine, university of Bisha, Saudi Arabia. *Onkologia i Radioterapia* 15 (7): 44565. ISSN-18968961
2593. Arumugam, D., Sivasailam, K. 2021. Eigen frequency analysis of diffuser casing of a multistage pump. *Sadhana - Academy Proceedings in Engineering Sciences* 46 (3). doi: 10.1007/s12046-021-01630-3. ISSN-02562499
2594. Anusuri, B., Dhilip Kumar, T.J., Kumar, S. 2021. Quantum dynamics of rotational transitions in CN ($X^2\Sigma^+$) by H⁺ collisions. *Frontiers in Chemistry* 9. doi: 10.3389/fchem.2021.790416. ISSN-22962646
2595. Pediredla, V.K., Annamraju, S., Ananda Rangan, A.R., Thondiyath, A. 2021. Enhancement of high-fidelity haptic feedback through multimodal adaptive robust control for teleoperated systems. *IEEE Systems Journal* 15 (4): 5526-5536. doi: 10.1109/JSYST.2020.3032965. ISSN-19328184
2596. Udayakumar, B., Gopal, K.V.N. 2021. Analysis of layered panels with mixed edge boundary conditions using state space differential quadrature method. *Composite Structures* 274. doi: 10.1016/j.compstruct.2021.114355. ISSN-02638223
2597. Nagarkatti, A., Kolar, A.K. 2021. Life cycle based sustainability index of coal power plants in India. *International Journal of Sustainable Development and Planning* 16 (2): 237-249. doi: 10.18280/IJSDP.160204. ISSN-17437601
2598. Arun Prasad, M., Pavithra, E., Dharmalingam, G., Siva Prakasham, D. 2021. Characterisation and structural transformation of yttria dispersed austenitic steel through VHP. *Materials Science and Technology (United Kingdom)* 37 (13): 1139-1151. doi: 10.1080/02670836.2021.1987684. ISSN-02670836
2599. Kumaresh, T., Awini, E.W., Bhaskar, L.K., Djordjevic, M.P., Matović, B., Kumar, R. 2021. Combustion synthesis of luminescent Eu-doped single phase Mayenite. *Journal of Solid State Chemistry* 302. doi: 10.1016/j.jssc.2021.122420. ISSN-00224596
2600. Amit, C., Sathe, G., Elchuri, S.V., et al. 2021. Graphitic carbon nitride causes widespread global molecular changes in epithelial and fibroblast cells. *ACS Omega* 6 (14): 9368-9380. doi: 10.1021/acsomega.0c05513. ISSN-24701343
2601. Thiruvengadam, P., Chand, D.K. 2021. Controlled and predictably selective oxidation of activated and unactivated C(sp³)-H bonds catalyzed by a molybdenum-based metallomicellar catalyst in water. *Journal of Organic Chemistry*. doi: 10.1021/acs.joc.1c02855. ISSN-00223263
2602. Ablikim, M., Achasov, M.N., Bianchi, F., et al. 2021. First measurement of the absolute branching fraction of $\Lambda \rightarrow p\mu^- \nu_\mu^-$. *Physical Review Letters* 127 (12). doi: 10.1103/PhysRevLett.127.121802. ISSN-00319007
2603. Anoop, M.V., Kannan, B.T. 2021. Calibration and data reduction for X-hotwires using cross validation. *Proceedings of the Institution of Mechanical Engineers, Part G: Journal of Aerospace Engineering*. doi: 10.1177/09544100211040305. ISSN-09544100
2604. Haridas, P., Janardhanan, J. 2021. A note on the smoothness of the Minkowski function. *Complex Variables and Elliptic Equations* 66. 4 541-545: doi: 10.1080/17476933.2020.1727898. ISSN-17476933
2605. Senguttuvan, N.B., Sankaran, R., Abraham, K.A., et al. 2021. Effect of discontinuation of ticagrelor and switching-over to other P2Y₁₂ agents in patients with acute coronary syndrome: a single-center real-world experience from India. *Egyptian Heart Journal* 73 (1). doi: 10.1186/s43044-020-00128-3. ISSN-11102608
2606. Joseph, D.P., Radha, R., Venkateswaran, C., et al. 2021. Investigation of the transparent conducting properties of spray-pyrolyzed Li and F co-doped SnO₂ thin film electrodes. *Journal of Materials Science: Materials in Electronics*. doi: 10.1007/s10854-021-06330-6. ISSN-09574522
2607. Ding, Z., Liu, R., Du, J., et al. 2021. Experimental study of quantum coherence decomposition and trade-off relations in a tripartite system. *npj Quantum Information* 7 (1). doi: 10.1038/s41534-021-00485-0. ISSN-20566387
2608. Kiri Sivakumar, K.H., Aravamudan, K. 2021. Simulation of a kinetic model integrated with variable catalyst holdup applied in industrial fluid catalytic cracking risers. *International Journal of Chemical Reactor Engineering*. doi: 10.1515/ijcre-2021-0100. ISSN-15426580

