

# Annual Report 2014–2015



**INDIAN INSTITUTE OF TECHNOLOGY MADRAS**

**CHENNAI – 600 036**



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President of India

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Indian Institute of Technology Madras  
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##### Nominees of the Senate

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**Prof. S.K. Bhattacharya**  
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**Dr. J. Letha**  
Director  
Directorate of Technical Education  
Government of Kerala, Padmavilasom, Fort  
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**Shri Kumar Jayant, IAS (till 28 October 2014)**  
Commissioner  
Directorate of Technical Education  
Government of Tamil Nadu  
Chennai 600025

**Mr. J. Ashok Kumar, IAS**  
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**Shri Praveen Kumar, IAS (from 29 October 2014)**  
Principal Secretary/Commissioner of Technical Education  
Directorate of Technical Education  
Government of Tamil Nadu, Chennai 600025

**Mr. Mohamed Hashim Jadwet (till 6 January 2015)**  
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**Dr. Uptal Sharma (from 7 January 2015)**  
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#### Secretary

**Ms V.G. Bhooma, IRPS**  
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#### Invitee

**Prof. P. Sriram**  
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Indian Institute of Technology Madras



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## 1. DIRECTOR'S REPORT

The Indian Institute of Technology Madras (IIT Madras) was established in 1959 and declared an institute of national importance by an Act of Parliament in 1961. From modest but firm beginnings in 1964, when 91 B.Tech. and 15 M.Sc. degrees were awarded. On the day of the 52nd convocation, I am proud to report, we are crossing another milestone—we awarded more than 2000 degrees in a single year for the first time. The number of Ph.D. degrees awarded has increased by 18% to 212 this year, crossing 200 for the first time. Our full complement of 790 undergraduate and Dual Degree students, after the capacity increase effected between 2008 and 2010, are graduating at the 52nd convocation.

The institute published last year its Strategic Plan for 2014–2020, wherein our targets were spelt out for all the activities that inform life and work at the Institute. I now share with you some snapshots of our achievements during the academic year 2014–2015 with reference to our Plan.

### 1.1. Degree Programmes

A key Plan objective is the revision of our undergraduate curricula to permit the students more choice in the courses they take. This has become imperative in a fast-changing world where aspirations are themselves moving targets. In the new curriculum that comes into effect from the oncoming academic year, the student will be given the latitude to choose on average 40% of the courses. Students can thus pursue newly discovered passions or upgrade to a Dual Degree programme, stay on for an M.S. in Entrepreneurship or simply sample interesting courses in various disciplines.

An ever-increasing number of masters' students are discovering the excitement of research at IIT Madras. In 2014–2015, a total of 59 students upgraded to the Ph.D. programme, while 73 high achievers were admitted to it directly after their bachelor's degrees. A further 33 industry professionals also enrolled for their Ph.D. degrees, indicating a healthy growth in our interaction with industry. Overall, the Ph.D. intake per year has crossed our Plan target of 80% of the faculty strength, putting us on course to achieving the Ph.D. graduation target by 2020.

Our intense transnational collaborations have resulted in the formalisation of several joint-doctorate supervision agreements, including one that was signed with the President of Purdue University during his visit in November 2014. Four more joint doctoral programme agreements were signed in 2014–2015 to add to the existing four: the new ones are with the University of Melbourne, University of Technology Sydney and Curtin University, in Australia, and with the University of Duisburg, Essen, in Germany.

The fledgeling Centre for Technology and Policy Studies (CTaP) has launched an elective course, 'Technology and Public Policy', that is jointly taught by faculty members from across departments.

### 1.2. Academic Research

In 2014–2015, our faculty members and research scholars published 1089 papers in reputed international journals and 105 in national journals, representing a sharp growth of 30% over last year. They also presented 533 research papers at international conferences and 153 papers at national conferences, demonstrating a staggering growth of more than 50%. These are but harbingers, with a scorching pace being set by our growing band of research scholars and faculty, leading to a sharp rise in our international research profile.

#### 1.2.1. Snapshots of research

At the risk of sounding arcane, I would like to place before you a few examples of the high-quality research carried out by our 212 Ph.D. and 157 M.S. scholars who graduated at the 52nd convocation.

- H.V. Raghav, of the Department of Aerospace Engineering, addressed the strategic use of flare countermeasures and defense missiles for protecting AEW&C systems and non-maneuverable aircraft.
- R. Jayendiran, of the Department of Applied Mechanics, made novel contributions towards understanding and modelling the non-linear behaviour of some 1–3 piezocomposites.
- Soumi Bairagi, of the Department of Biotechnology, studied impaired circulating vascular progenitor cells and altered angiopoietin systems and correlated these and vascular abnormalities observed in polycystic amenorrhoeic females.
- S. Balakrishnan, of the Department of Chemical Engineering, developed a successful method to simulate fouling deposits of three Indian coal types by using chemical equilibrium calculations and binary eutectoid formations.

Through an ambitious objective of addressing various problems in metal optics, Maturi Renuka, of the Department of Chemistry, presented a complete set of frequency and wave-vector-dependent linear response tensors and outlined a formalism of macroscopic electrodynamics that uses scalar and vector potentials as fundamental building blocks. Nirod Kumar Sarangi, of the same department, found an interesting dependence of electron transport on lipid molecular tilt and uses of this dependence in molecular recognition.

P. Athira, of the Department of Civil Engineering, developed a method to predict stream flow in ungauged basins and quantified predictive uncertainty by regionalisation of distributed hydrological models.

Working on processor chip designs, John Jose, of the Department of Computer Science and Engineering, introduced some novel congestion management techniques for adaptive routers in mesh networks on chips.

P. Jiju, of the Department of Engineering Design, introduced some elegant methods of non-parametric shape recognition and volume-constrained polyhedronisation of point sets.

Rohit Budhiraja, of the Department of Electrical Engineering, proposed novel precoder and receiver designs for non-simultaneous two-way relaying and showed that this protocol performs better than one-way relaying.

Chandan Kumar, of the same department, worked on voltage control mode operation of distributed static compensators and proposed a multi-functional control algorithm and hybrid topology for improving the performance parameters.

Anu T. Ashokan, of the Department of Humanities and Social Sciences, made an exhaustive eco-critical analysis of the fictional work of Mahasweta Devi, which is the first of its kind on the environmentalism of the poor.

Working on dynamic pricing and bidding strategies based on users' behavioural biases, K. Sowmya, of the Department of Management Studies, concluded that traditional assumptions such as 'human beings are rational/hyper-rational' or 'they act in a way that maximises their utility' need to be cautiously examined when modelling human behaviour.

S. Rajesh, of the Department of Mathematics, initiated a study of the existence of best proximity points of asymptotically relatively non-expansive maps, which are novel extensions of both relatively non-expansive maps and asymptotically non-expansive maps.

Anup Paul, of the Department of Mechanical Engineering, studied the effect of large blood vessels during near-infrared laser-mediated plasmonic photo-thermal heating and observed an interesting effect of nanoparticles in altering photo-thermal heating and cooling parameters.

Devinder Yadav, of the Department of Metallurgical and Materials Engineering, developed non-equilibrium composites and solid solutions by friction stir processing and observed interesting patterns of microstructure evolution.

Tushar Sharma, of the Department of Ocean Engineering, developed some novel nanoparticle-stabilised emulsions for enhanced petroleum oil recovery.

Ranjim Ali Mondal, of the Department of Physics, developed ferroelectric and soft ferrite composites and observed an enhanced magneto-electric effect and multifunctional properties in some of the composites.

Jayachandra Bingi, of the same department, studied various dielectric and plasmonic materials and observed some interesting light-matter interaction patterns.

### 1.2.2. Research centres

IIT Madras has come to be known not only for its academic research but also for the transformative large-scale technologies developed in its multi-disciplinary research centres—technologies that impact lives of ordinary citizens throughout our country. Development of innovative, scalable, frugal, sustainable and affordable solutions for national challenges in housing, water, energy, healthcare, transportation and education is one of the key objectives of our Strategic Plan. In 2014—2015, we made impressive strides in this regard.

After successful pilot trials in four states, the revolutionary uninterrupted DC power supply technology developed by our Centre for Decentralised Power Systems is now being deployed for city-scale trials in Sasaram, Bihar, with one lakh homes, and in Lakhimpur, Assam, with 5000 homes. This system ensures a 24×7 supply of a fixed quantity of DC power to every home, incentivising the deployment of energy-efficient DC appliances and rooftop solar panels. It is a game-changer for India's renewable energy and energy conservation missions, besides giving a strong fillip to the Make in India programme. An off-grid version of this system is also being deployed in 40 villages in Rajasthan, as an affordable solution for the millions of homes that are not connected to the grid today.

The glass fibre-reinforced gypsum (GFRG) technology developed by the Civil Engineering Department for affordable, sustainable and rapid housing is being pursued as a key enabler to meet India's Housing for All target by the year 2022. The building codes and design manuals for this technology have been finalised. Pilot projects for low-income housing are being implemented in several states this year as a prelude to large-scale adoption.

The Centre of Excellence in Urban Transport has deployed an intelligent bus tracking and information system for trial on three arterial roads of Chennai surrounding our campus. The system provides real-time information to commuters and the transport authority on the location of buses and traffic conditions on the roads.



A team consisting of computer scientists and civil engineers has developed a wireless health monitoring system to observe the fitness of railway bridges remotely, and the first such system was deployed at Nagari Bridge, in Chittoor District, of Andhra Pradesh.

The National Centre for the Safety of Heritage Structures did yeoman work this past year for the rehabilitation of the Kedarnath temple and conducted a rapid structural assessment and developed temporary stabilisation designs for monuments in Nepal immediately after the devastating earthquake. The centre is assessing the structural health of the official residence of our Visitor, the President of India.

In consonance with the national goal of providing clean drinking water to all, the Thematic Unit of Excellence on Water deployed in 2014–2015 an additional 350 units of AMRIT, the nanomaterials-based drinking water purification technology developed by it. These units are serving over 4 lakh rural people in the arsenic-affected areas of India. The technology will benefit an additional 4 lakh people in the next 2 years. With a view to taking these technologies to the global market, IIT Madras has licensed 13 related patents.

The recent inclusion of IIT Madras as a full member of the Compact Muon Solenoid (CMS) experiments of CERN (European Laboratory for Particle Physics) has opened up IIT Madras' participation in fundamental physics, related technologies and developments in grid computing.

The Healthcare Technology Innovation Centre (HTIC) has developed design and technical specifications of ambulances for transporting newborn babies in Tamil Nadu. Around 30 neonatal ambulances were fabricated on the basis of this design for deployment in the state.

The Indo-German Centre for Sustainability (IGCS) was created to commemorate the golden jubilee of IIT Madras. Currently, nine projects are under way: septage management, bio-diesel for compression ignition engines, micropollutants in water sources, solar thermal system for domestic sewage treatment, land use and climate change effects on mountain streams, sustainable water management in Chennai, vulnerability and health risks due to air pollution and climate change in urban areas, climate change adaptation and resilience in peri-urban areas and detection of islanding and islanded operation of renewable power sources, the last mentioned project being funded by industry. The research is being undertaken jointly by our faculty members and 13 visiting German scientists and is funded equally by the Indian and German governments. IGCS has also attracted CSR funds for pilot implementations.

The TTK Centre for Rehabilitation Research and Device Development (R2D2), set up with a grant from the TTK Group, was inaugurated by Mr. T.T. Jagannathan, Chairman, TTK Prestige, and Distinguished Alumnus of IIT Madras. The centre will work with clinical specialists, NGOs and hospitals to engineer and develop affordable products for the rehabilitation needs of our people.

The Incubation Centre for Industrial Automation and Instrumentation and Automobile Engineering has been set up in the Department of Engineering Design with support from the Ministry of Labour and Employment (MoLE). The incubation centre will support MoLE with training selected ITI students and project development.

Several new multi-disciplinary research centres, in the areas of machine tools, data analytics, steel, propulsion and railway systems, are on the anvil, as envisaged in the Strategic Plan.

The institute undertook a new initiative in coordination with the Government of Tamil Nadu to take the benefits of research efforts of IIT Madras to the community. Senior government officials and our faculty members have identified a number of areas where the institute can contribute beneficially. This is besides the large number of graduating Ph.D. scholars joining engineering institutions in Tamil Nadu, and the training programmes, open online courses and faculty development programmes and the Quality Improvement Programme run by the institute to improve the quality of higher education in Tamil Nadu. Housing and construction technology, water treatment and pollution control, data mining and GPS-based solutions, solar power technologies, information networks and healthcare technologies were identified as priority areas. A dedicated research centre is proposed that will cater to specific needs in some of these areas that are not covered by existing centres.

### 1.2.3. New research and fabrication facilities

Constant upgrading of instruments and facilities plays a key role in carrying out research at the highest levels. IIT Madras continues to upgrade its research infrastructure to provide the best possible facilities to its scholars.

A 1.1-m diameter rotating platform capable of a maximum speed of 250 rpm, both clockwise and anti-clockwise, for which arbitrary profiles of rotation can be specified, has been installed in the Department of Aerospace Engineering. The facility is currently being augmented with PIV (particle image velocimetry) and is ideal for studies on rotating/sloshing-type flows.

A new laboratory with a facility to culture and work with the *C. elegans* model organism has been created in the Department of Biotechnology, Bhupat and Jyoti Mehta School of Biosciences.

The Civil Engineering Department has equipped itself with two more new laboratories this year—the MPCEM Laboratory, dedicated to characterising and enhancing the mechanical performance of civil engineering materials, and the Building Automation Laboratory, for conducting research in the area of automated building systems. A

new experimental facility for characterisation of stack emissions for monitoring gaseous and particulate matter pollutants has also been commissioned in the department.

The other major addition this year is the Ocean Optics and Imaging Laboratory, established in the Department of Ocean Engineering to carry out multidisciplinary research focused on the inherent optical properties of particles and dissolved substances and propagation of light within the ocean and across the air–water boundary. The department has also equipped itself with a turbine-testing facility and the Artificial Lift Lab this year.

### 1.3. Academic Distinctions Secured by Our Faculty Members and Students

Several academic distinctions, honours and awards, fellowships of academies and professional societies, and memberships of editorial boards of journals have been bestowed on our faculty and staff members and students in recognition of their academic achievements during the current year. Notable among the awardees are Dr. Shaikh Faruque Ali, who won the INAE Young Engineer Award, Dr. Rama Shanker Verma, elected Fellow of NAS, Dr. Arunn Narasimhan and Dr. R.I Sujith, elected Fellows of INAE, Dr. Bhaskar Ramamurthi, elected an IEEE Fellow, Dr. B.S. Murty, elected Fellow of INSA, and Dr. T. Pradeep, elected Fellow of the RSC.

Six of our young faculty members, Dr. Ethayaraja Mani, Dr. Shankar Balachandran, Dr. Madhu Mutyam, Dr. M.N. Jayalal Sarma, Dr. Krishna Jagannathan and Dr. Jitendra S. Sangwai, have won the Young Faculty Recognition Award of the institute for the year 2014. Prof. David Koilpillai won the award for Excellence in Teaching for the year 2014–2015. Prof. T. Pradeep was awarded the Lifetime Achievement R&D Award of IIT Madras, Profs. C. Balaji and Sathyanarayana N. Gummadi were awarded the Mid-career R&D Award, and Dr. Mohanasankar Sivaprakasam, Dr. N.V. Ravikumar and Dr. Ramesh Gardas were awarded the Junior-Level R&D Award.

Karnati Vinod Reddy, of the Department of Computer Science and Engineering, was awarded the Aditya Birla Scholarship for 2014, and Spandana Raj, of the same department, won Facebook's Grace Hopper and Google's Anita Borg scholarships.

The student team of Suthirth Vaidya and Abhijit Chunduru, from the Engineering Design Department, mentored by Dr. Ganapathy Krishnamurthi and Dr. M. Ramanathan, won the first place at the Longitudinal Multiple Sclerosis Segmentation Challenge 2015, held at New York.

Another student team, comprising Rangeeth (AE), Sri Harsha K. (CH), Sai Gole (ED), Aman Agrawal, Anoop K, Koushick Balaji, Manish Prajapat, Rohit John and Safar (ME), won awards for the best use of advanced manufacturing methods and best use of predictive design and simulation tools in the Student Design Challenge of the American Society of Mechanical Engineers.

Our faculty members have also been prolific this past year in writing books and monographs. An exhaustive list of laurels won by our faculty members and students is provided as an annexure.

### 1.4. Industrial Consultancy and Sponsored Research

IIT Madras leads in industry collaborations and industry-funded projects. Apart from the sponsoring industries, our faculty and students gain tremendously from the interaction as well. In 2014–2015, the institute received a sanction for ₹64 crores in new projects from industry, representing a 20% rise over the previous year. IIT Madras has been maintaining this annual growth rate over many years now and is on course to meet the Strategic Plan target in this respect.

The institute earned ₹97 lakhs from technology transfer fees and royalties during the year 2014–2015. The Intellectual Property Management Cell enabled the filing of around 80 patents during the year.

The Research Fund, of ₹50 crores, that was created last year to provide an impetus for the initiation of new research along risky pathways has been utilised to fund seven R&D awards (amounting to ₹1.9 crores), five research scholar innovation projects (for a total of ₹25 lakhs), 22 exploratory research projects with 'breakthrough' ideas (₹2 crores in all) and two multi-disciplinary team projects that establish new lines of research with potential to lead to the creation of new Research Centres (₹3.98 crores) this year. The Fund also helped students and new faculty members initiate and establish their research activities by funding 19 new Innovative Student Projects (a total of ₹22 lakhs) and 21 new faculty proposals (totaling ₹1 crore). The Fund was also utilised to operate and maintain instruments shared across the institute.

### 1.5. Research Park and Incubation

IITM Research Park (IITMRP), India's first such university-driven initiative, has indeed reinforced our interaction with industry manifold. Having reached maximum occupancy levels, with around 70 companies and research centres, since operations commenced in 2010, IITMRP has brought together in a common ecosystem expertise from the industry, our faculty and students. Phase II of IITMRP, five blocks with a built-up area of 8.2 lakh square

feet to cater to the varied specifications suitable for IT, mechanical engineering and biosciences, will be ready for occupation by the end of this year.

Saint-Gobain Research India (SGRI), our anchor client for Phase II, has taken an area of over 1.2 lakh square feet, which spreads across four floors in one of the blocks. Tata Consultancy Services (TCS), Confederation of Indian Industry (CII)—Logistics, Healthcare Technology Innovation Centre (HTIC), Biosciences Incubator (BI) and IIT Alumni Industry Interaction Centre (IAIIC) have also been allotted space that covers nearly 25% of Phase II.

To boost incubation activities as envisaged in our Strategic Plan, IITMRP has allocated 100,000 square feet for incubation in Phase II. It is worth mentioning here that the 35,000 square feet of space allocated for incubation in Phase I has been put to full use by the IITM Incubation Cell (IITMIC).

The incubators nurture technology and knowledge-based ventures through their start-up phase by providing all the support necessary to help entrepreneurs establish themselves before they scale up their ventures. IITMIC is working to build and share resources, including space and infrastructure, access to business support services, mentoring, networking and access to seed and early-stage venture funds, including the IITM Startup Fund, with contributions from industry and donations by IIT Madras alumni and grants from the Government of India. IITMIC's latest addition to its gamut of incubators is the Bioincubator, with support from BIRAC (Biotechnology Industry Research Assistance Council, Government of India), which will assist and promote emerging biotech entrepreneurs and facilitate innovative research, particularly in the biopharma, bioagri, bioenergy and industrial biotechnology areas.

Under the aegis of IITMIC and other incubators, IIT Madras is fast emerging as one of the most vibrant hubs for start-ups in the country. To date, 89 start-up companies have been incubated at IIT Madras, of which 29 were set up in 2014–2015. They were founded by students and faculty members of IIT Madras or external entrepreneurs leveraging expertise/resources at the institute, with a majority of them located at IITMRP. Several of them are working in advanced and emerging areas such as IoT (machine-to-machine), clean energy, water, biomedical devices/healthcare, education, agri-tech and ICT. Many have graduated with strong infusion of capital from interested majors. IIT Madras is confident of achieving the Strategic Plan target of at least 20 new companies incubated on average every year.

## 1.6. Continuing Education and Our Contributions to the National Educational System

IIT Madras has an extensive outreach programme catering to teachers, practicing engineers and researchers. The Centre for Continuing Education (CCE) organised 13 short-term training programmes for engineering college faculty members, 87 Continuing Education Programmes for persons from industries and about four programmes under the Curriculum Development Cell. About 89,000 participants benefited from these programmes in 2014–2015. The programmes resulted in a revenue of around ₹16 crores.

IIT Madras plays an important role in assisting other engineering institutions in the country with their curriculum, laboratory upgrading and faculty career development. Under the Quality Improvement Programme (QIP), we have a total of about 72 QIP scholars—63 pursuing Ph.D. and nine M.Tech. degrees, including 20 and four women, respectively. The institute is also assisting engineering colleges in Tamil Nadu and the neighbouring states with the implementation of their TEQIP-II programmes.

In order to meet a long-felt demand from professionals in industry, IIT Madras is launching this year live online courses in the evening for various industry verticals. We are beginning in 2015–2016 with automotive technology, information security, digital communications and business administration. Each student can complete courses at her or his own pace, and earn a master's degree when the required credits have been earned.

Under the Book Writing Scheme, designed to encourage writing of textbooks by our faculty members, 80 books have been published so far, and five books are being published in the current year.

Our Teaching Learning Centre, the first of its kind in the IIT system, was established in 2011 with a vision of developing effective teaching–learning methodologies for enhancing the quality of higher education in the country. A trained core team from science and engineering departments of the institute organises and conducts Faculty Development Programmes (FDPs) frequently for teachers at our institute, NITs and TEQIP-assisted engineering colleges. The objective of the FDPs is to guide the teachers in designing course learning outcomes, teaching using active and collaborative methods and developing skills for formative assessment as well as reflective teaching. The centre is also working towards building an effective Teaching Assistant Training Programme at the institute to augment teaching–learning processes, especially in large classrooms.

The National Programme on Technology Enhanced Learning (NPTEL) has been India's largest ICT-based technical course dissemination programme for more than a decade now. About 875 (Web/video) courses in engineering, science and technology developed under NPTEL are freely available on our NPTEL website and through YouTube. Edited transcripts of the lectures are also available. NPTEL has taken up the task of mapping every question in the GATE question papers (from 2011 to 2013) to NPTEL reference material, readily available within existing NPTEL courses. NPTEL has new Facebook and Twitter accounts too!

With massive open online courses (MOOCs) gaining momentum in the last few years, NPTEL embarked on offering online courses through its new portal, <https://onlinecourses.nptel.ac.in/>. It successfully completed three courses in 2014 and 54 courses in 2015. These include 37 full-semester 40-hour courses. Of the 2.4 lakh students who enrolled for the courses, 7500 were certified in 2014–2015 by means of a physically proctored examination.

IIT Madras' Summer Fellowship Scheme, initiated a few years ago, provides opportunities for summer research internship to top-ranking engineering and science students all over the country. A total of 158 students participated in the programme this year.

IIT Madras is mentoring two new IITs, at Palakkad and Tirupati. The temporary campuses and hostels are ready, and the classes for the first batch of students will commence from August this year. Earlier, IIT Madras successfully mentored IIT Hyderabad.

As part of the Rashtriya Avishkar Abhiyan (RAA), a recently launched initiative of the Government of India, IIT Madras has been proactively engaged in mentoring and providing in-house training to both the students and the teachers of the Kendriya Vidyalaya here on our campus and other government/non-government schools in our vicinity through the National Services Scheme (NSS) and the Centre for Social Innovation and Entrepreneurship.

IIT Madras, under the Ishan Vikas programme, launched by the Prime Minister, mentored 16 students and two faculty members from NITs of the north-eastern states of Mizoram and Assam for a month during the year 2014–2015.

### 1.7. International Collaborations

IITM has been interacting with several globally reputed universities and organisations abroad for collaborative research, exchange of faculty members and students, etc. The Office of I&AR has been instrumental in promoting such collaborations and exchanges. A record number of new MoUs, exceeding 50, were signed during 2014–2015 to facilitate student exchanges and faculty collaborations, taking the total number currently in effect to 200, and five joint doctorate programmes were launched in partnership with foreign universities in the year under review.

In November 2014, Deakin University, Australia, felicitated IIT Madras with the Strategic Partner award at the Australian High Commission towards its contributions to building the bond between the two countries through research and development. Earlier, in October, IIT Madras was admitted as a partner of the AOTULE Consortium (Asia–Oceania Top University League on Engineering), opening up a plethora of opportunities for the faculty and students of IIT Madras to collaborate with counterparts in the consortium of 11 premier engineering universities in the Asia–Oceania region.

With dedicated staffing to attend to inbound and outbound students and faculty members, the campus is being increasingly perceived as an attractive destination by exchange students, and IIT Madras students are also getting motivated to spend time abroad. A 40% increase in the number of students electing to take up 'study-abroad' programmes and research visits has been observed from 2013–2014. IIT Madras has announced a scheme by which visiting M.S. and Ph.D. scholars will be paid a scholarship during their stay, and this has resulted in a significant increase in the number of incoming students.

### 1.8. Human Resources

Systematic programmes are conducted throughout the year to train our technical and administrative staff and help them upgrade and acquire new knowledge, skills and professional orientation through a variety of learning experiences. In the year under review, about 120 staff members benefitted from three in-service and nine off-site training programmes. Apart from this, as many as 59 officers/staff members were provided Hindi training.

The Non-academic Staff Recognition Awards were instituted this year to recognise the efforts of administrative/technical staff members who have been making significant contributions to the institute through outstanding and consistently excellent service. The awardees for 2014–2015 are Ms Vasanthi Subramanian, Ms M. Saraswathi and Ms Jayasri Sridhar (Administrative Category); Mr. K. Thirunavukkarasu, Mr. Ajay Krishnan and Mr. S. Arjunan (Technical Category); and Mr. N. Elumalai (Supervisory/Managerial Category).

### 1.9. Quality and Process Improvement Initiatives

IIT Madras was awarded the ISO-9001:2000 certification for its academic support processes as early as 1999 and for its administrative support processes in 2001. All the units were certified as per the ISO 9001:2008 standard in 2011 and were re-certified in 2014. In addition to ISO 9001:2008 certification, the Central Electronic Centre has also been NABL-accredited for its Testing and Calibration Laboratories since 2004.

WORKFLOW, the institute-wide ERP, has brought a significant part of various administrative and academic processes of the institute under its wing, and it is being enhanced to cover more processes.



All academic departments, and the Institute as a whole, were reviewed by external review committees in 2014, many of which had members from leading universities abroad. One of the major inputs to the institute Peer Review Committee was the Strategic Plan 2014–2020. A plan of action based on the recommendations of the review committees has been evolved. The following initiatives have been undertaken on priority basis: (1) formation of a curriculum task force and implementation of a flexible B.Tech./Dual Degree curriculum from the 2015–2016 academic year, (2) performance-based career advancement for senior professors through Chair Professorships, (3) mentoring of young faculty members, (4) acquisition of a satellite campus, (5) improving safety standards in the work environment and (6) improved maintenance of infrastructure.

### 1.10. Infrastructure Development

A major landmark for IIT Madras this year is the generous allotment of 163 acres of land in Thaiyur Village by the Government of Tamil Nadu for our satellite campus. The second campus will go a long way in giving IIT Madras the elbow room to set up large inter-disciplinary research centres and house the growing research scholar population.

Tunga and Bhadra, two boys' hostels, with 732 rooms, were completed this year. Alumni contributed generously to the construction of the New Quark Canteen in the hostel area.

Our sports facilities are being significantly augmented to international standards, in time for the Inter-IIT Sports Meet, which returns to IIT Madras this December. The construction of a synthetic track at the stadium, installation of a synthetic surface for three basketball courts and renovation of two volleyball courts are under progress. The modernisation of the stadium has been made possible by a generous donation from our distinguished alumnus, Prem Watsa.

The 1 MW rooftop solar power plant has been commissioned. The new buildings for the National Centre for Combustion Research and Development, Chemistry Department and Thematic Unit of Excellence in Water are nearing completion. A capacious food court is also getting ready.

The Computer Centre constantly upgrades its facilities and consists today of the Virgo super cluster, a 100-teraflop machine with 4096 CPUs, the Libra Cluster, a GPU machine of 6 teraflops' capacity and the GNR Super Cluster, with a capacity of about 12 teraflops.

We remain committed to protecting and preserving our beautiful campus and its fauna and flora. Two animal censuses were conducted, in August 2014 and April 2015. It is estimated that there are about 372 Chital, 32 Blackbuck and about 284 Macaques. Continuous efforts are made to protect and expand the Blackbuck habitat.

In consonance with both the Swachh Bharath Mission and one of the recommendations of the Peer Review Committee, a comprehensive clean-up of discarded equipment, furniture, printed matter and e-waste has been completed in the Academic Zone. The Engineering Unit has simultaneously initiated periodic removal of construction debris throughout the institute. The Zero Waste Zone (OWZone) team of self-help groups continues to do commendable service to the cause of keeping the campus clean by collecting the solid waste on campus on a daily basis for segregation, recycling and composting.

### 1.11. Co-curricular and Extra-curricular Activities of Students

2014–2015 was yet another eventful academic year for the students. Participation in the co-curricular and extra-curricular activities continued to show an upward trend, with several new clubs being launched and the memberships of the existing clubs doubling. All the competitions saw laudable performances due to the concerted efforts and preparation of the IIT Madras teams.

The past academic year was one of the most successful years for the Centre for Innovation (CFI), thanks to programmes such as Nirmaan and Vistaar, which have instilled the spirit of entrepreneurship among students.

The success of CFI can be witnessed by the accolades that our teams receive at various events. Team Amogh finished 15th in the International Robo Sub competition, conducted by AUVSI at San Diego. Team Raftar made the lightest and first sub-200 kg car and participated in FSAE. The team was placed 28th in Cost, 58th in Design and 52nd in Business Plan, finishing 62nd overall. Team Sahaay worked towards providing technical solutions for persons with disabilities, developing technologies that directly impact this vulnerable section of our society. A quadcopter designed and fabricated by IIT Madras students won the Masila Vijay award.

The IIT Madras Space Centre, which houses test equipment and a clean room to assemble the components of satellites, was inaugurated in April 2015, thanks to the generous support of our distinguished alumnus Dr. Krishna Chivukula. A satellite designed and built by our students from multiple graduating batches, over several years, is to be placed in a low Earth orbit later this year. It will collect data about high-energy charged particles in the outer layers of the atmosphere trapped by the Earth's magnetic field and transmit them to a ground station that will be set up at the IIT Madras campus. The team is guided by Prof. David Koilpillai and Prof. Hari Ramachandran.

Shaastra, the annual technical festival, attained greater heights this year, with a leap in the number of visitors and quality workshops. The stellar lecture series and the stunning pro-shows were the icing on the cake. A jewel in the crown of Shaastra was the 'Pledge a Book' campaign, which helped build libraries for rural schools.

Saarang, the cultural festival, celebrated its 40th edition, and the theme was 'Out of the World'. There were over 65 events and five professional shows. This edition of Saarang made history in terms of number of visitors, sponsorship, total revenue generated and, more importantly, the increased presence of our own students. The Saarang lectures showcased prominent people such as Pallela Gopichand, Resul Pookutty, Bombay Jayashri and Anita Nair. Three years since its inception, Eunoia, the social wing of Saarang, has collected ₹7 lakhs through its campaign called 'Stand up to Cancer', which aims to spread awareness about cancer through donations to NGOs and trusts.

This year saw the beginning of an intersection of Shaastra and Saarang through the involvement of music and choreo clubs in the tech-show ENVISAGE. The coming years will see a lot more intersection of Shaastra and Saarang.

Extramural Lectures (EML), a lecture series run by the students, has, in addition to organising lectures by several high-profile speakers from various walks of life, such as Vishwanathan Anand and Sqn. Ldr. Rakesh Sharma (Retd.), nucleated a 'mini-EML' series on niche topics including heritage and music. The feedback on the EML series has been very positive, and the engagement of the IIT Madras community on Facebook and Twitter has been phenomenal.

At the 50th Inter-IIT Sports Meet, the IIT Madras women's and men's contingents secured the third and fifth places, respectively, in the general championship. Mr. Praveen Kumar, of IIT Madras, was adjudged the fastest in the championship, winning both the 100 m and 200 m dashes. Our aquatic teams, both men and women, did very well, securing the first and second places, respectively. As stated previously, IIT Madras is augmenting its facilities for the 51st Inter-IIT Meet, which will be hosted on our campus this coming December.

The Gerhard Fischer and Kokila Rajaiah Chennai Basketball tournaments for men and women, respectively, Sportsfest and the Jimmy George All-India Invitational Volleyball Tournament saw participation from more than 30 colleges.

Our Quiz Club members were crowned champions of Nihilanth 2015 (the annual inter-IIT-IIM quizzing championship), the second victory in a row, establishing that our Quiz Club is among the best in the country. The IIT Madras choreo team also won quite a few laurels in inter-collegiate dance competitions.

The I&AR team started the year with alumni chapter initiatives such as Mentor for Interns and Alumni Day of Service in Delhi, Bangalore, Mumbai and Chennai. Analytics and Finance clubs were started with guidance from alumni. To assist final-year students with career and placement preparation, Career Connect and mock interviews were conducted. IIT-M TV, a YouTubeTV channel, was launched to brand IIT Madras. 'A Day at IIT Madras' was launched to showcase the rich student experience on campus to students preparing for JEE. We continue to have a strong connect with our alumni through several programmes such as Chennai36 (the biggest alumni blog in India), Telethon and Alumni to Be cards. Our International Day has grown manifold, providing a window to the rich culture and heritage of India to the international students on campus.

Our disaster management student team was very active this year, and the participation at its workshops, such as the Emergency Response Workshop (on first aid, CPR and rescue) and the Self-defence Workshop (for women). The team also mobilised funds from within the institute for the relief of the victims of the Jammu and Kashmir flood. A disaster management chapter was also added in the life skills course, which trains close to 800 freshers.

The National Service Scheme (NSS) Unit, which engages in social causes, undertook as many as 30 projects this year. The projects focused on teaching, content generation and bringing change. NSS Open House 2015 displayed the work done by NSS—IITM over the past year.

An honour code was formally introduced this year, and the Students Affairs Council members took their oaths with the honour code this time.

## 1.12. Student Welfare

Mitr, IIT Madras counseling and guidance service, organised many activities in the past academic year, such as orientation programmes, Emoticon 360, time management workshops, coordination of yoga and Tai Chi classes, with the objective of nurturing a physically, socially, emotionally and intellectually balanced life among our students. Mitr engages professional counsellors and experts for in-person counselling. They are also available 24 × 7 through the telephone. As many as 300 trained Mitr volunteers are also available to assist students.

The Mitr website has become the most preferred website for students seeking information about various institute procedures and activities. A mobile app, the first of its kind at IIT Madras, giving information to freshers has been created.

Activities such as the model quiz session, academic buddy programme, outbound training programme and life skills course help freshers showcase the rich student experience on campus to students preparing for JEE and cope with the sudden changes in their life.

### 1.13. Placement

As a result of IIT Madras reaching out to around 1950 core and non-core companies this year, 249 companies visited the institute for placement. A total of 63 companies were from core engineering. The focus was on contacting various Fortune 500 and other leading companies.

A total of 939 students were placed through the Placement Office, of whom a large fraction, 61%, joined core engineering companies. The placement percentage of M.S. scholars touched an all-time high of 70%.

An internship office chaired by an Advisor has been set up in order to enhance the interaction of students with companies. The summer internship 2015 drive placed about 59 Year III students into internships in 27 companies.

### 1.14. Alumni Matters

A key focus of the Office of I&AR continues to be to maximise two-way connectivity between the institute and her alumni. While e-mail communications have been maintained, social media are increasingly being leveraged. Alumni Day, reunions, chapter meetings, etc. have taken alumni interactions to the next level. Students continue to benefit from the lecture series endowed by alumni—Leadership Lecture Series, Institute Lecture Series, etc. The number of alumni visitors on campus continues to be high, with the involvement ranging from innovation and entrepreneurship initiatives to industry connects.

IIT Madras has been honouring selected alumni with Distinguished Alumnus Awards since 1997 in recognition of outstanding achievements in the areas of entrepreneurship, leadership and management, academia and research, social and technological innovation, and service to humanity at large. The awardees for this year are:

- 1) Dr. Prakash Keshaviah [1967/B.Tech./Mechanical Engineering], Director, Nephrology Unit, Himalayan Institute Hospital Trust, Dehra Dun
- 2) Mr. Lalit Mahajan [1968/B.Tech./Chemical Engineering], Chairman and Managing Director, J. Mitra & Co. Private Limited, New Delhi
- 3) Mr. Krishna Chivukula [1970/M.Tech./Aerospace Engineering], Chairman, Indo MIM Tec. Private Limited, Bangalore
- 4) Dr. S. Ramakrishnan [1972/M.Tech./Aerospace Engineering], Distinguished Professor, Vikram Sarabhai Space Centre, Thiruvananthapuram
- 5) Mr. Sekhar Vasam [1975/B.Tech./Metallurgical and Materials Engineering], Managing Director, Sansera Engineering Private Limited, Bangalore
- 6) Mr. Ajita Rajendra [1976/B.Tech./Chemical Engineering], President and COO, A.O. Smith Corporation, Milwaukee, Wisconsin, USA
- 7) Dr. Arumugam Manthiram [1981/Ph.D./Chemistry], Director, Texas Materials Research Institute, University of Texas at Austin, Texas, USA
- 8) Dr. Periannan Kuppasamy [1985/Ph.D./Chemistry], Director, Centre for Biomedical EPR Spectroscopy & Imaging, Ohio State University, Columbus, Ohio, USA
- 9) Dr. R. Srikant [1985/B.Tech./Electrical Engineering], Professor of Electrical and Computer Engineering, University of Illinois, Urbana-Champaign, Illinois, USA
- 10) Dr. Krishna Bharat [1991/B.Tech./Computer Science and Engineering], Distinguished Scientist, Google, Inc., Mountain View, California, USA

2014–2015 was the best year ever for fund-raising, with the contributed amount of ₹23 crores nearly double the previous highest annual intake. The year saw a diversification in giving patterns, with alumni donors in India emerging as the largest constituency. Mr. Lalit Mahajan contributed to Healthcare Innovation Technology Centre, Dr. Krishna Chivukula supported the IITM Satellite Project, which has been covered earlier in the report, and Dr. Prakash Keshaviah sponsored an Institute Chair Professorship as well as a new research award. Mr. T.T. Jagannathan, as covered in the report earlier, gave for the Centre for Rehabilitation Research and Device Development, while several companies contributed from their CSR funds to support DST-approved incubators on campus, as well as faculty R&D projects with social impact. Campus infrastructure continues to be funded by alumni, as evidenced by the recent renovation of the popular all-night eatery, Quark.

The single most notable contribution in 2014–2015 was from our Board Member and Distinguished Alumnus, Kris Gopalakrishnan. Kris announced the sponsorship of three Distinguished Chairs in Computational Brain

Research, endowed at ₹10 crores each. In keeping with the pace of the IT industry he helped create, the first two of these were launched in 2014–2015 itself, with Dr. Partha Mitra (Cold Spring Harbor Labs, New York) and Prof. Mriganka Sur (MIT, Cambridge) being named the Chair Professors. The Chairs were named after Prof. HN Mahabala and Mr. N.R. Narayana Murthy, respectively. These Chairs, affiliated with the Department of Computer Science and Engineering, are expected to nucleate a strong programme of research and education in the emerging area of computational neuroscience and to help attract the best new talent to teach and learn at IIT Madras.

A third Chair filled during the year (by Prof. Ashok Venkitaraman from Cambridge University) was a Chair in Biological Systems Engineering in the Department of Biotechnology, endowed by the Mehta Family Foundation (Houston).

The first-ever Donor Reception to honour India-based donors who have given back to the alma mater was held on campus in April 2015. For continuing with our efforts to scale up fund-raising, professionally-staffed Development Offices have been launched in India and in the USA.

### 1.15. Acknowledgements

An endeavour on the scale of this institute and its entire gamut of activities takes place with the whole-hearted 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. In particular, I would like to thank office-bearers such as Heads of Department, Deans, Chairpersons, Wardens, Advisors, and Professors-in-Charge of various cells and centres for the selfless work they put in to keep the institute ticking. The institute is grateful to the Ministry of Human Resources Development, Government of India, for its continued and sustained encouragement and support. I also take this opportunity to specially thank the state government for its benevolence in providing IIT Madras with the land for its satellite campus. I wish to thank Dr. Pawan Goenka, our Chairman, Board of Governors, for his wise counsel, support and guidance, enabling us to scale new heights. He has instilled in us a goal-oriented approach to the pursuit of our Strategic Plan objectives. I take this opportunity to thank outgoing Board members Mr. Mohamed Hashim Jadwet and Mr. Praveen Kumar and welcome Dr. Utpal Sharma and Mrs. S. Madhumathi to the Board. I would like to thank our Chief Guest, Prof. Manjul Bhargava for gracing this convocation. He has been exceptionally gracious in accepting our invitation, even though it meant travelling to India from the USA twice within a short span of time. He need not have gone out of his way, but he has.