2609. Alamanda, S.K., Boddeti, K.K. 2021. Relative distance measure arithmetic-based available transfer capability calculation with uncertainty in wind power generation. *International Transactions on Electrical Energy Systems* 31 (11). doi: 10.1002/2050-7038.13112. ISSN-20507038
2610. Sukhani, S., Punith, N., Lakshminarayana, R., et al. 2021. Plasma-activated water as nitrogen source for algal growth: a microcosm study. *IEEE Transactions on Plasma Science* 49 (2): 551-556. doi: 10.1109/TPS.2021.3051728. ISSN-00933813
2611. Ablikim, M., Achasov, M.N., Bianchi, F., et al. 2021. Observation of the decays $\chi_{c1} \rightarrow nK_S^0\Lambda^- + c.c.$. *Journal of High Energy Physics* 2021(11). doi: 10.1007/JHEP11(2021)217. ISSN-10298479
2612. Kumar, H., Ganapathy, N., Puthankattil, S.D., Swaminathan, R. 2021. EEG based emotion recognition using entropy features and Bayesian optimized random forest. *Current Directions in Biomedical Engineering* 7 (2): 767-770. doi: 10.1515/cdbme-2021-2196. ISSN-23645504
2613. Kumar, H., Puthankattil, S.D., Swaminathan, R. 2021. Analysis of EEG response for audio-visual stimuli in frontal electrodes at theta frequency band using the topological features. *Biomedical Sciences Instrumentation* 57 (2): 333-339. doi: 10.34107/YHPN9422.04333. ISSN-00678856
2614. Boranna, R., Nataraj, C.T., Prashanth, G.R., et al. 2021. Fluorescence signal enhancement by a spray-assisted layer-by-layer technique on aluminum tape devices for biosensing applications. *Langmuir*. doi: 10.1021/acs.langmuir.1c03186. ISSN-07437463
2615. Katiyar, S.K., B. Chand, A.K., Jha, S. 2021. Parameter identification for constrained data using a new class of rational fractal functions. *Numerical Analysis and Applications* 14 (3): 225-237. doi: 10.1134/S1995423921030034. ISSN-19954239
2616. Ghosh, R., Das, S., Roy, D., Ray, A., Benito-León, J. 2021. Moyamoya angiopathy in a case of Klinefelter syndrome. *Child's Nervous System*. doi: 10.1007/s00381-021-05371-w. ISSN-02567040
2617. Jangam, S. 2021. Pressure distribution on planing hull bottom with stern interceptor. *Applied Ocean Research* 117. doi: 10.1016/j.apor.2021.102953. ISSN-01411187
2618. Ablikim, M., Achasov, M.N., Bloms, J., et al. 2021. Measurement of the branching fraction of and search for a CP-violating asymmetry in $\eta' \rightarrow \pi^+\pi^-e^+e^-$ At BESIII. *Physical Review D* 103 (9). doi: 10.1103/PhysRevD.103.092005. ISSN-24700010
2619. Dhabu, A.C., Gudimella, R.S.T. 2021. Influence of Himalayan topography on earthquake ground motions. *Arabian Journal of Geosciences* 14 (18). doi: 10.1007/s12517-021-08111-1. ISSN-18667511
2620. Prashantha Kumar, H.G., Anthony Xavier, M., Simon Lobo, L. 2021. Property evaluation of hot extruded aluminum alloy – Graphene nanocomposites. *Materials Letters* 282. doi: 10.1016/j.matlet.2020.128688. ISSN-0167577X
2621. Kavisri, M., Marykutty Abraham, Gopal Prabakaran, Manickam Elangovan, Meivelu Moovendhan. 2021. Phytochemistry, bioactive potential and chemical characterization of metabolites from marine microalgae (*Spirulina platensis*) biomass. *Biomass Conversion and Biorefinery*. doi: 10.1007/s13399-021-01689-2. ISSN-21906815
2622. Andra, S., Balu, S.K., Arumugam, G., et al. 2021. Synthesis, characterization, and antimicrobial properties of novel dual drug loaded electrospun mat for wound dressing applications. *Journal of Bioactive and Compatible Polymers* 36 (5): 431-443. doi: 10.1177/08839115211046413. ISSN-08839115
2623. Shaji, S., Ganapathy, N., Swaminathan, R. 2021. Classification of Alzheimer condition using MR brain images and inception-residual network model. *Current Directions in Biomedical Engineering* 7 (2): 763-766. doi: 10.1515/cdbme-2021-2195. ISSN-23645504
2624. Sivasankaran, S., Ramkumar, K.R., Irfan, O.M., et al. 2021. Microstructural evolutions, hot deformation and work hardening behaviour of novel Al-Zn binary alloys processed by squeezing and hot extrusion. *Metals and Materials International*. doi: 10.1007/s12540-020-00945-w. ISSN-15989623
2625. Rajkumar, K., Parthiban, P., Lokesh, N. 2021. Control of transformerless T-type DVR using multiple delayed signal cancellation PLL under unbalanced and distorted grid condition. *Engineering Science and Technology, an International Journal* 24 (4): 925-935. doi: 10.1016/j.jestch.2021.01.013. ISSN-22150986
2626. Ablikim, M., Achasov, M.N., Biernat, J., et al. 2021. Cross section measurement of $e^+e^- \rightarrow pp^-\eta$ and $e^+e^- \rightarrow pp^-\omega$ at center-of-mass energies between 3.773 GeV and 4.6 GeV. Cross-section measurement of $e^+e^- \rightarrow pp^-\eta$... Ablikim M. et al.. *Physical Review D* 104 (9). doi: 10.1103/PhysRevD.104.092008. ISSN-24700010
2627. Padmavathy, K.P., Vuttaradhi, V.K., Venkatraman, G., et al. 2021. Clinical evaluation of proline, glutamic acid, and leucine-rich protein 1 expression in astrocytomas and correlations with the proliferation marker Ki-67. *Journal of Molecular Neuroscience* 71 (4): 724-733. doi: 10.1007/s12031-020-01690-w. ISSN-08958696
2628. Aadishwaran, A.B., Diwan, S.S. 2021. Predominance of pressure transport in spatial energy budget for a mixing layer approaching absolute instability. *Physical Review Fluids* 6 (9). doi: 10.1103/PhysRevFluids.6.L091901. ISSN-2469990X
2629. Jangam, S., Sahoo, P. 2021. Numerical investigation of interceptor effect on seakeeping behaviour of planing hull advancing in regular head waves. *Brodogradnja* 72 (2): 73-92. doi: 10.21278/brod72205. ISSN-0007215X
2630. Sudeesh, S., Sujatha, S., Shunmugam, M.S. 2021. The effects of polycentric knee design and alignment on swing phase gait parameters: a simulation approach. *Journal of Prosthetics and Orthotics* 33 (4): 266-278. doi: 10.1097/JPO.0000000000000384. ISSN-10408800
2631. Chakraborty, G., Bardhan, S., Saha, S.K. 2021. Unfolding of tryptophanoctyl ester and elastic deformation of host micelles via $RR'_3N^+\cdots\pi$ interaction: conceivable relevance to wrapping process of receptor mediated endocytosis. *ChemPhysChem* 22 (24): 2535-2549. doi: 10.1002/cphc.202100582. ISSN-14394235
2632. Adigilli, H.K., Reddy, K.M., Joardar, J., et al. 2021. The first

- report on formation of Al-W-Cu grain boundary phase and its influence on mechanical behavior of 2D-WS₂ reinforced Al-4Cu alloy matrix composites. *Journal of Alloys and Compounds* 883. doi: 10.1016/j.jallcom.2021.160792. ISSN-09258388
- 2633.Korobeinichev, O.P., Kumaran, S.M., Tereshchenko, A.G., et al. 2021. Experimental and numerical study of flame spread over bed of pine needles. *Fire Technology*. doi: 10.1007/s10694-021-01190-2. ISSN-00152684
- 2634.Baskaran, G. 2021. Anderson pseudospin and superradiant superconductivity revisited. *Annals of Physics* 435. doi: 10.1016/j.aop.2021.168580. ISSN-00034916
- 2635.Selvaraju, V., Pa, K., Swaminathan, R. 2021. Analysis of uterine electromyography signals using time-frequency based topological features for detection of preterm birth. *Current Directions in Biomedical Engineering* 7 (2): 867-870. doi: 10.1515/cdbme-2021-2221. ISSN-23645504
- 2636.Behuria, H.G., Arumugam, G.S., Pal, C.K., Jena, A.K., Sahu, S.K. 2021. Lipid flip-flop-inducing antimicrobial phytochemicals from gymnema sylvestre are bacterial membrane permeability enhancers. *ACS Omega* 6 (51): 35667-35678. doi: 10.1021/acsomega.1c05581. ISSN-24701343
- 2637.Ojha, R., Helander, T., Kumar, K.C.H. 2021. Experimental Determination of Phase Equilibria in Fe-Cr-Ni-Al System. *Journal of Phase Equilibria and Diffusion* 42. 3 428-438. doi: 10.1007/s11669-021-00896-8. ISSN-15477037
- 2638.Khan, S., Baire, B. 2021. Fe-Catalysed coupling reactions between alkynes and alcohols. *Chemical Record* 21 (12): 3662-3673. doi: 10.1002/tcr.202100130. ISSN-15278999
- 2639.Kurian, J., Shurooque, K.S., Ramkumar, V., Chakkumkumarath, L., Kanoth M., M. 2021. Delocalization effects and tunable emission in a class of charged cyclazines with nitrogen on the periphery. *Organic Letters* 23 (9): 3354-3358. doi: 10.1021/acs.orglett.1c00827. ISSN-15237060
- 2640.Mahesh Rawat, P., Sai, L., Behera, R.P., Singh, K.K., Zhu, D. 2021. Shear performance of MWCNTs modified single-lap joints of glass/epoxy laminates. *Journal of Adhesion Science and Technology*. doi: 10.1080/01694243.2021.2011825. ISSN-01694243
- 2641.Gupta, S., Bhattar, P., Kakkar, V. 2021. Point-of-care detection of tuberculosis using magnetoresistive biosensing chip. *Tuberculosis* 127. doi: 10.1016/j.tube.2021.102055. ISSN-14729792
- 2642.Assis, S.M., Suppandipillai, J., Kandasamy, J. 2021. Transverse injection experiments within an axisymmetric scramjet combustor. *International Journal of Turbo and Jet Engines* 38 (4): 489-495. doi: 10.1515/tjj-2019-0022. ISSN-03340082
- 2643.Ghosh, R., Dubey, S., Benito-León, J., et al. 2021. Wernicke's encephalopathy precipitated by neuromyelitis optica spectrum disorder and Graves' disease: A tale of clinical and radiological dilemmas. *Clinical and Experimental Neuroimmunology*. doi: 10.1111/cen3.12661. ISSN-17591961
- 2644.Rama Rao, G.V., Sunil, J.C., Vijaya, R. 2021. Soil-structure interaction effects on seismic response of open ground storey buildings. *Sadhana - Academy Proceedings in Engineering Sciences* 46 (2). doi: 10.1007/s12046-021-01633-0. ISSN-02562499
- 2645.Buonanno, G., Brancaccio, A., Costanzo, S., Solimene, R. 2021. A forward-backward iterative procedure for improving the resolution of resonant microwave sensors. *Electronics (Switzerland)* 10 (23). doi: 10.3390/electronics10232930. ISSN-20799292
- 2646.Mondal, S., Nair, M.T. 2021. Identification of matrix diffusion coefficient in a parabolic PDE. *Computational Methods in Applied Mathematics*. doi: 10.1515/cmam-2021-0061. ISSN-16094840
- 2647.Ramakrishnan, R., Subramaniam Nachimuthu, D. 2021. Design of state feedback LQR based dual mode fractional-order PID controller using inertia weighted PSO algorithm: for control of an underactuated system. *Journal of The Institution of Engineers (India): Series C* 102 (6): 1403-1417. doi: 10.1007/s40032-021-00756-x. ISSN-22500545
- 2648.Damani, D.N., Sundaram, D.S.B., Damani, S., Kapoor, A., Arruda-Olson, A.M., Arunachalam, S.P. 2021. Investigation of synchronized acquisition of electrocardiogram and phonocardiogram signals towards electromechanical profiling of the heart. *Biomedical Sciences Instrumentation* 57 (2): 305-312. doi: 10.34107/YHPN9422.04305. ISSN-00678856
- 2649.Chaubey, B., Chandrakumar, N., Pal, S. 2021. Preferential solvation of carbohydrates in water-trifluoroethanol mixtures: a solvent detected heteronuclear NMR approach. *Physical Chemistry Chemical Physics* 23 (27): 14564-14568. doi: 10.1039/d1cp01531a. ISSN-14639076
- 2650.Damani, D.N., Sundaram, D.S.B., Damani, S., Kapoor, A., Arruda-Olson, A.M., Arunachalam, S.P. 2021. Investigation of synchronized acquisition of electrocardiogram and phonocardiogram signals towards electromechanical profiling of the heart. *Biomedical Sciences Instrumentation* 57 (2): 305-312. doi: 10.34107/YHPN9422.04305. ISSN-00678856
- 2651.Chaubey, B., Chandrakumar, N., Pal, S. 2021. Preferential solvation of carbohydrates in water-trifluoroethanol mixtures: a solvent detected heteronuclear NMR approach. *Physical Chemistry Chemical Physics* 23 (27): 14564-14568. doi: 10.1039/d1cp01531a. ISSN-14639076

Papers published in trade publications

- 1.Sakthivel, T., Gettu, R., Pillai, R.G. 2021. Drying shrinkage of concrete with blended cementitious binders: Experimental study and application of models. *Indian Concrete Journal* 95 (10), 34-50
- 2.Appa Rao, G., Kondalraj, R. 2021. Shear strength and rationality of strut-and-tie method for design of deep beams. *Indian Concrete Journal* 95 (10), 16-24
- 3.Gouri Krishna, S.R., Menon, D., Meher Prasad, A. 2021. Simplified modelling approach for predicting lateral load behavior of GFRG walls. *Indian Concrete Journal* 95 (10), 15-Jul
- 4.Sakthivel, T., Gettu, R., Pillai, R.G. 2021. Adjustment of RILEM B4 model parameters for better prediction of the

- shrinkage response of blended cement concrete. *Indian Concrete Journal* 95 (10), 51-57
5. Stephen, S.J., Zangelmi Júnior, E., Gettu, R., Aguado, A., Vaishnav Kumar, S. 2021. Determination of the complete stress-strain response of concrete under uniaxial compression. *Indian Concrete Journal* 95 (9), 41-53
6. Govindarajan, H.K., Ganesh, L.S. 2021. Renewable energy for electricity use in India: Evidence from India's Smart Cities Mission. *Renewable Energy Focus* 38, pp 36-43. doi: 10.1016/j.ref.2021.05.005
7. Rao, P.S., Shariff, M.N., Harsha, N. 2021. Studies on p-m interaction curves for uniaxial bending of high strength concrete rectangular sections. *Indian Concrete Journal* 95 (7), 41-48
8. Mohan S., Abhijith G.R. 2021. Closure to hydraulic analysis of intermittent water-distribution networks considering partial-flow regimes by S Mohan and G R Abhijith. *Journal of Water Resources Planning and Management* 147 (11). doi: 10.1061/(ASCE)WR.1943-5452.00014721.1061/(ASCE)WR.1943-5452.0001472
9. Pratyush Kumar U Sarava. 2021. Feasibility on accurate measurement of non uniform strain field through contact methods. *Applications in Engineering Science* 7, p 07-Jul. doi: 10.1016/j.apples.2021.10005110.1016/j.apples.2021.100051
10. Kalyan, NSSP and Kandasami, Ramesh Kan. 2021. Computationally efficient approach to quantify 2D particle morphological descriptors. *EPJ Web of Conferences* 249. doi: 10.1051/epjconf/20212490500210.1051/epjconf/202124905002
11. Varun Kumar Reja, Parth Bhadaniya, Koshy Varghese and Quang Phuc Ha. 2021. Vision based progress monitoring of building structures using point intensity approach. *2021 Proceedings of the 38th ISARC, Dubai, UAE, ISBN 978 952 69524 1 3, ISSN 2413 5844*, pp 349-356. doi: 10.22260/ISARC2021/004910.22260/ISARC2021/0049
12. Vineela Thellakula, Varun Kumar Reja and Koshy Varghese. 2021. A web based GIS tool for progress monitoring of linear construction projects. *2021 Proceedings of the 38th ISARC, Dubai, UAE*, pp 33-40. doi: 10.22260/ISARC2021/000710.22260/ISARC2021/0007
13. Julina, M.; Thyagaraj, T. 2021. Shrinkage behaviour of slurry-consolidated and compacted clay soil. *Marine Georesources & Geotechnology*
14. Surya, Sathee Surendran; Arnepalli, Dali Naidu. 2021. A prediction model for the gas permeability of geomaterials. *Environmental Geotechnics* 8 (8), 517-528
15. Mishra, Vimal; Aadhar, Saran; Mahto, Shanti Shwarup. 2021. Anthropogenic warming and intraseasonal summer monsoon variability amplify the risk of future flash droughts in India. *NPJ Climate and Atmospheric Science* 4 (1)
16. Ambika, Anukesh Krishnankutty; Mishra, Vimal. 2021. Modulation of compound extremes of low soil moisture and high vapor pressure deficit by irrigation in India. *Journal of Geophysical Research-Atmospheres* 126 (7)
17. Aadhar, Saran; Mishra, Vimal. 2021. On the occurrence of the worst drought in South Asia in the observed and future climate. *Environmental Research Letters* 16 (2)
18. Torres, Jose I.; Bojorquez, Eden; Leal, Martin., et al. 2021. Peak floor acceleration prediction using spectral shape: Comparison between acceleration and velocity. *Earthquakes And Structures* 21 (5), 551-562
19. Kamde, Deepak K.; Kessler, Sylvia; Pillai, Radhakrishna G. 2021. Condition assessment of reinforced concrete systems with fusion bonded epoxy coated rebars. *CORROSION* 77 (12), 1332-1343
20. Narayanan, S.; Tamizhdurai, P.; Mangesh, V. L.; Ragupathi, C.; Krishnan, P. Santhana; Ramesh, A. 2021. Recent advances in the synthesis and applications of mordenite zeolite - review. *RSC ADVANCES* 11 (1), 250-267
21. Sarangi, Chandan; Qian, Yun; Li, Jianfeng; Leung, L. Ruby; Chakraborty, T. C.; Liu, Ying. 2021. Urbanization amplifies nighttime heat stress on warmer days over the US. *Geophysical Research Letters* 48 (24)
22. Dias, Felipe F.; Kim, Taehooie; Ramadurai, Gitakrishnan, et al. 2021. Modeling the evolution of ride-hailing adoption and usage: A case study of the Puget Sound Region. *Transportation Research Record* 2675 (3), 81-97
23. Jiang, Ning-Jun; Hanson, James L.; Gao, Zhiwu, et al. 2021. Geotechnical and geoenvironmental engineering education during the pandemic. *Environmental Geotechnics* 8 (3), 233-243
24. Sharma, Ashutosh; Tayal, Rajiv K.; Pradeep, T., et al. 2021. Sanjay Bajpai (1965-2021). *Current Science* 120 (11), 1790-1791
25. Ranjan, Prem; Parvathi, G.; Sarathi, R.; Robinson, R. G.; Harid, N.; Griffiths, H. 2021. Influence of water, acid rain and bentonite on ionization characteristics of sand under lightning impulse voltage. *IEEE Transactions on Dielectrics and Electrical Insulation* 28 (3), 897-905
26. Venkitesh D. 2021. Changing phases of fiber optic communication. *Journal of Optics India*. doi: 10.1007/s12596-021-00781-010.1007/s12596-021-00781-0
27. Thangavel K., Morozkin A.V., Murthy V.R.K., Rayaprol S., Poppl A., Nirmala R. 2021. Inverse magnetocaloric effect and the magnetostructural transition in $\text{Pr}_{0.15}\text{Ca}_{0.85}\text{MnO}_3$ manganite. *IEEE Transactions on Magnetics*. doi: 10.1109/TMAG.2021.309264410.1109/TMAG.2021.3092644
28. Chauhan Amit, Nanda, B. R. K. 2021. Induction of large magnetic anisotropy energy and formation of multiple Dirac states in SrIrO_3 films Role of correlation and spin orbit coupling. *Applied Physics Letters* 119 (26), 06-Jan. doi: 10.1063/5.006908610.1063/5.0069086K.
29. R. Namboodiri, Prem B. Bisht, V. R. Dantham. 2021. Cascaded Förster resonance energy transfer and role of relay dyes. *Journal of Atomic, Molecular, Condensed Matter and Nano Physics* 2, p 14-Jan. doi: 10.26713/jamcnp.v8i1.149110.26713/jamcnp.v8i1.1491