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



## Annexure

### Faculty Awards/Honours

Dr. Santhakumar S. (Retired faculty member, AE)	— Excellence in Aerospace Education Award, The Aeronautical Society of India
Dr. Sujith R.I. (AE)	— Ambassador, Technical University of Munich, Germany
Dr. Shaikh Faruque Ali (AM)	— INAE Young Engineer Award
Dr. Michael Gromiha M. (BT)	— Namiki Award, Tokyo Institute of Technology, Japan
Dr. Mukesh Doble (BT)	— Fifth National Award for Technology Innovation, Department of Chemicals and Petrochemicals, GoI
Dr. Rama Shanker Verma (BT)	— ABAP Senior Scientist Award, Devi Ahilya University, Indore
Dr. Sathyanarayana N. Gummadi (BT)	— Mid-career Research and Development Award, IIT Madras
Dr. Appa Rao G. (CE)	— DAE Outstanding Investigator Award
Dr. Devdas Menon (CE)	— Ultra Tech Award, ICI Tamil Nadu, Chennai Chapter
Dr. Ethayaraja Mani (CH)	— Young Faculty Recognition Award, IIT Madras
Dr. Pradeep T. (CY)	— Lifetime Achievement Research & Development Award, IIT Madras
Dr. Ramesh Gardas (CY)	— Junior-Level Research and Development Award, IIT Madras
Dr. Selvam P. (CY)	— Royal Society of Chemistry Award, International Section South India of the RSC
Dr. Sekar G. (CY)	— Bronze Medal, Chemical Research Society of India
Dr. Indrapal Singh Aidhen (CY)	— Excellence in Carbohydrate Research Award, Association of Carbohydrate Chemists and Technologists, India
Dr. Jayalal Sarma M.N. (CS)	— Young Faculty Recognition Award, IIT Madras
Dr. Krishna M. Sivalingam (CS)	— Distinguished Member, Association for Computing Machinery (ACM)
Dr. Madhu Mutyam (CS)	— Young Faculty Recognition Award, IIT Madras
Dr. Ravindran B. (CS)	— Yahoo Faculty Award
Dr. Shankar Balachandran (CS)	— Young Faculty Recognition Award, IIT Madras
Dr. Ashok Jhunjhunwala (EE)	— Honorary Doctorate, Rajasthan Technical University, Kota
Dr. David Koilpillai (EE)	— Srimathi Marti Annapurna Gurunath Award for Excellence in Teaching, IIT Madras
Dr. Krishna Jagannathan (EE)	— Young Faculty Recognition Award, IIT Madras
Dr. Mohanasankar Sivaprakasam (EE)	— Junior-Level Research and Development Award, IIT Madras
Dr. Nagendra Krishnapura (EE)	— Technomenter Award, India Electronics and Semi-conductor Association (IESA)
Dr. Bhaskar Ramamurthi (EE)	— Doyens of Madras Award
Dr. Shanthi Pavan (EE)	— Distinguished Lecturer, IEEE Solid State Circuits Society (SSCS)
Dr. Joe Thomas Karackattu (HS)	— Emerging Scholar, The New School, New York
Dr. Srilata K. (HS)	— Pushcart Poetry Prize
Dr. Rajendran C. (MS)	— DAAD Research Ambassador
Dr. Balaji C. (ME)	— Mid-Career Research & Development Award, IIT Madras
Dr. Ravikumar N.V. (MM)	— Junior-Level Research and Development Award, IIT Madras
Dr. Srinivasa Rao Bakshi (MM)	— Outstanding Professional Award, ASM International Chennai Chapter
Dr. Sriram V. (OE)	— Dr R.J. Garde Research Award, Indian Society of Hydraulics
Dr. Jitendra S. Sangwai (OE)	— Invention Award, Intellectual Ventures, Bangalore; Young Faculty Recognition Award, IIT Madras
Dr. Vendhan C.P. (OE)	— National Award in the Field of Ocean Science and Technology, Ministry of Earth Sciences, GoI

### Fellowships

Dr. Sujith R.I. (AE)	— Fellow, Indian National Academy of Engineering
Dr. Velmurugan R. (AE)	— Fellow, Aeronautical Society of India

- Dhivyaraja K. (AM) — Prime Minister's Fellowship, Confederation of Indian Industry and Department of Science and Technology, GoI
- Dr. Athi N Naganathan (BT) — Wellcome Trust DBT-India Alliance Intermediate Fellowship
- Dr. Rama Shanker Verma (BT) — Fellow, National Academy of Sciences; Fellow, Society for Applied Biotechnology and Applied Pharmacy, India
- Dr. Ramachandran K.B. (BT) — Honorary Fellow, Biotechnology Research Society of India
- Praveena Gangadharan (CE) — DST Fellowship under the Woman Scientists Scheme
- Jason R. Picardo (CH) — Fulbright-Nehru Doctoral Exchange Fellowship
- Indranath Chakraborty(CY) — Malhotra Weikfield Foundation Nanoscience Fellowship
- Dr. Pradeep T. (CY) — Fellow, Royal Society of Chemistry; J.C. Bose Fellowship; Department of Science and Technology
- Dr. Selvam P. (CY) — Fellow, Madras Science Foundation
- Dr. Subramanian S. (Adjunct faculty member, CY) — Fellowship of the International Electron Paramagnetic Resonance Society
- Dr. Bhaskar Ramamurthi (EE) — Fellow, Institute of Electrical and Electronics Engineers
- Dr. Arunn Narasimhan (ME) — Fellow, Indian National Academy of Engineering
- Dr. Murty B.S. (MM) — Fellow, Indian National Science Academy; Fellow, Asia Pacific Academy of Materials
- Dr. Shanmugam P. (OE) — Brain Pool Fellow, Korean Federation of Science and Technology
- Books/monographs**
- Dr. Lakshmana Rao C. (AM) — *Modelling of Engineering Materials*, John Wiley & Sons
- Dr. Abhijit Deshpande P. (CH) — *A Systems Theoretic Approach to Systems and Synthetic Biology I: Models and System Characterisations*, Springer
- Dr. Karthik Raman (BT) — *A Systems Theoretic Approach to Systems and Synthetic Biology II: Analysis and Design of Cellular Systems*, Springer
- *Intelligent Computing in Bioinformatics*, Springer
- Dr. Mukesh Doble (BT) — *Polymers in a Marine Environment*, Smithers Rapra, UK
- Dr. Ravikumar N.V. (MM)
- Dr. Sanjib Senapati (BT) — *Ionic Liquid-in-Oil Microemulsions*, John Wiley & Sons, Inc., Hoboken, NJ
- Dr. Arun K. Tangirala (CH) — *Principles of System Identification: Theory and Practice*, CRC Press
- Dr. Pradeep T. (CY) — *Aquananotechnology: Global Prospects*, CRC Press
- Dr. Devdas Menon (CE) — 'भ्रम से जागो, सोने वालों!', Yogi Impressions
- Dr. Krishna S. (EE) — *An Introduction to Modelling of Power System Components*, Springer
- Dr. Jyotirmaya Tripathy (HS) — *Becoming Minority: How Discourses and Policies Produce Minorities in Europe and India*, Sage Publications
- Dr. Sudarsan Padmanabhan
- Dr. Satya Sundar Sethy (HS) — *Contemporary Ethical Issues in Engineering*, IGI Global: Pennsylvania, USA
- Dr. Sonika Gupta (HS) — *Politics and Cosmopolitanism in a Global Age*, Routledge (Taylor & Francis Group)
- Dr. Swarnalatha Rangarajan (HS) — *Ecocriticism of the Global South*, Lexington Books
- Dr. Swarnalatha Rangarajan (HS) — *Final Instructions*, Authors Press
- Dr. Feroz Ali Khader (MS) — *The Access Regime: How Reorganisation of Local Patent Laws can Promote Global Access to Affordable Medicines*, Oxford University Press
- Dr. Kamalnabhan T.J. (MS) — *Success and Life Satisfaction among Women Micro Entrepreneurs*
- Dr. Thamban Nair (MA) — *Calculus of One Variable*, Ane Books
- Dr. Babu Viswanathan (ME) — *Fundamentals of Gas Dynamics*, Athena Publishers & Wiley
- Dr. Balaji C. (ME) — *The Joy of Research*, Ane Books
- Dr. Srinivasan K. (ME) — *Frontiers in Aeroacoustics*, Multi-Science Publishing Co., UK
- Dr. Ganesh Raman (MM)

- Dr. Venkateshan S.P. (ME) — *Mechanical Measurements*, Ane Books
- Dr Ashutosh S. Gandhi (MM) — *Metastable Phase Selection and Low-Temperature Plasticity in Chemically Synthesised Amorphous Al<sub>2</sub>O<sub>3</sub>-ZrO<sub>2</sub> and Al<sub>2</sub>O<sub>3</sub>-Y<sub>2</sub>O<sub>3</sub>*, Pan Stanford Publishing
- Dr Murthy B.S. (MM) — *High Entropy Alloys*, Elsevier
- Dr Shanmugam P. (OE) — *Petroleum Engineering Technical Terms*, World Tamil Research Institute
- Dr Sundaravadivelu R.
- Dr. Srinivasan Chandrasekaran (OE) — *Dynamic Analysis and Design of Offshore Structures*, Springer
- Dr. Vijayan C. (PH) — *Essentials of Nonlinear Optics*, Wiley International
- Dr. Prabha Mandayam (PH) — *The Functional Analysis of Quantum Information Theory*, Springer
- Membership of editorial boards**
- Dr. Sivasambu Mahesh (AE) — Member, Editorial Board, *International Journal of Plasticity*, Elsevier
- Dr. Velmurugan R. (AE) — Member, Editorial Board, *Journal of Aerospace Sciences and Technologies*
- Dr. Michael Gromiha M. (BT) — Member, Editorial Board, *Scientific Reports*, Nature Publishing Group
- Dr. Benny Raphael (CE) — Member, Editorial Board, *Advanced Engineering Informatics*
- Dr. Gandhi S.R. (CE) — Associate Editor, *Sadhana*
- Dr. Ravindra Gettu (CE) — Associate Editor, *Materials and Structures Journal*, RILEM Bureau
- Dr. Sachin S. Gunthe (CE) — Co-Editor, *Journal of Atmospheric Chemistry and Physics (ACP)*
- Dr. Balakrishnan A.R. (CH) — Editor-in-Chief, *Journal of the Institution of Engineers (India): Series E (Chemical and Textile Engineering)*
- Dr. Siva Ram Murthy C. (CS) — Associate Editor, *IEEE Transactions on Mobile Computing*
- Dr. Siva Ram Murthy C. (CS) — Editor, *Computer Networks Journal*, Elsevier
- Dr. Baskaran S. (CY) — Associate Editor, *Journal of Chemical Sciences*
- Dr. Indrapal Singh Aidhen (CY) — Member, Editorial Board, *Indian Journal of Chemistry (B)*
- Dr. Mishra A.K. (CY) — Member, Editorial Board, *Indian Journal of Chemistry A*
- Prof. T. Pradeep (CY) — Member, Advisory Board, *Nanoscale (RSC Journal)*
- Dr. Shankar Ram C.S. (ED) — Member, Editorial Board, *International Journal of Vehicular Technology*
- Dr. Mahesh Kumar (EE) — Editor, *IEEE Transactions on Sustainable Energy*
- Dr. Thamban Nair M. (MA) — Editor, *Journal of Analysis & Number Theory (JANT)*, Natural Sciences Publishing
- Dr. Raghu Prakash (ME) — Member, Editorial Board, *SRESA's International Journal of Reliability and Safety Engineering*
- Dr. Ramesh Babu (ME) — Associate Editor, *Sadhana*
- Dr. Ganesh Sundara Raman (MM) — Editor, *Transactions of the Indian Institute of Metals*
- Dr. Ravi Kumar N.V. (MM) — Member, Editorial Board, *Surface Innovations*
- Dr. Sampath Kumar T.S. (MM) — Associate Editor, *Biomaterials, Frontiers Journal*
- Dr. Rajiv Sharma (OE) — Member, Editorial Board, *Journal of Offshore Structure and Technology*
- Dr. Ganesan A.R. (PH) — Associate Editor, *Optical Engineering*
- Dr. Ramachandra Rao M.S. (PH) — Section Editor, *Condensed Matter, Interfaces and Related Nanostructures Section of the Journal of Physics D: Applied Physics (JPhysD)*
- Best thesis awards**
- Dr. Anadi Singha Mahapatra (CY) — Second Prize, 2014 Lilly Outstanding Thesis Awards
- Dr. C. Venkatesh (EE) — Power System Operation Corporation (POSOCO) Award
- Best paper/poster awards**
- Kiran Kumar Ramanaidu Marri (AM) — Most Excellent Paper Award, *Sixth International Conference on Signal Processing Systems (ICSPS-2014)*
- Dr. Ramakrishnan S.
- Rajalakshmi S. (BT) — Best Poster Award, *International Conference on Polymeric Biomaterials, Bioengineering and Biodiagnostics (Biomaterials-2014)*

- Dr. Rama Shanker Verma  
Revathi S. (BT) — Best Poster Award, *International Conference MD@50*
- Dr. Sanjib Senapati  
Dipin S. Pillai (CH) — Best Poster Award, *Dynamics Days Asia Pacific-08 (DDAP 08)*
- Dr. Pushpavanam S.  
Narasimha Reddy S. (CH) — Best Paper Award, *Fifth International Conference on Chemical Engineering and Applications (CCEA 2014)*
- Dr. Sai P.S.T.  
Ananya Bakshi (CY) — Best Poster Awards, *Bangalore India Nano*
- Dr. Pradeep T.  
Rajeshkhanna Gaddam (CY) — Best Poster Award, *Fifth Interdisciplinary Symposium on Materials Chemistry*
- Dr. G. Ranga Rao  
Rahul Narayanan (CY) — Royal Society of Chemistry Poster Prize, *17th Chemical Research Society of India Symposium*
- Depanjan Sarkar  
Dr. Graham Cooks R. (Adjunct faculty)  
Dr. Pradeep T.  
Chitra V.S. (CE) — Second Prize for Poster, *Symposium on Air Pollution-Induced Health Effects*
- Ganesh Kumar S. (CE) — IGS-MD Desai Memorial YGE Award for Best Paper, *Indian Geotechnical Conference*
- Dr. Rajagopal K.  
Dr. Robinson R.G.  
Karthigeyan S. (CE) — IGS-Chennai Chapter Biannual Prize for Best Paper, *Indian Geotechnical Conference*
- Dr. Rajagopal K.  
Muthulingam S. (CE) — ScienceDirect Top 25 List of Most Downloaded Articles in Corrosion Science
- Dr. Rao B.N.  
Omprakash Ranjan (CE) — First Prize for Poster, *Symposium on Air Pollution-Induced Health Effects*
- Jyothi S. Menon  
Praveena Gangadharan (CE) — Best Poster Award, *International Conference on Microbial Fuel Cells*
- Dr. Indumathi M. Nambi  
Col. Rahul Oberoi (CE) — Commendation Certificate for Paper, *Indian Roads Congress*
- Dr. Veeraragavan A.  
Srijith Balakrishnan (CE) — Best Paper Award, *International Conference on Recent Trends and Challenges in Civil Engineering (RTCCE-2014)*
- Prof. R. Sivanandan (CE)  
Harisankar Haridas (CS) — Best Poster Award, *Sixth IBM India Collaborative Academia Research Exchange (I-CARE)*
- Dr. Janakiram D.  
Sudharsan J. (CS) — Bronze Medal, *ACM Student Research Competition, PACT-2014*
- Kalyan T.V.  
Dr. Madhu Mutyam  
Pankaj Arora (EE) — Best Poster Award, *National Conference on Nanoscience and Nanotechnology (NS&NT)*
- Dr. Ananth Krishnan  
Pankaj Arora (EE) — Best Paper Award, *Photonics 2014 Conference*
- Dr. Ananth Krishnan  
Raghuvaran Narasimhan (EE) — Best Paper Award, *International Conference on Electronic Design, Computer Networks and Automated Verification (EDCAV 2015)*

Dr. Anil Prabhakar	
Dr. Nitin Chandrachoodan	
Jatheendranath Moothayil (ED)	— Student Paper Award, <i>Seventh Asian Conference on Multibody Dynamics (ACMD 2014)</i>
Dr. Shankar Ram C.S.	
Chitra Margret Dey (MS)	— First Prize for Best Paper, <i>14th Consortium of Management Students in Research (COSMAR 2014)</i>
Dr. Ganesh M.P.	
Giridhar Ramachandran (MS)	— Third Prize, <i>IMR Doctoral Conference 2014</i>
Dr. Richa Agrawal	
Nivethitha Santhanam (MS)	— Best Paper Award, <i>Fourth Annual International Conference on Business Strategy and Organisational Behavior</i>
Prof. Kamalanabhan T.J.	
Dr. Lata Dyaram	
Sowmya S. (MS)	— Best Paper Award, <i>51st Eastern Finance Association Meeting</i>
Dr. Krishna Prasanna P.	
Bala Suyambu Jeyaram (MA)	— Session's Best Paper Award, <i>18th World Multi-conference on Systemics, Cybernetics and Informatics (WMSCI 2014)</i>
Dr. Rama R.	
Jayasree R. (MM)	— Best Scientific Session Paper Award, <i>27th Annual Conference of the Indian Society for Dental Research</i>
Dr. Sampath Kumar T.S.	
Dr. Sampath Kumar T.S. (MM)	— JBT Best Paper Award 2014, American Scientific Publishers
Anuj Kulshreshtha (OE)	— Best Paper Award, <i>International Conference on Water Resource, Coastal and Ocean Engineering (ICWRCOE'15)</i>
Dr. Shanmugam P.	
Patel A.K.P. (OE)	— Certificate of Excellence, <i>International Maritime Technology Conference and Shipping &amp; Maritime Expo</i>
Dr. Rajiv Sharma	
Sivabalan P. (OE)	— Best Paper Award, <i>Ninth International Conference on Marine Technology (MARTEC 2014)</i>
Dr. Surendran Sankunny	
Yogang Singh (OE)	— First Prize in the Student Poster Competition, <i>International Symposium (IEEE) on Underwater Technology-2015 (UT 15)</i>
Vineet K. Upadhayay	
Dr. Idichandy V.G.	
Guruprasad Sahoo (PH)	— Best Paper Award, <i>International Symposium for Research Scholars on Metallurgy, Materials Science and Engineering (ISRS 2014)</i>
Dr. Mahaveer Kumar Jain	
Shaina P.R. (PH)	— Best Poster Prize, <i>NANODAYS 2015 Conference</i>
Dr. Manu Jaiswal	
<b>Scholarships</b>	
Karnati Vinod Reddy (CS)	— Aditya Birla Scholarship
Spandana Raj B. (CS)	— Facebook's 2014 Grace Hopper Scholarship; Google Anita Borg Memorial Scholarship (Asia Pacific)
Balasaravanan T. Kumaravel (ME)	— DAAD Working Internships in Science and Engineering (WISE) Programme Scholarships
Rama Srinivas Varanasi (MM)	
Aayush Maloo (ED)	
Sukruth Somappa (AE)	

Sreedath Panat (ME)

George Francis (ED)

Dhawal Rajendra Thakare (ME)

Abhishek Goud Pandala (ME)

Harish Venkatachalapathy (CH)

Sagar Joshi (ED)

**Student Prizes/Awards**

Chaitanya Peddawad (EE)

— Third Place, Programming Contest, TAU Workshop, Monterey, CA

Aman Goel, Dheeraj B.

Shashwat Sharma (OE)

— Third Place, PetroBowl—Quiz Competition of the Society of Petroleum Engineering International

Milind Agrawal

Ankit Sharma

Arpit Chaudhary

Gaurav Bhargava

Rangeeth (AE)

— Awards for best use of advanced manufacturing methods and best use of predictive design and simulation tools, Student Design Challenge, American Society of Mechanical Engineers

Sri Harsha K. (CH)

Sai Gole (ED)

Aman Agrawal (ME)

Anoop K. (ME)

Koushick Balaji (ME)

Manish Prajapat (ME)

Rohit John (ME)

Safar (ME)

Suthirth Vaidya (ED)

— First Place at the Longitudinal Multiple Sclerosis Segmentation Challenge at ISBI 2015, New York

Abhijit Chunduru

Dr Ganapathy Krishnamurthi

Dr M. Ramanathan

## 2. ADMINISTRATION

### 2.1. General

Indian Institute of Technology (IIT) Madras is an autonomous statutory organization functioning within the Institutes of Technologies Act 1961, as amended by the Institute of Technology (Amendment Act, 1963). The IITs (the others being at Mumbai, Kanpur, Kharagpur, Delhi, Guwahati, Roorkee, Rupnagar, Bhubaneswar, Gandhinagar, Hyderabad, Patna, Rajasthan, Mandi, Indore and BHU, Varanasi) are administrated centrally by the Councils of IITs, the apex body established by the Government of India (GoI) to co-ordinate the activities of these institutes. The Minister for Human Resource Development, GoI is the Chairperson of the Council. Each IIT has a Board of Governors responsible for its overall administration and control.

The Senate decides the academic policies of the Institute. It approves and controls the curricula, courses, examinations and declaration of results. It appoints various committees to look into 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 both the facilities and standards. The Director of the Institute is the Chairman of the Senate. The members of the Senate are listed in the Appendix. Financial advice is provided to the Institute by the Finance Committee. The Buildings and Works Committee advises the institute on matters relating to buildings and works.

The compositions of these committees and boards are provided in the appendices.

### 2.2. Staff Positions

As on 31 March 2015, there were 1218 faculty/staff members in position.

#### Number of faculty/staff members in position

Faculty Members	Visiting Faculty	Group A Staff	Scientific Officers	Technical Staff	Administrative Staff
536	11	65	2	241	363

#### Number of faculty/staff members appointed during 2014–2015

Professors	Associate Professors	Assistant Professors	Visiting Faculty	Administrative Staff
1	2	24	13	1

- Three faculty and staff members resigned.
- Thirty-two faculty and staff members retired from service.
- Five staff members expired.
- Twenty-seven faculty and staff members were on long leave.

#### 2.2.1. Faculty/staff members appointed between 1 April 2014 and 31 March 2015

##### List of faculty members/staff members appointed during the period from April 2014 to March 2015

Sl. No.	ID No.	Name	Designation	Department/Section	Date of Joining
1	8654	K. Vijaykumar	Junior Assistant	Finance and Accounts/ Cash Section	4 April 2014
2	8655	Sathyan Subbiah	Associate Professor	Mechanical	19 May 2014
3	8656	Shantanu Shashikant Mulay	Assistant Professor	Aerospace	19 May 2014
4	8658	Nandan Sudarsanam	Assistant Professor	Management Studies	18 July 2014
5	8559	Dawood Kothawala	Assistant Professor	Physics	18 July 2014
6	8648	Saumendra Kumar Bajpai	Assistant Professor	Applied Mechanics	18 July 2014
7	8552	Varadhan S.K.M.	Assistant Professor	Applied Mechanics	18 July 2014



Sl. No.	ID No.	Name	Designation	Department/Section	Date of Joining
8	8600	Srikrishna Sahu	Assistant Professor	Mechanical	18 July 2014
9	8579	Soundarapandian Santhanakrishnan	Assistant Professor	Mechanical	18 July 2014
10	8598	Anand Krishnasamy	Assistant Professor	Mechanical	18 July 2014
11	8661	Atul Narayan S.P.	Assistant Professor	Civil	18 July 2014
12	8657	Jayeeta Bhattacharyya	Assistant Professor	Physics	25 July 2014
13	8659	Sivarama Krishnan	Assistant Professor	Physics	31 July 2014
14	8660	Prabha Mandayam	Assistant Professor	Physics	1 August 2014
15	8662	Tarun K. Chandranyadula	Assistant Professor	Ocean	1 September 2014
16	8663	Sourav Rakshit	Assistant Professor	Mechanical	1 September 2014
17	8664	Sundararajan Natarajan	Assistant Professor	Mechanical	10 September 2014
18	8665	M. Rajsekar	Assistant Professor	Computer Science	13 October 2014
19	8666	Senkamalam Periyasamy Dhanavel	Professor	Humanities	29 October 2014
20	8667	Mayank Mittal	Assistant Professor	Mechanical	30 October 2014
21	8668	Santanu Sarkar	Assistant Professor	Mathematics	30 October 2014
22	8669	Niket S. Kaisare	Associate Professor	Chemical	3 November 2014
23	8670	M. Geetha	Assistant Professor (on contract)	Management Studies	3 November 2014
24	8671	S. Mathava Kumar	Assistant Professor	Civil	10 November 2014
25	8672	Sarang Sharad Sane	Assistant Professor	Mathematics	1 January 2015
26	8673	Tiju Thomas	Assistant Professor	Metallurgy	1 January 2015
27	8674	Chester Dominic Rebeiro	Assistant Professor	Computer Science	5 January 2015
28	8675	Kaushik Mitra	Assistant Professor	Electrical	12 January 2015

Sl. No.	ID No.	Name	Designation	Department	Date of Joining
1	INSPF-003	Srilakshmi Krishnamoorthy	INSPIRE Hosted Faculty	Mathematics	2 May 2014
2	VF-124	Franziska Steinbruch	Visiting Associate Professor	Civil	1 July 2014
3	VF-125	Sundararaman Mahadevan	Visiting Professor	Metallurgy	21 July 2014
4	VF-127	James Mayhew	Visiting Professor	Mechanical	23 July 2014
5	VF-128	O.N. Ramesh	Visiting Associate Professor	Aerospace and Mechanical Engineering	1 August 2014
6	VF-129	G. Balachandran	Visiting Professor	Metallurgy	1 September 2014
7	VF-119	Mark Alexander	Visiting Professor	Civil	12 September 2014
8	VF-131	Nathan Cohen	Visiting Assistant Professor	Mathematics	1 December 2014
9	VF-132	Arun Kumar	Visiting Assistant Professor	Mathematics	1 January 2015
10	VF-133	Hemanta Doloi	Visiting Associate Professor	Civil	1 January 2015
11	VF-134	V.S. Gopalaratnam	Visiting Professor	Civil	5 January 2015
12	VF-135	Pierre Fima	Visiting Assistant Professor	Mathematics	12 January 2015
13	VF-136	Branko Matovic	Visiting Professor	Metallurgy	6 February 2015

#### Internal faculty/staff members who joined during the period from April 2014 to March 2015

Sl. No.	Name	Designation	Department/Section	Date of Joining
1	G. Vijaykumari	Office/Lab Assistant	RTI & Legal	16 May 2014
2	K. Thirupathiah	Office/Lab Assistant	Mathematics	16 May 2014



Sl. No.	Name	Designation	Department/Section	Date of Joining
3	V. Subramani	Office/Lab Assistant	Central Workshop	20 May 2014
4	Periyapatna Ananthapadmanabiah Ramakrishna	Professor	Aerospace	18 July 2014
5	Nandan Kumar Sinha	Professor	Aerospace	18 July 2014
6	Murthy Haradanahalli S.N.	Professor	Aerospace	18 July 2014
7	Amit Kumar	Professor	Aerospace	18 July 2014
8	K Arul Prakash	Associate Professor	Applied	18 July 2014
9	Ramakrishnan Swaminathan	Professor	Applied	18 July 2014
10	Prasad Patnaik B.S.V.	Professor	Applied	18 July 2014
11	M. Manivannan	Professor	Applied	18 July 2014
12	Mahesh Panchagnula	Professor	Applied	18 July 2014
13	Madhulika Suresh Dixit	Associate Professor	Biotechnology	18 July 2014
14	Preeti Aghalayam	Professor	Chemical	18 July 2014
15	Ramanathan Srinivasan	Professor	Chemical	18 July 2014
16	Dillip Kumar Chand	Professor	Chemistry	18 July 2014
17	Govindasamy Sekar	Professor	Chemistry	18 July 2014
18	Amlan Kumar Sengupta	Professor	Civil	18 July 2014
19	G.R. Dodagoudar	Professor	Civil	18 July 2014
20	G. Appa Rao	Professor	Civil	18 July 2014
21	Karthik K. Srinivasan	Professor	Civil	18 July 2014
22	Shankar Balachandran	Associate Professor	Computer Science	18 July 2014
23	Sutanu Chakraborti	Associate Professor	Computer Science	18 July 2014
24	Ramanathan Muthuganapathy	Associate Professor	Engineering Design	18 July 2014
25	Venkatesh Balasubramanian	Professor	Engineering Design	18 July 2014
26	Srikanth Vedantam	Professor	Engineering Design	18 July 2014
27	Asokan Thondiyath	Professor	Engineering Design	18 July 2014
28	Boddeti Kalyan Kumar	Associate Professor	Electrical	18 July 2014
29	Srirama Srinivas	Associate Professor	Electrical	18 July 2014
30	Boby George	Associate Professor	Electrical	18 July 2014
31	Sonika Gupta	Associate Professor	Humanities	18 July 2014
32	Rajesh Kumar	Associate Professor	Humanities	18 July 2014
33	Umakant Dash	Professor	Humanities	18 July 2014
34	Sreekumar N.	Professor	Humanities	18 July 2014
35	Aysha Iqbal Viswamohan	Professor	Humanities	18 July 2014
36	Srinivasa Rao Manam	Associate Professor	Mathematics	18 July 2014
37	Arya Kumar Bedabrata Chand	Associate Professor	Mathematics	18 July 2014
38	Shaligram Tiwari	Professor	Mechanical	18 July 2014
39	Arunn Narasimhan	Professor	Mechanical	18 July 2014
40	Rajiv Sharma	Associate Professor	Ocean	18 July 2014
41	Jitendra Shital Sangwai	Associate Professor	Ocean	18 July 2014
42	P. Shanmugam	Professor	Ocean	18 July 2014
43	Srinivasan Chandrasekaran	Professor	Ocean	18 July 2014
44	P Murugavel	Associate Professor	Physics	18 July 2014
45	Manoj Gopalakrishnan	Associate Professor	Physics	18 July 2014
46	Balaji Narasimhan	Associate Professor	Civil	21 July 2014
47	Prabhu Rajagopal	Associate Professor	Mechanical	5 August 2014

Sl. No.	Name	Designation	Department/Section	Date of Joining
48	B. Jagadeeswaran	Driver (SG)	Engineering Unit	12 September
49	A. Vijayadevan	Driver (SG)	Transport Cell	12 September 2014
50	V.K. Santhosh Kumar	Driver (SG)	Transport Cell	12 September 2014
51	G. Kamalarajan	Senior Driver	Transport Cell	12 September 2014
52	K. Natarajan	Senior Driver	Transport Cell	12 September 2014
53	M. Lakshmanan	Cook (SG)	Bose Einstein Guest House	12 September 2014
54	M. Abubucker Siddik	Cook (SG)	Bose Einstein Guest House	12 September 2014
55	Arshinder Kaur	Associate Professor	Management Studies	2 December 2014
56	K. Rajendran	Office/Lab Assistant	Metallurgy	12 December 2014
57	K. Jayakumar	Office/Lab Assistant	Electrical	12 December 2014
58	C. Soundarajan	Office/Lab Assistant	Mechanical	12 December 2014
59	L. Naraiah	Office/Lab Assistant	Metallurgy	12 December 2014
60	J. Kumaran	Office/Lab Assistant	Chemical	12 December 2014
61	Pushpalingam	Office/Lab Assistant	Gymkhana	12 December 2014
62	T. Sekar	Office/Lab Assistant	Gymkhana	12 December 2014
63	Adikesavan	Office/Lab Assistant	Gymkhana	12 December 2014
64	G. Ananddragan	Office/Lab Assistant	Gymkhana	12 December 2014
65	P. Murugesan	Office/Lab Assistant	Gymkhana	12 December 2014
66	V. Seenivasan	Senior Horticulture Officer	Engineering Unit	29 December 2014
67	K. Dharmaraj	Executive Engineer (Civil)	Engineering Unit	29 December 2014
68	M. Ramachandran	Executive Engineer (Civil)	Engineering Unit	29 December 2014
69	P. Raju	Assistant Physical Education Officer (SS)	Institute Gymkhana	29 December 2014
70	K. Ravichandran	Assistant Executive Engineer (Electrical)	Engineering Unit	29 December 2014
71	E. Selvam	Office/Lab Assistant	Engineering Unit	8 January 2015

#### Faculty/staff members who resigned/were relieved

Sl. No.	ID No.	Name	Designation	Department	Date of Relief
1	8590	Harendra Kumar Behra	Assistant Professor	Humanities	26 June 2014
2	8515	Shireen Mirza	Assistant Professor	Humanities	31 January 2015
3	8584	Radha K.	Staff Nurse	Institute Hospital	31 March 2015

#### Faculty/staff members who retired between 1 April 2014 and 31 March 2015

Sl. No.	PPO No.	Name	Designation	Department	Date of Birth	Date of Retirement
1	1858	Muthuveerappan G.	Professor	Mechanical Engineering	9 April 1949	30 April 2014
2	CPFG-43	Murthy D.	Senior Attendant	Civil Engineering	4 April 1954	30 April 2014
3	CPFG-44	Sitaram N.	Professor	Mechanical Engineering	10 June 1949	30 June 2014
4	1861	Kamaraj K.	Senior Library Information Officer	Central Library	22 May 1954	31 May 2014
5	1862	Lakshmikanthan G.	Senior Assistant	IC & SR	4 May 1954	31 May 2014
6	1863	Subramani V.	Lab Assistant	CWS	21 May 1954	31 May 2014
7	1864	Ajit Kumar Kolar	Professor	Mechanical Engineering	4 June 1949	30 June 2014
8	1865	S.G. Kamath	Professor	Mathematics	24 June 1949	30 June 2014
9	1866	Narayanan G.	Superintendent	Finance and Accounts	10 June 1954	30 June 2014
10	CPFG-46	Thirupathaiah K.	Office Assistant	Mathematics	12 July 1954	31 July 2014

Sl. No.	PPO No.	Name	Designation	Department	Date of Birth	Date of Retirement
11	1867	M. Chakkarapani	Assistant Registrar	Academic	18 August 1954	31 August 2014
12	1868	K. Velu	Junior Superintendent	F&A	14 August 1954	31 August 2014
13	1871	E. Sukumar	Technical Superintendent	Physics	4 September 1954	30 September 2014
14	1872	V. Balasubramanian	Senior Technician	Engineering Design	7 September 1954	30 September 2014
15	1873	T.T. Narendran	Professor	Management Studies	6 October 1949	31 October 2014
16	1874	J.S. Mani	Professor	Ocean Engineering	18 October 1949	31 October 2014
17	1875	S. Kuberan	Superintendent	Finance and Accounts	12 October 1954	31 October 2014
18	1876	M. Kathirvelu	Junior Superintendent	Engineering Unit	19 October 1954	31 October 2014
19	CPFG-47	Shunmugam M.S.	Professor	Mechanical	15 October 1949	31 October 2014
20	CPFG-48	Krishna Mohan N.	Senior Scientific Officer Grade-I	Physics	20 October 1952	31 October 2014
21	CPFG-49	Murthy R.	Superintendent	Biotechnology	14 October 1954	31 October 2014
22	1878	L. Venkataraman	Executive Engineer	Engineering Unit	11 November 1954	30 November 2014
23	1879	Jayakumar K.	Office Assistant	Electrical Engineering	15 December 1954	31 December 2014
24	CPFG-50	Mohan S.	Assistant Professor	Humanities	31 December 1949	31 December 2014
25	CPFG-51	Jayakumari M.	JJunior Superintendent	IC & SR	23 Decemeber 1954	31 December 2014
26	1880	Prabhakar Rao P.	Scientific Officer Grade-I	Electrical Engineering	22 January 1953	31 January 2015
27	1881	Saraswathi P.	Superintendent	Physics	28 February 1955	28 February 2015
28	1882	Kalyanakumar M.	Senior Technician	CWS	22 February 1955	28 February 2015
29	CPFG-52	S.C. Chaudhary	Professor	Humanities	1 March 1950	28 February 2015
30	1883	Natarajan T.S.	Professor	Physics	29 March 1950	31 March 2015
31	1884	Elangovan R.	JJunior Technical Superintendent	Mechanical Engineering	15 March 1955	31 March 2015
32	1885	Suganda Kundalambal R.	Senior Assistant	Mathematics	11 March 1955	31 March 2015

#### Faculty/staff members who expired while in service

Sl. No.	PPO No.	Name	Designation	Department	Date of Birth	Date
1	FPPO.1869	Harish Chandra	Librarian	Central Library	2 January 1954	14 June 2014
2	FPPO.1870	Kottaiah A.	Attendant	Gymkhana	1 July 1959	3 July 2014
3	FPPO.1877	Manoj M.	Driver Grade-I	Transport Cell	13 March 1975	12 August 2014
4	FPPO.1886	Venkatesan C.S.	Assistant System Engineer	CC	10 June 1973	4 October 2014
5	FPPO.1887	Udayakumar K.	Junior Technician	CWS	5 May 1961	31 January 2015

#### Faculty members/officers/staff members on long leave

##### Faculty/staff members on extraordinary leave

Sl. No.	Name	Designation	Department	Period	Assignment/ Visits	Remarks
1	C.V.R. Murty	Professor	Civil	11 September 2013 to 10 September 2018	Directorship of IIT Jodhpur	
2	S.V. Raghavan	Professor	Computer Science	1 July 2013 to 30 June 2015	Scientific Secretary in the Office of the Principal Scientific Advisor to the GoI	

Sl. No.	Name	Designation	Department	Period	Assignment/ Visits	Remarks
3	T.A. Gonsalves	Professor	Computer Science	From 4 January 2010	Director, IIT Mandi, Himachal Pradesh	Awaiting further orders
4	M.N. Sudheendra Rao	Professor	Chemistry	6 August 2013 to 5 August 2015	Professor, Central University of Karnataka, Gulbarga	
5	Debashis Chakraborty	Associate Professor	Chemistry	19 December 2013 to 18 December 2015	Associate Professor, IIT Patna, India	Technical resignation
6	Prema Rajagopalan	Associate Professor	Humanities	18 July 2013 to 17 July 2015	Visiting faculty position at IIT Ropar, Punjab	Teaching
7	S. Ponnusamy	Professor	Mathematics	10 October 2012 to 9 October 2016	Head, Indian Statistical Institute, Chennai Centre	
8	R. Gnanamoorthy	Professor	Mechanical	27 August 2008 to 4 May 2015	Director, IIITD & M, Kancheepuram	
9	Arshinder Kaur	Assistant Professor	Management Studies	4 January 2014 to 3 January 2015	Senior Lecturer, School of Information Systems, Curtin Business School, Curtin University, Australia	
10	M.P. Ganesh	Assistant Professor	Management Studies	31 December 2013 to 30 June 2015	Visiting faculty member, IIT Hyderabad	Faculty Exchange Programme
11	Shankar Balachandran	Assistant Professor	Management Studies	20 June 2014 to 19 June 2015	Assistant Professor, IIT Bombay (Faculty Exchange Programme amongst IITs)	Faculty Exchange Programme
12	Varisha Rehman	Assistant Professor	Management Studies	9 March 2015 to 8 August 2015	Collaborative research at Oxford Evidence & Interventions Ltd., Oxford, UK	
13	M. Murali Prakash	Assistant Executive Engineer (Electrical)	Engineering Unit	16 December 2013 to 15 December 2015	EE, NIT Puducherry, Karaikal	Deputation

#### Faculty members on sabbatical leave

Sl. No.	Name	Designation	Department	Period	Assignment/Visits	Remarks
1	N. Sujatha	Associate Professor	Applied Mechanics	21 April 2014 to 20 April 2015	Nanyang Technology University, Singapore	Visiting faculty
2	M. Michael Gromiha	Associate Professor	Biotechnology	30 March 2015 to 31 July 2015	Visiting Associate Professor at Chou University, Tokyo, Japan	
3	K. Mangala Sundar	Professor	Chemistry	6 January 2014 to 5 January 2015	From 6 January to 15 May 2014—visiting faculty member, IISER, Mohali, Punjab, 16 May 2014 to 5 January 2015	Book writing
4	Koshy Varghese	Professor	Civil	13 September 2014 to 12 March 2015	University of Witwatersrand, South Africa and Autodesk, USA	Book writing
5	Madhu Mutyam	Associate Professor	Computer Science	2 June 2014 to 31 May 2015	Research Consultant, Intel Technology India, Pvt. Ltd., Bangalore	
6	Anjan Chakravorty	Associate Professor	Electrical	2 February to 31 December 2015	Invited Researcher at University of Bordeaux, France	
7	Nilesh Jayantilal Vasa	Professor	Engineering Design	16 March to 1 August 2015	Fixed-term faculty member, Department of Engineering, Graduate School of Information Science and Electrical Engineering, Kyushu University, Fukuoka, Japan	

Sl. No.	Name	Designation	Department	Period	Assignment/Visits	Remarks
8	Jyotirmaya Tripathy	Associate Professor	Humanities	1 March to 31 December 2015	Visiting Fellow, Aarhus Univesity, Denmark	
9	Sudarsan Padmanabhan	Associate Professor	Humanities	1 March to 31 December 2015	Visiting Fellow, Aarhus University, Denmark	
10	Sudhir Chella Rajan	Professor	Humanities	29 July 2014 to 29 July 2015	Book writing (EL from 30 July 2014 to 29 July 2015)	
11	Durga Janaki Ram Gabbita	Associate Professor	Metallurgy	28 July 2014 to 27 July 2015	Visiting Professor, University of Louisville, USA	
12	P. Murugavel	Assistant Professor	Physics	1 August 2014 to 31 July 2015	Visiting fellowship awarded by IBS CCES, Seoul National University, Korea	
13	Aditi Simha	Assistant Professor	Physics	15 August 2014 to 15 May 2015	Visiting Scholar, Department of Mathematics, West Virginia University, Eberly College of Arts and Sciences, Morgan Town, USA	
14	Arul Lakshminarayanan	Professor	Physics	1 January to 30 September 2015	Guest Scientist position at Max-Planck-Institut fur Physik komplexer Systeme, Germany	

## 2.3. Staff Welfare

### 2.3.1. Human resource development

As part of its human resource development activities, the Institute plans and implements programmes for providing opportunities to technical and administrative staff members to update and upgrade their knowledge and skills so that they may perform their duties effectively. In addition, the programmes are also aimed at enhancing the pride and satisfaction they feel in their work. The overall feeling of happiness engendered by these programmes also overflows to their home lives and contributes to a sense of well-being for the entire family. These activities also form a part of the training requirements under the ISO dispensation.