Appendices

Appendix 1. The Senate

S.No	Name	Department
1	Prof. Bhaskar Ramamurthi Prof. Kamakoti V (Director from 17.01.2022)	Computer Science
2	Prof. Ramakrishna M	Aerospace Engineering
3	Prof. Sriram P	Aerospace Engineering
4	Prof. Bhaskar K	Aerospace Engineering
5	Prof. Luoyi Tao	Aerospace Engineering
6	Prof. Velmurugan R	Aerospace Engineering
7	Prof. Sujith R I	Aerospace Engineering
8	Prof. Chakravarthy S R	Aerospace Engineering
9	Prof. Nagendra Gopal K V	Aerospace Engineering
10	Prof. P.A. Ramakrishna	Aerospace Engineering
11	Prof. Amit Kumar	Aerospace Engineering
12	Prof. Rajesh G	Aerospace Engineering
13	Prof. Nandan Kumar Sinha	Aerospace Engineering
14	Prof. Sameen A	Aerospace Engineering

S.No	Name	Department
15	Prof. Sunetra Sarkar	Aerospace Engineering
16	Prof. Sivasambu Mahesh	Aerospace Engineering
17	Prof. Murthy N. Haradanahalli	Aerospace Engineering
18	Prof. Muruganandam T M	Aerospace Engineering
19	Prof. Ramasubba Reddy M	Applied Mechanics
20	Prof. Ramesh K	Applied Mechanics
21	Prof. Lakshmana Rao C	Applied Mechanics
22	Prof. Ramakrishnan S	Applied Mechanics
23	Prof. Sivakumar M S	Applied Mechanics
24	Prof. Vengadesan S	Applied Mechanics
25	Prof. Baburaj A P	Applied Mechanics
26	Prof. Prasad Patnaik B S V	Applied Mechanics
27	Prof. Manivannan M	Applied Mechanics
28	Prof. Mahesh Venkata Panchagnula	Applied Mechanics

S.No	Name	Department	S.No	Name	Department
29	Prof. Sarith P Sathian	Applied Mechanics	52	Prof. Sanjib Senapati	Bio Technology
30	Prof. Anuradha Banerjee	Applied Mechanics	53	Prof. Madhulika Dixit	Bio Technology
31	Prof. Sayan Gupta	Applied Mechanics	54	Prof. Rayala Suresh Kumar	Bio Technology
32	Prof. Pijush Ghosh	Applied Mechanics	55	Prof. Rajagopal K	Civil Engineering
33	Prof. Arockiarajan A	Applied Mechanics	56	Prof. Devdas Menon	Civil Engineering
34	Prof. Arul Prakash K	Applied Mechanics	57	Prof. Ramamurthy K	Civil Engineering
35	Prof. Abhijit Chaudhuri	Applied Mechanics	58	Prof. Sivanandan R	Civil Engineering
36	Prof. Sujatha N	Applied Mechanics	59	Prof. Mohan S	Civil Engineering
37	Prof. Arun Kumar Thittai	Applied Mechanics	60	Prof. Ballamudi Srinivasa Murthy	Civil Engineering
38	Prof. Mahalingam S	Bio Technology	61	Prof. Arul Jayachandran	Civil Engineering
39	Prof. Guhan Jayaraman	Bio Technology	62	Prof. Meher Prasad A	Civil Engineering
40	Prof. Subramaniam K	Bio Technology	63	Prof. Alagusundaramoorthy P	Civil Engineering
41	Prof. Suraish Kumar G K	Bio Technology	64	Prof. Ravindra Gettu	Civil Engineering
42	Prof. Aradhya Gopala Krishna	Bio Technology	65	Prof. Satyanarayana K N	Civil Engineering
43	Prof. Baskar R	Bio Technology	66	Prof. Murthy C V R	Civil Engineering
44	Prof. Michael Gromiha M	Bio Technology	67	Prof. Koshy Varghese	Civil Engineering
45	Prof. Srinivasa Chakravarthy V	Bio Technology	68	Prof. Gangolu Appa Rao	Civil Engineering
46	Prof. Amal Kanti Bera	Bio Technology	69	Prof. Satishkumar S. Rajaram	Civil Engineering
47	Prof. Chandraraj K	Bio Technology	70	Prof. Robinson R G	Civil Engineering
48	Prof. Kesavan V	Bio Technology	71	Prof. Murali Krishnan J	Civil Engineering
49	Prof. Manoj N	Bio Technology	72	Prof. Amlan Kumar Sengupta	Civil Engineering
50	Prof. Nitish Ranjan Mahapatra	Bio Technology	73	Prof. Ligy Philip	Civil Engineering
51	Prof. Sathyanarayana Naidu G	Bio Technology	74	Prof. Benny Raphael	Civil Engineering

S.No	Name	Department
75	Prof. Goudappa Dodagoudar	Civil Engineering
76	Prof. Sudheer K P	Civil Engineering
77	Prof. Nageswara Rao B	Civil Engineering
78	Prof. Indumathi Manivannan Nambi	Civil Engineering
79	Prof. Shiva Nagendra S M	Civil Engineering
80	Prof. Karthik K. Srinivasan	Civil Engineering
81	Prof. Lelitha Devi V	Civil Engineering
82	Prof. Manu Santhanam	Civil Engineering
83	Prof. Thyagaraj T	Civil Engineering
84	Prof. Dali Naidu Arnepalli	Civil Engineering
85	Prof. Balaji Narasimhan	Civil Engineering
86	Prof. Raghukanth S T G	Civil Engineering
87	Prof. Ashwin Mahalingam	Civil Engineering
88	Prof. Sachin S. Gunthe	Civil Engineering
89	Prof. Saravanan U	Civil Engineering
90	Prof. Subhadeep Banerjee	Civil Engineering
91	Prof. Nagarajan R	Chemical Engineering
92	Prof. Shankar Narasimhan S	Chemical Engineering
93	Prof. Pushpavanam S	Chemical Engineering
94	Prof. Sreenivas Jayanti	Chemical Engineering
95	Prof. Ravi R	Chemical Engineering
96	Prof. Susy Varughese	Chemical Engineering
97	Prof. Kannan A	Chemical Engineering

S.No	Name	Department
98	Prof. Upendra Natarajan	Chemical Engineering
99	Prof. Abhijit P. Deshpande	Chemical Engineering
100	Prof. Raghunathan Rengasamy	Chemical Engineering
101	Prof. Tanmay Basak	Chemical Engineering
102	Prof. Rajagopalan Srinivasan	Chemical Engineering
103	Prof. Ravi krishna R	Chemical Engineering
104	Prof. Ramanathan S	Chemical Engineering
105	Prof. Preeti Aghalayam	Chemical Engineering
106	Prof. Arun K. Tangirala	Chemical Engineering
107	Prof. Renganathan T	Chemical Engineering
108	Prof. Basavaraja Madivala Gurapa	Chemical Engineering
109	Prof. Raghuram Chetty	Chemical Engineering
110	Prof. Sridharakumar Narasimhan	Chemical Engineering
111	Prof. Rajnish Kumar	Chemical Engineering
112	Prof. Jitendra Shital Sangwai	Chemical Engineering
113	Prof. Niket S Kaisare	Chemical Engineering
114	Prof. Hema A. Murthy	Computer Science
115	Prof. Deepak Khemani	Computer Science
116	Prof. Siva Ram Murthy C	Computer Science
117	Prof. Sreenivasa Kumar P	Computer Science
118	Prof. Chandra Sekhar C	Computer Science
119	Prof. Sukhendu Das	Computer Science
120	Prof. Janaki Ram D	Computer Science

S.No	Name	Department
121	Prof. Krishnamoorthy Sivalingam	Computer Science
122	Prof. Narayanaswamy N S	Computer Science
123	Prof. Ravindran B	Computer Science
124	Prof. Anurag Mittal	Computer Science
125	Prof. Sutanu Chakraborti	Computer Science
126	Prof. Nandivada Venkata Krishna	Computer Science
127	Prof. Madhu Mutyam	Computer Science
128	Prof. Jayalal Sarma M N	Computer Science
129	Prof. Sankararaman S	Chemistry
130	Prof. Vidyasagar K	Chemistry
131	Prof. Archita Patnaik	Chemistry
132	Prof. Mishra A K	Chemistry
133	Prof. Selvam P	Chemistry
134	Prof. Ranga Rao G	Chemistry
135	Prof. Narasimha Murthy N	Chemistry
136	Prof. Indrapal Singh Aiden	Chemistry
137	Prof. Baskaran S	Chemistry
138	Prof. Dhamodharan R	Chemistry
139	Prof. Pradeep Thalappil	Chemistry
140	Prof. Bhyrappa P	Chemistry
141	Prof. Sanjay Kumar	Chemistry
142	Prof. Sundargopal Ghosh	Chemistry
143	Prof. Dillip Kumar Chand	Chemistry
144	Prof. Muraleedharan K M	Chemistry
145	Prof. Rajakumar B	Chemistry
146	Prof. Sekar G	Chemistry
147	Prof. Edamana Prasad	Chemistry
148	Prof. Arti Dua	Chemistry
149	Prof. Ramesh L Gardas	Chemistry
150	Prof. Masilamani Jeganmohan	Chemistry
151	Prof. Kothandaraman R	Chemistry
152	Prof. Pazhamalai Anbarasan	Chemistry

S.No	Name	Department
153	Prof. Nilesh Jayantilal Vasa	Engineering Design
154	Prof. Asokan Thondiyath	Engineering Design
155	Prof. Rengaswamy Jayaganthan	Engineering Design
156	Prof. Srikanth Vedantam	Engineering Design
157	Prof. Ramanathan M	Engineering Design
158	Prof. Venkatesh B	Engineering Design
159	Prof. Saravana Kumar G	Engineering Design
160	Prof. Kavitha Arunachalam	Engineering Design
161	Prof. Shankar Ram C S	Engineering Design
162	Prof. Bhaskar Ramamurthi (Director up to 16.01.2022)	Electrical Engineering
163	Prof. Enakshi Bhattacharya	Electrical Engineering
164	Prof. Harishankar Ramachandran	Electrical Engineering
165	Prof. Amitava Dasgupta	Electrical Engineering
166	Prof. Aravind R	Electrical Engineering
167	Prof. Devendra Jalihal	Electrical Engineering
168	Prof. Karmalkar S	Electrical Engineering
169	Prof. Nandita Dasgupta	Electrical Engineering
170	Prof. Ravinder David Koilpillai	Electrical Engineering
171	Prof. Shanthi Swarup K	Electrical Engineering
172	Prof. Vinita Vasudevan	Electrical Engineering
173	Prof. Giridhar K	Electrical Engineering
174	Prof. Sridharan K	Electrical Engineering

S.No	Name	Department
175	Prof. Srinivasan Umesh	Electrical Engineering
176	Prof. Sarathi R	Electrical Engineering
177	Prof. Mahesh Kumar	Electrical Engineering
178	Prof. Krishna Vasudevan	Electrical Engineering
179	Prof. Rajagopalan A N	Electrical Engineering
180	Prof. Bijoy Krishna Das	Electrical Engineering
181	Prof. Shanti Bhattacharya	Electrical Engineering
182	Prof. Anil Prabhakar	Electrical Engineering
183	Prof. Balaji S	Electrical Engineering
184	Prof. Lakshminarasamma	Electrical Engineering
185	Prof. Deepa Venkitesh	Electrical Engineering
186	Prof. Arunkumar D Mahindrakar	Electrical Engineering
187	Prof. Shanthi Pavan Y	Electrical Engineering
188	Prof. Srirama Srinivas	Electrical Engineering
189	Prof. Nagendra Krishnapura	Electrical Engineering
190	Prof. Nitin Chandrachoodan	Electrical Engineering
191	Prof. Srikrishna B	Electrical Engineering
192	Prof. Andrew Edwin Raj T	Electrical Engineering
193	Prof. Anjan Chakravorty	Electrical Engineering
194	Prof. Bobby George	Electrical Engineering
195	Prof. Anbarasu Manivannan	Electrical Engineering
196	Prof. Sheetal Kalyani	Electrical Engineering
197	Prof. Mohanasankar Sivaprakasam	Electrical Engineering