#### HRD programmes conducted

HRD activities were initiated at the Institute in 1997 under the charge of a professor. In the period of reporting, 12 internal training programmes and nine external training programmes organized by other institutions/organizations were attended by our staff members. The impact of the various programmes, as seen from the feedback at the end of each programme, appears to be advantageous to the Institute as the employees were able to upgrade their knowledge through these programmes as these were designed on the basis of needs.

#### Training calendar for the year 2014

##### External training

Sl. No.	No. of Persons Attended	Course Title	Duration	Section/Department	Organization
1	1	10th Annual Meeting and Workshop of INDEST–AICTE Consortium	5–6 May 2014	Central Library	NIT Silchar, Assam
2	1	Lean Six Sigma Application for testing and calibration Laboratories	19–21 May 2014	CEC	Centre for Electro-nics Test Enginee-ring, STQC, Bangalore
3	2	Power Tools	19–20 June 2014	Central Workshop	M/s. BOSCH, Bangalore
4	2	Outcome Budget	25–26 August 2014	Finance & Accounts, Training & Placement	ISTM, New Delhi
5	3	Green Buildings	15–17 September 2014	Engineering unit	M/s. NITT & R, Chandigrah
6	2	Operation Training Course of JES-FA 200 ESR Spectrometer	16–19 September 2014	SAIF	JEOL Ltd., Japan

Sl. No.	No. of Persons Attended	Course Title	Duration	Section/Department	Organization
7	1	HP SDN Summit 2014	9–10 October 2014	Computer Centre	M/s. HP India, Bangalore
8	1	Knowledge Management	27–31 October 2014	Administration	Indian Institute of Public Administration.(IIPA), New Delhi
9	2	Sensitisation of the personnel covering the guidelines/procedures	24–25 February 2015	Engineering Unit	Central Vigilance Commission, New Delhi

### Internal training

Sl. No.	No. of Persons Attended	Course Title	Duration	Section/Department	Organization
1	1	Steering Systems and Vehicle Handling	25–26 April 2014	Engineering Design	SAE India Southern Section, Chennai
2	1	5S	14 June 2014	Engineering Design	TANSTIA, Chennai
3	3	Stores & Purchase Procedure	26 July 2014	All sections/departments (new recruits from)	IIT Madras
4	35	Office Procedure with Special Reference to Noting & Drafting	9 August 2014	All sections/departments (new recruits from)	IIT Madras
5	35	MS Excel–Advanced	13 August 2014	All sections/departments (new recruits from)	IIT Madras
6	1	Red Hat Linux	18 August 2014 (63 hours)	Computer Centre	CMC Academy, Chennai
7	1	Engine Testing & Certification	18–22 August 2014	Engineering Design	ARAI, Pune
8	6	Reservation Policy	12–13 September 2014	RTI, Administration, Finance &Accounts and Liaison Officers	C-WET, Chennai
9	1	More Advanced Microsoft Excel 2010 with Macro Programming	25–26 September 2014	Computer Centre	Sieger Training Consultants Pvt. Ltd., Chennai
10	1	Ethical Hacking	3–8 November 2014	Physics	MSME DI, Chennai
11	4	TDS, Remuneration, Planning & Retirement Benefits	7 February 2015	Finance & Accounts Section and Administration	The Princeton Academy, Chennai
12	1	Dell Interface	20 February 2015	Computer Centre	Dell, Chennai

### 2.3.2. Hindi coaching

#### Ongoing activities of Official Language Section

##### a) Hindi training

In accordance with the directions of the Department of Official Language of the Home Ministry, GoI, full-time intensive Hindi language learning programmes, i.e., LILA Prabodh, LILA Praveen and LILA Pragya were conducted regularly for both technical and administrative staff members to improve their Hindi. During the year 2014–2015, a total of 80 staff members successfully completed all these three courses online.

##### b) Hindi workshops and conferences

A one-day Rajbhasha Technical Conference in Hindi, “Science & Technology”, was organized on 2 September 2014 at IC & SR Auditorium, wherein all OLIC members and a few students of IIT Madras gave oral-cum-Power-Point presentations in Hindi. Mr. Ajai Malik, Assistant Director, CHTSI, Chennai chaired both the sessions. The best three out of the 17 speakers were felicitated during the Hindi Day celebrations. Mr. Nagesh R. Iyer, Director, CSIR-SERC, Chennai was the chief guest. All faculty/staff members actively volunteered for the conference.



### c) Celebration of Hindi Day and World Hindi Day

Hindi Day was celebrated on 20 October 2014. The Director presided over the function and distributed certificates, cash awards and personal pay to the staff members who had successfully passed Hindi examinations. On the occasion of World Hindi Day, a panel discussion in Hindi was organized for the faculty, staff and students of IIT Madras, which was followed by a cultural programme. The Director distributed cash awards for the winners of the Hindi workshop conducted for the quarter ending December 2014.

### d) Publications

*Campus News* is being released every week bilingually (Hindi and English).

The quarterly e-magazine *Hindi Manjusha* is being uploaded to the Institute website regularly.

### e) Unicode

Unicode has been activated/enabled in all the computers of the departments/sections/centres, and training is being imparted to the staff members to work in Hindi.

### f) OLIC meeting

The Official Language Implementation Committee (OLIC) has been constituted to monitor progressive use of the official language in the Institute. Meetings are being convened regularly on a quarterly basis under the chairmanship of the Registrar.

The 47th meeting of the Town Official Language Implementation Committee (TOLIC) was convened at IIT Madras under the chairmanship of Mr. Suresh Kumar Sharma, AGM, Southern Railway, on 21 November 2014. Around 200 member-offices attended the meeting.

### g) Other activities for effective use of the official language

The daily Hindi newspaper *Rajasthan Patrika* is being distributed to all the departments and the Administration Section from 1 January 2015 for progressive use of the official language.

### 2.3.3. Assistance for education of children

In the financial year 2014–2015, the Institute reimbursed a sum of Rs.93,49,871 to 512 faculty/staff members against Children Education Assistance according to GoI norms.

### 2.3.4. Transport facilities for children of the staff

From 10 February 2008, free transport facilities have been provided for the benefit of all users within the campus.

### 2.3.5. Advances

During the year under report, a sum of Rs.22.60 lakhs was sanctioned as advances for the following:

Sl. No.	Advance	No of Beneficiaries	Amount Sanctioned (Rs.)
1	House Building Advance	0	0
2	Car Advance	4	7,20,000
3	Two Wheeler Advance	11	2,94,000
4	Personal Computer Advance	6	1,80,000
5	Festival Advance	237	10,66,500
	<b>Total</b>	<b>258</b>	<b>22,60,500</b>

### Insurance

Group Mediclaim insurance scheme for the period from 1 February 2014 to 31 January 2015

Sl. No.	Category	No. of Persons Covered	Premium Paid (Rs.)
	<b>Basic Coverage</b>		<b>2,44,72,445</b>
1	Employee & Dependents	3182	
2	Pensioners & Spouses	688	
3	Family Pensioner	349	

Sl. No.	Category	No. of Persons Covered	Premium Paid (Rs.)
<b>Additional Coverage</b>			
4	Employee & Dependant	1344	
5	Pensioners & Spouses	1010	
6	Family Pensioners	94	
<b>Fire Insurance</b>			<b>9,06,126</b>

#### Group term insurance scheme for the period from 10 February 2014 to 9 February 2015

Sl. No.	Group	No. of Employees Covered	Sum Insured per Employee (lakhs of Rs.)	Annual Premium/Employee (Rs.)	Total Premium Paid (Rs.)	Death Claims Made During Period (lakhs of Rs.)
1	A	573	30	7045	40,36,785	60
2	B	253	15	3522	8,91,066	–
3	C	325	10	2348	7,63,100	55

#### 2.3.6. Meetings of the authorities

Board of Governors	Four meetings were held, on 18 July 2014, 26 September 2014, 28 November 2014 and 20 March 2015.
Finance Committee	Two meetings were held, on 31 May 2014 and 18 November 2014.
Buildings & Works Committee	One meeting was held, on 2 January 2015.
Senate	

#### 2.3.7. ISO 9001:2008 in IIT Madras: April 2014 to March 2015

##### ISO summary

International Organization for Standardization (ISO) is a world-wide federation that certifies the operation and existence of a quality management system, and ISO 9001:2000 is an international standard for quality systems. IIT Madras was awarded the ISO-9001:2000 certification for academic and support processes (QSM-I: Academic Section, Central Library, Central Workshop, Computer Centre, Industrial Consultancy & Sponsored Research and User-Oriented Programmes) in 1999 and for administrative support processes (QSM-II: Administration, Central Electronic Centre, Engineering Unit, Finance & Accounts, Security Section and Stores & Purchase) in 2001. In year 2011, all the academic and support units of IIT Madras were certified as per the new ISO standard ISO 9001:2008 and were subsequently recertified in 2014. In addition to having the ISO 9001:2008 certification, the Central Electronic Centre has been NABL-accredited for its Testing and Calibration Laboratories since 2004.

#### I ISO activities for the year 2014–2015

##### Internal audits

Unit/Section	Schedule	
	First Audit	Second Audit
QSM-I	21–25 April 2014	20–27 November 2014
QSM-II	28 April to 2 May 2014	28 November to 5 December 2014

##### Management review meetings

Unit/Section	Schedule	
QSM-I and QSM-II	19 May 2014	(35th MR meeting)
QSM-I and QSM-II	9 December 2014	(36th MR meeting)

##### Recertification/surveillance audits (undertaken by TUV India Ltd.)

Unit/Section	Schedule	
QSM-I	26–27 May 2014	(Recertification)
QSM-II	16 December 2014	(Surveillance)



## ISO activities

The ISO 9001:2008 recertification for QSM-I has been completed, and the certificate is valid till 2017.

Dr. V. Vijayalakshmi and Dr. Rupashree Baral (Management Studies) successfully completed ISO Lead Auditor training under TUV India in August 2014.

## II NABL Activities for the year 2014–2015 (for Central Electronics Centre)

Desktop auditing is in progress. Audit for renewal of accreditation by NABL is due in March 2016.

### 2.3.8. List of faculty members and officers in the Academic Administration and General Administration

#### (i) Academic Administration

<b>Director</b>	Prof. Bhaskar Ramamurthi
<b>Deans</b>	
Academic Courses	K. Ramamurthy
Academic Research	Saritkumar Das
Administration	P. Sriram
Industrial Consultancy & Sponsored Research	Krishnan Balasubramaniam
Students	L.S. Ganesh (up to 24 May 2014) M.S. Sivakumar (from 25 May 2014)
Planning	Ravinder David Koilpillai
International and Alumni Relations	R. Nagarajan

#### (ii) Heads of departments

Aerospace	K. Bhaskar
Applied Mechanics	M. Ramasubba Reddy
Biotechnology	Mukesh Doble (up to 31 July 2014) D. Karunakaran (from 1 August 2014)
Chemical Engineering	P. Sessa Talpa Sai
Chemistry and MSRC	U.V. Varadaraju
Civil Engineering	A. Meher Prasad
Computer Science and Engineering	P. Sreenivasa Kumar
Electrical Engineering	Harishankar Ramachandran
Engineering Design	Nilesh Jayantilal Vasa
Humanities and Social Sciences	Malathy Duraisamy
Management Studies	G. Srinivasan (up to 31 July 2014) T.J. Kamalanabhan (from 1 August 2014)
Mathematics	S.H. Kulkarni (up to 4 December 2014) M. Thamban Nair (from 5 December 2014)
Mechanical Engineering	T. Sundararajan (up to 7 December 2014) B.V.S.S.S. Prasad (from 8 December 2014)
Metallurgical and Materials Engineering	M. Kamaraj
Ocean Engineering	V. Anantha Subramanian
Physics	P.B. Sunil Kumar

#### (iii) Heads of research centres

Sophisticated Analytical & Instrumentation Facility	S.S. Bhattacharyya
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#### (iv) Heads of special facilities for interaction with other institutions

Centre for Industrial Consultancy & Sponsored Research	Krishnan Balasubramanian
Chairman, CCE	Ajit Kumar Kolar (up to 29 June 2014) A. Ramesh (from 30 June 2014)

Central Electronics Centre  
Computer Centre

**Chairman**

GATE  
JEE

V. Jagadeesh Kumar  
Koshy Varghese (up to 11 September 2014)  
C. Balaji (from 12 September 2014)

K. Srinivasan  
S. Sundar

**(v) Central Administration**

**Registrar**

**Deputy Registrars**

Academic Section

Administration

Finance & Accounts Section

Internal Audit Section

Stores and Purchase Section

Training & Placement

IC & SR

V.G. Bhooma

G. Ravichandran

D. Ravee

S. Sundaravinayagam

S. Sambasivam

R. Esakkimuthu

A.V. Sudarsanam

Lt. Col. (Retd.) Jayakumar

B. Nagarajan

**Assistant Registrars**

Administration

Finance & Accounts Section

Stores & Purchase Section

Recruitment

Office of the Dean (Students)

Engineering Unit

IC & SR

Security cum Fire Officer

P. Jamuna

R. Chandrakasu

B. Dhamodaran

K. Vijayalakshmi

K. Kumarappan

J. Edwin

V. Perumal

Y.E.L. Sudhakar Rao Pujari

V. Rajendran

N. Elumalai

**(vi) Heads of central services, facilities and Section**

Central Library

Chief Medical Officer in-charge

Chairman, Council of Wardens

Central Gas Blowing Section

Professor in-charge, Central Workshop

Co-ordinator, NSS

Advisor, Sports

Advisor, Cultural

Advisor, Foreign Students

Chief Vigilance Officer (Part Time)

Advisor (Placement & Training)

Advisor, Mentoring for Individual Transformation (MITr)

Advisor, Weaker Section Students

Mahalakshmi M. Ravi

M. Prakash Maiya (up to 5 June 2014)

K. Sethupathi (from 6 June 2014)

U.V. Varadaraju (up to 30 July 2014)

P.B. Sunil Kumar (from 31 July 2014)

N. Ramesh Babu

John Bosco Lourdusamy

K.P. Sudheer

Udayachandran Chakkingal (up to 4 June 2014)

Umakant Dash (from 5 June 2014)

Sudarshan Padmanabhan

S. Sankararaman

Babu Viswanathan

M.S. Sivakumar (up to 1 July 2014)

Arul S. Jayachandran (from 2 July 2014)

M. Suresh Babu

**(vii) Engineering Unit**

Chairman

A. Veeraraghavan (upto 22 February 2015)

Ligy Philip (from 23 February 2015)

Co-chairman

Ligy Philip (up to 22 February 2015)

S.R. Gandhi (from 23 February 2015)

Superintending Engineer

R. Arumugam

Executive Engineers

K. Viswanath

K. Dharmaraj

M. Ramachandran

V. Seenivasan

Assistant Executive Engineers

M. Murali Prakash (on EOL)

H. Anandram

K. Rizwan Ali

N.R. Vineetha

K. Ravichandran

**(viii) IC & SR**

Chief Techno-economic Officer

R. Sundaram

Senior Techno-economic Officer

V. Suresh

### 3. ACADEMIC PROGRAMMES AND AWARD OF DEGREES

The institute offered Ph.D. programmes in all the 16 departments, M.S. programme in 12 departments, M.Tech. programmes in 28 streams/ specialisations, M.Sc. programme in 3 branches, B.Tech. programmes in 10 branches, Dual Degree (B.Tech. and M.Tech.) programmes in 21 streams/specialisations, Dual Degree (B.S. & M.S.) in biological sciences & physics, M.B.A. programme, M.A. integrated programme in 3 streams and besides a preparatory course for SC/ST students during the year under report.

#### 3.1. Admissions 2014–2015

Candidates were selected for admission to B.Tech., Dual Degree and M.Tech. programmes through JEE (Advanced) and based on GATE score respectively. Quite a few candidates were also selected for M.Tech. programme under Sponsored, Q.I.P. and User Oriented programmes through interviews and/or written test. Selection for Ph.D. and M.S. programmes was carried out through a test/interviews. Selection for M.Sc. programmes in mathematics, physics, and chemistry was carried out through a common test (JAM) conducted jointly by seven IITs. For M.B.A. programme, selection was through CAT and interviews and for M.A. Integrated Programme, selection was through HSEE.

The number of students and scholars admitted to various programmes in July 2014 and in January 2015 are provided in Table 3.1.

**TABLE 3.1. Fresh admissions**

Sl. No.	Department	B.Tech.	Dual Degree	M.Tech.	PG Diploma	M.Sc	M.B.A.	M.A.	M.S.	Ph.D.	Total
1	Aerospace Engineering	37	21	26	—	—	—	—	19	21	124
2	Applied Mechanics	—	—	26	—	—	—	—	16	24	66
3	Biotechnology	—	46	3	—	—	—	—	4	19	72
4	Chemical Engineering	70	18	40	—	—	—	—	16	23	167
5	Chemistry	—	—	—	—	54	—	—	—	46	101
6	Civil Engineering	61	33	87	—	—	—	—	24	54	259
7	Computer Science & Engineering	30	26	55	—	—	—	—	25	14	150
8	Electrical Engineering	66	52	58	—	—	—	—	43	36	255
9	Engineering Design	—	55	—	—	—	—	—	7	14	76
10	Humanities & Social Sciences	—	—	—	—	—	—	42	—	21	63
11	Management Studies	—	—	—	37	—	61	—	15	15	128
12	Mathematics	—	—	15	—	49	—	—	—	15	79
13	Mechanical Engineering	74	73	100	—	—	—	—	66	79	392
14	Metallurgical & Materials Engineering	36	13	15	—	—	—	—	5	16	85
15	Ocean Engineering	35	17	42	—	—	—	—	16	22	142
16	Physics	30	10	6	—	42	—	—	—	28	116
17	ID	—	—	—	—	—	—	—	12	28	40
	<b>Total</b>	<b>439</b>	<b>364</b>	<b>473</b>	<b>37</b>	<b>145</b>	<b>61</b>	<b>42</b>	<b>268</b>	<b>475</b>	<b>2304</b>

In addition to the above, 5 students (GE PD :1, SC PD: 2, ST PD: 2) joined preparatory course.

#### Fresh admissions of OBC/SC/ST students

Sl. No	Programme	OBC	SC	ST	PD	Female
1	B.Tech.	121	65	33	7	65
2	Dual Degree	100	55	26	5	36

Sl. No	Programme	OBC	SC	ST	PD	Female
3	M.Tech.	107	47	22	8	55
4	PG Diploma in Metro Rail	0	—	—	—	—
5	M.B.A.	11	11	—	—	11
6	M.Sc.	37	23	8	—	40
7	M.A.	17	6	4	1	23
8	M.S.	70	6	—	1	57
9	Ph.D.	153	22	2	0	150
<b>Total</b>		<b>616</b>	<b>235</b>	<b>95</b>	<b>22</b>	<b>437</b>

The total number of students admitted during the year includes the following:

Foreign nationals	3	User-oriented Programme (M.Tech.)	61
		Q.I.P.	M.Tech. 1
OBC	616		Ph.D. 10
Scheduled castes	235	Sponsored	M.Tech. 26
Scheduled tribes	95	Project	M.S. 39
Physically Handicapped	22		Ph.D. 11
Women students	437	External Registration	M.S. 7
Defence Officers (M.Tech.)	48		Ph.D. 31

### 3.2. Enrolment of Students/Scholars

The numbers of students on roll in various programmes of the institute in the academic year 2014–2015 is provided in Table 3.2.

TABLE 3.2. Students on roll

Sl. No.	Department	B.Tech.	Dual Degree	M.Tech.	PG Diploma	M.Sc	M.B.A	M.A.	M.S.	Ph.D.	Total
1	Aerospace Engineering	139	110	48	—	—	—	—	58	85	440
2	Applied Mechanics	—	—	45	—	—	—	—	49	110	204
3	Biotechnology	50	187	22	—	—	—	—	26	194	479
4	Chemical Engineering	288	99	79	—	—	—	—	42	107	615
5	Chemistry	—	—	—	—	96	—	—	0	231	327
6	Civil Engineering	263	203	165	—	—	—	—	68	246	945
7	Computer Science & Engineering	146	160	113	—	—	—	—	108	85	612
8	Electrical Engineering	289	340	110	—	—	—	—	178	184	1101
9	Engineering Design	—	298	—	—	—	—	—	43	64	405
10	Humanities & Social Sciences	—	—	—	—	—	—	216-	—	52	268
11	Management Studies	—	—	—	38	—	133	—	53	94	318
12	Mathematics	—	—	24	—	93	—	—	—	60	177
13	Mechanical Engineering	338	381	198	—	—	—	—	186	313	1416
14	Metallurgical & Materials Engineering	128	69	40	—	—	—	—	35	98	370
15	Ocean Engineering	144	90	96	—	—	—	—	69	125	524
16	Physics	118	45	11	—	76	—	—	—	171	421
<b>Total</b>		<b>1903</b>	<b>1982</b>	<b>951</b>	<b>38</b>	<b>265</b>	<b>133</b>	<b>216</b>	<b>915</b>	<b>2219</b>	<b>8622</b>

**The students on roll included the following:**

Foreign Nationals	4	Q.I.P.	M.Tech	9
			Ph.D.	64
OBC	2263	Sponsored	M.Tech	53
Scheduled Castes	962	Project	M.S.	115
			Ph.D.	62
Scheduled Tribes	393	External Registration	M.S.	60
			Ph.D.	179
Physically Handicapped	88	Registration Kept Alive	M.S.	11
			Ph.D.	14
Women students	1653	Part-Time Programme (Ph.D.)	M.S.	15
			Ph.D.	56
Defence Officers (M.Tech.)	95	User-oriented Programme (M.Tech.)		120

**OBC/SC/ST Students on roll:**

Sl. No.	Course	OBC	SC	ST	Female
1	B.Tech.	522	317	170	235
2	Dual Degree	525	312	139	238
3	M.Tech.	222	109	49	123
4	M.Sc	78	44	9	69
5	M.B.A	24	19	0	29
6	M.A	58	33	19	132
7	Ph.D.	618	111	6	645
8	M.S.	215	17	1	182
	<b>Total</b>	<b>2263</b>	<b>962</b>	<b>393</b>	<b>1653</b>

The branch-/discipline-wise and year-wise details of students enrolled in B.Tech., Dual Degree and M.Tech. programmes are provided in Table 3.3.

**TABLE 3.3. B.Tech students on roll**

Sl. No.	Branch	2014	2013	2012	2011	2010 & earlier batch	Total
1	Aerospace Engineering	34	38	33	23	11	139
2	Biotechnology	—	—	—	36	14	50
3	Chemical Engineering	63	68	72	65	20	288
4	Civil Engineering	59	62	64	52	26	263
5	Computer Science & Engineering	33	33	31	33	16	146
6	Electrical Engineering	73	71	74	50	21	289
7	Engineering Physics	31	25	25	29	8	118
8	Mechanical Engineering	82	77	84	80	15	338
9	Metallurgical & Materials Engineering	31	32	30	28	7	128
10	Naval Architecture	33	32	33	32	14	144
	<b>Total</b>	<b>439</b>	<b>438</b>	<b>446</b>	<b>428</b>	<b>152</b>	<b>1903</b>

**TABLE 3.4 Dual Degree (B.Tech. & M.Tech.) students on roll**

Sl. No.	Branch	2014	2013	2012	2011	2010	2009 earlier	Total
1	Aerospace Engineering	11	13	10	16	18	4	72
	AE (B.Tech.) & AM (M.Tech.)	7	8	9	6	6	2	38

Sl. No.	Branch	2014	2013	2012	2011	2010	2009 earlier	Total
2	Biotechnology				17	25	6	48
	Biological Engineering	13	19	22	—	—	—	54
	Biological Sciences (B.S. & M.S.)	29	30	26	—	—	—	85
3	Chemical Engineering	20	14	16	21	23	5	99
4	Civil Engineering & Infrastructural Civil	30	24	24	38	36	16	168
	CE (B.Tech.) & AM (M.Tech.)	8	6	7	4	7	3	35
5	Computer Science & Engineering	29	28	29	28	29	17	160
6	Electrical Engineering	47	50	50	69	64	19	299
	EE (B.Tech.) & AM (M.Tech.)	8	9	9	8	7	—	41
7	Engineering Design	55	55	57	53	53	25	298
8	Mechanical Engineering	69	73	77	71	82	9	381
9	Metallurgical & Materials Engineering	13	11	11	14	16	4	69
10	Naval Architecture & Ocean Engineering	9	9	6	10	11	62	107
	NA (B.Tech.) & AM (M.Tech.)	6	8	7	10	6	—	37
11	Physics (B.S. & M.S.)	10	9	8	8	6		37
	<b>Total</b>	<b>364</b>	<b>366</b>	<b>368</b>	<b>373</b>	<b>389</b>	<b>122</b>	<b>1982</b>

**TABLE 3.5. M.Sc students on roll**

Sl. No.	Branch	2014	2013	Total
1	Chemistry	52	44	96
2	Mathematics	47	46	93
3	Physics	42	34	76
	<b>Total</b>	<b>141</b>	<b>124</b>	<b>265</b>

**TABLE 3.6. M.Tech. students on roll**

Sl. No.	Department\Discipline\Batch	2014	2013	Extended students	Total
1	Aerospace Engineering	24	23	1	48
2	Applied Mechanics	24	20	1	45
3	Biotechnology–Clinical Engineering	3	7	12	22
4	Chemical Engineering	30	26	1	57
	Catalysis Technology	3	3	—	6
5	Civil Engineering				
	CE 1—Building Technology	9	8	—	17
	CE 2—Environmental Engineering	3	3	—	6
	CE 3—Geotechnical Engineering	12	7	—	19
	CE 4—Hydraulic & Water Resource Engineering	2	5	—	7
	CE 5—Structural Engineering	19	17	2	38
	CE 6—Transportation Engineering	8	8	2	18
	CE 7—Construction Technology & Management	30	30	—	60
6	CS 1—Computer Science & Engineering	51	58	4	113
7	Electrical Engineering				
	EE 1—Communication Systems	16	16	1	33
	EE 2—Power Systems and Power Electronics	4	8	3	15
	EE 3—Micro Electronics and VLSI Design	16	19	1	36
	EE 4—Control and Instrumentation System	8	9	—	17
	EE 5—Photonics	5	3	1	9

Sl. No.	Department\Discipline\Batch	2014	2013	Extended students	Total
8	Industrial Maths & Scientific Computing	15	9	—	24
9	Mechanical Engineering				
	ME 1—Thermal Engineering	38	38	—	76
	ME 2—Design	27	33	1	61
	ME 3—Manufacturing Engineering	16	21	2	39
	ME 4—Automotive Engine Technology	11	10	—	21
10	MM—Metallurgical & Materials Engineering	14	25	1	40
	NE—Nuclear Engineering	6	10	—	16
11	OE—Ocean Engineering	8	16	—	24
	—Ocean Technology & Management	3	3	1	7
	—Petroleum Engineering	11	9	—	20
	—Offshore Structures and Engineering	20	24	—	44
12	Physics				
	PH—Solid State Technology	5	5	1	11
	<b>Total</b>	<b>441</b>	<b>473</b>	<b>35</b>	<b>949</b>

**TABLE 3.7. M.B.A. students on roll**

Sl. No.	Branch	2014	2013	Total
1	Management Studies	61	72	133

**TABLE 3.8 M.A. students on roll**

Sl. No.	Branch	2014	2013	2012	2011	2010	Total
1	Humanities and Social Sciences	42	42	42	41	49	216

**TABLE 3.9 M.S scholars on roll**

Sl. No.	Branch	I Year	II Year	III Year	IV Year	V Year & others	Total
1	Aerospace Engineering	19	21	13	5	—	58
2	Applied Mechanics	16	13	17	2	1	49
3	Biotechnology	6	9	6	4	1	26
4	Chemical Engineering	18	7	6	9	2	42
5	Civil Engineering	24	21	15	7	1	68
6	Computer Science & Engineering	27	33	30	15	3	108
7	Electrical Engineering	45	44	45	37	7	178
8	Engineering Design	8	16	7	12	—	43
9	Management Studies	15	18	16	2	2	53
10	Mechanical Engineering	67	59	40	16	4	186
11	Metallurgical & Materials Engineering	5	17	8	3	2	35
12	Ocean Engineering	19	18	19	10	3	69
	<b>Total</b>	<b>269</b>	<b>276</b>	<b>222</b>	<b>122</b>	<b>26</b>	<b>915</b>

**TABLE 3.10 Ph.D. scholars on roll**

Sl. No.	Branch	I Year	II Year	III Year	IV Year	V Year & others	Total
1	Aerospace Engineering	23	17	12	11	22	85
2	Applied Mechanics	24	17	23	18	28	110
3	Biotechnology	29	44	31	35	55	194
4	Chemical Engineering	25	24	15	24	19	107



Sl. No.	Branch	I Year	II Year	III Year	IV Year	V Year & others	Total
5	Chemistry	51	40	32	52	56	231
6	Civil Engineering	55	70	37	39	45	246
7	Computer Science & Engineering	16	21	16	10	22	85
8	Electrical Engineering	41	40	38	25	40	184
9	Engineering Design	14	12	14	13	11	64
10	Humanities & Social Sciences	22	14	7	4	5	52
11	Management Studies	15	14	18	20	27	94
12	Mathematics	15	16	8	18	3	60
13	Mechanical Engineering	80	82	51	42	58	313
14	Metallurgy & Materials Engineering	20	21	15	20	22	98
15	Ocean Engineering	22	35	28	19	21	125
16	Physics	31	48	33	19	40	171
	<b>Total</b>	<b>483</b>	<b>515</b>	<b>378</b>	<b>369</b>	<b>474</b>	<b>2219</b>

### 3.3. Courses Offered

In the academic year 2014–2015, 2378 courses were offered of which 1273 courses in July–November 2014 and 1105 courses in January–May 2015. The Department-wise details of the courses offered are provided in Table 3.11.

**TABLE 3.11 No. of courses offered**

Sl. No.	Department	No. of Courses Offered in July–November 2014				No. of Courses Offered in January–May 2015			
		Core	Elective	Lab.	Total	Core	Elective	Lab	Total
1	Aerospace Engineering	45	12	17	74	45	12	17	74
2	Applied Mechanics	17	11	6	34	17	11	6	34
3	Biotechnology	56	8	4	68	46	6	6	58
4	Chemical Engineering	54	22	19	95	52	21	13	86
5	Chemistry	13	2	10	25	9	3	10	22
6	Civil Engineering	87	41	26	154	70	40	18	128
7	Computer Science & Engineering	42	21	7	70	33	20	4	57
8	Engineering Design	48	6	12	66	41	4	9	54
9	Electrical Engineering	68	2	29	99	43	0	19	62
10	Humanities & Social Sciences	49	34	0	83	37	29	2	68
11	Management Studies	13	30	0	43	13	19	0	32
12	Mathematics	22	21	3	46	15	26	3	44
13	Mechanical Engineering	94	48	7	149	80	38	19	137
14	Metallurgy & Materials Engineering	53	21	15	89	39	18	17	74
15	Ocean Engineering	68	11	7	86	57	23	14	94
16	Physics	61	14	17	92	54	13	14	81
	<b>Total</b>	<b>790</b>	<b>304</b>	<b>179</b>	<b>1273</b>	<b>651</b>	<b>283</b>	<b>171</b>	<b>1105</b>

### 3.4. Convocation

The 51st Convocation was held on 18 July 2014. Dr Devi Prasad Shetty delivered the Convocation address. 1973 candidates were awarded various degrees 1691 candidates received degrees in person. The department-wise details of degrees awarded are provided in Table 3.12.

**TABLE 3.12 Degrees awarded**

Sl. No.	Department	Ph.D.	M.S.	M.Tech.	M.Sc	M.B.A	M.A	Dual Degree		B.Tech. Honours	B.Tech.	Total
								B.Tech.	M.Tech.			
1	Aerospace Engineering	10	4	19	0	0	0	17	17	4	23	94
2	Applied Mechanics	5	12	18	0	0	0	16	16	0	0	67
3	Biotechnology	19	1	12	0	0	0	19	19	3	23	96
4	Chemical Engineering	5	6	29	0	0	0	16	16	10	58	140
5	Chemistry	22	0	0	46	0	0	0	0	0	0	68
6	Civil Engineering	11	7	84	0	0	0	21	21	3	39	186
7	Computer Science Engineering	10	22	52	0	0	0	18	18	7	26	153
8	Electrical Engineering	14	39	56	0	0	0	57	57	10	36	269
9	Engineering Design	3	6	0	0	0	0	34	34	0	0	77
10	Humanities & Social Sciences	7	0	0	0	0	37	0	0	0	0	44
11	Management Studies	8	16	0	0	100	0	0	0	0	0	124
12	Mathematics	10	0	10	54	0	0	0	0	0	0	74
13	Mechanical Engineering	26	26	82	0	0	0	59	59	15	52	319
14	Metallurgical & Materials Engineering	11	3	23	0	0	0	12	12	0	27	88
15	Ocean Engineering	6	7	35	0	0	0	7	7	1	23	86
16	Physics	13	0	7	37	0	0	6	6	5	14	88
	<b>Total</b>	<b>180</b>	<b>149</b>	<b>427</b>	<b>137</b>	<b>100</b>	<b>37</b>	<b>282</b>	<b>282</b>	<b>58</b>	<b>321</b>	<b>1973</b>

With this Convocation, the total number of degrees awarded so far by the institute is 42,518, the details of which are given below:

Sl. No.	Programme	No.	
1	Ph.D.	3958	
2	M.S.	2923	
3	M.Tech.	13168	
4	M.Sc.	3051	
5	M.B.A.	701	
6	MA	114	
7	Dual Degree		
		B.Tech.	1872
		M.Tech.	1872
8	B.Tech.	14460	
9	B.Tech. (Honours)	58	
10	PGDMEM	63	
11	B.Sc (Tech)	20	
12	DIIT	245	
13	PGDMRT	13	
	<b>Total</b>	<b>42518</b>	

### 3.5. Award of Prizes to the students

#### 3.5.1. Convocation Prizes

The following are the details of Prizes awarded to the students at the 51st Convocation:

1	President of India Prize Mr V. Srinivasan Memorial Prize Prof G.V.N. Rayudu Memorial Prize [Mechanical Engineering]	Sneha Abhyankar (ME09B095)
2	Governor's Prize Motorola Prize [Electrical Engineering]	Pananjady Martin Ashwin (EE10B025)
3	Bharat Ratna M. Visvesvaraya Memorial Prize HAL Prize [Aerospace Engineering]	G. Karthik (AE10B014)
4	Dr Shankar Dayal Sharma Prize	Jayadev Bhaskaran (EE10B123)

#### Other Prizes

Sl. No.	Donor/Prize	Department	Name of the Student
<b>Bachelor of Technology—B.Tech.</b>			
1	The Divashri Award	Boitechnology	Akhil Sai Valluri (BT10B001)
2	Reliance Heat Transfer Pvt. Ltd. Prize	Chemical Engineering	Krishna Shrinivas (CH10B026)
3	C.A. Sastry Endowment Prize	Chemical Engineering	Swaroop I.R. (CH10B068)
4	Larsen & Toubro ECC Endowment Prize	Civil Engineering	Krishna Kumar Rao (CE10B032)
5	B. Ravichandran Memorial Prize	Computer Science & Engineering	Akshay Dhananjai Degwekar (CS10B056)
6	Siemens Prize	Electrical Engineering	Saragadam R.V. Vishwanath (EE10B035)
7	Prof Achim Bopp Endowment Prize	Electrical Engineering	Gokina Sree Satwik (EE10B010)
8	Hema Balasubramanian Excellence Award	Engineering Physics	Athreya S. (EP10B001)
9	Banco Foundation Prize	Mechanical Engineering	S. Sudarshan (ME10B156)
10	Sivasailam Merit Prize	Mechanical Engineering	Dheeraj Bharadwaj Gosala (ME10B013)
11	Dr Dhandapani Memorial Prize	Metallurgical and Materials Engineering	Shahane Ninad Makarand (MM10B030)
12	American Bureau of Shipping Prize	Naval Architecture & Ocean Engineering	Kalavalapudi Venkata Sumanth (NA10B011)
<b>Dual Degree (B.Tech. &amp; M.Tech.)</b>			
1	Dr V. Mohan Raman Prize	Aerospace Engineering	Pranav R. Kamat (AE09B041)
2	Mayan Prize	Aerospace Engineering	Y.P. Manohar Reddy (AE09B014)
3	Institute Merit Prize	Applied Mechanics	Abhishek De (EE09B095)
4	Biocon Prize	Biotechnology	Inampudi Pradeep Kumar (BT09B040) Vinay Lathi (BT09B061) [Joint Winners]
5	B. Ravichandran Memorial Prize	Chemical Engineering	Merin Thomas (CH09B070)
6	Dr N.R. Dave Prize	Civil Engineering	Vadali Nandita (CE09B075)
7	Alumni Association Prize	Computer Science & Engineering	Guru Prakash A. (CS09B033)
8	Prema & Nagaraja Setty Prize	Engineering Design	Nayakanti Nigamaa (ED09B019)
9	Philips India Prize	Electrical Engineering	Thatte Jayant Purushottam (EE09B109)
10	S. Anantharamakrishnan Memorial Prize	Metallurgical and Materials Engineering	J. Manoj Prabhakar (MM09B041)

Sl. No.	Donor/Prize	Department	Name of the Student	
11	Goodearth Shipbuilding Pvt. Ltd. Prize	Naval Architecture & Ocean Engineering	Katru Uday	(NA09B044)
12	Prof J. Sobhanadri Prize	Physics–B.S. & M.S.	Gosika Mounika	(PH09B002)
<b>Master of Arts—M.A.</b>				
1	Prof A. Ravindran Prize	Integrated M.A. programme—Economics	Raisa Sherif	(HS09H028)
2	Dr Dilip Veeraraghavan Memorial Award	Integrated M.A. programme—Development Studies	Annavarapu Sneha	(HS09H034)
3	Prof A.V. Krishna Rao Memorial Award	Integrated M.A. programme—English Studies	Anu Joshy	(HS09H008)
<b>Master of Technology—M.Tech.</b>				
1	Air India Prize	Aerospace Engineering	Debolina Dasgupta	(AE12M002)
2	Indira Sivasailam Merit Prize	Applied Mechanics	Jogdand Anoop Sheshrao	(AM12M007)
3	Prof B.V.A. Rao Endowment Prize	Applied Mechanics	Rajkumar G.	(AM12M019)
4	Usha Kothandaraman Memorial Prize	Applied Mechanics		
5	Sushruta Award	Applied Mechanics	Jibin Jose	(AM12M006)
6	Institute Merit Prize	Clinical Engineering	Arvind Kumar Prajapati	(BT11M013)
7	Dr K. Subba Raju Memorial Prize	Chemical Engineering	Rahul R.	(CH12M021)
8	Mr S.V. Balakrishnan Prize	Catalysis Technology	Harisankar N.S.	(CA12M003)
9	Valli Anantharamakrishnan Merit Prize	Civil Engineering	Parvathy V. Raj	(CE12M082)
10	K. Devarajan Memorial Prize	Civil Engineering	Jijo K. Mathew	(CE12M033)
11	L&T Endowment Prize	Construction Technology & Management	Triveni Trinath	(CE12M199)
12	CMC Prize	Computer Science & Engineering	Vishal Pandya Milan Patnaik	(CS12M058) (CS12M029) [Joint Winners]
13	Prof H.N. Mahabala Endowment Prize	Computer Science & Engineering	Sainageswar Satchidanand	(CS12M042)
14	Siemens Prize	Electrical Engineering	Muppuri Raj Anup	(EE12M095)
15	Prof Achim Bopp Endowment Prize	Electrical Engineering	Anish Babu Abraham P. Vinod	(EE12M107) (EE09B044)
16	Prof Helmut Neunzert Endowment Prize	Industrial Mathematics & Scientific Computing	Abhishek	(MA12M001)
17	Prof B. Sengupto Prize	Mechanical Engineering	Neha Gupta	(ME12M123)
18	Dr S. Vaidyanathan Memorial Prize	Mechanical Engineering		
19	Mico-Bosch Prize	Mechanical Engineering	Nikhil Sharma	(ME12M029)
20	Prof Rama Rao Jayanti Memorial Prize	Nuclear Engineering	Soumitra Bhattacharya	(NE12M006)
21	Giri Brothers Prize	Mechanical Engineering	Bollapragada Vijaya Raghavendra	(ME09B132)
22	S. Anantharamakrishnan Merit Prize	Mechanical Engineering	Anand T.S.	(ME12M004)
23	Prof Ramamohana Rao Memorial Prize	Mechanical Engineering		
24	Delphi-TVS Diesel Systems Ltd. Prize	Automotive Technology	Ramanathan N.	(AT12M008)
25	Sudharshan Bhat Memorial Prize	Metallurgical & Materials Engineering	Tanay Pandey	(MM12M024)
26	American Bureau of Shipping Prize	Ocean Engineering	Yadava Vemburajan Essakimuthu	(OE12M026)

Sl. No.	Donor/Prize	Department	Name of the Student	
27	Prof K.A.V. Pandalai Prize	Ocean Technology & Management	Arunbalu I.	(OE12M031)
28	Institute Merit Prize	Offshore Structural Engineering	Saravana Vel A.	(OE12M048)
29	Mr R.R.P. Sinha & Vimla Dewi Prize	Petroleum Engineering	Vishal Devgun	(PE12M012)
30	Sri Krishnamurthy Sundarambal Prize	Solid State Technology	Vikas Rai	(PH12M011)
<b>Master of Science—M.Sc.</b>				
1	Dr S.R. Ramadas 60th Birthday Commemoration Award	Chemistry	Sayan Dutta	(CY12C035)
2	Ratna Rao Memorial Prize	Chemistry		
3	Mira Paul Memorial Prize	Mathematics	Varsha Sreenivasan	(MA12C049)
4	Prof Chilukuri Ramasastry Memorial Prize	Physics	Sharmila B.	(PH12C031)
<b>Master of Business Administration—M.B.A.</b>				
1	Coka Parthasarathy Prize	Management Studies	Ankit Jain Nahar	(MS12A10)
2	K.V. Arunkumar Memorial Prize	Management Studies		
<b>M.S. &amp; Ph.D.</b>				
1	Prof V. Ramamurti Award	Applied Mechanics	Ranjith S. Kumar	(AM10D020)
2	Sudharshan Bhat Memorial Prize	Metallurgical and Materials Engineering	G. Vara Prasad Reddy	(MM07D010)
3	Prof C.N. Pillai Prize	Organic Chemistry and Bio Chemistry	Anadi Singha Mahapatra	(CY08D009)
4	Prof G. Sundararajan Endowment Prize	Organic Chemistry	Dr Balamurugan D.	(CY09D007)
5	Prof Langmuir Prize	Physical Chemistry and Theoretical Chemistry	Dr Bootharaju M.S.	(CY09D018)
6	Prof Werner Prize	Inorganic Chemistry and Analytical Chemistry	Dr K. Kumar Varma Chakrahari	(CY09D017)
7	Prof A.L. Laskar Memorial Prize	Physics	Bhosale Udaysinh Tanajirao	(PH08D009)
8	Shree Gaayathree Devi Award	Civil Engineering	Bindhu V.M.	(CE08D001)
9	GE Ecomagination Excellence Award	Civil Engineering—Ecological and environmental protection	Aviraj Datta	(CE08D007)
10	Ms Lakshmikutty Amma and Mr A. Krishnankutty Nair Kutty	Mathematics	Viswanathan Puthan Veedu	(MA10D001)
11	Bhagyalakshmi and Krishna Ayengar Award	Mechanical Engineering	Dheeraj Bharadwaj Gosala	(ME10B013)
			Tanuj B. Jhunjhunwala	(ME09B097)
			Suma J.	(EE11S061)
			Vineeth Nair V.	(AE10D014)
			Bindhu V.M.	(CE08D001)
			Jyothi Latha Tamalapakula	(CH09D008)

### 3.5.2. Institute Day Prizes

On the basis of performance, the following students were awarded Merit Prizes on the 55th Institute Day held on 17 April 2014 at the Student Activities Centre. Mr Avinath Chander, Secretary, Department of Defence (R&D), Director General of DRDO, and Scientific Adviser to RM was the Chief Guest.

#### I. Institute Merit Prizes

[Silver medal & cash award of ₹5000/-]

**For the student with the best academic record in the first 2 semesters of the B.Tech./Dual Degree Programme (2012 batch)**

CS	CS12B059	Aditi R.	(Mr S. Subramanian Prize—I Prize)
CS	CS12B061	Vidhya Ramaswamy	(Mr K. Krishnamurthi Prize—II Prize)

**For the best academic record in the third and fourth semesters put together in B.Tech/Dual Degree programme (2011 batch)**

AE	AE11B017	Krishna Dutt	(Prof T.K. Varadan Prize)
BT	BT11B014	Guruprasad Raghavan	(Dr Anita Mehta-Damani Prize)
CE	CE11B034	Mundlamuri Vinod Kumar	(Computer Age Management Services Pvt. Ltd. Prize)
CH	CH11B093	Nirmal L.	(Dr Anita Mehta-Damani Prize)
CS	CS11B059	Srinivasan R.	(Mr V. Ramachandran Prize)
EE	EE11B001	Abhilash S.	(Mr V. Rajagopalan Memorial Prize)
ED	ED11B043	Athira Jane Jacob	(Ms Latha & Sampath Srinath Prize)
EP	EP11B002	Akshay Krishna	(Ms Latha & Sampath Srinath Prize)
ME	ME11B152	Anoop R.	(Mrs Jayashree Ananth Prize)
MM	MM11B011	Divyasree P.K.	(Mr Satish Pai Prize)
NA	NA11B028	Rajaram S.	(Ms Latha & Sampath Srinath Prize)
PH	PH11B001	Aniket S. Joshi	(Institute Merit Prize)

**For the student with the best academic record in the first four semesters of the B.Tech. programme (2011 batch)**

ME	ME11B152	Anoop R.	(Sri Raghavendra Memorial Prize)
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**For the student who secured the highest marks in the Mechanical Operations course**

CH	CH11B089	Sahithi Gorthy	(Prof Ramanujam Memorial Award)
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**For the student with the best academic record in the fifth and sixth semesters in each branch of B.Tech. / Dual Degree programme (2010 batch)**

AE	AE10B014	G. Karthik	(Prof E.G. Tulapurkara Prize)
BT	BT10B040	Shikha Jain	(Dr Anita Mehta-Damani Prize)
CE	CE10B024	Hareesh Pallikara Bahuleyan	(M.S.K. Chaitanya Varma Memorial Prize)
CH	CH10B026	Krishna Shrinivas	(Dr R.K. Viswanath Memorial Prize)
CS	CS10B032	Babbula Spandana Raj	(Computer Age Management Service Pvt. Ltd. Prize)
EE	EE10B058	Doshi Jainam Deepak	(Sri Ramasarma V. Kolluri Memorial Prize)
ME	ME10B156	S. Sudarshan	(Dr Vivekanand Kochikar Award)
MM	MM10B021	Karthik A.	(Ratna Award)
NA	NA10B051	Ambetkar Vighnesh Vidyadhar	(Institute Merit Prize)
PH	PH10B007	B. Sudarsan	(Institute Merit Prize)
ED	ED10B017	Kavya Sudhir	(Institute Merit Prize)
EP	EP10B001	Athreya S.	(Institute Merit Prize)

**For the student with the best academic record (highest CGPA) in the first six semesters in B.Tech. Mechanical Engineering branch**

ME	ME10B156	S. Sudarshan	(Dr S. Chandrasekharan Memorial Prize)
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**For the student with the best academic record in the seventh and eighth semesters in Dual Degree programme (2009 batch)**

AE	AE09B041	Pranav R. Kamat	(Institute Merit Prize)
EE	EE09B095	Abhishek De	(Institute Merit Prize)

BT	BT09B026	Raghavendran P.	(Mr Madan Gopal Damani Prize)
CH	CH09B067	Iyer Shachit Shankaran	(Dr Anita Mehta- Damani Prize)
CE	CE09B085	Vinayak Bakshi	(Institute Merit Prize)
CE	CE09B075	Vadali Nandita	(Mr Venkataraman Ravi Prize)
CS	CS09B028	Anuja Agrawal	(Computer Age Management Services Pvt. Ltd. Prize)
ED	ED09B019	Nayakanti Nigamaa	(Institute Merit Prize)
EE	EE09B107	Prakruthi P.	(Electronics For You Prize)
EE	EE09B093	R. Ravi Kiran	(D. Anand Subramaniam Memorial Award)
EE	EE09B104	Ballikonda Vamshi	(Mr Ramanan Ramamurthy Prize)
ME	ME09B078	Raghav Tandon	(Mr Raghu Ramamoorthy Prize)
ME	ME09B095	Sneha Abhyankar	(Mr Rajesh Achanta Prize)
ME	ME09B117	S. Shiva Sai	(Mr Sagar Pushpala Prize [Joint Winners])
ME	ME09B132	S. Bollapragada Vijaya Raghavendra	
MM	MM09B041	Manoj Prabhakar J.	(Prof V. Sundaresan Prize)
NA	NA09B044	Katru Uday	(Mr Poovai T.R. Srinivasan & S. Alamelu Award)
PH	PH09B002	Gosika Mounika	(Institute Merit Prize)

**For student with best academic record in first 2 semesters of the M.Tech. programme**

AE	AE12M002	Debolina Dasgupta	(Institute Merit Prize)
AM	AM12M019	Rajkumar G.	(Institute Merit Prize)
CA	CA12M003	Harisankar N.S.	(Institute Merit Prize)
CH	CH12M024	Resmi Suresh M.P.	(M/s Chevron Products Company Prize)
CE	CE12M082	Parvathy V. Raj	(Ms Jayalakshmi Narasimhan Memorial Prize)
CE	CE12M199	Triveni Trinath	(Institute Merit Prize)
CS	CS12M039	Ramnath J.	(Institute Merit Prize [Joint Winners])
CS	CS12M047	Shaik Zakir Hussain	
EE	EE12M038	Leena P. Markose	(Prof M.K. Achuthan Prize)
MA	MA12M001	Abhishek	(Institute Merit Prize [Joint Winners])
MA	MA12M007	Nitin Kumar Yadav	
ME	ME12M123	Neha Gupta	(Mr Ramanan Ramamurthy Prize)
AT	AT12M005	Jayamurugan R.	(Institute Merit Prize)
MM	MM12M021	Soumya S.	(Institute Merit Prize)
NE	NE12M006	Soumitra Bhattacharya	(Prof Rama Rao Jayanti Memorial Prize)
OE	OE12M026	Vemburajan Essakimuthu Yadava	(Prof Vallam Venkataswami Prize)
OE	OE12M031	Arunbalu I.	(Institute Merit Prize)
OE	OE12M048	Saravanavel A.	(Institute Merit Prize)
PE	PE12M001	Bhavik J. Shah	(Prof M.S. Ananth Prize [Joint Winners])
PE	PE12M012	Vishal Devgun	
PH	PH12M005	Priji C.	(Mrs Lakshmi Ravikumar Memorial Prize)

**For the student with the best academic record in the first and second semesters of the M.Sc Programme in Chemistry, Mathematics and Physics**

CY	CY12C015	Gourab Das	(Mrs Kalaimani Natarajan Prize)
MA	MA12C049	Varsha Sreenivasan	(Institute Merit Prize)
PH	PH12C031	Sharmila B.	(Chilukuri Ramasastry Memorial Prize)



**For the student with the best academic records 1st and 2nd semesters of the M.Tech. Mechanical Engineering student (Thermal Engineering) for the best academic record in.**

ME	ME12M044	Sourav Sarkar	(Prof N. Venkatarayulu Memorial Prize)
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**For the student with the best academic record in the first and second semesters of the M.Tech Civil Engineering (Resources Engg.)**

CE	CE12M086	Vema Vamsi Krishna	(Prof Gerhard Rouve Memorial Prize)
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**For one M.A. student (2012 Batch) with best academic record in the first and second semesters**

HS	HS12H026	Liza Tom	(Institute Merit Prize)
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**For one M.A. student (2011 Batch) with best academic record in the third and fourth semesters**

HS	HS11H009	Apoorva Gupta	(Institute Merit Prize)
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**For the student with the best academic record in the fifth and sixth semesters in each branch of the M.A programme (2010 Batch)**

HS	HS10H039	Vaishali V. [Eco]	(Institute Merit Prize)
HS	HS10H024	Pranathi Diwakar [DS]	(Institute Merit Prize)
HS	HS10H009	Dhivya Jothi G. [ES]	(Institute Merit Prize)

**For the student with the best academic record in the seventh and eighth semesters in each branch of the M.A programme (2009 Batch)**

HS	HS09H033	Siddharth S. [ES]	(Institute Merit Prize) [Joint Winners]
HS	HS09H041	T.P. Kurian [ES]	
HS	HS09H034	Sneha A. [DS]	(Institute Merit Prize)
HS	HS09H028	Raisa Sherif [Eco]	(Institute Merit Prize)

**For the student with the best academic record (highest CGPA) in the first seven semesters in B.Tech. programme in mechanical engineering.**

ME	ME10B156	S Sudarshan	(Dr Dinesh Balagangadhar Prize)
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**For the B.Tech./Dual Degree student with the best cumulative performance in minor category under "English Studies" in the fifth, sixth and seventh semester.**

CS	CS10B056	Akshay Dhananjai Degwekar	(Rajalakshmi Krishnamurthy English Prize)
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**For the student with the best academic record from first to ninth semester in Intelligent Manufacturing of Dual Degree (B.Tech. & M.Tech.) programme in Mechanical Engineering**

ME	ME09B116	Shiv Kumar Agarwal	(Prof V. Radhakrishnan Endowment Award)
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**For the M.Sc (Maths) student (2012 Batch) for best academic record upto 3rd semester.**

MA	MA12C049	Varsha Sreenivasan	(L.V.K.V. Sarma Prize)
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**For the M.Tech. student (2012 Batch) for best academic record in Industrial Maths & Scientific Computing upto 3rd semester.**

MA	MA12M001	Abhishek	(L.V.K.V. Sarma Prize)
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**For the best 3rd semester M.Sc chemistry student satisfying the income criteria specified by the Donor with CGPA more than 7 at the end of 2nd semester (combined).**

CY	CY12C019	Kalyan Sarkar	(R. Padmanabhan Memorial Prize) [Joint Winner]
CY	CY12C042	Srinivasa Rao Bezawada	



**For the student with the best academic record in Geotechnical Engineering stream of M.Tech. Civil Engineering.**

CE	CE11M05	Veena U.	(Rajnikant Gandhi Memorial Award)
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**For the student with best academic record in 1st and 2nd semesters (First four quarters) of MBA.**

MS	MS12A010	Ankit Jain Nahar	(Prof T.N. Govindarajan Memorial Prize)
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**For the B.Tech./Dual Degree student with the best cumulative performance in courses offered under HSS category from third to seventh semesters (2010 Batch).**

HS	CH10B072	Varun Govindaraj	(K. Srinivasan and Indira Srinivasan Prize)
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**For the B.Tech./Dual Degree student with the best cumulative performance in courses taken under HSS category and minor in HSS (2010 Batch).**

BT	BT10B040	Shikha Jain	(Dr Dilip Veeraraghavan Memorial Award)
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**Swati / Jayalakshmi Memorial Award to a Girl student with the best academic record at the end of Pre-final semester in each of the following programmes.**

B.Tech.	BT10B040	Shikha Jain	
Dual Degree	ME09B095	Sneha Abhyankar	
M.Tech.	ME12M123	K.M. Neha Gupta	
M.A	HS09H028	Raisa Sherif	[Joint Winners]
	HS09H034	Sneha A.	
M.Sc	PH12C031	Sharmila B.	

**For the B.Tech./Dual Degree/MA student with the highest CGPA in Innovation and Entrepreneur minor in the fifth, sixth and seventh semester.**

ME	ME10B098	Vishwajith G. Bhat	(Ms Pattammal Viswanathan Prize)
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**For the student with the highest CGPA in Marketing Specialization in the MBA programme**

MS	MS12A096	Tanay Tiwary	(Dr V. Kumar Prize)
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**For the B.Tech./Dual Degree/MA student with the highest CGPA in Management minor in the fifth, sixth and seventh semester.**

CH	CH10B101	Shivani Patel	(Mr S. Viswanathan Prize)
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**For the B.Tech. student with all round performance in the first six semesters and attainments in cultural activities literary events, sports, good citizenship, etc, among the branches of CH, CE, ME, MT and NA Departments.**

CE	CE10B032	Krishna Kumar Rao	(Mr K.M. Ramamurthi Prize)
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**Notional Prize of ₹1000 and a certificate of Merit to the following 29 B.Tech./DD students of 2013batch**

Sl. No.	Roll No.	Name	AIR
1	ME13B068	Sooraj Narayan	54
2	CS13B021	Nalam V.S.S. Krishna Chaitanya	63
3	EE13B010	S. Aravindakshan	91
4	EP13B014	G. Koushik	100
5	CS13B002	Alameluvari Anirudh	112
6	EE13B017	S.K. Bharath	147
7	CS13B018	Matam Satya Prateek	156
8	CS13B012	J. Jeevan Sankar	168
9	CS13B013	Kamanuru Darwin	176
10	CS13B017	Maryala Nikhil	195

Sl. No.	Roll No.	Name	AIR
11	CS13B024	K. Ritwika	208
12	CS13B025	Sai Praveen B.	211
13	CS13B026	A. Sundar	212
14	EE13B009	Arava Tharun Justice Vaidheya	221
15	EE13B054	Pranav V.	235
16	EE13B002	Abhijeet Sheno	238
17	EE13B030	Jaya Jyothiswaroop Kotni	243
18	CH13B086	N. Pradeep	253
19	CS13B039	Kancheti Sai Srinivas	304
20	EE13B046	Navin Adarsh G.	320
21	EE13B057	C. Sai Harshith	348
22	EE13B013	Ayyalasomayajula Varun Kumar	352
23	EE13B047	Nithin Seyon Ramesan	354
24	EE13B006	B. Akhil Sai	364
25	CS13B055	Yelamarthi Satya Surya Venkata Sasi Kiran	366
26	EE13B027	Guntupalli Yeswanth	375
27	EE13B016	Bhandaru Rohith	390
28	EE13B052	Pradeep Venkata Kotipalli	402
29	CS13B031	Akshay Utture	403

## 4.1. DEPARTMENT OF AEROSPACE ENGINEERING

### 4.1.1. Introduction

The Department of Aerospace Engineering was established in 1969 and 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 structures.

### 4.1.2. Academic Programmes

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

#### New courses introduced

Course No.	Faculty Member	Subject	Credits
AS 6060	G. Rajesh	Shockwave Dynamics	3 0 0 3
ID 5040	Shyam Keralavarma	Engineering Plasticity	3 0 0 3
AS 5011	Aerodynamics and Flight Mechanics Group	Compressible Fluid Flows	3 0 0 3
AS 5100	Design Group	Mini Project	3 0 0 3

#### Students on roll

Programme	I Year	II Year	III Year	IV Year	V Year and Others	Total
B.Tech.	37	37	33	24	9	140
Dual Degree	18	21	19	22	22	102
M.Tech.	24	23	—	—	1	48
M.S.	3	24	15	10	4	56
Ph.D.	2	25	19	29	24	99
<b>Total</b>	<b>84</b>	<b>130</b>	<b>86</b>	<b>85</b>	<b>60</b>	<b>445</b>

#### Names of students/scholars who attended conferences/workshops/seminars/symposia abroad/in India

Sl. No.	Name of Scholar	Roll No.	Name of Conference/Seminar/Symposium/Workshop	Date and Venue	Financial Assistance from
<b>India</b>					
1	N.L. Dheeraj Varma	AE13D035	Workshop on Upper Ocean Physics in the Bay of Bengal	9–21 July 2014, IISc Bangalore	Project
2	V. Ramanan	AE10D015	International workshop, 'Combustion Instability in Swirl Combustors'	15–16 October 2014, IISc Bangalore	IIT Madras
3	G. Kamble	AE09S025	International workshop, 'Combustion Instability in Swirl Combustors'	15–16 October 2014, IISc Bangalore	IIT Madras
4	Aswathy Nair K.	AE12S013	IUTAM symposium, 'Multiphase Flows with Phase Change: Challenges and Opportunities'	8–11 December 2014, Hyderabad	IIT Madras
5	Salil Harris	AE12S035	Fifth International and 41st National Conference on Fluid Machines and Fluid Power 2014	12–14 December 2014, IIT Kanpur	IIT Madras
6	Vaisakh S.	AE12 S033	Fifth International and 41st National Conference on Fluid Machines and Fluid Power 2014	12–14 December 2014, IIT Kanpur	IIT Madras

Sl. No.	Name of Scholar	Roll No.	Name of Conference/Seminar/ Symposium/Workshop	Date and Venue	Financial Assistance from
7	Dheelibun Remigius W.	AE12D020	Fifth International and 41st National Conference on Fluid Mechanics and Fluid Power 2014	12–14 December 2014, IIT Kanpur	IIT Madras
8	Kiran Kumar M.N.	AE12S021	Fifth International and 41st National Conference on Fluid Mechanics and Fluid Power 2014	12–14 December 2014, IIT Kanpur	IIT Madras
9	R. Vishnu	AE14D003	ASME 2014 Gas Turbine India Conference	15–17 December 2014, New Delhi	IIT Madras
10	Aswathy Nair K.	AE12S013	IUTAM symposium, Advances in Computation, Modeling and Control of Transitional and Turbulent flows	15–18 December 2014, Goa	IIT Madras
11	Dheeraj Varma N.L.	AE13D035	The Bay of Bengal Science and Discussion Meeting	16–18 December 2014, Chennai	Project
12	Salil Harris	AE12S035	Sixth International Conference on Theoretical, Applied, Computational and Experimental Mechanics	29–31 December 2014, IIT Kharagpur	IIT Madras
13	Hamza Naseem	AE11D007	Second National Propulsion Conference 2015	23–24 February 2015, IIT Bombay	IIT Madras
14	Nagendra Kumar	AE12D021	Second National Propulsion Conference 2015	23–24 February 2015, IIT Bombay	IIT Madras
15	Nikunj Rathi	AE13D207	Second National Propulsion Conference 2015	23–24 February 2015, IIT Bombay	IIT Madras
16	Gaurav	AE10D016	Second National Propulsion Conference 2015	23–24 February 2015, IIT Bombay	IIT Madras
17	Manu N.M.	AE10B044	Second National Propulsion Conference 2015	23–24 February 2015, IIT Bombay	IIT Madras
18	Arjun B.J.	AE10B040	Second National Propulsion Conference 2015	23–24 February 2015, IIT Bombay	IIT Madras
19	James Joseph	AE13M012	Second National Propulsion Conference 2015	23–24 February 2015, IIT Bombay	IIT Madras
20	Chaitanya V.	AE12S035	Second National Propulsion Conference 2015	23–24 February 2015, IIT Bombay	IIT Madras
21	Ravi Teja S.	AE14D017	Second National Propulsion Conference 2015	23–24 February 2015, IIT Bombay	IIT Madras
22	Vishnu P.R.	AE14S042	Second National Propulsion Conference 2015	23–24 February 2015, IIT Bombay	IIT Madras
23	Meenatchidevi M.	AE12D019	Conference on Nonlinear Systems and Dynamics (CNSD–2015)	12–17 March 2015, Mohali	IIT Madras
24	E.A. Gopalakrishnan	AE11D006	Conference on Nonlinear Systems and Dynamics (CNSD–2015)	12–17 March 2015, Mohali	IIT Madras
25	Vishnu R. Unni	AE13D006	Conference on nonlinear systems and dynamics (CNSD–2015)	12–17 March 2015, Mohali	IIT Madras
<b>Abroad</b>					
1	U. Balavishnu	AE11D208	1st International Conference on Mechanics of Composites	9–12 June 2014, USA	IIT Madras
2	Anup Pydah	AE09D015	17th U.S National Congress on Theoretical and Applied Mechanics (USNCTAM–2014)	15–20 June 2014, USA	IIT Madras
3	K. Rajesh Kumar Reddy	AE10D003	ASME Turbo Expo 2014: Turbine Technical Conference and Exposition GT 2014	16–20 June 2014, Dusseldorf, Germany	IIT Madras

Sl. No.	Name of Scholar	Roll No.	Name of Conference/Seminar/ Symposium/Workshop	Date and Venue	Financial Assistance from
4	V. Vineeth Nair	AE10D014	ASME Turbo Expo 2014: Turbine Technical Conference and Exposition GT 2014	16–20 June 2014, Dusseldorf, Germany	IIT Madras
5	Vinu Varghese P.	AE09D005	Twenty-First International Congress on Sound and Vibration (ICSV21)	13–17 July 2014, Beijing, China	IIT Madras
6	H.V. Raghav	AE10D011	International Federation of Automatic Control (IFAC) World Congress 2014	24–29 August 2014, Cape Town, South Africa	IIT Madras
7	K. Sreesankar	AE11S013	29th Congress of the International Council of the Aeronautical Sciences (ICAS)	7–12 September 2014, Saint Petersburg, Russia	IIT Madras
8	E.A. Gopalakrishnan	AE11D006	Tenth European Fluid Mechanics Conference (EFMC10)	14–18 September 2014, Copenhagen, Denmark	IIT Madras
9	V. Ramanan	AE10D015	Tenth European Fluid Mechanics Conference (EFMC10)	14–18 September 2014, Copenhagen, Denmark	IIT Madras
10	G. Kamble	AE09S025	Tenth European Fluid Mechanics Conference (EFMC10)	14–18 September 2014, Copenhagen, Denmark	IIT Madras
11	B. Manikandan	AE12S006	International conference, 'SPEIC 2014: Towards Sustainable Combustion'	19–21 November 2014, Lisbon, Portugal	IIT Madras
12	Aritra Chakraborty	AE14S017	Seventh European Combustion Meeting 2015	30 March to 2 April 2015, Budapest, Hungary	IIT Madras
13	Arun K. Ampi	AE12S001	Seventh European Combustion Meeting 2015	30 March to 2 April 2015, Budapest, Hungary	IIT Madras
14	Arjun B.J.	AE10B040	European Combustion Meet 2015	30 March to 2 April 2015, Budapest, Hungary	IIT Madras
15	Manu N.M.	AE10B044	European Combustion Meet 2015	30 March to 2 April 2015, Budapest, Hungary	IIT Madras

#### Names of scholars/students who won convocation/Institute Day prizes

Sl. No.	Name of the Student/Scholar	Roll No.	Name of Prize	Prize Awarded by
1	G. Karthik	AE10B014	Bharat Ratna M. Visvesvaraya Memorial Prize	IIT Madras
2	G. Karthik	AE10B014	HAL Prize	IIT Madras
3	Pranav R. Kamat	AE09B041	Dr. V. Mohan Raman Prize	IIT Madras
4	Y.P. Manohar Reddy	AE09B014	Mayan Prize	IIT Madras
5	Debolina Das Gupta	AE12M002	Air India Prize	IIT Madras
6	Vineeth Nair V.	AE10D014	Bhagyalakshmi and Krishna Iyengar Award	IIT Madras

#### 4.1.3. Faculty and Their Activities

##### Faculty and their areas of specialisation

Name and Qualifications	Major Areas of Specialisation
<b>Professors</b>	
Ramakrishna M., Ph.D., University of Texas at Arlington	Fluid mechanics; numerical methods; computer solutions
Sriram P., Ph.D., Georgia Institute of Technology	Structural mechanics; fatigue and fracture; parallel computing
Bhaskar K., Ph.D., IIT Madras	Structural mechanics; plates and shells; composite structures
Sujith R.I., Ph.D., Georgia Institute of Technology	Acoustics and combustion instability; optical flow diagnostics
Chakravarthy S.R., Ph.D., Georgia Institute of Technology	Propulsion; combustion; fluid mechanics

Name and Qualifications	Major Areas of Specialisation
Velmurugan R., Ph.D., IIT Delhi	Composite structures analysis and design; impact mechanics; 3-D composites
Luoyi Tao, Ph.D., University of Pittsburgh	Continuum mechanics and its applications (fluids, solids, multiphase flows, etc.)
Murthy H.S.N., Ph.D., Purdue University	Fatigue and fracture; non-destructive evaluation; tribology; advanced materials; elasticity
Amit Kumar, Ph.D., Case Western Reserve University	Combustion; propulsion; fire research; computational fluid dynamics
Ramakrishna P.A., Ph.D., IISc Bangalore	Combustion; propulsion; fuel cells
Nandan Kumar Sinha, Ph.D., IIT Bombay	Nonlinear dynamics; bifurcation theory and continuation methods; flight dynamics and controls
<b>Associate Professors</b>	
Panchapakesan N.R., Ph.D., Cornell University, USA	Fluid mechanics; stability and transition of fluid flows; turbulence
Sunetra Sarkar, Ph.D., IISc Bangalore	Insect aerodynamics; fluid–structure interaction; uncertainty quantification
Rajesh G., Ph.D., Andong National University, South Korea	Shock wave dynamics; high-speed flows; experimental aerodynamics
Sameen A., Ph.D., IISc Bangalore	Stability, transition and turbulence; computational fluid dynamics
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
Sivasambu Mahesh, Ph.D.	Structure-property modeling of aerospace materials
<b>Assistant Professors</b>	
K.V. Nagendra Gopal, Ph.D., IISc Bangalore	Computational mechanics and multi-scale modeling; fracture mechanics; structural dynamics and aero-elasticity
Ranjith Mohan, Ph.D.	Helicopters; rotorcraft MAVs; spectral methods in fluid dynamics
Santanu Ghosh, Ph.D., North Carolina University	Computational fluid dynamics; turbulent flows; shock/boundary-layer interaction; immersed-boundary methods
Manikandan Mathur, Ph.D.	Instabilities and mixing; stratified and rotating flows; Lagrangian coherent structures
Shankar Ghosh, Ph.D., University of Minnesota, USA	Hypersonic flow simulation; non-equilibrium effects; computational fluid dynamics; turbulent flows
Shyam M. Keralavarma, Ph.D.	Plasticity; ductile fracture; computational materials modeling; multiscale modeling
Joel George, Ph.D.	Navigation, guidance and control of aerospace vehicles Multi-agent systems theory as applied to multiple unmanned aerial vehicle missions
Shantanu Shashikant Mulay, Ph.D.	Continuum mechanics; large deformations of materials; fracture mechanics and plasticity
<b>AICTE–INAE Visiting Faculty</b>	
Padmanabhan Jayasimha	Former General Manager (Design), HAL, and our alumnus (B.Tech. AE-1971). Chosen for AICTE-INAE Distinguished Visiting Professorship to visit our department for two semesters

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

Sl. No.	Name of Faculty Member	Title	Period and Venue
<b>Workshops</b>			
1	S.R. Chakravarthy	International workshop, Combustion Instability in Swirl Combustors	15–16 October 2014, IISc Bangalore
2	R.I. Sujith	Thermoacoustic Instability	27–28 November 2014, Siemens, Lincoln, UK

Sl. No.	Name of Faculty Member	Title	Period and Venue
<b>Seminars/symposia/conferences</b>			
1	Nandan Kumar Sinha	International Conference on Biomolecular Simulations and Dynamics	28–30 November 2014, IIT Madras
2	R.I. Sujith	First Mechanical, Combustion, Aero, Thermal Conference	11 December 2014, GE, Bangalore
3	K.V. Nagendra Gopal	International Conference on Theoretical, Applied, Computational and Experimental Mechanics 2014	29–31 December 2014, IIT Kharagpur
4	R.I. Sujith	Conference on Nonlinear Systems and Dynamics (CNSD-2015)	13–15 March 2015, IISER Mohali
5	R.I. Sujith	Dynamic Days Asia-Pacific (DDAP-08)	Chennai
<b>Meetings</b>			
1	Dr. G. Rajesh visited the Armament Research & Development Establishment (ARDE), Pune during 4–5 March 2014 for technical discussions.		
2	Dr. Shyam Keralavarma visited the National Physical and Oceanographic Laboratory (division of DRDO) in Kochi on 2 May 2014.		
3	Nandan Kumar Sinha attended an ARDB project review meeting at IIT Guwahati during 22–23 May 2014.		
4	P.A. Ramakrishna visited Premier Explosives Limited (PEL), Hyderabad and signed a non-disclosure agreement and was a visiting faculty member there along with Dr. Varun Kumar, of the Mechanical Engineering Department, on 30 May 2014.		
5	Dr. R.I. Sujith got an assignment as a Visiting Scientist at the Technical University of Munich, Germany from 12 May to 20 June 2014.		
6	Dr. K.V. Nagendra Gopal was invited by C-WET, Chennai to be a member of the working group for standards related to activities for wind turbines in India.		
7	Dr. Ranjit Mohan visited HAL (RWRDC, Bangalore) to take part in a peer review for their LCH Project on 21 July 2014.		
8	Dr. R.I. Sujith attended the Comprehensive Technical Review of the experimental flight of GSLV-MKIII (LVM3-X) at ISRO, Bangalore on 19 August 2014.		
9	Dr. Manikandan Mathur delivered a talk at the Bay of Bengal Science and Discussion Meeting, Chennai on 16–18 December 2014.		
10	Dr. Nandan Kumar Sinha has been inducted as a member of the Project Review Committee (PRC) in the national programme on Gas Turbine Enabling Technology Initiation (GATET) by DRDO.		
11	Dr. K. Bhaskar visited HAL, Bangalore along with the Dean (I&AR) on 20 February 2015 to sign an MoU between HAL and IIT Madras.		
12	Dr. K.V. Nagendra Gopal was inducted as a member of the Project Monitoring Committee and Evaluation Committee by MNRE, GoI to review R&D proposals in thrust areas of small wind energy and hybrid Systems and attended review meetings at NIWE, Chennai.		

### Special lectures delivered by the faculty at other institutions

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
1	R.I. Sujith	Prediction of an impending combustion instability	KTH, Sweden	26 May 2014
2	R.I. Sujith	Intermittency route to thermoacoustic instability in turbulent combustors	Alstom	5 June 2014
3	Shyam Keralavarma	Part of InnoVision 2014	Govt. Engg. College, Trivandrum	25 June 2014
4	S.R. Chakravarthy	Thermoacoustics mini symposium	Copenhagen, Denmark	14 September
5	S.R. Chakravarthy	Acoustic-hydrodynamic/mixed mode switching and flame structure fluctuations in a self-excite laboratory-scale technically premixed swirl combustor	IISc, Bangalore	15–16 October 2014

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
6	Shyam Mohan Keralavarma	Discrete dislocation plasticity simulations of void growth in single crystals	CEA, Saclay, France	10–12 December 2014
7	Shyam Keralavarma	Multiscale modeling of dynamic strain aging in Al-Mg alloys	GE Global Research, Bangalore	18–19 March 2015

### Visits abroad by faculty members

Sl. No.	Name of Faculty Member	Country Visited	Date	Purpose of Visit	Funding from
1	A. Sameen	Italy	6 May to 30 June 2014	Visiting faculty member	Italy
2	R.I. Sujith	Technical University of Munich, Germany	12 May to 26 June 2014	To accept an assignment as Visiting Scientist	Germany
3	S.R. Chakravarthy	Dusseldorf, Germany	18–20 June 2014	To attend Turbo Expo 2014	Germany
4	K.V. Nagendra Gopal	Seville, Spain	22–26 June 2014	Paper presentation	IIT Madras
5	S.R. Chakravarthy	Berlin	23–24 June 2014	To visit TU for collaborative discussion	Berlin
6	A. Sameen	Texas A&M University, Texas	1–18 July 2014	For collaborative research work	Texas, USA
7	S.R. Chakravarthy	USA	30 July 2014	To deliver seminar talk	USA
8	S.R. Chakravarthy	USA	31 July to 1 August 2014	To attend workshop	IIT Madras
9	S.R. Chakravarthy	USA	3–8 August 2014	To attend a symposium on combustion	IIT Madras
10	R.I. Sujith	San Francisco, California, USA	3–8 August 2014	To attend the 35th International Symposium on Combustion and to present paper	IIT Madras
11	Sunetra Sarkar	Copenhagen, Denmark	14–18 August 2014	Paper presentation	IIT Madras
12	R.I. Sujith	UK	4–5 September 2014	To attend workshop	UK
13	R.I. Sujith	Munich, Germany	8–12 September 2014	To attend workshop	Germany
14	S.R. Chakravarthy	Ankara, Turkey	11–12 September 2014	To attend OPTIMASH project meeting	Project
15	S.R. Chakravarthy	Copenhagen, Denmark	14–18 September 2014	To deliver talk	Denmark
16	R.I. Sujith	Copenhagen, Denmark	14–18 September 2014	To attend the 10th European Fluid Conference	Denmark
17	R.I. Sujith	Keele, Staffordshire	18–19 September 2014	To attend workshop	Keele
18	K.V. Nagendra Gopal	Nara, Japan	10–13 October 2014	Paper presentation	IIT Madras
19	P. Sriram	Germany	4–5 November 2014	To attend the Third Young Investigators	IIT Madras
20	N.R. Panchapakesan	USA	23–25 November 2014	Oral presentation	IIT Madras
21	R.I. Sujith	UK	27–28 November 2014	To attend a seminar on combustion thermoacoustics	UK
22	R.I. Sujith	Germany	29 November–1 December 2014	To participate in the Second Research Alumni Forum and receive the title of TUM Ambassador	Germany
23	Shyam Keralavarma	France	10–12 December 2014	To attend OPTIDIS	IIT Madras
24	Shyam Keralavarma	Qatar	11–14 January 2015	Paper presentation	IIT Madras



## Honours and awards

Sl. No.	Name of the Faculty Member	Name of Award
1	R.I. Sujith	TUM Ambassador by the Technical University of Munich
2	R.I. Sujith	Bhagyalakshmi and Krishna Iyengar Prize (for guiding Vineeth Nair)
3	R. Velmurugan	First Prize on 52nd National Metallurgists Day (NDM 2014) for paper titled 'Influence of biaxial stress state on microstructure and mechanical behavior of commercially pure titanium'
4	S. Santhakumar (retired Professor)	Excellence in Aerospace Education Award for the year 2013 by the Aeronautical Society of India

## Fellowships of academic and professional societies

Sl. No.	Name of Faculty Member	Name of Fellowship
1	R.I. Sujith	INAE (Indian National Academy of Engineering)
2	R. Velmurugan	AeSI (Aeronautical Society of India)

## Editorial boards of journals

Sl. No.	Name of Faculty Member	Position (Editor/Member)	Journal
1	R. Velmurugan	Member	<i>Journal of Aerospace Sciences and Technologies</i>
2	Sivasambu Mahesh	Member	<i>International Journal of Plasticity (Elsevier)</i>

### 4.1.4. Design and Development Activities

#### New facilities added

Sl. No.	Equipment	Value (lakhs of Rs.)
1	1.1 m diameter rotating platform capable of a maximum speed of 250 rpm (clockwise and anti-clockwise); arbitrary rotation profiles can be specified for the rotation of the platform; ideal for studies on rotating/sloshing-type flows. The facility is currently being augmented with particle image velocimetry (PIV).	29.15

#### Patents filed

Sl. No.	Name of Faculty Member	Title of Patent
1	Sujith R.I.	System and method for early detection of one set of instabilities in combustion or aero-mechanical or aero-elastic systems by constructing complex networks
2	Ramakrishna P.A.	A novel technique to coat burn rate modifiers over ammonium perchlorate
3	Ramakrishna P.A.	Improving the mechanical properties of paraffin wax
4	Sujith R.I.	System and methodology for early detection of aero elastic instabilities
5	Sujith R.I.	System and method for early prediction of an impending blowout in combustion systems using complex networks
6	Muruganandam T.M.	A swirl mesh lean direct injection concept for distributed flame holding for low pollutant emissions and mitigation of combustion instability

### 4.1.5. Research and Consultancy

#### Sponsored research projects

Sl. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co-ordinators
1	Four universal testing machines (UTMs)	21 July 2014 to 20 July 2015	Capital Equipment Research Grant	2.00	R. Velmurugan
2	Bridging length scales in fracture: A hybrid modeling approach	6 August 2014 to 5 August 2017	DST	19.43	Shyam M. Keralavarma

Sl. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co-ordinators
3	Onset of combustion instability in combustors with turbulent flow	14 November 2014 to 13 November 2016	ONRG	72.26	R.I. Sujith and Sunetra Sarkar
4	Development of a back pack rocket motor	11 February 2015 to 10 February 2016	IC & SR research funds	10.00	P.A. Ramakrishna
5	Simulation of mixing layer in stratified medium	23 February 2015 to 22 February 2018	ISRO	30.36	A. Sameen and Balaji Srinivasan A.M.
6	Development of the multiscale modelling framework for fracture studies of textile composites	23 February 2015 to 22 February 2018	ISRO	22.20	Shantanu Shashikant Mulay and H.S.N. Murthy
7	Flow characterization studies and performance analysis of an annular aero-spike nozzle	23 February 2015 to 22 February 2018	ISRO	28.32	G. Rajesh
8	Numerical modeling of arcjet	23 February 2015 to 22 February 2017	ISRO	17.35	Amit Kumar
9	Hybrid rockets for sounding rocket applications using hydrogen peroxide as oxidizer	23 February 2015 to 22 February 2017	ISRO	29.61	P.A. Ramakrishna
10	Identification of mesoscale eddies in the Bay of Bengal using Lagrangian coherent structures	9 March 2015 to 8 March 2018	ISRO	38.4	Manikandan Mathur
11	Coupled physical processes in the Bay of Bengal and monsoon air-sea interaction	May 2015 to May 2018	Indian Institute of Tropical Meteorology	52.14	Manikandan Mathur

### Industrial consultancy projects

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of Rs.)
1	S.R. Chakravarthy	Experimental characterization of flow field in a fuel-air premixer using optical measurement techniques	GEIT	35.10
2	S.R. Chakravarthy	Development of a non-intrusive gas monitoring for biomass gasifier unit	CUMM	12.34
3	T.M. Muruganandam	Development of a non-intrusive gas monitoring for biomass gasifier unit	CUMM	12.34

### RBIC projects

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of Rs.)
1	R. Velmurugan	Evaluation methods to use composites in off-highway trucks	CATR	13.48
2	R. Velmurugan	Experimental studies of epoxy/nano composites	MERC	6.03
3	R. Velmurugan	Studies on SMA-embedded FRP composites for energy absorption and damage mitigation under impact loading	DRDO	58.39

### Exchange programmes with other universities including institutions/universities under MOUs

Dr. K. Bhaskar made a visit to HAL, Bangalore along with Dean (I&AR) on 20 February 2015 to sign and MoU between HAL and IIT Madras

### Research publications

Papers published in refereed national journals:	3
Papers published in refereed international journals:	41
Papers presented at national conferences:	9
Papers presented at international conferences:	29

### Papers published in refereed national journals

1. R. Velmurugan. 2014. Study of strain rate dependent behaviour of glass/epoxy composites with nano fillers. *Defence Science Journal* special issue on the topic of polymer science and engineering.
2. R. Velmurugan and R.S. Sikarwar. 2014. Ballistic impact on glass/epoxy composite laminates. *Defence Science Journal* 64(4): 393–399.
3. C. Palani Kumar and Amit Kumar. 2014. Combined effect of diaphragm and oxidizer swirl on regression rate in hybrid rocket motors. *Defence Science Journal* 64(1): 21–26.