S.No	Name	Department
198	Prof. Kalyan Kumar B	Electrical Engineering
199	Prof. Rajesh Kumar	Humanities and Social Science
200	Prof. Jyotirmaya Tripathy	Humanities and Social Science
201	Prof. Umakant Dash	Humanities and Social Science
202	Prof. Suresh Babu M	Humanities and Social Science
203	Prof. Aysha Iqbal	Humanities and Social Science
204	Prof. Swarnalatha R	Humanities and Social Science
205	Prof. Sreekumar N	Humanities and Social Science
206	Prof. Senkamalam Periyasamy Dhanavel	Humanities and Social Science
207	Prof. Sudhir Chella Rajan	Humanities and Social Science
208	Prof. Muraleedharan V R	Humanities and Social Science
209	Prof. Srinivasa Rao Manam	Mathematics
210	Prof. Jayanthan A V	Mathematics
211	Prof. Shaiju A J	Mathematics
212	Prof. Arya Kumar Bedabrata Chand	Mathematics
213	Prof. Chidella Srinivasa Rao	Mathematics
214	Prof. Sivakumar K C	Mathematics
215	Prof. Radha R	Mathematics
216	Prof. Sanyasiraju Y V S S	Mathematics
217	Prof. Arindama Singh	Mathematics
218	Prof. Vetrivel V	Mathematics
219	Prof. Satyajit Roy	Mathematics
220	Prof. Sundar S	Mathematics

S.No	Name	Department
221	Prof. Rama R	Mathematics
222	Prof. Ponnusamy S	Mathematics
223	Prof. Kalpana Mahalingam	Mathematics
224	Prof. Shruti Dubey	Mathematics
225	Prof. Prabhu Rajagopal	Mechanical Engineering
226	Prof. Shamit Bakshi	Mechanical Engineering
227	Prof. Krishna Kannan	Mechanical Engineering
228	Prof. Raghavan V	Mechanical Engineering
229	Prof. Dhiman Chatterjee	Mechanical Engineering
230	Prof. Arunn Narasimhan	Mechanical Engineering
231	Prof. Srinivas Reddy K	Mechanical Engineering
232	Prof. Shaligram Tiwari	Mechanical Engineering
233	Prof. Sujatha Srinivasan	Mechanical Engineering
234	Prof. Samuel G L	Mechanical Engineering
235	Prof. Balaji C	Mechanical Engineering
236	Prof. Srinivasan K	Mechanical Engineering
237	Prof. Shankar Krishnapillai	Mechanical Engineering
238	Prof. Gnanamoorthy R	Mechanical Engineering
239	Prof. Chandramouli P	Mechanical Engineering
240	Prof. Raghu Prakash	Mechanical Engineering
241	Prof. Babu V	Mechanical Engineering
242	Prof. Mallikarjuna J M	Mechanical Engineering
243	Prof. Sarit Kumar Das	Mechanical Engineering
244	Prof. Raju Sethuraman	Mechanical Engineering
245	Prof. Venkatarathnam G	Mechanical Engineering

S.No	Name	Department
246	Prof. Seshadri Sekhar	Mechanical Engineering
247	Prof. Krishnan Balasubramaniam	Mechanical Engineering
248	Prof. Ramesh A	Mechanical Engineering
249	Prof. Prakash Maiya M	Mechanical Engineering
250	Prof. Mani A	Mechanical Engineering
251	Prof. Ramesh Babu N	Mechanical Engineering
252	Prof. Sujatha Chandramohan	Mechanical Engineering
253	Prof. Amitava Ghosh	Mechanical Engineering
254	Prof. Arvind Pattamatta	Mechanical Engineering
255	Prof. Ashis Kumar Sen	Mechanical Engineering
256	Prof. Sathyan Subbiah	Mechanical Engineering
257	Prof. Balaji Srinivasan	Mechanical Engineering
258	Prof. Somnath Bhattacharyya	Metallurgical and Materials Engineering
259	Prof. Ravikumar N V	Metallurgical and Materials Engineering
260	Prof. Gandham Phanikumar	Metallurgical and Materials Engineering
261	Prof. Ranjit Bauri	Metallurgical and Materials Engineering
262	Prof. Sankaran Shanmugam	Metallurgical and Materials Engineering
263	Prof. Prathap Haridoss	Metallurgical and Materials Engineering
264	Prof. Subramanya Sarma V	Metallurgical and Materials Engineering
265	Prof. Udayachandran C	Metallurgical and Materials Engineering

S.No	Name	Department
266	Prof. Ganesh Sundara Raman S	Metallurgical and Materials Engineering
267	Prof. Murty B S	Metallurgical and Materials Engineering
268	Prof. Balasubramanian M	Metallurgical and Materials Engineering
269	Prof. Bhattacharyya S S	Metallurgical and Materials Engineering
270	Prof. Kamaraj M	Metallurgical and Materials Engineering
271	Prof. Hari Kumar K C	Metallurgical and Materials Engineering
272	Prof. Sampath V	Metallurgical and Materials Engineering
273	Prof. Kottada Ravi Sankar	Metallurgical and Materials Engineering
274	Prof. Srinivasa Rao Bakshi	Metallurgical and Materials Engineering
275	Prof. Arshinder Kaur	Management Studies
276	Prof. Rahul Ratnakar Marathe	Management Studies
277	Prof. Thillai Rajan A	Management Studies
278	Prof. Arun Kumar G	Management Studies
279	Prof. Usha Mohan	Management Studies
280	Prof. Saji K Mathew	Management Studies
281	Prof. Krishna Prasanna	Management Studies
282	Prof. Prakash Sai L	Management Studies
283	Prof. Madhumathi R	Management Studies
284	Prof. Thenmozhi M	Management Studies

S.No	Name	Department
285	Prof. Srinivasan G	Management Studies
286	Prof. Sundarraj R P	Management Studies
287	Prof. Rajendran C	Management Studies
288	Prof. Kamalanabhan T J	Management Studies
289	Prof. Amit R K	Management Studies
290	Prof. Nilanjan Saha	Ocean Engineering
291	Prof. Abdus Samad	Ocean Engineering
292	Prof. Rajiv Sharma	Ocean Engineering
293	Prof. Shanmugam P	Ocean Engineering
294	Prof. Suresh Kumar G	Ocean Engineering
295	Prof. Murali K	Ocean Engineering
296	Prof. Sannasiraj S A	Ocean Engineering
297	Prof. Nallayarasu S	Ocean Engineering
298	Prof. Srinivasan Chandrasekaran	Ocean Engineering
299	Prof. Panneer Selvam R	Ocean Engineering
300	Prof. Palaniswamy Ananthakrishnan	Ocean Engineering
301	Prof. Manoj Gopalakrishnan	Physics
302	Prof. James Frederick Libby	Physics
303	Prof. Nirmala R	Physics
304	Prof. Prafulla Kumar Behera	Physics
305	Prof. Prasanta Kumar Tripathy	Physics
306	Prof. Rajesh Narayanan	Physics
307	Prof. Sriramkumar L	Physics
308	Prof. Murugavel P	Physics

S.No	Name	Department
309	Prof. Santhosh P N	Physics
310	Prof. Arul Lakshminarayan	Physics
311	Prof. Subramanian V	Physics
312	Prof. Harish Kumar N	Physics
313	Prof. Suresh Govindarajan	Physics
314	Prof. Prem B. Bisht	Physics
315	Prof. Sunil Kumar P B	Physics
316	Prof. Sethupathi K	Physics
317	Prof. Ganesan A R	Physics
318	Prof. Ramachandra Rao MS	Physics
319	Prof. Jatindra Kumar Rath	Physics
320	Prof. Venkata Satyanarayana M	Physics