### Papers published in refereed international journals

1. Manikandan Mathur, Glenn S. Carter and Thomas Peacock. 2014. Topographic scattering of the low mode internal tide in the deep ocean. *Journal on Geophysics Research–Oceans* 119(4): 2165–2182.
2. Nagasankar P., Balasivanandha Prabu S., Velmurugan R. and Paskaramoorthy R. 2014. The effect of the chopped fibers on the damping characteristics of fiber reinforced polymer skins of the polypropylene honeycomb sandwich panel. *Advanced Materials Research* 893: 245–249.
3. S. Venkatesh, Sunetra Sarkar and Igor Rychlik. April 2014. Uncertainties in blade flutter damage prediction under random gust. *Probabilistic Engineering Mechanics* 36: 45–55.
4. Velmurugan R., Srinivasulu G. and Jayasankar S. 2014. Influence of fibre waviness on the effective properties of discontinuous fiber reinforced composites. *Computational Materials Science* 91: 339–349.
5. Chhangrekar P.S., Banjare R., Rao B.C. and Murthy H.S.N. 2014. Tensile testing of AI16061-T6 microspecimens with ultrafine grained structure derived from machining-based SPD process. *Journal of Materials Research* 29(11): 1278–1287.
6. Abhilash M.N. and Murthy H.S.N. 2014. Finite element analysis of 2-D elastic contacts involving FGMs. *International Journal of Computational Methods in Engineering Science and Mechanics* 15(3): 253–257.
7. Boyina D., Banerjee A. and Velmurugan R. 2014. Mixed-mode translaminal fracture of plain-weave composites. *Composites Part B: Engineering* 60: 21–28.
8. Narasimhan A., Raju K.S. and Chakravarthy S.R. 2014. Experimental and numerical determination of interface slip coefficient of fluid stream exiting a partially filled porous medium channel. *Journal of Fluids Engineering, Transactions of the ASME* 136(4): art no. 041201.
9. Chandra N., Raja S. and Nagendra Gopal K.V. 2014. Vibro-acoustic response and sound transmission loss analysis of functionally graded plates. *Journal of Sound and Vibration* 333(22): 5786–5802.
10. Ishita Kumar and P.A. Ramakrishna. 2014. Studies on the role of iron oxide and copper chromite in solid propellant combustion. *Combustion and Flame* (IF 3.6).
11. Ishita Kumar and P.A. Ramakrishna. Activated charcoal: As burn rate modifier and its mechanism of action in non-metalized composite solid propellants. *International Journal of Advances in Engineering Sciences (AEAM)*.
12. Ishita Kumar and P.A. Ramakrishna. 2014. Enhancing composite solid propellant burning rates with potassium doped ammonium perchlorate–Part 1. *Journal of Propulsion and Power* 30(2): 277–284.
13. Rajiv Kumar and P.A. Ramakrishna. Measurement of regression rate in hybrid rocket using combustion chamber pressure. *Acta Astronautica*.
14. P.A. Ramakrishna, M. Ramakrishna and R. Manimaran. 2014. Experimental investigation of temperature separation in a counter flow vortex tube. *ASME Journal of Heat Transfer* 136(8): art no. 082801.
15. Ishita Kumar and P.A. Ramakrishna. 2014. Enhancing composite solid propellant burning rates with potassium doped ammonium perchlorate–Part 2. *Journal of Propulsion and Power* 30(4): 876–882.
16. Gurusideswar S. and Velmurugan R. 2014. Strain rate sensitivity of glass/epoxy composites with nano-fillers. *Materials and Design* 60: 468–478.
17. Sampath R. and Chakravarthy S.R. 2014. Proper orthogonal and dynamic mode decompositions of time-resolved PIV of confined backward-facing step flow. *Experiments in Fluids* 55(9): art no. 1792.
18. Gurram N. and Chakravarthy S.R. 2014. Experimental investigation of cellular instability in ammonium perchlorate (ap) and fine ap–binder mixtures. *Proceedings of Combustion Institute* (IF 2.625).
19. Mulla I.A. and Chakravarthy S.R. 2014. Flame speed and tangential strain measurements in widely stratified partially premixed flames interacting with grid turbulence. *Combustion and Flame* 161(9): 2406–2418.
20. Nagasankar P., Balasivanandha Prabu S., Velmurugan R. and Paskaramoorthy R. 2014. Experimental investigation on dynamic characteristics of polypropylene honeycomb sandwich structures under the influences of different temperatures. *Applied Mechanics and Materials* 606: 153–157.
21. Nagasankar P., Balasivanandha Prabu S. and Velmurugan R. 2014. The effect of the strand diameter on the damping characteristics of fiber reinforced polymer matrix composites: Theoretical and experimental study. *International Journal of Mechanical Sciences* 89: 279–288.
22. Balbudhe K. Roy and Chakravarthy S.R. 2014. Computer modelling of nano-aluminium agglomeration during the combustion of composite solid propellants. *Proceedings of Combustion Institute* (IF 2.625).

23. V. Nair and R.I. Sujith. May 2014. Multifractality in combustion noise: Predicting an impending combustion instability. *Journal of Fluid Mechanics* 747: 635–655.
24. Gopalakrishnan E.A. and Sujith R.I. 2014. Influence of system parameters on the hysteresis characteristics of a horizontal Rijke tube. *International Journal of Spray and Combustion Dynamics* 6(3): 293–316.
25. G. Balaganesan, R. Velmurugan, M. Srinivasan, N.K. Gupta and K. Kanny. 2014. Energy absorption and ballistic limit of nanocomposite laminates subjected to impact loading. *International Journal of Impact Engineering*.
26. Ankit Mittal, G. Rajesh, V. Lijo and H.D. Kim. 2014. Starting transients of a vacuum ejector–diffuser system. *Journal of Propulsion and Power*.
27. Keralavarma S.M., Bower A.F and Curtin W.A. 2014. Quantum-to-continuum prediction of ductility loss in aluminum–magnesium alloys due to dynamic strain aging. *Nature Communications* 5: 4604 (IF 10.742).
28. K. Bhaskar and Anup Pydah. 2014. An elasticity approach for simply-supported isotropic and orthotropic stiffened plates. *International Journal of Mechanical Sciences* 89: 21–30.
29. Khatri A.K., Singh J. and Sinha N.K. 2014. Aircraft design using constrained bifurcation and continuation method. *Journal of Aircraft* 51(5): 1647–1652.
30. Verma S. and Ramakrishna P.A. 2014. Dependence of density and burning rate of composite solid propellant on mixer size. *Acta Astronautica* 93: 130–137.
31. Zhang B., Chen G.Q., Li J.S. and Luoyi Tao. 2014. Methane emissions of energy activities in China 1980–2007. *Renewable and Sustainable Energy Reviews* 29: 11–21.
32. Velmurugan R. and Najeeb E.M. 2014. Study of far-field pyroshock responses of composite panels. *Journal of Vibration and Acoustics, Transactions of the ASME* 136(3): art no. 031014.
33. Vinayagam A.K. and Sinha N.K. 2014. An assessment of thrust vector concepts for twin-engine airplane. *Proceedings of the Institution of Mechanical Engineers, Part G: Journal of Aerospace Engineering* 228(6): 960–979.
34. Jithin C.S., Prabu S.B. and Velmurugan R. 2014. Development of shape memory alloy polymer composite and influence of material parameters on shape memory. *Applied Mechanics and Materials* 592–594: 158–163.
35. Manikandan Mathur, Sabine Ortiz, Thomas Dubos and Jean-Marc Chomaz. 2014. Effects of an axial flow on the centrifugal, elliptic and hyperbolic instabilities in Stuart vortices. *Journal of Fluid Mechanics* 758: 565–585 (IF 2.294).
36. G. Srinivasulu, R. Velmurugan and S. Jayasankar. 2014. Influence of void microstructure on the effective elastic properties of discontinuous fiber-reinforced composites. *Journal of Composite Materials* 0021998314554122.
37. Shantanu S. Mulay, Gauthier Becker, Renaud Vayrette, Jean-Pierre Raskin, Thomas Pardoën, Montserrat Galceran, Stéphane Godet and Ludovic Noels. 2014. Multiscale modelling framework for the fracture of thin brittle polycrystalline films: Application to polysilicon. *Computational Mechanics* DOI:10.1007/s00466-014-1083-4 (IF 2.044).
38. Sivasambu Mahesh, J. Singh, G. Kumar, P. Pant, D. Srivastava, G.K. Dey, N. Saibaba and I. Samajdar. 2015. Texture development and plastic deformation in a pilgered zircaloy-4 tube. *Metallurgical and Materials Transactions A*.
39. D. Nagarathinam, A. Sameen and Manikandan Mathur. 2015. Centrifugal instability in non-axisymmetric vortices. *Journal of Fluid Mechanics* 769: 26–45 (IF 2.294).
40. Nagasankar P., Balasivanandha Prabu and R. Velmurugan. 2015. Role of temperatures and fiber orientations on transverse shear damping of polypropylene honeycomb sandwich structures. *Journal of Reinforced Plastics and Composites* (Sage).
41. G. Srinivasulu, R. Velmurugan and S. Jayasankar. 2015. A hybrid method for computing the effective properties of composites containing arbitrarily shaped inclusions. *Computers & Structures* 150: 63–70.

#### Papers presented at national conferences

1. R. Vishnu and R.I. Sujith. Investigation of flame dynamics in a V-flame combustor during combustion instability. *ASME 2014 Gas Turbine India Conference*, 15–17 December 2014, New Delhi.
2. Dheeraj Varma N.L. and Manikandan Mathur. Internal tide generation and scattering: How good is the WKB approximation? *Science and Discussion Meeting*, 16–18 December 2014, Chennai.
3. Sharma P. and Shankar Ghosh. A novel vortex generator for mitigation of shock-induced separation. *52nd AIAA Aerospace Sciences Meeting–AIAA Science and Technology Forum and Exposition, SciTech 2014*.
4. Hamsa Nazeem, Avdhesh K. Gola, H.S.N. Murthy and P.A. Ramakrishna. Effect of aging on ballistic properties of solid propellants. *Second National Propulsion Conference*, 23–24 February 2015, IIT Bombay.
5. Nagendra Kumar and P.A. Ramakrishna. A novel method for grain design using a disposable mandrel. *Second National Propulsion Conference*, 23–24 February 2015, IIT Bombay.



6. Nikunj Rathi and P.A. Ramakrishna. Reducing ammonium perchlorate content and residue in solid fuel ramjet. *Second National Propulsion Conference, 23–24 February 2015, IIT Bombay.*
7. Gaurav, Madhuri M.R. and P.A. Ramakrishna. A novel method to obtain temperature sensitivity of composite solid propellants. *Second National Propulsion Conference, 23–24 February 2015, IIT Bombay.*
8. Gaurav Manu N.M., Arjun B.J. and P.A. Ramakrishna. Experimental validation and study of a new high performance hybrid propellant combination. *Second National Propulsion Conference, 23–24 February 2015, IIT Bombay.*
9. James Joseph and P.A. Ramakrishna. Design of a hybrid rocket for mid-air restarting of an aero engine. *Second National Propulsion Conference, 23–24 February 2015, IIT Bombay.*

#### **Papers presented at international conferences**

1. Harshini Devathi and Sunetra Sarkar. Investigation of level crossings in a vertical axis wind turbine (VAWT) using probability density evolution method (PDEM). *SIAM Uncertainty Quantification Conference, Savannah, Georgia, USA, April 2014.*
2. Katreddy R.K.R. and Chakravarthy S.R. Resolving large and small scale structures in the swirl flow of a typical land-based gas turbine combustor single nozzle rig. *ASME Turbo Expo 2014: Turbine Technical Conference and Exposition, Dusseldorf, Germany, 16–20 June 2014, Paper No. GT2014-26616.*
3. U. Balavishnu and K.V. Nagendra Gopal. Free vibration analysis of a sandwich composite plate with functionally graded syntactic foam core using state space generalized differential quadrature method. *First International Conference on Mechanics of Composites, Stony Brook University, New York, USA, 9–12 June 2014.*
4. Jasraj Asdev and K.V. Nagendra Gopal. Dynamic response of syntactic foam core sandwich using a multiple scales based asymptotic method. *16th European Conference on Composite Materials, Seville, Spain, 22–26 June 2014.*
5. Anup Pydah and K. Bhaskar. Elasticity solutions for isotropic and orthotropic stiffened plates. *17th U.S. National Congress on Theoretical and Applied Mechanics (USNCTAM-2014), Michigan State University, USA, 15–20 June 2014.*
6. V. Vineeth Nair and R.I. Sujith. Intermittency in the dynamics of turbulent combustors. *ASME Turbo Expo 2014: Turbine Technical Conference and Exposition GT, Dusseldorf, Germany, 16–20 June 2014.*
7. V. Vineeth Nair and R.I. Sujith. Engineering precursors to forewarn the onset of an impending combustion instability. *ASME Turbo Expo 2014: Turbine Technical Conference and Exposition GT, Dusseldorf, Germany, 16–20 June 2014.*
8. P. Vinu Varghese and R.I. Sujith. Acoustic perturbation equation for combustion generated sound using method of multiple scales. *21st International Congress on Sound and Vibration (ICSV21), Beijing, China, 13–17 July 2014.*
9. H.V. Raghav and Nandan Kumar Sinha. The target guarding problem revisited: Some interesting revelations. *International Federation of Automatic Control (IFAC) World Congress, Cape Town, South Africa, 24–29 August 2014.*
10. Mangal Kothari, Joel George M. and Ian Postlethwaite. Cooperative pursuit–evasion game for non-holonomic systems. *19th World Congress of the International Federation of Automatic Control (IFAC), Cape Town, South Africa, August 2014.*
11. K. Sreesankar and Nandan Kumar Sinha. Effect of aerodynamic uncertainties on high-alpha spin. *29th Congress of the International Council of the Aeronautical Sciences (ICAS), Saint Petersburg, Russia, 7–12 September 2014.*
12. E.A. Gopalakrishnan and R.I. Sujith. Noise induced transition in a horizontal Rijke tube. *10th European Fluid Mechanics Conference (EFMC10), Technical University of Denmark, Copenhagen, 14–18 September 2014.*
13. R. Sampath, V. Ramanan, G. Kamble, I. Mulla and S.R. Chakravarthy. Experimental observations of hydrodynamic and acoustic interactions during thermo-acoustic instabilities in dump and swirl combustors. *10th European Fluid Mechanics Conference (EFMC10), Technical University of Denmark, Copenhagen, 14–18 September 2014.*
14. A. Kannan, C. Balaji and S.R. Chakravarthy. Coupled incompressible and acoustic solution approach to predict thermo acoustic instability in turbulent combustion systems. *10th European Fluid Mechanics Conference (EFMC10), Technical University of Denmark, Copenhagen, 14–18 September 2014.*
15. V. Ramanan, G. Kamble, R. Sampath, I. Mulla and S.R. Chakravarthy. Acoustic-hydrodynamic/mixed mode switching and flame structure fluctuations in a self-excited laboratory-scale technically premixed swirl combustor. *International Workshop on Combustion Instability in Swirl Combustors, IISc Bangalore, 15–16 October 2014.*

16. Vaisakh S. and T.M. Muruganandam. Injection through micro ramps on normal shock/boundary layer interactions. *Fifth International and 41st National Conference on Fluid Mechanics and Fluid Power*, IIT Kanpur, 12–14 December 2014.
17. Salil Harris and Sunetra Sarkar. Effect of sinusoidal gust on thrust generated by a plunging airfoil. *Fifth International and 41st National Conference on Fluid Mechanics and Fluid Power*, IIT Kanpur, 12–14 December 2014.
18. Dheelibun Remigius and Sunetra Sarkar. Fluid structure interaction a flexible plate in a compressible medium. *Fifth International and 41st National Conference on Fluid Mechanics and Fluid Power*, IIT Kanpur, 12–14 December 2014.
19. N. Chandra, K.V. Nagendra Gopal and S. Raja. Vibro-acoustic response of sandwich plates with functionally graded core. *Asian Conference on Mechanics of Functional Materials and Structures*, Nara, Japan, 10–13 October 2014.
20. Rajeev John and K.V. Nagendra Gopal. Fracture analysis of a pre-cracked functionally graded beam under low velocity impact using three-dimensional finite element analysis. *Asian Conference on Mechanics of Functional Materials and Structures*, Nara, Japan, 10–13 October 2014.
21. N.R. Panchapakesan. Rotating lid driver cubical cavity flows. *67th Annual Meeting of the American Physical Society, Division of Fluid Dynamics*, San Francisco, CA, USA, 23–25 November 2014.
22. Aswathy Nair K. and A. Sameen. Experiments on boundary layer flow over porous region. *IUTAM Symposium on Multiphase Flows with Phase Change: Challenges and Opportunities*, Hyderabad, 8–11 December 2014.
23. Rohit Vashishtha, K.V.N. Gopal and A. Gogoi. Effect of fluid-structure-thermal (FST) interaction on mechanical yaw thrust vectoring efficiency of a 2D nozzle. *Fifth International Congress on Computational Mechanics and Simulation*, SERC, Chennai, 10–13 December 2014.
24. Aswathy Nair K., A. Sameen and S. Anil Lal. Computation of boundary layer flow over porous laminate flat plate. *IUTAM Symposium on Advances in Computation, Modeling and Control of Transitional and Turbulent Flows*, Goa, 15–18 December 2014.
25. Salil Harris and Sunetra Sarkar. Effect of random gusts on thrust generated by a plunging airfoil. *Sixth International Conference on Theoretical, Applied, Computational and Experimental Mechanics*, IIT Kharagpur, 29–31 December 2014.
26. N. Chandra, S. Raja and K.V. Nagendra Gopal. Influence of grading index on vibro-acoustic behaviour of functionally graded plates. *Sixth International Conference on Theoretical, Applied, Computational and Experimental Mechanics*, IIT Kharagpur, 29–31 December 2014.
27. S. Vijay Kishore and K.V. Nagendra Gopal. Non-linear dynamic analysis of sandwich plates using homotopy perturbation method. *Sixth International Conference on Theoretical, Applied, Computational and Experimental Mechanics*, IIT Kharagpur, 29–31 December 2014.
28. Dharmendra Bhardwaj and K.V. Nagendra Gopal. Free vibration analysis of sandwich plates with viscoelastic core using multiple-scales asymptotic expansion method. *Sixth International Conference on Theoretical, Applied, Computational and Experimental Mechanics*, IIT Kharagpur, 29–31 December 2014.
29. Agarwal H., Akhil K.T., Unni V.R., Ravi N.T., Sujith R.I., Iqbal S. Md. and Pesala B. Performance optimization of tunable standing wave thermoacoustic engine by varying the stack parameters and resonator length: An experimental study. *International Conference on Advances in Electrical Engineering, ICAEE*, 2014.

#### Distinguished visitors (faculty members/scientists) to the department

Sl. No.	Name of the Visitor and Designation	Date	Purpose of Visit
1	Dr. Manoj Srinivasan, Ohio State University	5 August 2014	To deliver a guest lecture, 'Predictive Mathematical Models of Human Walking and Running'
2	Dr. G.K. Suryanarayana, National Aerospace Laboratories, Bangalore	6 August 2014	To deliver a guest lecture, 'Some Interesting Instability Phenomena in Aerodynamics'
3	Dr. Subith S. Vasu, Assistant Professor, University of Central Florida, Orlando	12 August 2014	To deliver a guest lecture, 'Overview of Combustion and Laser Diagnostics Research'
4	Dr. Saravanan Balusamy, Research Associate, Department of Engineering, University of Cambridge, USA	5 September 2014	To deliver a guest lecture, 'Combustion Studies Using Optical Diagnostics'

Sl. No.	Name of the Visitor and Designation	Date	Purpose of Visit
5	Dr. Tim Lieuwen, Professor of the School of Aerospace Engineering and the Executive Director of the Strategic Energy Institute at Georgia Technology	8 October 2014	To deliver a guest lecture, 'Dynamics of Flamelets in Harmonically Oscillating Flow Fields'
6		9 October 2014	To deliver a guest lecture, 'Transformations in the US Energy Sector'
7		10 October 2014	To deliver a guest lecture, 'Natural and Forced Dynamics of Reacting Wakes'
8	Dr. Nisha Mohan, Post-Doctoral Fellow, Caltech, USA	21 October 2014	To deliver a guest lecture, 'Extracting Material Response from Simple Mechanical Tests'
9	Dr. Hukam C. Mongia, Professor of the School of Mechanical Engineering, Purdue University, West Lafayette, IN, USA	22 December 2014	To deliver a guest lecture, 'Fourth Generation Lean Direct Injection Combustion Research'
10	Dr. P.K. Sen	10 February 2015	To deliver a Seminar, 'A New Approach to Anisotropy in Wall-Turbulent Shear Flow, and with Application to Organised Disturbances, When These Are Present'
11	Dr. Vagesh D. Narasimhamurthy, Senior Research Engineer of the CMR, Bergen, Norway	12 February 2015	To deliver a seminar talk, 'Direct Numerical Simulation of Turbulence, Transition and Flow Instabilities'
12	Dr. Murugan Thangadurai, CSIR-CMERI, Durgapur, India	2 March 2015	To deliver a seminar talk, 'A Study on the Characteristics of Shock Driven Impulsive Flow'
13	Dr. C. Ramprasad, Senior Assistant Professor, SASTRA University	23 September 2014	To visit the Aerospace Department and laboratories

#### Distinguished visitors (students)

1. Around 95 students along with faculty members from the Aeronautical Department of St. Peter's College of Engineering and Technology, Avadi, Chennai visited the laboratories on 5 September 2014.
2. Students and teachers of the Government Higher Secondary School, Kelambakkam visited the laboratories during 27–30 September 2014.

#### 4.1.6. Other activities

International collaborations/achievements by the department

As part of the TANGO (thermo-acoustic and aero-acoustic nonlinearities in green combustors with orifice structures) network, Prof. R.I. Sujith published a journal paper with Prof. Wolfgang Polifke of TU Munich.

#### Faculty visits

Sl. No.	Name of Faculty Member	Purpose of Visit	Date and Venue
1	S.R. Chakravarthy	Collaborative research meeting	23–24 June 2014, Berlin
2	A. Sameen	Collaborative research meeting	1–20 July 2014, Texas, USA

#### Faculty visits from abroad

Sl. No.	Name of Faculty Member	Purpose of Visit	Venue
1	Dr. Alessandra Bigongiari	For collaborative research	Keele University, UK
2	Mr. Nalinikant Mukherjee	For collaborative research	Keele University, UK

#### Student visits from abroad

Eight students from France visited the department for one Semester of course work during July–November 2014.

## 4.2. DEPARTMENT OF APPLIED MECHANICS

### 4.2.1. Introduction

The Department of Applied Mechanics has been in existence since 1959 and has grown into a full-fledged interdisciplinary graduate research department over the years. The department focuses on academic activities in three broad areas: (1) biomedical engineering, (2) fluid mechanics and (3) solid mechanics.

The department also offers minor streams for undergraduate students.

### 4.2.2. Academic Programmes

#### New courses introduced

Sl. No.	Course No.	Title
1	AM5510	Biomedical Signals and Systems
2	AM 5520	Medical Electronics
3	AM 5119	Physiology for Engineers
4	AM 6517	Foundations of Micro, Nano Scale Fluid Mechanics
5	AM 5610	Measurements in Mechanics
6	AM 6518	Biophysical Aspects of Tumor Microenvironment
7	AM 6516	Neuromechanics of Human Movement
8	AM 5040	Introduction to Nanomechanics
9	AM 5021	Materials, Mechanics and Design
10	AM 5020	Biomedical Ultrasonics
11	AM 7010	Classics in Neuroscience
12	AM 6190	Cellular Structures and Mechanics
13	AM 6999	Special Topics in Applied Mecahanics
14	AM 7999	Special Topics in Applied Mecahanics

#### Students on roll as of September 2013 + M.S. and Ph.D scholars admitted in January 2014

Programme	I Year	II Year	III Year	IV Year	V Year and Others	Total
Dual Degree	27	24	30	31	33	145
M.Tech.	24	29	—	—	—	53
M.S.	4	18	13	11	4	50
Ph.D.	5	17	16	17	10+11	80
<b>Total</b>						<b>358</b>

#### Names of students/scholars who attended conferences/workshops/seminars/symposia abroad/in India

Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference/Seminar/ Symposia/Workshop	Date and Venue	Financial Assistance from
<b>Abroad</b>					
1	Bala Nivetha K.	AM12D001	SPIE DSS	5–9 May 2014, Baltimore, USA	
2	Nachiketa Janardan	AM10D025	Ninth Annual Symposium on Contact Angle, Wetting and Hysteresis	14–16 June 2014, Lehigh University, Pennsylvania, USA	IIT Madras
3	Vipin Koothur	AM11S037	“Progress in Wall Turbulence” Understanding and Modelling: Velocity of line plumes on the hot plate in turbulent natural convection progress in wall turbulence: Understanding and modeling	18–20 June 2014, Lille, France	



Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference/Seminar/ Symposia/Workshop	Date and Venue	Financial Assistance from
4	Vivek Ramakrishnan	AM12D025	JENESYS 2.0 (Japan-East Asia Network of Exchange for Students and Youths) programme	16–24 June 2014, Tokyo and Mie Prefecture, Japan	
5	T. Abhinav	AM12S013	ICEM'16—SIF evaluation from strain field using multi-parameter equation employing QR decomposition	6–12 July 2014, University of Cambridge, UK	
6	B. Shreesudha	AM12S028	ICEM'16—Photoelastic study of an inclined crack from a fillet of a biaxially loaded cruciform specimen	6–12 July 2014, University of Cambridge, UK	
7	Vivek Ramakrishnan	AM12D028	ICEM'16—Influence of thermal cycling on the residual stresses generated in glass using digital photoelasticity—International Conference on Experimental Mechanics	July 2014, University of Cambridge, UK	
8	G. Mallikarjunachari Vivek Ramakrishnan Amrita Rath	AM12D005 AM12D025 AM12D028	ICEM'16—Photoelastic and optical study of polymeric microcapsules dispersed in epoxy matrix	6–12 July 2014, University of Cambridge, UK	
9	Bhakti Patel	AM12D029	ICEM'16—Experimental study of sheet metal forming process	6–12 July 2014, University of Cambridge, UK	
10	A. Yezhil Arasu T. Abhinav	VSSC Scientist Trivandrum AM12S013	International Conference on Experimental Mechanics—SIF evaluation from strain field by the use of multi parameter equation employing QR decomposition	July 2014, University of Cambridge, UK	
11	Navaneethakrishnan	AM13S030	Multiscale feature based analysis of surface EMG signals under fatigue and non-fatigue conditions	26–30 August 2014, Chicago, USA	
12	Karthick P.A.	AM12D014	Analysis of fatigue conditions in biceps brachii muscles using surface electromyography signals and strip spectral correlation	20–23 August 2014, Hong Kong, China	
13	Karthick P.A.	AM12D014	Analysis of progression of fatigue conditions in biceps brachii muscles using surface electromyography signals and complexity based features	26–30 August 2014, Chicago, USA	
14	Suganthi S.S.	AM11D010	Segmentation of breast tissues in infrared images using noise model and level set method	3–5 September 2014, Bologna, Italy	
15	Venugopal G.	AM11D019	Analysis of fatigue progression during dynamic contraction of biceps brachii muscles using intrinsic mode functions of surface EMG signals and spectral features	3–5 September 2014, Bologna, Italy	
16	Diptasree Maitra	AM13D004	Characterization and analysis of surface EMG signals under fatigue and non-fatigue conditions using multiscale fractal dimension technique	3–5 September 2014, Bologna, Italy	
17	K.S. Siddharth	AM12D023	26th ILASS (Institute for Liquid Atomization and Spray Systems) Europe—2014	8–10 September 2014, Bremen, Germany	IIT Madras
18	Pradeep Malaji	AM13D009	VETOMAC-X—Energy harvesting from near periodic structures	9–11 September 2014, University of Manchester	

Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference/Seminar/ Symposia/Workshop	Date and Venue	Financial Assistance from
19	Pradeep Malaji	AM13D009	For research collaborations	12 September to 9 October 2014, Swansea UK	
20	Udayakumar K.	AM11D006	ICEM 2015, Singapore	15–17 November 2014, Singapore	
21	Iqbal Baig, Hariprasad M.P., Ramesh K.	CE09B088 AM13D007 Professor	International Conference on Experimental Mechanics (ICEM— 2014)—Analysis of Stress Distribution in Dry Masonry Walls Using Three Fringe Photoelasticity	15–17 November 2014, Singapore	
22	Krishne Gowda V.	AM12S019	67th Annual Meeting of the APS Division of Fluid Dynamics— Aerodynamics of flapping insect wing in inclined stroke plane hovering with ground effect	23–25 November 2014, San Francisco, USA	
23	Vadivukkarasan M.	AM10D021	67th Annual Meeting of the APS Division of Fluid Dynamics— Combined Rayleigh-Taylor and Kelvin-Helmholtz instabilities on cylindrical interfaces	23–25 November 2014, San Francisco, USA	IIT Madras
24	Swaminathan K.	AM11D005	67th Annual Meeting of the APS Division of Fluid Dynamics— Spontaneous emulsification dynamics of natural oils	23–25 November 2014, San Francisco, USA	IIT Madras
25	Kiran Marri	AM13D026	Sixth International Conference on Signal Processing Systems (ICSPS–2014)	8–9 December 2014, Dubai, UAE	
26	Kiran Marri	AM13D026	Second International Conference on Control, Mechatronics and Automation (ICCMA–2014)	9 December 2014, Dubai, UAE	
27	Michael Raju	AM12S020	SPIE Photonics West	7–12 February 2015, San Fransisco, USA	
28	Udayakumar K.	AM11D006	SPIE Medical Imaging 2015	21–26 February 2015, Orlando, USA	
<b>India</b>					
1	R. Jayendiran	AM10D014	Second International Conference on Advanced Functional Materials—Finite element modeling and experimental study of electromechanical response of 1-3 piezocomposites	19–20 February 2014, Thiruvananthapuram, Kerala	
2	Sreenivasa Prasath	AM11D020	Second International Conference on Advanced Functional Materials— The Effect of interphase material on the effective mechanical constants of macro fibre composites (MFCs)	19–20 February 2014, Thiruvananthapuram, Kerala	
3	V. Kasiviswanath	AM10S018	Second International Conference on Advanced Functional Materials— Analytical and numerical prediction of effective properties for layered magneto electro elastic composite	19–20 February 2014, Thiruvananthapuram, Kerala	
4	Subramanyan Reddy	AM13D014	International Conference on Near Net Shape Manufacturing of Precision Engineering Components (NNSMW–2014)	5 May 2014, Central Glass and Ceramic Research Institute, Kolkata	

Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference/Seminar/ Symposia/Workshop	Date and Venue	Financial Assistance from
5	Vivek Ramakrishnan	AM12D025	International Conference on Near Net Shape Manufacturing of Precision Engineering Components (NNSMW 2014)	5 May 2014, Central Glass and Ceramic Research Institute, Kolkata	
6	Amrita Rath Pijush Ghosh	AM12D028 Asst. Professor	International Conference on Soft Materials (ICSM-2014)—Nano mechanical characterization of crosslinked chitosan/hydroxyapatite film	6–10 October 2014, MNIT Jaipur	
7	P. Sasikumar	AM09D004	13th ISAMPE National Conference on Composites Failure—Probability of laminated composite beams in flexure: SFEM predictions and experimental validation	14–15 November 2014, Thiruvananthapuram	
8	Meeshawn S. Marathe Nayan S. Bhatt, Raji Sundararajan	AM13S029 AM14S002 Visiting Professor, Perdue University	IEEE International Conference on Circuits, Computing, Control & Communication—A novel wireless vein finder	20–22 November 2014, MSRIT, Bangalore	
9	Sushant Kulkarni	AM14S010	Medical imaging and neuroscience diagnostic: Analysis and treatment	4 December 2014, NIMHANS, Bangalore	
10	Navaneethakrishna Makaram	AM13S030	Fifth International Conference on Swarm, Evolutionary and Memetic Computing (SEMCCO-2014)	7–19 December 2014, Bhubaneswar, India	
11	Sangeeth Krishnan Baburaj A. Puthenveetil Emil J. Hopfinger	AM10S002 Associate Professor Honorary Professor, CNRS- UJF-INP, Grenoble, France	IUTAM Symposium on Multiphase Flows with Phase Change: Challenges & Opportunities—Cavity dynamics in bursting bubbles	8–11 December 2014, IIT Hyderabad	
12	Pallab S. Mahapatra	Non-student (Project Officer)	IUTAM-2014 Symposium on Multiphase Flows with Phase Change: Challenges and Opportunities	8–11 December 2014, Hyderabad, India	
13	Vishnudas Abhijit Chauduri	AM12D024 Assistant Professor	IUTAM Symposium—A Influence of dispersivity on miscible and immiscible viscous fingering during polymer flooding	8–12 December 2014, IIT Hyderabad	
14	Hridya P. Lal	AM12D004	Reduced order modeling and uncertainty quantity for a stochastic linear dynamical system	10–13 December 2014, CSIR-SERC, Chennai	
15	Allmin Pradhap Singh	AM14S016	Workshop on Image and Speech Processing Methods (WISP-2014)	13 December 2014, Hyderabad	
16	Suhail Parvez	AM14D016			
17	D.R. Raghuram	AM14S006			
18	Vadivukkarasan M.	AM10D021	Fifth International and 41st National Conference of FMFP	12–14 December 2014, IIT Kanpur	
19	Anoop P.	AM12D009	Fifth International Conference on Fluid Mechanics and Fluid Power	12–14 December 2014, IIT Kanpur	

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposia/Workshop	Date and Venue	Financial Assistance from
20	B. Ramakrishna	AM12D004	12th International Conference on Fiber Optics and Photonics—Plasmonic sandwich immunoassay on fibre optic sensor: Sensitivity enhancement using refractive index media	13–16 December 2014, IIT Kharagpur	Department of Applied Mechanics, IIT Madras
21	Pallab S. Mahapatra	Non-student (Project Officer)	ASME–2014, Gas Turbine India Conference (GTINDIA2014)	15–17 December 2014, New Delhi, India	
22	B. Ramakrishna	AM12D004	International Conference on MEMS and Sensors (ICMEMSS 2014)—LSPR based U-bent fibre optic biosensor using gold nanoparticles as labels	18–20 December 2014, IIT Madras	
23	J. Venkatramani	AM12D026	Nonlinear dynamical analysis of an airfoil subjected to non-Gaussian wind	29–31 December 2014, IIT Kharagpur	

#### Names of students/scholars who won prizes and awards outside

Sl. No.	Name of the Student/Scholar	Roll No.	Name of Prize	Prize Awarded by
1	Ranjan Piyush	AM12S024	Contest Chairman's Award for paper titled 'Proposal of a new tractographic feature for analysis of white matter in Alzheimer diffusion MR images'	51st Annual Rocky Mountain Bioengineering Symposium (RMBS 2014), held at Denver, CO, USA
2	Venugopal G.	AM11D019	Best Paper Award for paper titled 'Differentiating sEMG signals under muscle fatigue and non-fatigue conditions using logistic regression classifiers'	51st Annual Rocky Mountain Bioengineering Symposium (RMBS 2014), held at Denver, CO, USA
3	Shreesudha B.	AM12S028	Eaton Pratibha Scholarship 2014–2015	Eaton India
4	M.S. Raghu Prasad	AM10D003	GYTI Appreciation Award	Rashtrapathi Bhavan, New Delhi, 8 March 2015
5	Abhijit Biswas	AM10D009		
6	R. Jayendiran	AM10D014	Best Paper Award for 'Finite element modeling and experimental study on electromechanics response of 1-3 piezocomposites'	International Conference on Advanced Functional Materials, Thiruvananthapuram, Kerala, 19–21 February 2014

#### Names of students/scholars who won convocation/Institute Day prizes

Sl. No.	Name of the Student/Scholar	Roll No.	Name of Prizes	Name of Donor
1	Abhishek De	EE09B095	Institute Merit Prize	
2	Jogdand Anoop Sheshrao	AM12M007	Indira Sivasailam Merit Prize	
3	G. Rajkumar	AM12M019	Usha Kothandaraman Memorial Prize	
4	Jibin Jose	AM12M006	Sushruta Award	
5	Ranjith S. Kumar	AM10D020	Prof V. Ramamurti Award	Dr. V. Ramamurti

#### 4.2.3. Faculty members and their activities

##### Faculty

Name and Qualifications	Areas of Specialization
<b>Professors</b>	
M. Ramasubba Reddy [Head]	Biosignal and image processing; bioinstrumentation
K. Ramesh	Digital photoelasticity; fracture mechanics
C. Lakshmana Rao	Fracture mechanics; modeling of materials; piezoelectric materials

Name and Qualifications	Areas of Specialization
M.S. Sivakumar	Smart materials and structures; plasticity
S. Ramakrishnan	Biomedical instrumentation; enhancing diagnostic relevance of medical equipment
M. Manivannan	Haptics; medical simulation
S. Vengadesan	Fluid mechanics; turbulent flows and modeling; computational fluid dynamics
Mahesh Panchagnula	Spray combustion and atomization; surface tension phenomena; multi-phase flows
B.S.V. Prasad Patnaik	Computational fluid dynamics; fluid structure interaction (flow control, FIV); biofluid mechanics
<b>Associate Professors</b>	
A. Arockiarajan	Smart materials; finite elements mesh-free methods
Sayan Gupta	Dynamics and random vibration; structural reliability; probabilistic mechanics
Anuradha Banerjee	Fracture mechanics; composites
N. Sujatha	Biomedical optical instrumentation; biomedical spectroscopy; laser-based diagnostic imaging; optical signal/image processing
A. Baburaj Puthanveetil	Turbulent convection; interfacial phenomena
Arul Prakash	Large eddy simulation (LES) and related techniques; computational fluid dynamics and thermal hydraulics
<b>Assistant Professors</b>	
Rinku Mukerjee	Post-stall flow prediction; applied aerodynamics; boundary layer stability
Abhijit Chaudhuri	Modeling of geo-thermal system; stochastic groundwater hydrology
Pijush Ghosh	Nanocomposites; self-healing materials; molecular dynamics
Raghavendra Sai V.V.	LSPR and SERS phenomena; clinical diagnostics and therapeutics using nanomaterials and nano-devices; sensors for environmental monitoring and explosive detection; fibre optic and microfabricated waveguides and nanoparticles
Shaikh Faruque Ali	Vibration control; control of nonlinear systems; feedback linearisation; energy harvesting; structural dynamics
Varadhan S.K.M.	Neuromechanics; motor behaviour and motor learning; rehabilitation; understanding action and perception
Sarith P. Sathian	Microfluidics and nanofluidics; compressible and rarefied gas flows; microscale and nanoscale thermophysics
Saumendra Kumar Bajpai	Microfabricated biomimetic systems; mechanics of tissue reorganisation; biophysical profiling of cells and tissues
Arun Kumar Thittai	Biomedical ultrasound imaging; ultrasound elastography; image analysis; image processing; ultrasound therapeutics

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

Sl. No.	Coordinator(s)	Title	Period
1	B.S.V. Prasad Patnaik	DNS of Wall Bounded Turbulence	31 December 2014
2	A.P. Baburaj	Gravity Currents on Slopes	27 January 2015
<b>Short term Courses</b>			
1	Sayan Gupta, Shaikh Farque Ali, Sunetra Sarkar	STTP on Computational Dynamics	1–5 September 2014
2	Arun K. Thittai, Saumendra K. Bajpai	STTP on Biomedical Systems, Signals and Images	17–21 November 2014
3	Abhiji Chaudhuri, S. Vengadesan, Sarith P. Sathian	STTP on Fluid Dynamics–Theory to Industrial Application	17–22 November 2014

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

Sl. No.	Name of Faculty Member	Title	Institution	Period
<b>Workshops</b>				
1	K. Ramesh (speaker)	International Conference on Near Net Shape Manufacturing of Precision Engineering Components (NNSMW 2014) (talk titled 'Residual stress analysis of glass using digital photoelasticity')	Central Glass and Ceramic Research Institute, Kolkata	5 May 2014

Sl. No.	Name of Faculty Member	Title	Institution	Period
<b>Symposia</b>				
1	N. Sujatha (speaker)	SPIE Photonics Europe	Brussels, Belgium	14–17 April 2014
2	K. Arul Prakash	AR&DB (Aerodynamics Panel) annual symposium (presented the progress of ongoing project titled 'Development of Navier–Stokes solver for simulating fluid flow past rectangular cylinder to study the effect of flow induced vibrations')	IIT Guwahati	22–23 May 2014
3	N. Sujatha (speaker)	ICEM 2014	Singapore	15–17 November 2014
4	A.P. Baburaj	IUTAM Symposium on Multiphase Flows with Phase Change: Challenges & Opportunities	IIT Hyderabad	8–11 December 2014
<b>Conferences</b>				
1	M. Manivannan (Distinguished Speaker)	First International Conference on Advancements of Medical Electronics (talk titled 'Robotics in medical education and training')	Kolkata	29–30 January 2015