S.No	Name	Department
321	Prof. Srinivas V	Physics
322	Prof. Kasi Viswanathan S	Physics
323	Prof. Markandeyulu G	Physics
324	Prof. Vijayan C	Physics
325	Prof. Lakshmi Bala S	Physics
326	Prof. Prahallad Padhan	Physics
327	Prof. Krishnamurthy C V	Physics
328	Prof. Sudakar Chandran	Physics
329	Prof. Aravind G	Physics
330	Prof. Somnath Chanda Roy	Physics
331	Prof. Birabar Ranjit Kumar Nanda	Physics

Appendix 2. Board of Academic Courses

1.	Prof. Prathap Haridoss Dean (Academic Courses)	Chairman
2.	Prof. A.K Mishra (Academic Research)	Member - Ex-officio
3.	Prof. Nilesh J Vasa, Dean (Students)	"
4.	Previous Dean (Academic Courses)	"
5.	Dr Shankar Ghosh, Aerospace Engineering	Member
6.	Dr Manoj G, Biotechnology	
7.	Dr Ramesh Gardas, Chemistry	
8.	Dr Saravanan U, Civil Engineering	"
9.	Dr Rupesh Nasre, Computer Science	"
10.	Dr Saravana Kumar, Engineering Design	
11.	Dr Binitha V Thampi, Humanities and Social Sciences	"
12.	Prof. Manas Mukherjee, Metallurgical and Materials Engineering	"
13.	Prof. Sarith P Sathian, Applied Mechanics	"
14.	Dr Jithin John Varghese, Chemical Engineering	"
15.	Dr S Krishna, Electrical Engineering	"
16.	Dr G Srinivasan, Management Studies	"
17.	Dr Srinivasa Rao Manam, Mathematics	"
18.	Prof. Abhijit Sarkar, Mechanical Engineering	"
19.	Prof. Nilanjan Saha, Ocean Engineering	"
20.	Dr Dawood Kothawala, Physics	"
21.	Dr Saji Mathew, MS Advisor, SC/ST/PC students	Member - Ex-officio
22.	Dr Nilesh J Vasa, Chief Advisor, MITr, Engineering Design	"
23.	Mr S Sidhartha Narayan, Academic Affairs Secretary	Student Member

24.	Mr Unman Uday Nibandhe, SGS	"
25.	Smt. K. Vijayalakshmi, Deputy Registrar (Research)	Invitee
26.	Smt. Jayasri Sridhar, Assistant Registrar (Courses)	Invitee
27.	Mr P Sarvaharana, Deputy Registrar (Courses)	Secretary - Ex-officio

Appendix 3. Board of Academic Research

1.	Prof. Shanthi Pavan Dean (Academic Research)		Chairman
2.	Prof. Prathap Haridoss Dean (Academic Courses)		Member - Ex-officio
3.	Dr Raghunathan Rengaswamy, Dean GE		"
4.	Prof. Nilesh J Vasa, Dean-Student		"
5.	Previous Dean (Academic Research)		"
6.	Dr Nitish Mahapatra	Biotechnology	Member
7.	Dr Sumesh P Thampi	Chemical Engineering	"
8.	Dr B Raja Kumar	Chemistry	"
9.	Dr John E Augustine	Computer Science	"
10.	Dr C S Shankarram	Engineering Design	"
11.	Dr S P Dhanavel	Humanities and Social Sciences	"
12.	Dr Neelesh S Upadhye	Mathematics	"
13.	Dr Sankaran S	Metallurgical and Materials Engineering	"
14.	Dr G Rajesh	Aerospace Engineering	"
15.	Dr Vagesh D Narasimhamurthy	Applied Mechanics	"
16.	Dr Kalyan Kumar B	Electrical Engineering	"
17.	Dr Rupashree Baral	Management Studies	"
18.	Dr Sundararajan Natarajan	Mechanical Engineering	"
19.	Dr V Sriram	Ocean Engineering	"
20.	Dr P Murugavel	Physics	"
21.	Dr Subhadeep Banerjee	Civil Engineering	"
22.	Dr Nilesh J Vasa, Chief Advisor, MITr	Engineering Design	"
23.	Ms. Vamanie Permual	Research Affairs Secretary	Student Member
24.	Mr. Unman Uday Nibandhe	Students' General Secretary	"
25.	Mr P Sarvaharana, Deputy Registrar (Courses)		Invitee
26.	Dr Sivarama Krishnan, Physics		IDRP Invitee
27.	Smt. K. Vijayalakshmi, Deputy Registrar (Research)		Secretary - Ex-officio

Appendix 4. Board of Students

S.No.	Name	Designation	Status
1	Dr. Nilesh J Vasa	Dean (Students)	Chairperson
2	Dr. Shanthi Pavan	Dean (Academic Research)	Member
3	Dr. Prathap Haridoss	Dean (Academic Courses)	Member

4	Dr. Mahesh Panchagnula	Dean (Alumni & Corporate Relations)	Member
5	Dr. Raghunathan Rengasway	Dean (Global Engagement)	Member
6	Dr. Sivakumar M S	Former Dean (Students)	Invitee
7	Dr. Thyagaraj T	Chairperson, Warden Council	Member
8	Dr. Mallikarjuna J M	Vice Chairperson, Warden Council	Member
9	Dr. Arshinder Kaur	Advisor (Cultural)	Member
10	Dr. Ratna Kumar Annabattula	Advisor (Co-curricular)	Member
11	Dr. Arul Prakash	Advisor (Sports)	Member
12	Dr. Anuradha Banerjee	Co-Advisor (Sports)	Member
13	Dr. Shankar Ram C S	Advisor (Training & Placement)	Member
14	Dr. Sathyan Subbiah	Advisor (Internship)	Member
15	Dr. Saji K Mathew	Advisor (Inclusive Education)	Member
16	Dr. Ethayaraja Mani	Chief Coordinator (NCC)	Member
17	Dr. Sivakumar K C	Advisor (NSS)	Member
18	Dr. Prabhu Rajagopal	Faculty Head (Centre for Innovation)	Member
19	Dr. Satyanarayanan Seshadri	Deputy Faculty Head (Centre for Innovation)	Member
20	Dr. Anup Kumar Bhandari	Advisor (Socio Economic and Caste Census/ Student Legislative Council)	Member
21	Dr. Palaniappan Ramu	Chairman (Committee for Monitoring General Facilities of Students)	Member
22	Dr. Ashwin Mahalingam	Advisor (E-Cell)	Member
23	Dr. Andrew Thangaraj	Coordinator (B.Sc. Online Degree Programme)	Invitee
24	Dr. Preeti Aghalayam	Advisor (EML, Colloquium & T5e)	Member
25	Dr. Nilesh J Vasa	Advisor (MITr)	Member
26	Dr. Sunetra Sarkar	Advisor (Saathi)	Member
27	Dr. Pijush Ghosh	Co-Advisor (IIT for Villages)	Member
28	Dr. Richa Agrawal	Faculty Head (Nirmaan)	Member
29	Dr. Arun Menon	Advisor (Career Development)	Member
30	Dr. Sachin S Gunthe	Advisor (IAR Affairs)	Member
31	Mr. Babu A	Deputy Registrar (Administration)	Member
32	Mr. Sarvaharna P	Deputy Registrar (Academic)	Member
33	Mr. Sudhakar Rao Pujari Y E L	Deputy Registrar (Students)	Member