### Special lectures delivered by faculty members at other institutions

Sl. No.	Name of Faculty	Topic of Lecture	Institution	Date
1	S. Vengadesan	Computational fluid dynamics and applications	Thiagarajar College of Engineering, Madurai	24 February 2014
2	K. Arul Prakash	Progress of ongoing project titled 'Development of Navier–Stokes solver for simulating fluid flow past rectangular cylinder to study the effect of flow-induced vibrations'	IIT Guwahati	22–23 May 2014
3	A. Arockiarajan	Smart composites: Modeling and experiments	Institute of Smart Structures and Systems, IISc, Bangalore	27 September 2014
4	S. Ramakrishnan	Research issues in biomedical engineering (in the intensive course 'Future Perspective in Biomedical Engineering')	Tallinn, Estonia	29 September to 3 October 2014
5	K. Ramesh (Invited Speaker)	Overview of experimental determination of crack tip stress field parameters	Vikram Sarabhai Space Centre (VSSC), Thiruvananthapuram, India	6 November 2014
6	Ramasubba Reddy	For participants of INSPIRE programme	YSR Loyala Degree College, Pulivendla	7 December 2014
7	Mahesh V. Panchagnula	Microstructure of a spray system Dissecting a spray and understanding it	IIT Bombay P.J. Paul Mem Workshop, Chennai	10 January 2015 24–25 January 2015
8	V.V. Raghavendra Sai	Fibre optic probes for biosensing and cancer research, at Second Workshop on Ultrafast Photonic Processes and Interactions	Dublin City University, Glasnevin, Dublin, Ireland	28–29 January 2015
9	N. Sujatha	Monitoring diabetes non-invasively: Role of optical tools, at School of Chemical and Biomedical Engineering	NTU, Singapore	20 March 2015
10	M. Manivannan	Haptics in Medical Education—NPTEL Meeting on Medical Education Haptics in medical training—Brainstorming session on robotics in medicine Role of haptics in remote healthcare, at Workshop on Data Analysis for Health Care Systems <i>Haptics in medical training</i> Recent trends in mechatronics—medical mechatronics SISTEM-SPHERE, ICTs in the Modern World—, ICT based Medical Education and Training	IIT Delhi IIST, Thiruvananthapuram IIT Madras <i>Kalyani University, Kolkata</i> Guindy Engineering College, Anna University, Chennai IIT Madras	8 December 2014 10 January 2015 27 January, 2015 29 January 2015 26–27 February 2015 28 February 2015



Sl. No.	Name of Faculty	Topic of Lecture	Institution	Date
	M. Manivannan	EMTS-2015 Emerging Trends in Mechatronics, Anna University CEG "Biomechanics"	Anna University, Madras Institute of Technology, Chennai	6 March 2015
		Frontiers in Medicine by Dignity Foundation "A rigorous scientific approach on Varma System of Medicine"	Chennai	14 March 2015

### Visits abroad by faculty members

Sl. No.	Name of Faculty Member	Place Visited	Date	Purpose of Visit
1	N. Sujatha	Brussels, Belgium NTU, Singapore	14–17 April 2014 April 2014 to May 2015	SPIE Photonics Europe Visiting Associate Professor, research collaboration
2	Arockiarajan	Institute for Mechanics, TU Dortmund, Germany	27 May to 8 June 2014	Visiting Professor
3	K. Ramesh	University of Cambridge, UK	7 July 2014	Chairing a session, Photoelasticity 1, at the International Conference on Experimental Mechanics (ICEM'16)
4	K. Ramesh	University of Cambridge, UK University of Southampton, UK	6–12 July 2014 13–15 July 2014	Attending ICEM'16 "Influence of thermal cycling on the residual stress introduced in glass using digital photoelasticity" Presenting a talk, 'Digital photoelastic evaluation of crack-tip stress field parameters', at research colloquium
5	Sarith P. Sathian	Xi'an, China	13–18 July 2014	29th International Symposium on Rarefied Gas Dynamics
6	Ramasubba Reddy M.	Snowbird, Utah, USA	7–10 September 2014	Attending 13th International Tissue Elasticity Conference
7	S. Vengadesan	San Francisco, USA	23–25 November 2014	To attend 67th Annual Meeting of the APS Division of Fluid Dynamics Conference on Aerodynamics of flapping insect wing in inclined stroke plane hovering with ground effect
8	S. Ramakrishnan	Tallinn, Estonia Estonia Sungkyunkwan University, South Korea	22 September to 8 October 2014 22–28 January 2015	Erasmus Mundus Action 2 Heritage Programme for teaching/research at Technical University, Tallinn (TTU), Estonia Visiting TTU Establishing joint collaboration for biomedical engineering research and development with Department of Human ICT Convergence

### Honours and awards obtained by faculty members

Sl. No.	Name of Faculty Member	Name of Award	Awarded by	Awarded for	Date
1	S. Ramakrishnan	Contest Chairman's Award	51st Annual Rocky Mountain Bioengineering Symposium (RMBS 2014), held at Denver, CO, USA	Paper titled 'Proposal of a new tractographic feature for analysis of white matter in Alzheimer diffusion MR images	4–6 April 2014
		Best Paper Award	51st Annual Rocky Mountain Bioengineering Symposium (RMBS 2014), held at Denver, CO, USA	Paper titled 'Differentiating sEMG signals under muscle fatigue and non-fatigue conditions using logistic regression classifiers'	4–6 April 2014



#### 4.2.4. Design and development activities

##### Patents filed

Sl. No.	Name of Faculty Member	Topic of Patent
1	J. Venkatramani, Vineeth Nair, Sayan Gupta, Sunetra Sarkar, R.I. Sujith	Setup and methodology for early detection of aeroelastic instabilities, numbered 4273/CHE/2014, dated 2 September 2014
2	M. Manivannan	Non-linear, tunable mechanism for simulating chest stiffness in Hi-Fidelity Mannequins, numbered 4014/CHE/2014, Chennai

#### 4.2.5. Research and consultancy

##### Sponsored research projects (ongoing and new)

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Co-ordinators
1	Extreme value distributions for stochastic loads modeled as LMA processes	6 June 2014 to 5 June 2016	Naval Research Board	11.41	Sayan Gupta
2	Contact stress parameter evaluation using digital photoelasticity	5 September 2014 to 4 September 2016	ISRO	22.308	K. Ramesh
3	Studies of the dynamic behaviour of water in carbon nano tubes and application to filtration	21 November 2014 to 20 November 2017	DST (Nanomission)	35	Sarith P. Sathian
4	Studies on a scanning probe based fluorescence imaging system for quantification of biomarkers in multilayered tissue phantoms	August 2012 to August 2015	DST	13.5	N. Sujatha
5	Investigations on collagen content change and skin thickening in sclerodermic patients using optical spectroscopy	December 2014 to December 2016	DST	32.26	N. Sujatha
6	Blast mitigation through fluid–structure interaction	2014	DRDO	28	B.S.V. Patnaik
7	A student in teacher’s role in rural schools: A pilot study of the (C minus 4) model	2014	SRPX	3	Pijush Ghosh
8	Modeling and experimental investigation of magnetostrictive thin films	2014	DRDO	22.44	Arunachalaksi Arockiarajan
9	An experimental characterization on fatigue behaviour of piezoelectric materials	2014	NRBX	44,184	Arunachalaksi Arockiarajan
10	Modeling studies on low cycle fatigue related damage evolution of thin super elastic SMA elements for structural damping applications: Theoretical investigations	2014	ARDB	7.333	Arunachalaksi Arockiarajan
11	Blast mitigation through fluid–structure interaction	2014	DMRL	23,82,480	Lakshmana Rao C.
12	SIMUGLASS: Development of a synergistic computational tool for material modeling, process simulation and optimization of optical glass moulding	2014	DSTX	69.664	Ramesh, Karthik P.
13	Modeling studies on low cycle fatigue related damage evolution of thin super elastic SMA elements for structural damping applications: Theoretical investigations	2014	ARDB	7.333	Sivakumar M. Srinivasan
14	Design of alternate airflow measurement	2015	BHEL	10	S. Vengadesan
15	Plasmonic biosensors for clinical diagnosis	2015	NFSC	15	V.V.R. Sai
16	Development of high sensitivity and fast response detection system for extremely dilute toxic gases using surface enhanced Raman scattering(SERS) techniques: A new concept	2015	DRDE	163.55	V.V.R. Sai

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Co-ordinators
17	Biomedical ultrasound imaging	2015	NFIG	5	Arun K. Thittai
18	Visualization of fungal spore emission	2015	RESF	10	A.P. Baburaj
19	Investigation on the aerodynamics of insect hovering in inclined stroke plane	2015	ARDB-SIGMA	12.75	S. Vengadesan
20	Acoustic wall pressure spectra by turbulent boundary layer by CFD approach for underwater vehicles	2015	NRB	14.65	S. Vengadesan
21	Developing interface between concrete and polymer	2015	NFSC	19.25	Pijush Kanti Ghosh
22	Microcapsule and microparticle dispersed polylactic acid (PLA): A new generation environment friendly biomaterial for automobile industry	2015	NRSP	11,05,500	Pijush Kanti Ghosh
23	Design of strain based release in polymer thin films: An exploratory research	2015	RESF	10	Pijush Kanti Ghosh
24	Mixed mode translaminar fracture of fibre reinforced composites: Experiments and simulations	2015	ISRO	17.64	Anuradha Banerjee
25	FEA using advanced material models and related topic	2015	HCLT	2,20,600	Arunachalaksi Arockiarajan
26	Friction testing and study for pattern in antiskid plates	2015	CATR	3,17,754	Arunachalaksi Arockiarajan
27	An experimental characterization of smart piezoelectric composites	2015	CSIR	17.42	Arunachalaksi Arockiarajan
28	Design of strain based release in polymer thin films: An exploratory research	2015	RESF	10	Arunachalaksi Arockiarajan
29	Buckling control of cylindrical/conical shells for aerospace applications using PZT actuators	2015	ISRO	29.48	Lakshmana Rao C.
30	Bi-axial (dynamic) test system	2015	RFME	2.5	Lakshmana Rao C.
31	Conducting polyaniline based polymer devices for electrochemomechanical actuation and artificial muscle applications	2015	RESF	7	Lakshmana Rao C.
32	Friction testing and study for pattern in anti-skid plates	2015	CATR	3,17,754	Sivakumar M. Srinivasan
33	FEA using advanced material models and related topics	2015	HCLT	2,20,600	Sivakumar M. Srinivasan
34	Development of analysis tool for prediction of deformations in sheet metal bending and its integration into existing sheet metal bending software	2015	AIPL	23,25,964	Sivakumar M. Srinivasan
35	PP-GIS decision support system for farmers	2015	SRPX	3	Sivakumar M. Srinivasan
36	Impact studies on laminated composite plates	2015	ARDB	35,89,200	Sivakumar M. Srinivasan
37	Investigations on the aerodynamics of insect hovering in inclined stroke plane	2015	Special Interest Group on Micro Aerial Vehicles	11.495	K. Arul Prakash
38	Orifice tool design for Caterpillar trucks	2015	Caterpillar	6.75	K. Arul Prakash

#### Industrial consultancy projects (ongoing and new)

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹)
1	M. Manivannan	Algorithms for Extracting vital parameters from PPG	Above Inc., Bangalore	1,12,360

## Research publications

Papers published in refereed international journals:	61
Papers presented at national conferences:	1
Papers presented at international conferences:	49

### Papers published in refereed international journals

1. M. Prabha and M.S. Sivakumar. 2014. Micro mechanical modeling of onset and progression of damage in composite structures. *Computational Methods of Engineering Science and Mechanics*.
2. M. Prabha and M.S. Sivakumar. 2014. A constituent behavior motivated model for damage in fiber reinforced composites. *Computational Materials Science*.
3. S. Gunasegarane and Baburaj A. Puthenveetil. 2014. Dynamics of line plumes on horizontal surfaces in turbulent convection. *Journal of Fluid Mechanics* 749: 37–78.
4. R. Jayendiran and A. Arockiarajan. 2014. Micromechanical modeling and experimental characterization of 1-3 piezocomposites subjected to electromechanical loads. *International Journal of Engineering Science* 81: 15–32.
5. S. Sreenivasa Prasath and A. Arockiarajan. 2014. Analytical, numerical and experimental predictions of the effective electromechanical properties of macro-fiber composite (MFC). *Sensors and Actuators A: Physical* 214: 31–44.
6. Pankaj Kumar, S. Narayanan and Sayan Gupta. 2014. Finite element solution of Fokker–Planck equation of nonlinear systems subjected to colored non-Gaussian noise. *Probabilistic Engineering Mechanics* 38: 143–155.
7. Bharat Pokale and Sayan Gupta. 2014. Damage estimation in vibrating beams from time domain experimental measurements. *Archive of Applied Mechanics* 84: 1715–1737.
8. Y. Appalanaidu and Sayan Gupta. 2014. Probabilistic damage estimation in piping components against thermal fatigue and creep. *Nuclear Engineering Design* 273: 202–214.
9. Sasikumar P., Suresh R. and Sayan Gupta. 2014. Analysis of CFRP laminated plates with spatially varying non-Gaussian in homogeneities using SFEM. *Composite Structures* 112: 308–326.
10. Yash Vyas, Y. Appalanaidu and Sayan Gupta. 2014. Noise models in numerical analysis of stochastic creep damage growth and residual life assessment. *Journal of Failure Analysis and Prevention* 14(2): 259–264.
11. Sasikumar P., Suresh R. and Sayan Gupta. 2014. Stochastic finite element analysis of layered composite beams with spatially varying non-Gaussian in homogeneities. *Acta Mechanica* 225(6): 1503–1522.
12. Y. Appalanaidu, Anindya Roy and Sayan Gupta. 2014. Stochastic creep damage estimation in pipings with spatial non-Gaussian uncertainties using spectral stochastic finite element method. *Procedia Engineering* 86: 677–684.
13. G.S. Gunasegarane and Baburaj A. Puthenveetil. 2014. Dynamics of line plumes on horizontal surfaces in turbulent convection. *Journal of Fluid Mechanics* 749: 37–78.
14. Joe Francis and Sarith P. Sathian. 2014. A molecular dynamics study. *29th International Symposium on Rarefied Gas Dynamics*.
15. Joe Francis and Sarith P. Sathian. The effect of graphene layers on interfacial thermal resistance in composite nanochannels with flow. *Microfluidics and Nanofluidics* (accepted for publication).
16. Sachin Krishnan, Jeetu S. Babu and Sarith P. Sathian. Effect of confined fluid interaction on the thermal transport in Carbon nanotubes. *International Journal of Micro Nano Scale Transport* (accepted for publication).
17. Sooraj K. Prabha and Sarith P Sathian. A molecular dynamics study of energy and momentum accommodation coefficients in the transitional knudsen numbers. *International Journal of Micro Nano Scale Transport* (accepted for publication).
18. Nandu Gopan and Sarith P. Sathian. 2014. Rayleigh instability at small length scales. *Physical Review E* 90,033001.
19. S. Sreenivasa Prasath and A. Arockiarajan. 2014. Influence of bonding layer on effective electromechanical properties of macro-fiber composites (MFC). *Smart Materials and Structures* 23: 095046.
20. Suganthi S.S. and Ramakrishnan S. 2015. Analysis of breast thermograms using structure tensors. *Journal of Medical Imaging and Health Informatics*.
21. R. Jayendiran and A. Arockiarajan. 2014. Viscoelastic modeling and experimental characterization of thermo-electromechanical response of 1–3 piezocomposites. *Journal of Applied Physics* 116: 214103.
22. P. Sasikumar, R. Suresh, Vijayaghosh P.K. and Sayan Gupta. 2015. Experimental characterization of random field models for CFRP composite panels. *Composite Structures* 20: 451–471.
23. Nandu Gopan and Sarith P. Sathian. A Langevin dynamics study of nanojets. *Journal of Molecular Liquids* (accepted for publication).

24. Vivek Ramakrishnan and Ramesh K. 2014. Residual stress analysis of commercial float glass using digital photoelasticity. *International Journal of Applied Glass Science*.
25. Puneet Mahajan, Tarkes Dora P., T.S. Sandeep and Vinayak M. Trigune. 2015. Optimized design of mold in precision glass molding using deviation approach. *International Journal for Computational Methods in Engineering Science and Mechanics* DOI:10.1080/15502287.2014.976677.
26. Abhijit Biswas, Mandayam Srinivasan and M. Manivannan. 2015. Multiscale layered biomechanical model of Pacinian corpuscle. *IEEE Transactions on Haptics*.
27. Abhijit Biswas, Mandayam Srinivasan and M. Manivannan. 2015. Vibrotactile sensitivity threshold: Nonlinear stochastic mechanotransduction model of Pacinian corpuscle. *IEEE Transactions on Haptics*.
28. Rangaraj P., Abhijit Chaudhuri and Sayan Gupta. 2015. The use of polynomial chaos for parameter identification from measurements in nonlinear dynamical system. *Journal of Applied Mathematics and Mechanics (Zeitschrift für Angewandte Mathematik und Mechanik)* DOI:0.1002/zamm.01300232.
29. Kiran Marri and S. Ramakrishnan. 2016. Analysis of biceps brachii muscles in dynamic contraction using sEMG signals and multifractal DMA algorithm. *International Journal of Signal Processing System* 4(1) (in press).
30. A.K. Chauhan, B.V.S.S. Prasad and B.S.V. Patnaik. 2014. Numerical simulation of flow through an eccentric annulus with heat transfer. *International Journal of Numerical Methods for Heat & Fluid Flow* 24: 1864–1887.
31. S. Mathew, B.S.V. Patnaik and T.J. Tharakan. 2014. Numerical study of air-core vortex dynamics during liquid draining from cylindrical tanks. *Fluid Dynamics Research* 46(2): 025508.
32. S.K. Ranjith, B.S.V. Patnaik and S. Vedantam. 2014. Transport of DNA in hydrophobic microchannels: A dissipative particle dynamics simulation. *Soft Matter* 10(23): 4184–4191.
33. S.K. Ranjith, S. Vedantam and B.S.V. Patnaik. 2015. Hydrodynamics of flow through microchannels with hydrophobic strips. *MicroFluidics NanoFluidics* (in print).
34. M.S. Raghu Prasad and M. Manivannan. 2014. Comparison of force matching performance in conventional and laparoscopic force-based task. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting* 58: 683–687.
35. M.S. Raghu Prasad, M. Manivannan and M. Chandramohan. 2014. Effects of laparoscopic instrument and finger on force perception. *A First Step towards Laparoscopic Force-Skills Training, Surgical Endoscopy* (Accepted), Springer.
36. Martin Grunwald, M. Manivannan, Hyun Kim, Jung Kim, Frank Krause, Stephanie Mueller and Mandayam A. Srinivasan. 2014. Human haptic perception is interrupted by explorative stops of milliseconds front. *Frontiers in Psychology: Cognition*.
37. L. Suganthi, Lakshmanan, M. Manivannan, Kunwar, Brajesh Kumar, Joseph, George, Danda and Debashish. 2014. Morphological analysis of peripheral arterial signals in Takayasu's arteritis. *Journal of Clinical Monitoring and Computing* 1387–1307.
38. Xia R. and Thittai A.K. 2015. Method to estimate the deviation from ideal uniaxial compression during freehand elastography. *Ultrasonic Imaging* 37(1): 70–82.
39. Thittai A.K. and Xia R. 2015. An analysis of the segmentation threshold used in axial-shear strain elastography. *Ultrasonics* 55: 58–64.
40. Cerine Lal and N. Sujatha. 2015. Correlation analysis of laser Doppler flowmetry signals: A potential non-invasive tool to assess microcirculatory changes in diabetes mellitus. *Medical and Biological Engineering and Computing* DOI:10.1007/s 11517-015-1266-y.
41. B.S. Suresh Anand and N. Sujatha. 2014. Diffuse reflectance spectroscopy for monitoring diabetic foot ulcer: A pilot study. *Optics and Lasers in Engineering* 53: 1–5.
42. N. Sujatha, B.S. Suresh Anand, K. Bala Nivetha, V.B. Narayana Murthy, S. Sheshadri and Richa Podda. Assessment of microcirculatory hemoglobin levels in normal and diabetic subjects using diffuse reflectance spectroscopy: A pilot study. *Journal of Applied Spectroscopy* (in press).
43. M. Gunasekaran and Rinku Mukherjee. Numerical analysis of an echelon formation exhibiting post-stall behavior (in press).
44. Vasanth Kumar G. and Rinku Mukherjee. A numerical unsteady analysis of a plunging wing (in press).
45. S. Ravishankar and K. Arul Prakash. 2015. Enhanced cooling of electronic components using fluid flow under high adverse pressure gradient. *ASME—Journal of thermal science and engineering applications* 7: 031011-1–031011-10.
46. Immanuvel Paul, K. Arul Prakash and S. Vengadesan. 2014. Numerical analysis of fluid flow characteristics past an elliptic cylinder. *Physics of Fluids* 26, 023601.
47. S. Ravishankar and K. Arul Prakash. 2014. Numerical studies on thermal performance of novel cooling plate designs in polymer electrolyte membrane fuel cell stacks. *Applied Thermal Engineering* 66: 239–251.



48. Prasanth Anand Kumar Lam and K. Arul Prakash. 2014. A numerical study on natural convection and entropy generation in a porous enclosure with heat sources. *International Journal of Heat and Mass Transfer* 69: 390–407.
49. Immanuvel Paul, K. Arul Prakash and S. Vengadesan. 2014. Numerical analysis of fluid flow characteristics past an elliptic cylinder. *International Journal for Numerical Methods in Heat Transfer and Fluid Flow* 24(7): 1570–1594.
50. Prasanth Anand Kumar Lam and K. Arul Prakash. 2015. A numerical investigation of heat transfer and entropy generation during jet impingement cooling of protruding heat sources without and with porous medium. *Energy Conversion and Management* 89: 626–643.
51. Janardan N. and Panchagnula M.V. 2014. Effect of the initial conditions on the onset of motion in sessile drops on tilted plates. *Colloids and Surfaces A: Physicochemical and Engineering Aspects* 456: 238–245.
52. Panchagnula M.V., Sojka P.E. and Bajaj A.K. 2014. The effect of viscosity and convection on the stability of annular liquid sheets. *Atomization and Sprays* 949–976.
53. Anantharaju N. and Panchagnula M.V. 2014. Experimental and computational study of triple line shape and kinetics on heterogeneous surfaces. *Colloids and Surfaces A: Physicochemical and Engineering Aspects* 455: 19–27.
54. Kolakaluri R., Subramanian S. and Panchagnula M.V. Trends in multiphase modeling of sprays. *International Journal of Spray and Combustion Dynamics* (accepted).
55. Sooraj K. Prabha and Sarith P. Sathian. 2014. Velocity distribution and velocity correlation of mixture of gases in a nanochannel. *International Journal of Thermal Sciences* 81: 52–58.
56. Pandey S.N., Chaudhuri A., Kelkar S., Sandeep V.R. and Rajaram H. 2014. Investigation of permeability alteration of fractured limestone reservoir due to geothermal heat extraction using three-dimensional thermo-hydro-chemical (THC) model. *Geothermics* 51: 46–62.
57. A.K. Chauhan, B.V.S.S. Prasad and B.S.V. Patnaik. 2013. Thermal-hydraulics of rod-bundles: The effect of eccentricity. *International Journal of Numerical Methods for Heat & Fluid Flow* 24: 1864–1887.
58. Rongmin Xia, Guazhi Tao and Thittai A.K. 2014. Dynamic frame-pairing in real time freehand elastography. *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control* 61(6): 979–985.
59. Rongmin Xia and Thittai A.K. 2014. Real-time monitoring of HIFU treatment using axial strain and axial-shear strain elastograms. *Ultrasound in Medicine and Biology* 40(3): 485–495.
60. Fouetio Kengne B., Karmakar S., Kaura M., Sai V.V.R., Corti G., Niraula I.B. and McIlroy D.N. 2014. Self-assembled monolayers of thiols adsorbed on Au/ZnO-functionalized silica nanosprings: Photoelectron spectroscopy-analysis and detection of vaporized explosives. *ACS Applied Materials and Interfaces* 6(16): 13355–13366.
61. Satija J., Punjabi N.S., Sai V.V.R. and Mukherji S. 2014. Optimal design for U-bent fiber-optic LSPR sensor probes. *Plasmonics* 9(2): 251–260.

#### **Papers presented at national conferences**

1. P. Sasikumar, R. Suresh and Sayan Gupta. Failure probability of laminated composite beams in flexure: SFEM predictions and experimental validation. *13th ISAMPE National Conference on Composites*, Thiruvananthapuram, 14–15 November 2014.

#### **Papers presented at international conferences**

1. N. Sujatha, K. Bala Nivetha and Akshay Singhal. Optimal source to detector separation for extracting sub-dermal chromophores in fiber optic diffuse reflectance spectroscopy: A simulation study. *Proceedings of SPIE*, Vol. 9129, DOI:10.1117/12.2048869, Brussels, Belgium, April 2014.
2. K. Bala Nivetha and N. Sujatha. Understanding the role of hemoglobin in altering multi-layered tissue intrinsic fluorescence in visible region using fiber optics. *Proceedings of SPIE*, Vol. 9098, DOI:10.1117/12.2053634, Baltimore, Maryland, USA, May 2014.
3. Vivek Ramakrishnan and K. Ramesh. Influence of thermal cycling on the residual stresses generated in glass using digital photoelasticity. *International Conference on Experimental Mechanics*, University of Cambridge, UK, July 2014.
4. Karthick P.A. and Ramakrishnan S. 2014. Analysis of muscle fatigue progression in biceps brachii using surface electromyography signals and wavelet packet entropies. *Neuroinformatics*, Leiden, Netherlands, 25–27 August 2014.
5. Navaneethakrishna M. and Ramakrishnan S. 2014. Multiscale feature based analysis of surface EMG signals under fatigue and non-fatigue conditions. *IEEE EMBS 2014*, Chicago, USA, 26–31 August 2014.
6. Pradeep Malaji and Shaikh Faruque Ali. 2014. Energy harvesting from near periodic structures. *VETOMAC 2014*, University of Manchester, UK, 9–11 September 2014.
7. Sushant Kulkarni, Venugopal G. and Ramakrishnan S. 2014. Differentiating surface EMG signals under fatigue and non fatigue conditions using rainfall counting based features, *ICMMB 2014*, Bologna, Italy, 2014.

8. Diptasree M.G. and Ramakrishnan S. 2014. Characterization and analysis of surface EMG signals under fatigue and nonfatigue conditions using multiscale fractal dimension technique. *ICMMB 2014*, Bologna, Italy, 2014.
9. Karthick P.A., Navaneethakrishna M. and Ramakrishnan S. 2014. Analysis of progression of fatigue conditions in biceps brachii muscles using surface electromyography signals and complexity based features. *IEEE EMBS 2014*, Chicago, USA, 2014.
10. Karthick P.A. and Ramakrishnan S. 2014. Analysis of fatigue conditions in biceps brachii muscles using surface electromyography signals and strip spectral correlation. *IEEE DSP 2014*, Hong Kong.
11. S.S. Suganthi, Luca Saba, S. Ramakrishnan and Jasjit Suri. 2014. Segmentation of breast tissues in infrared images using noise model and level set method. *ICMMB 2014*, Bologna, Italy, 3–5 September.
12. Venugopal G. and S. Ramakrishnan. 2014. Analysis of fatigue progression during dynamic contraction of biceps brachii muscles using intrinsic mode functions of surface EMG signals and spectral features. *ICMMB 2014*, Bologna, Italy, 3–5 September.
13. M. Kavitha, Ramasubba Reddy M. and Bagyam Raghavan. 2014. Study of ultrasound stiffness imaging techniques using real time breast imaging. *13th International Tissue Elasticity Conference*, Snowbird, Utah, USA, 7–10 September.
14. Amrita Rath and Pijush Ghosh. 2014. Nano mechanical characterization of cross linked chitosan/hydroxyapatite film. *International Conference on Soft Materials*, MNIT Jaipur, 6–10 October.
15. Vivek Ramakrishnan and K. Ramesh. 2014. Photoelastic calibration of commercial float glass. *9th International Symposium on Advanced Science and Technology in Experimental Mechanics*, New Delhi, 1–6 November.
16. Hariprasad M.P., Vivek Ramakrishnan and Ramesh K. 2014. New initiatives in the smoothing of digital photoelastic data. New Delhi, 1–6 November.
17. Hariprasad M.P., Bhuvanewari S., K. Ramesh, Paul Simon and Jayashree Mohan. 2014. Evolution of suitable photoelastic model in implant dentistry. *Ninth International Symposium on Advanced Science and Technology in Experimental Mechanics*, New Delhi, 1–6 November.
18. Subramanyam Reddy M., Shreesudha B. and Ramesh K. 2014. Photoelastic study on the effect of residual stresses on crack tip stress field in ductile fracture. New Delhi, 1–6 November.
19. T. Abhinav and K. Ramesh. 2014. Use of DIC for evaluating crack tip displacement field parameters employing linear least squares method. *Ninth International Symposium on Advanced Science and Technology in Experimental Mechanics*, New Delhi, 1–6 November.
20. B. Shreesudha and K. Ramesh. 2014. Annealing of polycarbonate for photoplastic analysis. *Ninth International Symposium on Advanced Science and Technology in Experimental Mechanics*, New Delhi, 1–6 November.
21. Tarkes Dora P. and K. Ramesh. 2014. Calibration of glass with low photoelastic constant using phase shifting technique. *Ninth International Symposium on Advanced Science and Technology in Experimental Mechanics*, New Delhi, 1–6 November.
22. M. Subramanyam Reddy, B. Shreesudha and K. Ramesh. Photoelastic study on the effect of residual stresses on crack tip stress field in ductile fracture. *9th International Symposium on Advanced Science and Technology in Experimental Mechanics*, New Delhi, November.
23. Tarkes Dora P., K. Ramesh and Puneet Mahajan. 2014. Estimation of thermal boundary conditions in cooling stage of glass using digital photoelasticity. *5th ICCMS 2014*, Chennai, India, 10–13 December 2014.
24. T. Abhinav and K. Ramesh. 2014. Numerical generation of deformed speckle images for the assessment of DIC parameters. *5th ICCMS 2014*, Chennai, India, 10–13 December.
25. M. Manivannan, R. Periyasamy, Suresh and Devashayam. Handheld isobaric aesthesiometer for measuring two-point discrimination. *IcorD'15*, Bangalore.
26. Kiran Marri and S. Ramakrishnan. Fatigue analysis of triceps brachii muscles using sEMG signals and recurrence quantification analysis. *ICCMA 2014*, Dubai, 8–10 December (in press).
27. S. Ramakrishnan and Kiran Kumar. Analysis of biceps brachii muscles in dynamic contraction using sEMG signals and multifractal DMA algorithm. *ICSP 2014*, Dubai, UAE, 8–10 December.
28. Hridya P. Lal, Sunetra Sarkar and Sayan Gupta. 2014. Reduced order modeling and uncertainty quantification for a stochastic linear dynamical system. *Fifth International Congress on Computational Mechanics and Simulation*, CSIR-SERC, Chennai, 10–13 December.
29. Pranjal Naik and Sayan Gupta. 2014. Parallel computing in stochastic finite element analysis. *Fifth International Congress on Computational Mechanics and Simulation*, CSIR-SERC, Chennai, 10–13 December.
30. P. Tarkes Dora and K. Ramesh. 2014. Estimation of thermal boundary conditions in cooling stage of glass using digital photoelasticity. *Fifth International Congress on Computational Mechanics and Simulation*, CSIR-SERC, Chennai, 10–13 December.

31. Sunakraneni Soumya and K. Arul Prakash. 2014. Effect of splitter plate location on fluid flow characteristics past a circular cylinder: A numerical study. *Fifth International Congress on Computational Mechanics and Simulation*, CSIR-SERC, Chennai, 10–13 December.
32. T. Abhinav and K. Ramesh. 2014. Numerical generation of deformed speckle images for the assessment of DIC parameters. *Fifth International Congress on Computational Mechanics and Simulation*, CSIR-SERC, Chennai, 10–13 December.
33. M. Santhosh and Pijush Ghosh. 2014. Deformation mechanism of chitosan/hydroxyapatite molecular dynamics. *Fifth International Congress on Computational Mechanics and Simulation*, CSIR-SERC, Chennai, 10–13 December.
34. L. Harish and C. Lakshmana Rao. 2014. Modeling of mechanical response of PVDF. *Fifth International Congress on Computational Mechanics and Simulation*, CSIR-SERC, Chennai, 10–13 December.
35. Sai Rajesh and Arul Prakash. 2014. Passive enhancement of multiple-jet impingement cooling of an array of heat sources in crossflow through geometric modification. *Fifth International Congress on Computational Mechanics and Simulation*, IIT Kanpur, 12–14 December.
36. Anoop P. and A.P. Baburaj. 2014. Motion of a drop in viscous fluid along an inclined plane. *Fifth International Congress on Computational Mechanics and Simulation*, IIT Kanpur, 12–14 December.
37. Ramakrishna Bandaru and V.V. Raghavendra Sai. Plasmonic sandwich immunoassay on fiberoptic sensor: Sensitivity enhancement using refractive index media. *12th International Conference on fiber optics and photonics*, IIT Kharagpur, 13–16 December.
38. M. Navaneethakrishna and S. Ramakrishnan. 2014. Binary BAT based classification of sEMG signals using multiscale Reyni's entropy. *Fifth International Conference on Swarm, Evolutionary and Memetic Computing (SEMCCO 2014)*, Bhubaneswar, India, 17–19 December 2014.
39. Ramakrishna Bandaru and V.V. Raghavendra Sai. 2014. LSPR based U bent fiber optic biosensor using gold nanoparticle as labels. *International Conference on MEMS and sensors*, IIT Madras, 18–20 December 2014.
40. G. Mallikarjunachari and Pijush Ghosh. 2014. Interfacial shear strength of PMMA thin film on modified and unmodified epoxy substrate. *Sixth International Conference on TAACP*, IIT Kharagpur, 29–31 December 2014.
41. Faizan Md. Rashida and Anuradha Banerjee. 2014. A correlation between model parameters of triaxiality dependent cohesive model and failure locus. *ICTACEM 2014*, IIT Kharagpur, 29–31 December 2014.
42. J. Venkatramani, Neel Harsh Patel, Sunetra Sarkar and Sayan Gupta. 2014. Nonlinear dynamical analysis of an airfoil subjected to non-Gaussian wind. *ICTACEM 2014*, IIT Kharagpur, 29–31 December 2014.
43. A. Biswas, M. Manivannan, M.A. Srinivasan. 2014. Nonlinear two stage mechanotransduction model and neural response of Pacinian corpuscle. *BSEC-14, IEEE*, ORNL Biomedical Science and Engineering Center, Oak Ridge, Tennessee, USA.
44. K. Udayakumar and N. Sujatha. 2014. Estimation of stress relaxation time for normal and abnormal breast phantoms using optical technique. *Proceedings of SPIE*, Singapore, December 2014.
45. N. Sujatha and Arnab Banerjee. 2014. An experimental model for minimizing errors in laser speckle contrast imaging for microcirculation analysis. *Proceedings of SPIE*, Singapore, December 2014.
46. Michael Raju and N. Sujatha. 2015. Diffuse reflectance based inverse Monte Carlo model for the estimation of the dependent scattering of the Intralipid 20% using a simplified two fiber oblique geometry set up. *Proceedings of SPIE*, Vol. 9325, 93250D 1-10, DOI:10.1117/12.2079203, San Francisco, California, United States, February 2015.
47. Suresh Anand and N. Sujatha. 2015. Effects of scattering and absorbing medium in the fluorescence conversion efficiency of the physical tissue models. *Proceedings of SPIE*, San Francisco, California, United States, February 2015.
48. K. Udayakumar, N. Sujatha and A.R. Ganesan. 2015. Digital speckle pattern interferometry based anomaly detection in breast mimicking phantoms: A pilot study. *Proceedings of SPIE*, Orlando, Florida, USA, February 2015.
49. K. Bala Nivetha and N. Sujatha. 2015. Fiber based in vivo imaging of epithelial FAD fluorescence: Experiments and simulations. *Proceedings of SPIE*, Orlando, Florida, USA, February 2015.

#### Distinguished visitors to the department

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1	Dr Prakash Keshaviah, Alumnus (1967/ BT/ME)	27 August 2014	Launch of the first alumnus-funded Institute chair (in biomedical engineering) in the name of Prof. Perry L. Blackshear, funded by our alumnus Dr. Prakash Keshaviah (1967/BT/ME), followed by an inaugural lecture and an interactive session



Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
2	Dr Srikanth Thiagarajan, alumnus, Department of Applied Mechanics, 1997	28 August 2014	Special talk, 'Applied bio-signal processing: Relating theory to practice
3	Mr. Paul Cahil, Ph.D. student, Structural Dynamics and Renewable Energy Laboratory, Department of Civil Engineering, University College Cork (UCC), Ireland	–	Three week visit for research and as a part of MoU between IIT Madras and UCC, Ireland. Hosted by Department of Applied Mechanics
4	Mr. Khanjan Mehta, Director, Penn State University, USA	11 December 2014	To deliver a talk, 'Human-centered and context-driven design for developing communities'
5	Mr. Praveen Kumar, Orbitz, USA	31 December 2014	To deliver a talk on DNS of wall bounded turbulence
6	Dr. Laurent Ponson, Head, Solid and Structural Mechanics, Alerbert At Universite Pierre et Marie Curie, Paris, France	9 January 2015	To deliver a talk, 'Cracking the crack: What do the scaling properties of fracture surfaces tell us about material failure?'
7	Prof. E.J. Hopfinger, Honorary Professor, CNRS-UJF-INP, Grenoble, France	27 January 2015	To deliver a talk, 'Gravity currents on slopes'
8	Dr. Julian M. Goldmann, Medical Director of Biomedical Engineering, Massachusetts General Hospital, Harvard University, MA, USA	28 January 2015	To evaluate one of the simulators we have developed in the lab

#### 4.2.6. Other activities

##### Faculty visits

Sl. No.	Name of the Faculty Member	Purpose of Visit	Date and Venue
1	M.S. Sivakumar	Chief guest at Convergence 2014; invited to be a part of the brainstorming session with Mr. Avinash Chander, DRDO SA to RM	8 May 2014, Sai Ram Engineering College
2	M.S. Sivakumar	Co-organizer for Fun with Engineering workshop for school children as a part of SRP project; signed MoU with two companies for starting technical projects with them	8 May 2014, Sai Ram Engineering College
3	A. Arockiarajan	Invited to chair a session at the International Conference on Smart Systems and Structures	11 July 2014, IISc Bangalore
4	S. Ramakrishnan	Cognitive Science Research Initiative Project meeting	7 August 2014, Delhi
		Attended 1 day seminar, 'Medical Imaging and Neuroscience Diagnostic: Analysis and Treatment', organised by NIMHANS	4 December 2014, Bangalore
		Served as technical expert for DST to evaluate Agada Medical Technologies	16 December 2014, Chennai
		Served as technical expert for DST to evaluate BIRAC project	19 January 2015, Pune
5	Ramasubba Reddy	UG Board of Studies meeting	6 December 2014, JNT University, Anantapur
		Meeting of LSRB Specialist Panel on LSBP for scrutinising projects	10 December 2014, DEBEL, Bangalore
		Conducted viva voce of Ph.D. scholar	12 December 2014, Tirupati
6	V.V. Raghavendra Sai	Exploring the possibility of developing a prototype for a concept based on a multianalyte fibre optic detection system and the relevant software, respectively	23 December 2014, Sri Sarada Automation Systems and ARKS Micro Electronics India Pvt. Ltd., Hyderabad
7	Mahesh Panchagnula	Gas turbine research establishment, DRDO Lab	22 January 2015, DRDO, Bangalore

## 4.3. DEPARTMENT OF BIOTECHNOLOGY

### 4.3.1. Introduction

The Department of Biotechnology at IIT Madras came into formal existence in July 2004 and has grown rapidly in the 11 years since then. The first batch of B.Tech. students graduated in July 2006, and the first batch of Dual Degree students graduated in July 2007.

The vision of the department is to make an international impact through research, teaching, technology transfer and service to society. At present, we have 31 faculty members, and the diversity of challenges that biotechnologists tackle is reflected in our research activities. The thrust areas of research are bioprocess engineering, *computational* biology, chemical biology and medical biotechnology. Faculty members of the department hold several patents and are also involved in active industrial consultancy. Several collaborative and technology transfer projects are currently running with numerous industries, and the department has collaborative research projects with hospitals. The department has set up a Centre of Excellence to develop knowledge and expertise in bioprocess engineering. The department has also set up a national facility to identify potential drug targets through cellular dynamics. Funding was provided by the Department of Biotechnology (DBT), India Cancer Biology task force and the FIST programme of the Department of Science and Technology (DST). A bioinformatics centre has also been set up with funding from DBT. The National Cancer Tissue Biobank (NCTB), a state-of-the-art non-profit community-based tissue bank in this department, is a joint initiative of DST, Government of India and Indian Institute of Technology Madras, in collaboration with Cancer Research and Relief Trust (CRRT).

### 4.3.2. Academic Programmes

Programmes offered currently by the department include the 5-year integrated Dual Degree, B.Tech. and M.Tech. in Biological Engineering; 5-year integrated Dual Degree, B.S. and M.S. in Biological Sciences; M.S. by research; and Ph.D. In addition, the department offers M.Tech. (Clinical Engineering) and Ph.D. (Biomedical Devices and Technology) programmes jointly with Sree Chitra Tirunal Institute of Medical Sciences and Technology, Thiruvananthapuram and Christian Medical College, Vellore. The integrated Dual Degree programmes have a strong emphasis on modern biology and engineering and varied laboratory experience. The M.S. and Ph.D. programmes emphasize excellence in research. The M.Tech. (Clinical Engineering) programme is designed to train students to address the management of the technological aspects of a hospital as well as the medical technology needs of the country. Two programmes, the 4-years B.Tech. in Biotechnology and the 5-year Dual Degree in Biotechnology, were discontinued from 2012.

#### New courses introduced

Sl. No.	Course No.	Title
1	BT5410	Infection Biology
2	BT6999	Special Topics in Biotechnology
3	BT7999	Special Topics in Biotechnology
4	BT6330	Developmental Biology

#### New labs established

A new laboratory was established that has facilities for culturing and working with the *Caenorhabditis elegans* model organism.

#### Students on roll as of September 2014 + M.S. and Ph.D. scholars admitted in January 2015

Programme	I Year	II Year	III Year	IV Year	V Year and Others	Total
B.Tech.	—	—	—	36	14	50
Dual Degree	42	49	48	17	31	187
M.Tech.	3	7	12	—	—	22
M.S.	6	6	9	4	—	25

Programme	I Year	II Year	III Year	IV Year	V Year and Others	Total
Ph.D.	29	40	42	23	54	188
<b>Total</b>	<b>80</b>	<b>102</b>	<b>111</b>	<b>80</b>	<b>99</b>	<b>472</b>

#### Names of students/scholars who attended conferences/workshops/seminars/symposia abroad/in India

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposium/ Workshop	Date and Venue	Financial Assistance from
<b>Abroad</b>					
1	Mathapati Santosh Sadashiv	BT08D025	Annual meeting of the International Society for Stem Cell Research (ISSCR-2013), to present paper titled 'Acellular cross-linked bovine pericardium coated with nanofibres for tissue engineering'	12-15 June 2014, Boston, Massachusetts, USA	DST
2	Debduti Dutta	BT08D022	FEBS EMBO 2014 International Conference, to present paper titled 'NGP promotes cell cycle progression by upregulating p53'	30 August to 4 September 2014, Paris, France	IIT Madras
3	Satya Prakash Singh	BT08D032	HIV R4P 2014 International Conference, to present poster titled 'HIV-2/SIV Vpx protein interacts with human Nup153 and regulates viral pathogenesis;	25-31 October 2014, South Africa	HIV R4P 2014
4	Indu Jose T.	BT09D002	FEBS EMBO 2014 International Conference, to present a paper titled 'GNL3L is nucleo-cytoplasmic shuttling protein: Role in cell division cycle regulation'	30 August to 4 September 2014, Paris, France	IIT Madras
5	Kalyani Ananthamohan	BT09D033	EMBO/EMBL Symposia: The Complex Life of mRNA	5-8 October 2014, EMBL Advanced Training Centre, Heidelberg, Germany	IIT Madras and European Molecular Biology Organization
6	Isai Pratha	BT10D009	FEBS EMBO 2014 International Conference, to present a paper titled 'Role of histone methylation in transcriptional repression of Ras-association domain family tumour suppressor, RASSF8'	30 August to 4 September 2014, Paris, France	IIT Madras
7	Nankar Rakesh Pandee	BT11D005	Eighth International Conference on Advanced Technologies and Treatments for Diabetes	18-21 February 2015, Paris, France	IIT Madras
8	Mohona Mukhopadhyay	BT11D019	Annual Meeting of the Society for Neuroscience	15-19 November 2014, Washington, DC, USA	IIT Madras
9	Nagarajan R.	BT12D012	International Conference on Bioinformatics (INCOB)	31 July to 2 August 2014, Sydney, Australia	IIT Madras
10	Venkata Reddy Chirasani	BT12D026	59th Annual Biophysical Society Meeting	7-11 February 2015, Baltimore, MD, USA	IIT Madras
11	Abar Ali Khan	BT12D051	EMBO/EMBL Symposia: The Complex Life of mRNA	5-8 October 2014, EMBL Advanced Training Centre, Heidelberg, Germany	IIT Madras
12	Abinaya Badri	BT13D016	Fifth International Conference on Biomolecular Engineering, to present paper titled 'Investigation of metabolic capabilities of recombinant <i>Lactococcus lactis</i> for production of hyaluronic acid using constraint-based genome-scale models'	11-14 January 2015, Hyatt Regency Lost Pines, Austin, Texas, USA	IIT Madras

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposium/ Workshop	Date and Venue	Financial Assistance from
13	Mandeep Kaur	BT12S014	Metabolic Engineering X	16–19 June 2014, Vancouver, Canada	IIT Madras
14	Priyashree Chaudhary	BT12S019	ISMB 2014: 22nd Annual International Conference on Intelligent Systems for Molecular Biology	11–15 July 2014, Boston, Massachusetts, USA	IIT Madras
15	Revathi S.	BT12S020	The 28th Annual Symposium of Protein Society	27–30 July 2014, San Diego, CA, USA	IIT Madras
16	Nandita Damaraju	BT10B030	Seventh Annual RECOMB/ISCB Conference on Regulatory and Systems Genomics, to present poster titled 'Design principles of circadian oscillators'	9–14 November 2014, San Diego, USA	RMF (registration fee)
17	S. Divya	BT08D020	Annual meeting of the Society for Neuroscience	15–19 November, Washington, DC, USA	Alumni Affairs, IIT Madras (50%)
18	S. Pavithra	BT08D017	26th Annual Fanconi Anemia Research Fund Scientific Symposium, Maryland	18–21 September 2014, Maryland, USA	Fanconi Research Fund and IIT Madras
19	Sneha Priya Rangasamy	BT08D038	AIDS Vaccine 2013	7–10 October 2013, Barcelona, Spain	IIT Madras
<b>India</b>					
1	Manas Ranjan Swain	BT13IPF01	55th Annual Conference of AMI AMI-EMMT-2014	12–14 November, 2014, TNAU, Coimbatore	IIT Madras
2	Pareesh N. Patel	BT13IPF02	International Symposium on Recent Advances in Medicinal Chemistry (ISRAM-2014), to present paper titled 'Synthesis and characterization of novel lanthanide metal complexes: A study of their antimicrobial activity and interaction with bio-molecules'	8–10 September 2014, NIPER, S.A.S. Nagar, Mohali	IIT Madras
3	Pareesh N. Patel	BT13IPF02	Symposium on analytical and supramolecular chemistry	10 November 2014, IIT Madras, Chennai	—
4	T. Ponrasu	BT14IPF01	Indo–Australian Conference on Biomaterials, Tissue Engineering, Drug Delivery System and Regenerative Medicine (BiTERM 2015)	5–7 February 2015, Anna University, Chennai	IIT Madras
5	Allu Prasanna Kumar Reddy	BT08D019	Indo-Canadian Symposium on Heart Failure: Progress & Prospects	12–14 March 2015, Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram	IIT Madras
6	Allu Prasanna Kumar Reddy	BT08D019	International Symposium on Genomics in Health and Disease and 40th Annual Conference of the Indian Society of Human Genetics (ISHG–2015)	28–30 January 2015, National Institute of Immunohematology, Mumbai	IIT Madras
7	Soumya Lipsa Rath	BT09D043	MD@50	26–28 August 2014, JNCASR, Bangalore	IIT Madras
8	Wasima Mohamed Shariff	BT09D045	Indo–French CEFIPRA Seminar on Women in Science	3–5 February 2015, IISc, Bangalore	
9	Sasirekha M.	BT10D005	Indo–US Conference on Advanced Lignocellulosic Biofuels	10–11 November 2014, Indian Institute of Chemical Technology, Hyderabad	CSIR

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposium/ Workshop	Date and Venue	Financial Assistance from
10	Sasirekha M.	BT10D005	International conference on protein folding	2014, National Centre for Biological Sciences, Bangalore	IIT Madras
11	Lakshmi Subramanian	BT10D008	12th Annual Conference of International Society for Heart Research (Indian Section)	14–15 March 2015, School of Life Sciences, Jawaharlal Nehru University, New Delhi, India	IIT Madras
12	Chellam Gayathri	BT11D002	National Symposium on Biophysics and Golden Jubilee Meeting of Indian Biophysical Society, to present paper titled 'Structural and functional studies on an archaeal tyrosine decarboxylase (MfnA) from <i>Methanocaldococcus jannaschii</i> '	14–17 February 2015, Jamia Millia Islamia, New Delhi	IIT Madras
13	G. Silpa	BT11D011	Carcinogenesis 2015, to present paper titled 'Identification of small molecules with potential anticancer activity and elucidation of their biological target'	11–13 February 2015, ACTREC, Mumbai	IIT Madras
14	Kiranmayi Malapaka	BT11D014	International Symposium on Genomics in Health and Disease and 40th Annual Conference of the Indian Society of Human Genetics (ISHG 2015)	28–30 January 2015, National Institute of Immunohematology, Mumbai	IIT Madras
15	Sarvepalli Jahnavi	BT11D020	International Conference on Polymeric Biomaterials, Bioengineering and Biodiagnostics Biomaterials—2014, to present a paper titled 'In vitro evaluation of decellularized bovine pericardium reinforced with PCL–chitosan polymeric blend: A biohybrid scaffold for heart valve tissue engineering'	27–30 October 2014, New Delhi	IIT Madras
16	Uma K.	BT11D023	Carcinogenesis 2015, Molecular Pathways to Therapeutics: Paradigms and Challenges in Oncology, to present paper titled 'Ultradian rhythms of redox oscillations in cancer cells'	11–13 February 2015, ACTREC, Mumbai	IIT Madras
17	Yogeshwar Chakrapani	BT11D025	Indo–Australian Conference on Biomaterials, Tissue Engineering, Drug Delivery System and Regenerative Medicine (BiTERM 2015), to present paper titled 'A novel electrospun degradable PCL blend composite for bone tissue engineering applications'	5–7 February 2015 Anna University, Chennai	—
18	Sneha Sudhakara	BT11D026	Asian Charge Density Workshop	23–26 February 2015, IISc, Bangalore	—
19	R. Balaji	BT12D003	Indo–Australian Conference on Biomaterials, Tissue Engineering, Drug Delivery System and Regenerative Medicine (BiTERM 2015)	5–7 February 2015, Anna University, Chennai	IIT Madras
20	Harsha Narayani	BT12D006	National Symposium on Biophysics and Golden Jubilee Meeting of Indian Biophysical Society, to present paper titled 'Structural and functional characterization of a DnaB helicase from <i>Pseudomonas aeruginosa</i> '	14–17 February 2015, Jamia Millia Islamia, New Delhi	IIT Madras

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposium/ Workshop	Date and Venue	Financial Assistance from
21	Nagarajan R.	BT12D012	Sixth International Symposium on Recent Trends in Macromolecular Structure and Function	22–24 January 2015, University of Madras	—
22	Malini Sundar Rajan	BT12D035	Sixth Bangalore Microscopy Course	21–28 September 2014, NCBS, Bangalore	CSIR
23	Abrar Ali Khan	BT12D051	Indo-Canadian Symposium on Heart Failure: Progress and Prospects	12–14 March 2015, Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram	IIT Madras
24	Arijita Ghosh	BT12D052	83rd Annual Meeting of Society of Biological Chemists (India)	17–21 December 2014, Bhubaneswar	IIT Madras
25	Anisha Ashokan	BT13D001	National Symposium on Biophysics and Golden Jubilee Meeting of Indian Biophysical Society, to present paper titled 'Molecular mechanism of signaling by human APJ receptor'	14–17 February 2015, Jamia Millia Islamia, New Delhi	IIT Madras
26	Binita Zipporah E.	BT13D035	2014 NextGen Genomics and Bioinformatics Technologies (NGBT)	17–19 November 2014, National Institute of Mental Health and Neurosciences & Institute of Bioinformatics, Bangalore	—
27	Govindaraj Perumal	BT13D039	Indo–Australian Conference on Biomaterials, Tissue Engineering, Drug Delivery System & Regenerative Medicine (BiTERM 2015)	5–7 February 2015, Anna University, Chennai	Self
28	Vignesh R.	BT13D061	National Symposium on Biophysics and Golden Jubilee Meeting of Indian Biophysical Society, to present paper titled 'Structural stability of nucleobindin-1/calnuc: Temperature and pH dependent studies'	14–17 February 2015, Jamia Millia Islamia, New Delhi	IIT Madras
29	Puja Kumari	BT13D201	Bioprocessing India 2014	17–20 December 2014, ICT, Matunga, Mumbai	IIT Madras
30	Shalini U.	BT14D009	Seventh Bangalore Benny Shilo Course in Developmental Biology	12–23 January 2015, National Centre for Biological Sciences Bangalore	NCBS
31	Neha Chetlangia	BT11S005	Carcinogenesis 2015, to present paper titled 'Mir–22 inhibits growth of human colorectal cancer cells and Wnt signaling'	11–13 February 2015, ACTREC, Mumbai	IIT Madras
32	S Rajalakshmi	BT11S006	International Conference on Polymeric Biomaterials, Bioengineering and Biodiagnostics Biomaterials—2014, to present a poster titled 'Development and characterization of cardiogel: A nano-matrix scaffold for cardiac regeneration'	27–30 October 2014, New Delhi	IIT Madras

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposium/ Workshop	Date and Venue	Financial Assistance from
33	Revathi S.	BT12S020	MD@50	26–28 August 2014, JNCASR, Bangalore	IIT Madras
34	Amrita Iyer	BT14S001	12th Annual Conference of International Society for Heart Research (Indian Section)	14–15 March 2015, School of Life Sciences, Jawaharlal Nehru University, New Delhi, India	IIT Madras
35	Cynthia M. Manohar	—	International Conference on Polymeric Biomaterials, Bioengineering and Biodiagnostics	27–30 October 2014, Radisson Blu Plaza, Delhi	DBT
36	Cynthia M. Manohar	—	Indo–Australian Conference on Biomaterials, Tissue Engineering, Drug Delivery System and Regenerative medicine (BiTERM 2015)	5–7 February 2015, Anna University, Chennai	DBT
37	S. Anusuya	—	International training program on leadership and career development for women scientists/technologists	8–12 September 2014, National Institute of Advanced Studies (NIAS), Bangalore	DST
			National Conference on Challenges and Future Prospects of Applied Research in Life Sciences	6 February 2015, Bharathidasan University, Tiruchirappalli	DST
			International Workshop on Drug Development and Neglected Tropical Infectious Diseases	22–27 February 2015, University of Madras, Chennai	DST
			National Conference on Microbial Research in Human Welfare	27–28 February 2015, Bharathidasan University, Tiruchirappalli	DST
			National Workshop on Current State-of-Art Computational Methods in Accelerating the Discovery of Novel Biopharmaceuticals	20–21 March 2015, JSS College of Pharmacy, Ooty	DST

#### Names of students/scholars who won outside prizes and awards

Sl. No.	Name of the Student/Scholar	Roll No.	Name of Prize	Prize Awarded by
1	Kalyani Ananthamohan	BT09D033	Travel Grant from EMBO to present a paper at EMBO/EMBL Symposia: The Complex Life of mRNA, 5–8 October 2014, EMBL Advanced Training Centre, Heidelberg, Germany	EMBL, Germany
2	S. Lakshmi	BT10D008	Dr N.K. Ganguly Award for best oral presentation in clinical cardiology	International Society for Heart Research (Indian Section)
3	Kiranmayi Malapaka	BT11D014	First prize for poster presentation	International Symposium on Genomics in Health and Disease and 40th Annual Conference of Indian Society of Human Genetics (ISHG)
4	Nagarajan R.	BT12D012	Incentive award	Department of Biotechnology (DBT), Ministry of Science and Technology, Government of India



Sl. No.	Name of the Student/ Scholar	Roll No.	Name of Prize	Prize Awarded by
5	Rajalakshmi S.	BT11S006	Best poster award	International Conference on Polymeric Biomaterials, Bioengineering and Biodiagnostics Biomaterials—2014
6	Revathi S.	BT12S020	Best poster Award	MD@50, JNCASR, Bangalore

### 4.3.3. Faculty members and their activities

#### Faculty

Name	Major Areas of Specialization
<b>Professors</b>	
D. Karunakaran [Head]	Cancer biology; signal transduction; apoptosis
Anju Chadha	Biocatalysis; green chemistry; biosensors
T.S. Chandra	Microbiology and genetics
A. Jayakrishnan	Biomaterials science and technology
Guhan Jayarman	Metabolic engineering; synthetic biology; downstream processing
Mukesh Doble	Biomaterials; drug design; biochemical engineering
G.K. Suraishkumar	Reactive species; algal biofuels
S. Mahalingam	Molecular virology and cell biology
Rama Shanker Verma	Stem cell biology and tissue regeneration; cancer therapeutics
V. Srinivasa Chakravarthy	Computational neuroscience
Satyanarayana Gummadi	Bioprocess engineering
K. Subramaiam	Developmental biology
<b>Associate Professors</b>	
Amal Kanti Bera	Ion channels and signaling
Sanjib Senapati	Computational biophysics
Nitish R. Mahapatra	Cardiovascular genetics; molecular medicine
Michael Gromiha	Protein bioinformatics
A. Gopala Krishna	Signal transduction and protein biochemistry
K. Chandraraj	Biofuels; bioremediation; industrial enzymes
Rayala Suresh Kumar	Cancer biology
N. Manoj	Structural biology
V. Kesavan	Chemical biology
R. Baskar	Developmental genetics
Madhulika Dixit	Vascular biology
<b>Assistant Professors</b>	
R. Murugan	Theoretical biology and biophysics
Karthik Raman	Computational systems biology
Vignesh Muthuvijayan	Biomaterials and tissue engineering
Smita Srivastava	Plant biotechnology and bioprocess engineering
Athi Narayanan	Experimental/computational protein folding
Hamsa Priya Mohana Sundaram	Protein solution thermodynamics
Vani Janakiraman	Infection biology/infectious diseases
<b>Emeritus Professors</b>	
K.B. Ramachandran	Bioprocess engineering and modeling; metabolic engineering
<b>Adjunct Faculty</b>	

Name	Major Areas of Specialization
Venil N. Sumantran	Cancer biology
Dhinakar Kompala	Biochemical engineering
V. Mohan	Diabetes
<b>Visiting Faculty</b>	
Suresh K. Alahari	Cancer biology
<b>INSA Senior Scientists</b>	
K.K. Balasubramanian	Organic chemistry

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

Sl. No.	Coordinator(s)	Title	Period
<b>Conferences</b>			
1	M. Michael Gromiha	International Conference on Intelligent Computing	3–6 August 2014
2	T.S. Chandra	Micropollutants in Water and Their Hazards	12–13 January 2015
3	S. Mahalingam	Cancercon 2014, international conference on cancer biology, molecular mechanisms and novel therapeutics	30 January to 1 February 2014
<b>Symposia</b>			
1	Sanjib Senapati and P.B. Sunil Kumar	GPU Programming and Applications	17–19 July 2014
<b>Workshops</b>			
1	Mukesh Doble, Vignesh Muthuvijayan and Sathyanarayana N. Gummadi	Summer Workshop on Problem Solving Skills in Bioprocess Engineering	16–20 June 2014
2	Guhan Jayaraman	ABLE-BIRAC Workshop on Nascent Entrepreneurs Development Programme	5 September 2014

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

Sl. No.	Name of Faculty Member	Title	Institution	Period
<b>Workshops</b>				
1	M. Michael Gromiha	Structure Based Drug Designing with Special Focus on Herbal Compounds	Queen Mary's College, Chennai	August 2014
2	G.K. Suraishkumar	Reactive Species: A Means to Improve Bio-productivities	VIT University	November 2014
3	M. Michael Gromiha	Bioinformatics	Sathyabama University, Chennai	December 2014
4	M. Michael Gromiha	Sequence Analysis and Molecular Dynamics	Anna University, Chennai	December 2014
5	G.K. Suraishkumar	The Cytotoxicity of Reactive Species	Sri Venkateshwara College of Engineering	February 2015
6	Sathyanarayana N. Gummadi	National Conference and Workshop Techsynod'14 on Advances in Materials and Advances in Bioprocess Engineering	Mohandas College of Engineering and Technology (MCET), Thiruvananthapuram	10–12 December 2014
7	Guhan Jayaraman	BIRAC-JNU Workshop on Optimization and scale-up of recombinant protein production for bacterial systems	JNU, New Delhi	22–24 August 2014
8	Guhan Jayaraman	DST-CCAMP Workshop on Cloning, Expression and Purification	C-CAMP Banagalore	10–14 March 2014
<b>Seminars</b>				
1	D. Karunakaran	83rd Annual Meeting of Society of Biological Chemists	KIIT University, Bhubaneswar	18–21 December 2014

Sl. No.	Name of Faculty Member	Title	Institution	Period
2	K. Subramaniam	83rd Annual Meeting of Society of Biological Chemists	KIIT University, Bhubaneswar	18–21 December 2014
3.	Guhan Jayaraman	Thermodynamic Analysis of Modern Separation processes	IIT Madras	24–28 November 2014
<b>Symposia</b>				
1	Athi N. Naganathan	International Symposium on Protein Folding and Dynamics	National Center for Biological Sciences (NCBS), Bangalore, India	5–7 November 2014
2	Karthik Raman	Sankara Nethralaya Genetics Convention	Sankara Nethralaya, Chennai	30 January 2015
3	Karthik Raman	Symposium on Aspects of Gene Regulation	Institute of Mathematical Sciences, Chennai	16 December 2014
4	M. Michael Gromiha	Indo–Japan symposium on Advances in Biomedicine and Bioinformatics	IIT Delhi	February 2015
5	M. Michael Gromiha	Symposium on Structural Bioinformatics and Computer Aided Drug Design	Alagappa University, Karaikudi	February 2015
6	M. Michael Gromiha	Seminar Bioinformatics and Biopharmaceuticals	Bharathiar University, Coimbatore	March 2015
7	G.K. Suraishkumar	TLC Symposium	IIT Madras	May 2014
8	G.K. Suraishkumar	Methods to Facilitate Learning in the Entire Class	KV Chemical Teachers Symposium	December 2014
9	G.K. Suraishkumar	Reactive Species—Manipulations and Consequences	VIT University	November 2014
10	Gopala Krishna A.	National Symposium on Biophysics and Golden jubilee meeting of the Indian Biophysical Society	New Delhi, India	14–17 February 2015
<b>Conferences</b>				
1	Anju Chadha	International Conference on Advanced Oxidation Processes (AOP) 2014	Mahatma Gandhi University, Munnar, Kerala	25–28 September 2014
2	Anju Chadha	First Joint CReATE Centres Workshop On Ethics, Pharmacovigilance, Biostatistics and Data Management in Clinical Research	Goa Medical College, Bambolim, Goa, India	25–28 November 2014
3	Anju Chadha	J–NOST–2014	IIT Madras	4–6 December 2014
4	Anju Chadha	International Conference on MEMS and Sensors (ICMEMSS)	IIT Madras	18–20 December 2014
5	M. Michael Gromiha	International Conference on Intelligent Computing	Taiyuan, China	August 2014
6	M. Michael Gromiha	International Conference on Bioscience, Engineering and Technology	Singapore	8–9 January 2015
7	M. Michael Gromiha	Statistical Models for Predicting Folding Rates of Proteins and Mutants	Chuo University, Tokyo, Japan.	June 2014
8	Vani Janakiraman	41st Annual Meeting of the Indian Immunology Society	Madurai Kamaraj University, Madurai, India	14–17 December 2014
9	Smita Srivastava	Second International Conference on Bioprocess and Engineering	Valencia, Spain	26–27 June 2014
10	K. Subramaniam	Ninth Biennial Meeting on Germ Cells	New York, USA	7–11 October 2014
11	D. Karunagaran	International Conference on New Horizons in Cancer Research: Harnessing Breakthroughs—Targeting Cures	Grand Hyatt Shanghai, China	9–12 October 2014

Sl. No.	Name of Faculty Member	Title	Institution	Period
12	Mukesh Doble	International Conference on Biotechnology and Bioengineering	Melbourne, Australia	11–12 December 2014
13	Vignesh Muthu Vijayan	Fifth International Conference and Exhibition on Pharmaceuticals & Novel Drug Delivery Systems	Dubai/United Arab Emirates	16–18 March 2015
14	Smita Srivastava	International Conference on Emerging Trends in Biotechnology (ICETB–2014)	New Delhi	6–9 November 2014
15	Guhan Jayaraman	Bioprocessing India 2014	UICT, Mumbai	17–19 December 2014
16	Guhan Jayaraman	Indo–US Conference on Systems and Synthetic Biology	JNU, New Delhi	9–12 December 2014

### Special lectures delivered by faculty members at other institutions

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
1	A. Jayakrishnan	Polymers for drug delivery (key note lecture at National Seminar on Chemistry of Materials for Drug Delivery)	Hindustan University, Chennai	22 January 2015
2	Sathyanarayana N. Gummadi	Enzyme technology	KVCET, Chennai	15 December 2014
3	Sathyanarayana N. Gummadi	Understanding fermentation process and case study on process development for biopolymer production	St. Joseph Engineering College, Chennai	25 November 2014
4	Sathyanarayana N. Gummadi	Bioprocess development for caffeine degradation in food products and effluents	JNU, New Delhi	8 November 2014
5	Sathyanarayana N. Gummadi	Bioprocess considerations for plant cell cultures	Anna University, Trichy	16 October 2014
6	Hamsa Priya	Protein Salvation	Anna University	17–20 December 2014
7	Athi N. Naganathan	Exploring the link between protein folding intermediates, frustration and function	National Centre for Biological Sciences, Bangalore, India	4 April 2014
8	Athi N. Naganathan	An introduction to protein structure	Anna University, Chennai, India	19 December 2014
9	K.B. Ramachandran	Bioprocess and genetic strategies to improve HA production	University of Westminster, London	3 June 2014
10	Karthik Raman	Fast-SL: An efficient algorithm to identify synthetic lethals in metabolic networks	Institute of Mathematical Sciences, Chennai	16 December 2014
11	Karthik Raman	Modelling metabolic networks from biofuels to better therapies	Sankara Nethralaya (Genetics Convention)	30 January 2015
12	K. Subramaniam	Regulation of the signaling between niche and germline stem cells	Madurai Kamaraj University, Madurai	17 April 2014
13	K. Subramaniam	A novel ER protein controls niche-stem cell signaling in the <i>C. elegans</i> germline	Tata Institute of Fundamental Research, Mumbai	25 March 2015
14	M. Michael Gromiha	Statistical models for predicting folding rates of proteins and mutants	Chuo University, Tokyo, Japan	4 June 2014
15	M. Michael Gromiha	Protein interactions: Understanding the recognition mechanism and applications to structure-based drug design	Queen Mary's College, Chennai	August 2014

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
16	M. Michael Gromiha	Emerging trends in bioinformatics	Christian College, Marthandam	September 2014
17	M. Michael Gromiha	Development of databases and algorithms for understanding the recognition mechanism of protein–DNA complexes	Japan Atomic Energy Institute, Nara, Japan	June 2014
18	M. Michael Gromiha	Bioinformatics approaches for understanding the recognition mechanism of protein complexes and applications to drug design	Sathyabama University, Chennai	December 2014
19	M. Michael Gromiha	Binding specificity of protein–protein complexes: Sequence and structural analysis, discrimination and prediction	Anna University, Chennai	December 2014
20	M. Michael Gromiha	Development of algorithms for understanding the recognition mechanism of protein–DNA complexes	IIT Delhi	25 February 2015
21	M. Michael Gromiha	Protein interactions: Understanding the recognition mechanism and applications to structure based drug design	Bharathidasan University, Tiruchirapalli	8 January 2015
22	M. Michael Gromiha	Binding specificity of protein–protein complexes: Sequence and structural analysis, discrimination and prediction	Alagappa University, Karaikudi	25 February 2015
23	M. Michael Gromiha	Protein–protein complexes: Binding specificity, sequence and structural analysis, discrimination and prediction	Bharathiar University, Coimbatore	March 2015
24	Nitish R. Mahapatra	A common genetic variation within the chromogranin A-derived peptide catestatin causes profound changes in systemic blood pressures and increases the risk for hypertension	School of Life Sciences, Jawaharlal Nehru University, New Delhi, India	14–15 March 2015
25	Nitish R. Mahapatra	Identification of novel risk factors for cardio-metabolic diseases in Indian populations: Common functional genetic variations in the neuroendocrine secretory granule protein chromogranin A	Department of Genetics, University of Madras, Taramani, Chennai, India	3 March 2015
26	Nitish R. Mahapatra	Functional non-synonymous genetic variations in the neuroendocrine secretory granule protein chromogranin A: Novel risk factors for cardio-metabolic disease states in Indian populations	National Institute of Biomedical Genomics, Kalyani, West Bengal, India	30 December 2014
27	Nitish R. Mahapatra	Molecular mechanisms of regulation of the novel monoamine oxidase renalase: Implications for cardiovascular and metabolic diseases	Indian Institute of Chemical Biology, Kolkata, India	13–15 December 2014
28	Nitish R. Mahapatra	Renalase: A novel regulator of cardiovascular and metabolic pathophysiology	Heart Failure Society of India, Secunderabad, India	19–20 April 2014
29	Rama S. Verma and Prasanna Vidyasekar	Stem cell therapy: Current status & clinical implications in cardiology	JACSICON–2013, held at Bokaro Steel City, Bokaro	27–28 April 2013

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
30	Madhumathi J., Devilakshmi S. and Rama S. Verma	Targeted therapy using humanized immunotoxin (at First International Conference on Recent Advances in Developing Biomarker Technology Application on NGS in Pharmacogenomics)	Shobit University, Meerut	29–30 March 2014
31	Rama Shanker Verma	Stem cells, tissue engineering and regeneration	IIT Delhi, ENEA, and CNR Italy under the auspices of Asian Polymer Association (APA)	27–30 October 2014
32	Rama Shanker Verma	Stem cell and tissue regeneration (ABAP Senior Scientist Awardee Lecture)	Devi Ahilya Viswavidyalaya, Indore	18–20 December 2014
33	Rama S. Verma	Stem cell, tissue engineering and regeneration	Anna University, Chennai	5–7 February 2015
34	Smita Srivastava	Bioprocess development for in vitro production of high-value low-volume plant secondary metabolites	MCET, Thiruvananthapuram	12 December 2014
35	T.S. Chandra	Status of micropollutants research	IIT Madras	13 January 2015
36	Smita Srivastava	Advances in bioprocess engineering	MCET, Thiruvananthapuram	11–14 December 2014
37	K. Chandraraj	Metabolic engineering of microbes for ethanol production from renewable resource	Pondicherry University	10 January 2015
38	V. Kesvan	a new organocatalyst from L-proline and its applications in asymmetric catalysis	Universite Paris-Sud 11, Chatenay Malabry, France	18 June 2014
39	V. Kesvan	A new organocatalyst from L-proline and its applications in asymmetric catalysis	Laboratoire COBRA, Universite Rouen, France	24 June 2014
40	V. Kesvan	A new organocatalyst from L-proline and its applications in asymmetric catalysis	Aix-Marseille Université, Institut des Sciences Moléculaires de Marseille (iSm2), Marseille, France	26 June 2014
41	N. Manoj	Evolutionary history of the neuropeptide S receptor–ligand system	Anna University	December 2014
42	N. Manoj	Structure–function studies of a SGNH arylesterase	SASTRA University	November 2014
43	Madhulika Dixit	Insulin: Boon or bane for diabetic vascular complications?	Annamalai University, Chidambaram	October 2014
44	Madhulika Dixit	Role of cell culture techniques in cardiovascular biology	Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram	11–12 March 2015
45	Madhulika Dixit	Glucose metabolism and vascular progenitors: Is mechano-sensing the missing link?	Raman Research Institute, Bangalore	25–26 April 2015

#### Visits abroad by faculty members

Sl. No.	Name of Faculty Member	Place Visited	Date	Purpose of Visit	Funding from
1	Karthik Raman	San Diego, USA	9–14 November 2014	Oral presentation titled 'Fast-SL: An efficient algorithm to identify synthetic lethals in metabolic networks' at the Seventh Annual RECOMB/ISCB Conference on Regulatory and Systems Genomics	CPDA

Sl. No.	Name of Faculty Member	Place Visited	Date	Purpose of Visit	Funding from
2	M. Michael Gromiha	Tokyo Institute of Technology, Japan	21 May to 18 June 2014	Collaborative research and delivering invited lectures	Tokyo Institute of Technology, Japan
3	M. Michael Gromiha	Tokyo Institute of Technology, Japan	16–18 July 2014	Collaborative research and delivering invited lectures	Tokyo Institute of Technology, Japan
4	M. Michael Gromiha	International Conference on Intelligent Computing, China	3–6 August 2014	Presenting a paper and chairing a session	IIT Madras
5	M. Michael Gromiha	Chuo University, Japan	8–12 December 2014	Collaborative research and delivering invited lectures	Chuo University, Japan
6	M. Michael Gromiha	International Conference on Bioscience, Engineering and Technology, Singapore	8–9 January 2015	Presenting a paper	IIT Madras
7	Rama S. Verma	Texas Medical Center, Houston, USA	23–24 September 2014	Exploration of collaborative project and student exchange to promote joint research programme between IIT Madras and Texas Medical Center	Mehta Research Foundation, Houston TX, USA
8	Rama S. Verma	26th Annual Fanconi Anemia Research Fund Scientific Symposium, Bethesda, MD., USA	18–21 September 2014	Presenting posted titled 'ROMO1 universally regulates RedOx state in FA cells and also serves an inducer of NF- $\kappa$ B driven EMT factors' at the symposium	Mehta Research Foundation, Houston, USA and Fanconi Research Fund
9	V. Srinivasa Chakravarthy	Computational Neuroscience Conference (CNS2014), Québec City, Canada	26–31 July 2014	Organization for Computational Neuroscience (OCNS)	—
10	Sanjib Senapati	A-STAR, Singapore	18–20 June 2014	Presentation on mechanism of function of HIV-1 protease	—
11	Sanjib Senapati	A-STAR, Singapore	20–25 June 2014	To deliver a talk on "Mechanism of Action of HIV-1 Protease"	A-STAR, Singapore
12	V. Kesavan	London, UK	24–27 June 2014	Poster presentation at the 15th Tetrahedron Symposium	—
13	Madhulika Dixit	University of Leeds, UK	20–23 June 2014	To attend joint project meeting of Indo-EU sponsored FUNCEFOOD project at Stockholm University, Sweden	—
14	Vignesh Muthu Vijayan	Atlanta, GA, USA	15 November to 3 December 2014	2014 AIChE Annual Meeting, Atlanta, GA, USA	—
15	Manoj N.	Brisbane, Australia	3–7 August 2014	2014 International Biophysics Congress	—
16	Subramaniam K.	Cold Spring Harbor, New York, USA	7–11 October 2014	Cold Spring Harbor Laboratory Germ Cells Meeting	—
17	V. Kesavan	Universite Paris-Sud 11, Chatenay Malabry, France	15–30 June 2014	Indo–French collaborative project	—
18	S. Mahalingam	Methodist Research Hospital, Houston, USA	September 2014	To explore collaborative research with IIT Madras	—



Sl. No.	Name of Faculty Member	Place Visited	Date	Purpose of Visit	Funding from
19	Vignesh MuthuVijayan	United Arab Emirates	14–18 March 2015	To attend Fifth International Conference and Exhibition on Pharmaceuticals & Novel Drug Delivery Systems	CPDA

### Honours and awards obtained by faculty members

Sl. No.	Name of Faculty Member	Name of Award	Awarded by	Awarded for	Date
<b>Honours</b>					
1	K.B. Ramachandran	Honorary Fellow	Biotechnology Research Society of India	Contribution to industrial biotechnology	6 November 2014
2	G.K. Suraishkumar	Expert	NEHU, Shillong (invited)	Faculty Selection Committee	16 February 2015
3	G.K. Suraishkumar	Expert	IIT Guwahati	Evaluation of the National Project on Virtual Laboratories carried out in many institutions	11–12 January 2015
4	G.K. Suraishkumar	Expert	IIT Delhi	Laboratories carried out in many institutions	21 March 2015
5	G.K. Suraishkumar	Visiting Professor	VIT University	Expertise	August 2014 onwards
<b>Awards</b>					
1	Mukesh Doble	Fifth National Award for Technology Innovation in Various Fields of Petrochemicals and Downstream Plastic Processing Industry	Petrochemicals and Downstream Plastic Processing Industry	Research in polymer science & technology for innovation in antimicrobial food wrap	February 2015
2	Mukesh Doble	Sartorius India Chemcon Distinguished Speaker Award, Indian Institute of Chemical Engineering CHEMCON–2014	Indian Institute of Chemical Engineering		27–30 December 2014
3	M. Michael Gromiha	Namiki Award for Identifying Potential Inhibitors for cYes Kinase	Tokyo Institute of Technology	Identifying a hit compound as a potential inhibitor for cYes kinase	July 2014
4	M. Michael Gromiha	Visiting Associate Professorship	Chuo University, Japan	Short-term research and delivering lectures	February 2015
5	M. Michael Gromiha	Incentive Award for Best Paper	Department of Biotechnology, Government of India	Best paper	2014
6	Sathyanarayana N. Gummadi	Mid Career Level Institute Research and Development Award (IRDA)	IIT Madras	Outstanding achievements in teaching, scholarship and creative research work	2014–2015

### Books, monographs authored/co-authored

Sl. No.	Name of Faculty Member	Title	Publisher	Author/Co-author
1	Mukesh Doble	<i>Polymers in a Marine Environment</i>	Smithers Rapra Publications, UK	Co-author
2	M. Michael Gromiha	<i>Intelligent Computing in Bioinformatics</i>	Springer	Co-author
3	Sanjib Senapati	<i>Ionic Liquid-in-Oil Microemulsions</i> (Editor, Bidyut K. Paul, ISI, Kolkata)	John Wiley & Sons, Inc., Hoboken, NJ	Co-author

## Fellowships of academies and professional societies

Rama S Verma: Fellow, Society for Applied Biotechnology and Applied Pharmacy, India (2014)

Rama S Verma: Fellow, The National Academy of Sciences, India (2014)

## Editorial boards of journals

Sl. No.	Name of Faculty Member	Position	Journal
1	K.B. Ramachandran	Member, Editorial Board	<i>Bioresource Technology, Preparative Biochemistry and Biotechnology</i>
2	M. Michael Gromiha	Editor-in-Chief	<i>Open Structural Biology</i>
3	M. Michael Gromiha	Associate Editor	<i>BMC Bioinformatics</i>
4	M. Michael Gromiha	Member, Editorial Board	<i>Current Computer Aided Drug Design</i>
5	M. Michael Gromiha	Guest Editor	<i>Protein and Peptide Letters</i>
6	M. Michael Gromiha	Member, Editorial Board	<i>Biology Direct</i>
7	Nitish R. Mahapatra	Guest Editor	<i>International Journal of Hypertension</i>

## 4.3.4. Design and Development Activities

### New facilities added or major equipment procured

Sl. No.	Name of Equipment	Value (lakhs of ₹)
1	Electronic orbital shaker with refrigerated unit and accessories	2.7
2	Fluorescence microscope with DIC, time-lapse and deconvolution	38
3	Real-time PCR (Applied Biosystems)	12
4	Electro spinning machine (Holmarc)	12
5	Microtome Leica RM2245	8
6	Computer cluster GNR, hosted at Computer Centre	60
7	Mini Fermentor	11
8	Bioincubator facility, Research Park, IIT Madras	280
9	HPLC (Shimadzu)	22
10	Bioreactor with gas analyser (Infors)	15
11	Spectrophotometer	4

## Patents

Sl. No.	Name of Faculty Member	Title
1	Mukesh Doble	WO/2015/022698, International appl No:PCT/IN2014/000020/, international filing date 9 January 2014, publication date 19 February 2015, 'A compound, Transitmycin, effective against bacterial and viral pathogens'
2	Mukesh Doble	Provisional filing application no. 2550/CHE/2014, 23 May 2014, S, Harshal, Mukesh Doble, 'System and method for measuring permeability of drugs/toxic chemical compounds'
3	Mukesh Doble	Invention disclosure IN-875077, 2014, Jitendra Shital Sangwai, Mukesh Doble, Sakthipriya N., 'Microbial degradation of waxy crude oil deposition at surface and downhole facilities for flow assurance'
4	Mukesh Doble	Novel system for measuring permeability of drugs/toxic chemicals/pesticides/carcinogens/plasma protein binding/ADME properties through lipid layer to predict oral ingestion of these compounds into the blood stream
5	Mukesh Doble	Mannosylerytritol lipids and related glycolipids as cloud point, cold filter plugging point (CFPP), pour point depressant and wax dispersant of hydrocarbon fuels and other oils
6	Rama Shanker Verma	Development and characterization of cardiac nanomatrix: A bioscaffold for cardiac regeneration
7	Rama Shanker Verma	Synergistic herbal formulation for treatment of skin cancer

Sl. No.	Name of Faculty Member	Title
8	Rama Shanker Verma	Cancer chemopreventive formulation of PM 002/broad spectrum anticancer formulation of PM 002
9	T.S. Chandra	A handheld portable device for coating electrospun polymer nanofibres on non-conductive surfaces
10	Smita Srivastava	Provisional filling of application no. 3638/CHE/2013, 'An optimised bioprocess for enhancing camptothecin yield from endophytes'
11	Enakshi Bhattacharya, Anju Chadha and Shanti Pavan	Miniaturised blood serum triglyceride monitoring system, application no. 4937/CHE/2013
12	Anju Chadha, Rony K. Roy and C. Kabilan	High yield process for producing omega-3 highly unsaturated fatty acid from <i>Thraustochytrid</i> -T01, 5599/CHE/2013, 5 December 2013

#### 4.3.5. Research and Consultancy

##### Sponsored research projects (ongoing and new)

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Co-ordinators
1	DBT Virtual Enzyme Centre—Development of enzyme formulations for treatment of ligno-cellulosic biomass	2014–2017	DBT	92.56	Guhan Jayaraman
2	Nuclear transport mechanism of HIV/SIV genome	2014–2017	DBT	90.80	S. Mahalingam
3	Molecular characterisation of methotrexate receptor in leukemias	2014–2017	DBT	51.65	Rama Shanker Verma, Venil Sumantran
4	Characterisation of genes that regulate self-renewal/differentiation decision in the <i>Caenorhabditis elegans</i> germline	2014–2017	DST	50.46	K. Subramaniam
5	Mesenchymal stem cells with a polymeric scaffold may improve cardiac function in a mouse myocardial model	2014–2017	DBT	46.60	Rama Shanker Verma
6	Identification and targeting of leukemic stem cells using tumour necrosis factor (TNF)-related apoptosis inducing ligand (TRAIL)	2014–2017	DST	45.80	Rama Shanker Verma
7	Identification and characterisation of functional polymorphisms in the physiological dysglycemic peptide pancreastatin in an Indian population	2014–2017	DST	32.70	Nitish R. Mahapatra
8	Modulation of P2X7 receptor mediated calcium signaling by pannexin	2014–2017	BRNS	27.35	Amal Kanti Bera
9	Regulation on Wnt signaling by plumbagin	2014–2017	BRNS	24.38	D. Karunakaran, Nitish R. Mahapatra
10	Basal ganglia at large	2015–2018	IFCP	23.74	Srinivasa Chakravarthy V.
11	Importance of ploidy in cell fate choices during dictyostelium discoideum development	2014–2017	DST	23.60	R. Baskar
12	Integrate second messenger signaling in synthetic biology applications	2014–2017	DST	23.60	D. Karunakaran
13	Design, synthesis and biological evaluation of novel heterocyclic drug scaffolds as potential inhibitors of 5-lipoxygenase (LO)	2014–2017	DST	21.60	Mukesh Doble
14	A computational study on the molecular mechanism of urea induced protein denaturation	2014–2017	DBT	19.09	Hamsa Priya Mohana Sundaram

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Co-ordinators
15	Implications of structure based drug designing, high throughput screening and structure optimisation techniques for designing novel RNA dependent RNA polymerase (RdRp) inhibitors for dengue infection	2014–2017	DST	16.25	Michael Gromiha
16	National facility on community based cancer tissue biobank for drug targets	2013–2018	DST	3090.00	Mahalingam S., Mukesh Doble, Madhulika Dixit
17	Strengthening existing and establishing new biocubators	2013–2018	DBT	1191.18	Guhan Jayaraman, Ramachandran K.B., Mukesh Doble
18	Strengthening research facilities in the Department of Biotechnology	2011–2016	DST	192.00	Head of the Department
19	Impact of agents with potential use in functional foods on biomarkers for induction of age related diseases	2010–2015	DBT	126.08	Madhulika Dixit
20	Functional characterisation and rejuvenation of diabetes associated dysfunctional circulating endothelial progenitor cells (EPCs) for therapeutic neovascularisation: Phase II	2011–2015	DBT	95.97	Madhulika Dixit
21	US–India consortium for development of sustainable advanced lignocellulosic biofuel systems	2013–2018	Indo-US Science & Technology Forum	84.51	K. Chandraraj
22	Targeting PELP1 (proline-, glutamic acid- and leucine-rich protein 1) in hormonal cancers with miRNA-551a incorporated into cyclic Arg-Gly-Asp (RGD) peptide labeled chitosan nanoparticle (RGD-CH-NP)	2011–2015	DBT	81.98	Rayala Suresh Kumar, V. Kesavan
23	Transcriptional and post-transcriptional regulation of monoamine oxidase A and B	2012–2015	DBT	68.43	Nitish R. Mahapatra
24	Development of online handwriting recognition system for Indian language (OHWR): Phase II—Deployment of an application and improvement of engine performance	2010–2015	DITX	58.20	Srinivasa Chakravarthy V., Chandra Sekhar C.
25	Development of antifouling coating based on surface modification approach	2012–2015	BRNS	53.90	Mukesh Doble, Ravi Kumar
26	Probing the conformational changes associated with the gating of acid sensing ion channel	2013–2016	DST	52.82	Amal Kanti Bera
27	Regulation of the novel catecholamine-metabolizing enzyme renalase by microRNAs	2013–2016	DBT	51.07	Nitish R. Mahapatra
28	The evolutionary origin of membrane bound proteins	2012–2015	Uppsala University, Sweden	50.14	N. Manoj
29	Enzymatic production and characterisation of prebiotic xylooligosaccharides from lignocellulosic biomass	2012–2015	DBT	48.50	K. Chandraraj
30	Probing the conformational changes of monomeric FtsZ in GTP-bound, GDP-bound and nucleotide-free states	2013–2015	DBT	47.75	Sanjib Senapathi
31	Structure function relationship in human protein Z, a regulator of blood coagulation (Wos)	2013–2016	DBT	45.95	Manoj N.