Student Members

S.No.	Name	Designation
1	Ramkamal T B	Academic Affairs' Secretary
2	Baibhabi Patnaik	Co-Curricular Affairs' Secretary
3	Sri Ram K	Cultural Affairs' Secretary (Arts)
4	Jai Santhoshi S	Cultural Affairs' Secretary (Literary)
5	Rithik Gudavalli	Hostel Affairs' Secretary
6	Satyendra Pandey	International & Alumni Relations' Secretary

7	Vamanie Perumal	Research Affairs' Secretary
8	Rudra Sameer Nair	Institute Sports' Secretary
9	Ajay Singh Sitole	Students' General Secretary
10	Abhigyan Chattopadhyay	CFI, Students' Head
11	Ansar Usama Shakeel Ahmed	MITr Student Head
12	Girish Mahawar	Speaker (Student Legislative Council)
13	Ardra	Chief Commissioner (Socio Economic and Caste Census)
14	Akshaj Shah	Standing Committee for the International Relations Student Council
15	Manoj Kumar S	Standing Committee for Research Affairs Secretary
16	Gopikrishnan B	Standing Committee for Cultural Affairs
17	Valeti Sriraj	Standing Committee for General Secretary
18	Neeraj K Udupa	Standing Committee for Co- Curricular Affairs Secretary
19	Raagul K	Standing Committee for Academic Affairs
20	Appili Vamsi Krishna	Standing Committee for Hostel Affairs
21	Sudarshan	Standing Committee for Sports

Appendix 5. Board of Industrial Consultancy and Sponsored Research

1	Prof. Manu Santhanam	Dean IC&SR
2	Prof. Ravindra Gettu	Immediate Past Dean IC&SR
3	Prof. Kamakoti V	Associate Dean, IC&SR (till 16.01.2022)
4	Dr Mahesh Panchagnula	Dean, ACR
5	Prof. Shanthi Pavan Dean	Dean, Academic Research
6	Prof. Raghunathan Rengaswamy	Dean, Global Engagement
7	Dr. Jane Prasad	Registrar
8	Dr Anbarasan P.	Member (Department of Chemistry)
9	Dr Aravind Kumar Chandiran	Member (Department of Chemical Engineering)
10	Dr Ganapathy Krishnamurthi	Member (Department of Engineering Design)
11	Dr Himanshu Sinha	Member (Department of Biotechnology)
12	Prof. Y.V.S.S. Sanniyasi Raju	Member (Department of Mathematics)
13	Dr K. G. Pradeep	Member (Department of Metallurgical and Materials Engineering)
14	Dr K. Murali	Member (Department of Ocean Engineering)
15	Dr Krishnankutty P.	Member (Department of Ocean Engineering)
16	Dr M. S. Ramachandra Rao	Member (Department of Physics)
17	Dr Manu Santhanam	Member (Department of Civil Engineering)
18	Dr Mohanasankar S.	Member (Department of Electrical Engineering)
19	Dr Nandan Sudarsanam	Member (Department of Management Studies)
20	Dr Ninitha A. J.	Member (Department of Biotechnical Engineering)
21	Dr Prabhu Rajagopal	Member (Department of Mechanical Engineering)
22	Dr Radhakrishna Ganti	Member (Department of Electrical Engineering)
23	Dr Rajesh Kumar	Member (Department of Humanities and Social Science)

24	Dr S. R. Chakaravarthy	Member (Department of Aerospace Engineering)
25	Dr Saravana Kumar G.	Member (Department of Engineering Design)
26	Dr Sayan Gupta	Member (Department of Applied Mechanics)
27	Dr Shiva Nagendra S.M.	Member (Department of Civil Engineering)
28	Dr Shweta Agrawal	Member (Department of Computer Science and Engineering)
29	Dr Sivaramakrishnan K. C.	Member (Department of Computer Science and Engineering)
30	Dr Varun Kumar	Member (Department of Mechanical Engineering)
31	Dr Vidya Praveen Bhallamudi	Member (Department of Physics)

Appendix 6. Library Advisory Committee

Name of the Member	Department
Prof. K Ramamurthy (Chairman)	Civil Engineering
Dr Santanu Ghosh	Aerospace Engineering
Dr Arul K Prakash	Applied Mechanics
Dr Hamsa Priya Mohana Sundaram	Biotechnology
Prof. Sridharakumar Narasimhan	Chemical Engineering
Prof. Rajakumar B	Chemistry
Dr Soumendra Nath Kuiry	Civil Engineering
Dr B. V. Raghavendra Rao	Computer Science Engineering
Prof. M Ramanathan	Engineering Design
Dr P. Viswanadha Reddy	Electrical Engineering
Dr Santhosh Abraham	Humanities and Social Sciences
Prof. P. Krishna Prasanna	Management Studies
Dr Sounaka Mishra	Mathematics
Dr Shyama Prasad Das	Mechanical Engineering
Dr Ajay Kumar Shukla	Metallurgical and Materials Engineering
Dr Suresh Rajendran	Ocean Engineering
Dr Prabhat Ranjan Pujahari	Physics
Mr Sidhartha Narayanan	Academic Affairs' Secretary
Ms. Vaminie Perumal	Research Affairs' Secretary
Dr Mahendra N Jadhav	Members' Secretary

Appendix 7. Finance Committee

<p>Dr Pawan Goenka - Chairman (Former Managing Director, Mahindra & Mahindra) Chairman, Indian National Space Promotion Authorization Centre (In-SPACe) Independent Director, Sun Pharma & Bosch India</p>	Chairman
<p>Prof. Bhaskar Ramamurthi Director Indian Institute of Technology Madras Chennai - 600 036 Prof. V. Kamakoti (from 17.01.2022) Director IIT Madras</p>	Member

Shri Rakesh Ranjan Additional Secretary (TE) Department of Higher Education Ministry of Human Resource Development Government of India, Shastri Bhawan, New Delhi - 110 001	<i>(Ex-officio)*</i> Member
Shri Anil Kumar Director (Finance) Integrated Finance Division, Department of Higher Education Ministry of Human Resource Development Government of India, Shastri Bhawan New Delhi-110 001	<i>(Ex-officio)*</i> Member
Thiru S. Krishnan, I.A.S. (from 02.12.2021) Additional Chief Secretary to Government Industries Department, Secretariat, Government of Tamil Nadu, Chennai	Member
Prof. Koshy Varghese Dean (Admn.), IIT Madras	Invitee
Prof. Ligy Philip Dean (Planning), IIT Madras	Invitee
Deputy Registrar (F&A)/Deputy Registrar (Audit) IIT Madras	Invitees
Dr Jane Prasad, IP&TAFS Registrar Indian Institute of Technology Madras Chennai-600 036	Secretary

Appendix 8. Building and Works Committee

Prof. Bhaskar Ramamurthi Director, IIT Madras Prof. Kamakoti V (from 17.01.2022) Director, IIT Madras	Chairman
Shri Duraiswamy Chief Engineer/Distribution Chennai South Region, 8th Floor, Eastern Wing, NPKRR Maaligai 144, Anna Salai, Chennai-600 002	Member
Shri Chidambaram W SE & Project Director IITM Project, CPWD, Chennai	Member
Prof. Ligy Philip Dean (Planning) IIT Madras	Member
Prof. R. G. Robinson Chairman (Engineering Unit) Prof. Sannasiraj S.A. Chairman (Engineering Unit) from 01.11.2021 IIT Madras	Member
Prof. Sannasiraj S.A. Co-Chairman (Engineering Unit) Prof. Benny Raphael Co-Chairman (Engineering Unit) from 01.11.2021	Member (Co-opted)
Dr Jane Prasad, IP&TAFS Registrar, IIT Madras	Member - Secretary
Shri K Dharmaraj Superintending Engineer Engineering Unit IIT Madras	Invitee