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Co-ordinators
32	Novel nanotechnological approaches for treatment of leishmaniasis using 2-propylquinoline	2013–2016	Indo-French Centre for the Promotion of Advance Research	42.17	Kesavan V.
33	Characterising the link between folding mechanism and function in a transcription regulatory protein by combining experiments, simulations and statistical models	2013–2016	DBT	41.81	Athi Narayanan N.
34	Bioprocess optimisation of recombinant expression of xylose reductase from <i>Debaryomyces nepalensis</i> in <i>E. coli</i>	2013–2016	DBT	39.93	Sathyanarayana Naidu G., Gopalakrishna A.
35	Production of immunoassay compatible monoclonal antibodies against human thyroid stimulating hormone (HTSH) and their application in immunoassay development	2012–2015	BRNS	39.66	Rayala Suresh Kumar
36	Role of protein hydration water in the flap opening–closing mechanisms of VIH-1 protease: Possible implications for designing new class of anti-AIDS drugs	2012–2015	DST	38.71	Sanjib Senapati
37	Genetic and metabolic engineering in two flavinogenic hemiascomycete fungi <i>Ashbya gossypii</i> and <i>Eremotgecium ashbyii</i> for enhanced flavin production through stress mechanisms	2013–2016	DBT	36.89	Chandra T.S.
38	Identification of differentially expressed genes by gene expression analysis of gamma irradiated mesenchymal, haematopoietic and cancer stem cells for the development of novel therapeutic strategy	2013–2016	BRNS	34.05	Rama S. Verma
39	Reactive species for improved bio-oil yields from microalgae	2013–2016	DST	32.83	Suraishkumar G.K.
40	Control of <i>in vivo</i> polymerisation by synthetic biology approaches	2013–2017	DBT	30.00	Guhan Jayaraman, Karthik Raman
41	Enhanced production of alpha-tocopherol by genetically transformed cell culture of <i>Helianthus annuus L.</i>	2012–2015	DBT	29.00	Smita Srivastava, Karthik Raman, Baskar R.
42	Biodegradation/deterioration of blended polyolefins in different environments	2012–2015	DBT	27.33	Mukesh Doble
43	Studies on the biochemical, biophysical and functional characterisation of human phospholipid scramblase 1 (HPLSCR1) interaction with topoisomerase II	2013–2016	BRNS	27.05	Sathyanarayana Naidu G., Rayala Suresh Kumar
44	Development of a 3-dimensional culture system using micro-gravity: Maintenance of haematopoietic stem cell potency for clinical transplantation	2013–2016	DRDO	26.49	Rama S. Verma
45	Biochemical and biophysical characterisation of anaest, an arylesterase from <i>Anabaena</i> sp. PCC 1720	2012–2015	DBT	25.78	Manoj N., Sathyanarayana Naidu G.
46	Protein unfolding disease: The $\beta\gamma$ -crystallins in health and diseases	2012–2015	DST	25.10	Gopalakrishna A.
47	Therapeutic targeting of cancer using novel humanised immunotoxins in lymphoma and leukemia cell lines	2012–2015	DST	25.00	Rama S. Verma

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Co-ordinators
48	Dissecting important amino acid residues for folding and binding of proteins	2013–2016	DST	24.70	Michael Gromiha M., Manoj N.
49	Metabolic network analysis of pathogenic organisms for designing novel therapeutic intervention strategies	2013–2016	DBT	24.37	Karthik Raman, Manoj N.
50	Production and improvement of bacterial keratinase and demonstration of feather waste management by keratin hydrolysing bacteria at pilot scale	2013–2016	DBT	24.00	Chandraraj K.
51	Signal transduction mechanism of a novel calcium binding protein calumenin	2013–2016	BRNS	23.52	Gopalakrishna A.
52	Mechanism of cucurbitacin I-induced cell death in human cervical cancer stem cells: Role of autophagy (scheme for young scientists)	2013–2016	DST	23.39	Karunakaran D.
53	Identification & kinetics of the compounds responsible for the neuroprotective role of <i>Sida</i> containing ayurvedic drug	2013–2016	DST	23.00	Amal Kanti Bera
54	Cloning, purification and characterisation of FtsZ from <i>Mycobacterium tuberculosis</i> and validating it as a potential drug target	2012–2015	DST	22.10	Mukesh Doble
55	Clinical engineering programme: Phase-II	2012–2015	DST	21.57	Mukesh Doble
56	Regulation of HMG-CoA reductase gene by microRNAs	2013–2016	CSIR	19.92	Nitish R. Mahapatra
57	Over-expression of <i>Arabidopsis thaliana</i> HPPD gene for enhanced alpha-tocopherol production in sunflower ( <i>Helianthus annuus</i> ) cultures	2012–2015	DST	19.90	Smita Srivastava
58	Investigating the oncogenic potential of KIBRA	2013–2016	Ministry of Science and Technology	19.65	Rayala Suresh Kumar
59	Potentialities of marine dietary fibres in binding with carcinogens	2012–2015	DST	19.60	Mukesh Doble
60	Investigating protein aggregation using structural analysis, prediction methods and molecular dynamics study with applications to an eye disease, corneal dystrophy	2013–2016	DBT	19.35	Michael Gromiha M.
61	Cancer chemopreventive activity of essential oils from genus <i>Atalantia</i>	2012–2015	DST	18.90	Rama S. Verma
62	Studies on <i>in vitro</i> production of cycloviolacin O2 (a potent antimicrobial cyclotide) by hairy root culture of <i>Viola odorata</i> (RGYI)	2013–2016	DBT	17.10	Smita Srivastava, Nandita Madhavan
63	Development of a biocatalytic process for the oxidation of primary and secondary alcohols: A kinetic and mechanistic study	2012–2015	CSIR	16.92	Anju Chadha
64	Metabolic engineering of <i>Lactococcus lactis</i> for the production of propionic acid	2013–2016	DBT	16.35	Guhan Jayaraman, Ramachandran K.B.
65	Natural products as inhibitors of mPGES-1 for the treatment of inflammation and cancer (under WOS)	2013–2016	DST	14.74	Mukesh Doble
66	Network interactions in temporal lobe epilepsy: An integrated approach using <i>in vitro</i> studies and computational modeling in human brain and animal models	2014–2017	DST	10.43	Srinivasa Chakravarthy V.

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Co-ordinators
67	Design and application of a robust process analytical technology (PAT) platform for real-time monitoring and control of hyaluronic acid production	2013–2016	DBT	6.90	Guhan Jayaraman
68	Development of high-throughput protocol for bioproduction of arabitol using yeast strain	2014–2015	IISc	3.93	Sathyannarayana Naidu G.
69	Creation of bioinformatics infrastructure facility (BIF) for the promotion of biology teaching through bio-informatics (BTBI): Phase II	2012–2017	DBT	3.00	Manoj N.
70	Centre for NEMS and Nanophotonics at IIT Madras	27 April 2011 to 26 April 2016	DietY, GoI	50 crores	Anju Chadha (Co-PI)
71	IIT Madras exploratory project on screening for heterocyclic anti-fungal activity	11 February 2015 to 10 February 2016	IIT Madras	7.5	Anju Chadha

### Industrial consultancy projects (ongoing and new)

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹)
1	Chandraraj K.	Development of enzymatic method for conversion of ammonia pretreated rice straw and wheat straw to glucose and xylose	Hindustan Petroleum Corporation Limited	51.66
2	Guhan Jayaraman	Downstream processing of a recombinant protein	Sudhin Biopharma Company	30.00
3	V. Srinivas Chakravarthy	Solution development for online handwriting recognition	LG Soft India Private Limited	16.85
4	Madhulika Dixit, Rama S. Verma	BT departmental flow cytometry facility (for Aria and Calibur)	Common Code	5.00
5	Karunakaran D.	Proteomic analysis using LC/MS	Common Code	5.00
7	Karunakaran D.	Proteomic analysis using LC/MS	Common Code	5.00
8	Mukesh Doble	Develop a mathematical model to simulate the segregation/stratification of solids in a mixture based on density differences using jigging operation	Tata Chemicals Limited	2.10
9	Karunakaran D., Sanjib Senapati	Kinase drug discovery	Parthys Reverse Informatics Analytic Solutions Private Limited	79.50
10	Mahalingam S.	Laboratory testing in molecular virology lab	Common Code	50.00
11	Mahalingam S.	Laboratory testing in molecular virology lab	Common Code	20.00
12	Chandraraj K., Ramachandran K.B.	Screen, isolate and characterise the active compound responsible for the bio-pesticide activity	SDS Ramcides Cropscience Private Limited	16.20
13	Mukesh Doble	Biodegradation of propylene	Reliance Industries Limited	10.00
14	Rama S. Verma	Molecular mechanisms involved in cardiogenic differentiation of bone marrow derived mesenchymal stem cells in micro fluidics	P.D. Patel Institute of Applied Science	4.49
15	Karunakaran D.	Cancer biology lab	Common Code	2.50
16	Rama S. Verma	Screening and development of phytochemicals lead for treating asthma	Ocius Life Sciences Private Limited	2.50
17	Gopalakrishna A.	Circular dichroism for protein structural studies	Common Code	1.00
18	Gopalakrishna A.	Circular dichroism for protein structure studies	Common Code	1.00
19	Chandraraj K.	Technical opinion on usage of whey protein concentrate and cardamom in biscuit manufacturing	Common Code	0.40



**RBIC projects (ongoing and new)**

Sl.No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹)
1	Rama S. Verma	Screening and development of phytochemicals leads for treating asthma	Ocius Life Sciences Pvt. Ltd.	2.50
2	Rama S. Verma	Molecular mechanisms involved in cardiogenic differentiation of bone marrow derived mesenchymal stem cells in micro fluidics	P.D. Patel Institute of Applied Science	4.49
3	Sanjib Senapati	Kinase drug discovery	Reverse Informatics	90.00
4	Guhan Jayaraman	Downstream processing of recombinant proteins	Sudhin Biotech Pvt. Ltd.	30

**Retainer consultancy (ongoing and new)**

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹)
1	Vani Janakiraman	Understanding host–pathogen interactions and molecular basis of pathogenesis in tuberculosis: Studies on region of difference (RD) proteins of <i>Mycobacterium tuberculosis</i>	New Faculty Scheme	30.00
2	Rayala Suresh Kumar	Exploring the therapeutic potential of RUNX3 peptide conjugate in <i>in vitro</i> , <i>in vivo</i> and in pre-clinical models of human cancers	Exploratory Research Project	10.00
3	Athi Narayanan N.	Qualifying the dynamic, thermodynamic and functional effects of surface electrostatics in the folding of a mini-protein	Exploratory Research Project	10.00
4	Anju Chadha	Probing inhibitors of <i>Candida</i> species: Studies on some fused heterocyclic compounds	Exploratory Research Project	7.50
5	Gopalakrishna A.	Fluorescence spectrometer, FPLC and UV spectrometer	Maintenance of Capital Equipment	5.77
6	Madhulika Dixit	Lease of life from leftovers	Research Scholars Innovative Project	5.20
7	Anju Chadha	GCMS-QP 2010 Ultra	Maintenance of Capital Equipment	3.00
8	Sanjib Senapati, Ramesh Gardas	A new generation nucleic acid storage medium based on hydrated ionic liquids	Research Scholars Innovative Project	3.00
9	Srinivasa Chakravarthy V.	Publish science books at high school level in regional languages and donate them to village school libraries	Socially Relevant Projects	2.96
10	Baskar R.	Nikon microscope, Leica microscope and Optika microscope	Maintenance of Capital Equipment	1.10
11	Subramaniam K.	Mechanistic insights into the self-renewal and differentiation decisions in the germline	New Faculty Scheme	35.00
12	Chandra T.S. Ligy Philip, Ravikrishna R	Fast sampling analyses for anthropogenic micro pollutants in wet environmental compartments	IIT Madras	24.28
13	Athi Narayanan N.	Mutational tuning of folding mechanisms in a model helical domain	New Faculty Scheme	20.00
14	Hamsa Priya Mohana Sundaram	Understanding the effect of cosolvents on protein folding stability	New Faculty Scheme	19.97
15	Karthik Raman	Metrec: A database of systematically annotated genome-scale metabolic reconstructions	New Faculty Scheme	15.00
16	Subramaniam K.	Control of self-renewal and differentiation decisions in adult stem cells	New Faculty Initiation Grant	6.22
17	Vani Janakiraman	Understanding host–pathogen interactions and molecular basis of pathogenesis in tuberculosis	New Faculty Initiation Grant	5.23

## Participation of faculty members with other institutions under MoUs

Sl. No.	Name of Faculty Member	Participation Details	Name of University/Institution
1	Mukesh Doble	Joint Ph.D. student	University of Swinburn, Australia

### Research publications

Papers published in refereed international journals:	95
Papers presented at national conferences:	1
Papers presented at international conferences:	15

### Chapter in books

1. Chakravarthy V.S. and Balasubramani P.P. 2014. Basal ganglia system as an engine for exploration. *Encyclopedia of Computational Neuroscience*, Springer, pp. 1–15. ISBN 978-1-4614-7320-6.
2. Raheja A., Muthuvijayan V., Chandra T.S. and Natarajan T.S. 2015. Sheath based optimization of PVA-PCL core-sheath electrospunfibers for encapsulation of insulin. *Nanotechnology: Novel Perspectives and Prospects*, McGraw-Hill, USA.

### Edited books

1. Vishwesh Kulkarni, Guy-Bart Stan and Karthik Raman. *A Systems Theoretic Approach to Systems and Synthetic Biology I: Models and System Characterizations*, Springer Verlag (London). ISBN 978-9401790406.
2. Vishwesh Kulkarni, Guy-Bart Stan and Karthik Raman. *A Systems Theoretic Approach to Systems and Synthetic Biology II: Analysis and Design of Cellular Systems*, Springer Verlag (London). ISBN 978-9401790468.

### Papers in refereed international journals

1. T. Sreelatha, S. Kandhasamy, R. Dinesh, S. Shruthy, S. Shweta, D. Mukesh, D. Karunakaran, R. Balaji, N. Mathivanan and P.T. Perumal. 2014. Synthesis and SAR study of novel anticancer and antimicrobial naphthoquinone amide derivatives. *Bioorganic & Medicinal Chemistry Letters* 24: 3647–3651.
2. D. Prabhavathy, B.N. Prabhakar and D. Karunakaran. 2014. HPV16 E2-mediated potentiation of NF- $\kappa$ B activation induced by TNF- $\alpha$  involves parallel activation of STAT3 with a reduction in E2-induced apoptosis. *Molecular & Cellular Biochemistry* 394: 77–90.
3. T. Pooja and D. Karunakaran. 2014. Emodin suppresses Wnt signaling in human colorectal cancer cells SW480 and SW620. *European Journal of Pharmacology* 742: 55–64.
4. M. Subramanian, S.R. Rao, P. Thacker, S. Chatterjee and D. Karunakaran. 2014. MiR-29b down regulates canonical Wnt signaling by suppressing coactivators of  $\beta$ -catenin in human colorectal cancer cells. *Journal of Cellular Biochemistry* 115: 1974–1984.
5. D. Raghu and D. Karunakaran. 2014. Plumbagin down regulates Wnt signaling independent of p53 in human colorectal cancer cells. *Journal of Natural Products* 77: 1130–1134.
6. C. Karthikeyan, N.S. Moorthy, S. Ramasamy, U. Vanam, E. Manivannan, D. Karunakaran and P. Trivedi. 2015. Advances in chalcones with anticancer activities. *Recent Patents on Anticancer Drug Discovery* 10: 97–115.
7. D. Prabhavathy, R. Vijayalakshmi, M.P. Kanchana and D. Karunakaran. 2014. HPV16 E2 enhances the expression of NF- $\kappa$ B and STAT3 target genes and potentiates NF- $\kappa$ B activation by inflammatory mediato`  
*Cellular Immunology* 292: 70–77.
8. Divyasree Sandeep, Sakthivel Ramasamy, Ramalingam Krishnan, Devarajan Karunakaran, Entissar Al Suhaibani and Cherupally Krishnan Nair. 2014. Evaluation of cytotoxic and anti-tumor activities of *Coscinium fenestratum* extract. *Advance Journal of Phytomedicine and Clinical Therapeutics* 12: 1346–1360.
9. D. Prabhavathy, C.K. Subramanian and D. Karunakaran. 2015. Re-expression of HPV16 E2 in SiHa (human cervical cancer) cells potentiates NF- $\kappa$ B activation induced by TNF- $\alpha$  concurrently increasing senescence and survival. *Bioscience Reports* 35(1): e00175.
10. B. Balakrishnan, N. Joshi, A. Jayakrishnan and R. Banerjee. 2014. Self-crosslinked oxidized alginate/gelatin hydrogel as injectable, adhesive biomimetic scaffolds for cartilage regeneation. *Acta Biomaterialia* 10: 3650–3663.
11. P.R. Sarika, K. Cinthya, A. Jayakrishnan, P.R. Anil Kumar and N.R. James. 2014. Modified gum arabic cross-linked gelatin scaffold for biomedical applications. *Materials Science and Engineering C* 43: 272–279.
12. A. Seenivasan, S.N. Gummadi, T. Panda and T. Theodore. 2015. Quantification of lovastatin produced by *Monascus purpureus*. *Open Biotechnology Journal* 9: 6–13.
13. H. Kumdam and S.N. Gummadi. 2015. Effect of kLa and fed-batch strategies for enhanced production of xylitol by *Debaryomyces nepalensis* NCYC 3413. *British Biotechnology Journal* 5: 24–36.

14. A. Retnadas and S.N. Gummadi. 2014. Optimization of process conditions for biotransformation of caffeine to theobromine using induced whole cells of *Pseudomonas* sp. *Journal of Bioprocessing & Biotechniques* 4:178.
15. P. Bhaskar and S.N. Gummadi. 2014. Bioconversion of non-detoxified hemicellulose hydrolysates to xylitol by halotolerant yeast *Debaryomyces nepalensis* NCYC 3413. *Journal of Microbial & Biochemical Technology* 6: 327–333.
16. R. Kanna, S.N. Gummadi and G. Suresh Kumar. 2014. Production and characterization of *Pseudomonas putida* MTCC 2467. *Journal of Biological Sciences* 14: 436–445.
17. V.G. Francis, P. Purnima and S.N. Gummadi. 2014. Snail interacts with hPLSCR1 promoter and down regulates its expression in IMR-32. *Biochemical and Biophysical Research Communications* 450: 172–177.
18. A. Nagarajan, N. Thirunavukkarasu, T.S. Suryanarayanan and S.N. Gummadi. 2014. Screening and isolation of novel glutaminase free l-asparaginase from fungal endophytes. *Research Journal of Microbiology* 9: 163–176.
19. S. Venkataraman and A. Chadha. 2015. Biocatalytic deracemisation of aliphatic  $\beta$ -hydroxy esters: Improving the enantioselectivity by optimisation of reaction paramete` *Journal of Industrial Microbiology & Biotechnology* 42: 173–180.
20. S. Venkataraman and A. Chadha. 2015. Preparation of enantiomerically enriched (S)-ethyl 3-hydroxy 4,4,4-trifluorobutanoate using whole cells of *Candida parapsilosis* ATCC 7330. *Journal of Fluorine Chemistry* 169: 66–71.
21. T. Sivakumari and A. Chadha. 2014. Regio- and enantio-selective oxidation of diols by *Candida parapsilosis* ATCC 7330. *RSC Advances* 4: 60526–60533.
22. T. Saravanan, S. Jana and A. Chadha. 2014. Utilization of whole cell mediated deracemization in a chemo-enzymatic synthesis of enantiomerically enriched polycyclic chromeno [4,3-b] pyrrolidines. *Organic & Biomolecular Chemistry* 12: 4682–4690.
23. U. Subuddhi, P.K. Vuram, A. Chadha and A.K. Mishra. 2014. Disaggregation induced solvatochromic switch: A study of dansylated polyglycerol dendrons in binary solvent mixture. *Spectrochimica Acta Part A: Molecular & Biomolecular Spectroscopy* 128: 351–356.
24. P.K. Singh, D. Ghosh, D. Tewari, G.M. Mohite, E. Carvalho, N.N. Jha, R.S. Jacob, S. Sahay, R. Banerjee, A.K. Bera and S.K. Maji. 2015. Cytotoxic helix-rich oligomer formation by melittin and pancreatic polypeptide. *PLOS ONE* 10(3): e0120346.
25. D. Tewari, T. Ahmed, V.R. Chirasani, P.K. Singh, S.K. Maji, S. Senapati and A.K. Bera. 2015. Modulation of the mitochondrial voltage dependent anion channel (VDAC) by curcumin. *Biochimica et Biophysica Acta: Biomembranes* 1848: 151–158.
26. T. Saha, S. Dasari, D. Tewari, A. Prathap, K.M. Sureshan, A.K. Bera, A. Mukherjee and P. Talukdar. 2014. Hopping mediated anion transport through a mannitol-based rosette ion channel. *Journal of the American Chemical Society* 136(40): 14128–14135.
27. G. Sahu, S. Sukumaran and A.K. Bera. 2014. Pannexins form gap junctions with electrophysiological and pharmacological properties distinct form connexins. *Science Reports* 4: 4955.
28. A.N. Naganathan and V. Munoz. 2014. Thermodynamics of downhill folding: Multi-probe analysis of PDD, a protein that folds over a marginal free energy barrier. *Journal of Physical Chemistry B* 118: 8982–8994.
29. A.N. Naganathan, J.M. Sanchez-Ruiz, S. Munshi and S. Suresh. 2014. Are protein folding intermediates the evolutionary consequence of functional constraints? *Journal of Physical Chemistry B* 119: 1323–1333.
30. S. Munshi and A.N. Naganathan. 2015. Imprints of function on the folding landscape: Functional role for an intermediate in a conserved eukaryotic binding protein. *Physical Chemistry Chemical Physics* 17: 11042–11052.
31. S.S. Badle, G. Jayaraman and K.B. Ramachandran. 2014. Ratio of intracellular precursors concentration and their flux influences hyaluronic acid molecular weight in *Streptococcus zooepidemicus* and recombinant *Lactococcus lactis*. *Bioresource Technology* 163: 222–227.
32. J. Jolly, B. Hitzmann, S. Ramalingam and K.B. Ramachandran. 2014. Biosynthesis of 1, 3-propanediol from glycerol with *Lactobacillus reuteri*: Effect of operating variables. *Journal of Bioscience and Bioengineering* 118(2): 188–194.
33. R.V. Hmar, S.B. Prasad, G. Jayaraman and K.B. Ramachandran. 2014. Chromosomal integration of hyaluronic acid synthesis (HAS) genes enhances the molecular weight of hyaluronan produced in *Lactococcus lactis*. *Biotechnology Journal* 9: 1554–1564.
34. A.S. Chauhan, S.S. Badle, K.B. Ramachandra and G. Jayaraman. 2014. The P170 expression system enhances hyaluronan molecular weight and production in metabolically-engineered *Lactococcus lactis*. *Biochemical Engineering Journal* 90: 73–78.
35. D. Kalaiyezhini and K.B. Ramachandran. 2015. Biosynthesis of poly-3-hydroxybutyrate (PHB) from glycerol by *Paracoccus denitrificans* in a batch bioreactor: Effect of process variables. *Preparative Biochemistry and Biotechnology* 45(1): 69–83.

36. R. Partha and K. Raman. 2014. Revisiting robustness and evolvability: Evolution in weighted genotype spaces. *PLOS ONE* 9(11): e112792.
37. V. Prabhawathi, T. Boobalan, P.M. Sivakumar and M. Doble. 2014. Functionalized polycaprolactam as an active food package for antibiofilm activity and extended shelf life. *Colloids and Surfaces B: Biointerfaces* 123: 461–468.
38. S. Pradeep, M.K. Sarath Josh, S. Balachandran, R. Sudha Devi, R. Sadasivam, P.E. Thirugnanam, M. Doble, R.C. Anderson and S. Benjamin. 2014. *Achromobacter denitrificans* SP1 produces pharmaceutically active 25C prodigiosin upon utilizing hazardous di(2-ethylhexyl)phthalate. *Bioresource Technology* 171: 482–486.
39. P. Biswa and M. Doble. 2014. Production of acylated homoserine lactone by a novel marine strain of *Proteus vulgaris* and inhibition of its swarming by phytochemicals. *Microbiology* 160: 2170–2177.
40. M. Raman and M. Doble. 2014. Physicochemical and structural characterisation of marine alga *Kappaphycus alvarezii* and the ability of its dietary fibres to bind mutagenic amines. *Journal of Applied Phycology* 26: 2183–2191.
41. G. Krishnamoorthy, R. Selvakumar, T.P. Sastry, S. Sadulla, A.B. Mandal and M. Doble. 2014. Experimental and theoretical studies on gallic acid assisted EDC/NHS initiated crosslinked collagen scaffolds. *Materials Science and Engineering C* 43: 164–171.
42. P. Sajeesh, M. Doble and A.K. Sen. 2014. Hydrodynamic resistance and mobility of deformable objects in microfluidic channels. *Biomicrofluidics* 8: 54112.
43. S. Duggirala, R.P. Nankar, S. Rajendran and M. Doble. 2014. Phytochemicals as inhibitors of bacterial cell division protein FtsZ: Coumarins are promising candidates. *Applied Biochemistry and Biotechnology* 174: 283–296.
44. C.A. Amarnath, N. Venkatesan, M. Doble and S.N. Sawant. 2014. Water dispersible Ag@polyaniline–pectin as supercapacitor electrode for physiological environment. *Journal of Materials Chemistry B* 2: 5012–5019.
45. N. Sudhapriya, P.T. Perumal, C. Balachandran, S. Ignacimuthu, M. Sangeetha and M. Doble. 2014. Synthesis of new class of spirocarbocycle derivatives by multicomponent domino reaction and their evaluation for antimicrobial, anticancer activity and molecular docking studies. *European Journal of Medicinal Chemistry* 83: 190–207.
46. T. Sreelatha, S. Kandhasamy, R. Dinesh, S. Shruthy, S. Shweta, D. Mukesh, D. Karunagaran, R. Balaji, N. Mathivanan and P.T. Perumal. 2014. Synthesis and SAR study of novel anticancer and antimicrobial naphthoquinone amide derivatives. *Bioorganic & Medicinal Chemistry Letters* 24: 3647–3651.
47. V. Prabhawathi, K. Thirunavukarasu and M. Doble. 2014. A study on the long term effect of biofilm produced by biosurfactant producing microbe on medical implant. *Materials Science and Engineering C* 40: 212–218.
48. M.K. Sarath Josh, S. Pradeep, K.S. Vijayalekshmi Amma, S. Balachandran, U.C. Abdul Jaleel, M. Doble, F. Spener and S. Benjamin. 2014. Phthalates efficiently bind to human peroxisome proliferator activated receptor and retinoid X receptor subtypes: An *in silico* approach. *Journal of Applied Toxicology* 34: 754–765.
49. B. Ratna Sunil, T.S. Sampath Kumar, U. Chakkingal, V. Nandakumar and M. Doble. 2014. Friction stir processing of magnesium–nanohydroxyapatite composites with controlled *in vitro* degradation behavior. *Materials Science and Engineering:C* 39: 315–324.
50. V. Prabhawathi, T. Boobalan, P.M. Sivakumar and M. Doble. 2014. Antibiofilm properties of interfacially active lipase immobilized porous polycaprolactam prepared by LB technique. *PLOS ONE* 9: e96152.
51. J. Arutchelvi, J. Sangeetha, J. Philip and M. Doble. 2014. Self-assembly of surfactin in aqueous solution: Role of divalent counterions. *Colloids and Surfaces B: Biointerfaces* 116: 396–402.
52. B. Ratna Sunil, T.S. Sampath Kumar, U. Chakkingal, V. Nandakumar and M. Doble. 2014. Nanohydroxyapatite reinforced AZ31 magnesium alloy by friction stir processing: A solid state processing for biodegradable metal matrix composites. *Journal of Materials Science: Materials in Medicine* 25: 975–988.
53. A. Radhika Devi, J.A. Chelvane, P.K. Prabhakar, P.B. Padma Priya, M. Doble and B.S. Murty. 2014. Generation of drugs coated iron nanoparticles through high energy ball milling. *Journal of Applied Physics* 115: 124906.
54. A.M. Thangakani, S. Kumar, R. Nagarajan, D. Velmurugan and M.M. Gromiha. 2014. GAP: Towards almost 100 percent prediction for  $\beta$ -strand-mediated aggregating peptides with distinct morphologies. *Bioinformatics* 30: 1983–1990.
55. B. Nagarathnam, S.D. Karpe, K. Harini, K. Sankar, M. Iftekhhar, D. Rajesh, S. Giji, G. Archunan, V. Balakrishnan, M.M. Gromiha, W. Nemoto, K. Fukui and R. Sowdhamini. 2014. DOR: A database of olfactory receptors—Integrated repository for sequence and secondary structural information of olfactory receptors in selected eukaryotic genomes. *Bioinformatics and Biology Insights* 8: 147–158.
56. M.M. Gromiha, K. Veluraja and K. Fukui. 2014. Identification and analysis of binding site residues in protein–carbohydrate complexes using energy based approach. *Proteins and Peptide Letters* 21: 799–807.



57. M.M. Gromiha. 2014. Protein folding, stability and interactions. *Protein and Peptide Letters* 21: 705–706.
58. P. Parasuraman, V. Murugan, J.F. Selvin, M.M. Gromiha, K. Fukui and K. Veluraja. 2014. Insights into the binding specificity of wild-type and mutated wheat germ agglutinin towards Neu5Aca(2-3)Gal: A study by *in silico* mutations and molecular dynamics simulations. *Journal of Molecular Recognition* 27(8): 482–492.
59. K. Yugandhar and M.M. Gromiha. 2014. Feature selection and classification of protein–protein complexes based on their binding affinities using machine learning approaches. *Proteins* 82: 2088–2096.
60. K. Yugandhar and M.M. Gromiha. 2014. Protein–protein binding affinity prediction from amino acid sequence. *Bioinformatics* 30(24): 3583–3589.
61. M.X. Suresh, M.M. Gromiha and M. Suwa. 2015. Development of a machine learning method to predict membrane protein–ligand binding residues using basic sequence information. *Advances in Bioinformatics* 2015: 843030.
62. R. Nagarajan, S.P. Chothani, C. Ramakrishnan, M. Sekijima and M.M. Gromiha. 2015. Structure based approach for understanding organism specific recognition of protein–RNA complexes. *Biology Direct* 10(1): 8.
63. P.J. Sonawane, V. Gupta, B.K. Sasi, A. Kalyani, B. Natarajan, A.A. Khan, B.S. Sahu and N.R. Mahapatra. 2014. Transcriptional regulation of the novel monoamine oxidase renalase: Crucial roles of transcription factors Sp1, STAT3 and ZBP89. *Biochemistry* 53(44): 6878–6892.
64. S. Jahnavi, T.V. Kumary, G.S. Bhuvaneshwar, T.S. Natarajan and R.S. Verma. 2015. Engineering of a polymer layered bio-hybrid heart valve scaffold. *Materials Science and Engineering C* 51: 263–273.
65. P. Shyamsunder, R.S. Verma and A. Lyakhovich. 2015. ROMO1 regulates RedOx states and serves as an inducer of NF-kappaB-driven EMT factors in Fanconi anemia. *Cancer Letters* 361(1): 33–38.
66. R.V. Devi, M. Doble and R.S. Verma. 2015. Nanomaterials for early detection of cancer biomarker with special emphasis on gold nanoparticles in immunoassays/senso` *Biosensors and Bioelectronics* 68: 688–698.
67. R. Santhakumar, P. Vidyasekar and R.S. Verma. 2014. Cardiogel: A nano-matrix scaffold with potential application in cardiac regeneration using mesenchymal stem cells. *PLOS ONE* 9(12): e114697.
68. G. Pagano, P. Shyamsunder, R.S. Verma and A. Lyakhovich. 2014. Damaged mitochondria in Fanconi anemia: An isolated event or a general phenomenon? *Oncoscience* 1: 287–295.
69. R.T. Philips and S. Chakravarthy. 2015. The mapping of eccentricity and meridional angle onto orthogonal axes in the primary visual cortex: An activity-dependent developmental model. *Frontiers in Computational Neuroscience* 9: 3.
70. R. Balan and G.K. Suraishkumar. 2014. UVA-induced reset of hydroxyl radical ultradian rhythm improves temporal lipid production in *Chlorella vulgaris*. *Biotechnology Progress* 30: 673–681.
71. K.R. Menon, S. Jose and G.K. Suraishkumar. 2014. Photon up-conversion increases biomass yield in *Chlorella vulgaris*. *Biotechnology Journal* 9: 1547–1553.
72. S.L. Rath and S. Senapati. 2014. Why are the truncated cyclin Es more effective CDK2 activators than the full-length isoforms? *Biochemistry* 53: 4612–4624.
73. V.G. Poosarla and T.S. Chandra. 2014. Purification and characterization of novel halo-acid-alkali-thermo-stable xylanase from *Gracilibacillus* sp. TSCPVG. *Applied Biochemistry and Biotechnology* 173(6): 1375–1390.
74. S. Kavitha and T.S. Chandra. 2014. Vitamin C modulates metabolic responses in hemiascomycete riboflavinogenic fungus *Ashbya gossypii*. *International Journal of Current Microbiology and Applied Sciences* 3(7): 161–170.
75. N. Murtaza, R.K. Baboota, S. Jagtap, D.P. Singh, P. Khare, S.M. Sarma, K. Podili, S. Alagesan, T.S. Chandra, K.K. Bhutani, R.K. Boparai, M. Bishnoi and K.K. Kondepudi. 2014. Finger millet bran supplementation alleviates obesity-induced oxidative stress inflammation and gut microbial derangements in high-fat diet-fed mice. *British Journal of Nutrition* 114(9): 1447–1458.
76. S. Kavitha and T.S. Chandra. 2014. Oxidative stress protection and glutathione metabolism in response to hydrogen peroxide and menadione in riboflavinogenic fungus *Ashbya gossypii*. *Applied Biochemistry and Biotechnology* 174(6): 2307–2325.
77. A. Agarwal, A. Raheja, T.S. Natarajan and T.S. Chandra. 2014. Effect of electrospun montmorillonite–Nylon 6 nanofibrous membrane coated packaging on potato chips and bread. *Innovative Food Science & Emerging Technologies* 26: 424–430.
78. G.P. Reddy, P. Vinayagam and V. Kesavan. 2015. Enantio selective assembly of functionalized carbocyclic spirooxindoles using an l-proline derived thiourea organocatalyst. *RSC Advances* 5: 7370–7379.
79. V. Kumar, V. Kesavan and V.K. Gothelf. 2015. Highly stable triple helix formation by homopyrimidine (l)-acyclic threoninol nucleic acids with single stranded DNA and RNA. *Organic and Biomolecular Chemistry* 13: 2366–2374.

80. S. Jayakumar, N. Kumarswamyreddy, M. Prakash and V. Kesavan. 2015. Palladium catalyzed asymmetric allylation of 3-OBoc-oxindoles: An efficient synthesis of 3-allyl-3-hydroxyoxindoles. *Organic Letter* 17: 1066–1069.
81. M. Prakash, S. Muthusamy and V. Kesavan. 2014. Copper (I) bromide catalyzed arylation of cyclic enamides and naphthyl-1-acetamides using diaryliodonium salts. *The Journal of Organic Chemistry* 79: 7836–7843.
82. P. Vinayagam, M. Vishwanath and V. Kesavan. 2014. New class of bifunctional thioureas from l-proline: Highly enantioselective Michael addition of 1,3-dicarbonyls to nitroolefins. *Tetrahedron: Asymmetry* 25: 568–577.
83. R. Murugan. 2014. Theory on the dynamics of oscillatory loops in the transcription factor networks. *PLOS ONE* 9(8): e104328.
84. A. Krishnan, R. Dnyansagar, M. Almén, M.J. Williams, R. Fredriksson, N. Manoj and H.B. Schiöth. 2014. The GPCR repertoire in the demosponge *Amphimedon queenslandica*: Insights into the GPCR system at the early divergence of animals. *BMC Evolutionary Biology* 14: 270.
85. R. Valsalan and N. Manoj. 2014. Evolutionary history of the neuropeptide S receptor/neuropeptide S system. *General and Comparative Endocrinology* 209: 11–20.
86. K. Thiagarajan, K. Kavitha, A. Thautam, M. Dixit and S. Nagini. 2014. Dietary chlorophyllin abrogates TGF beta signaling to modulate the hallmark capabilities of cancer in an animal model of fore stomach carcinogenesis. *Tumor Biology* 35(7): 6725–6737.
87. J. Kowshik, H. Giri, T.K. Kiran Kishore, R. Kesavan, R.N. Vankudavath, G.B. Reddy, M. Dixit and S. Nagini. 2014. Ellagic acid inhibits VEGF/VEGFR2, PI3K/Akt, and MAPK signaling cascades in hamster cheek pouch carcinogenesis model. *Anti-cancer Agents in Medicinal Chemistry* 14(9): 1249–1260.
88. J. Kowshik, A.B. Baba, H. Giri, G. Deepak Reddy, M. Dixit and S. Nagini. 2014. Astaxanthin inhibits JAK/STAT-3 signalling to abrogate cell proliferation, invasion and angiogenesis in hamster model of oral cancer. *PLOS ONE* 9(10): e109114.
89. A.A. Nathan, M.A. Charan Tej, M. Chitilprolu, S. Rangan, V. Mohan, R. Harish, S.B. Anand and M. Dixit. 2015. Impaired glucose tolerance alters functional ability of peripheral blood-derived mononuclear cells in Asian Indian men. *Diabetes and Vascular Disease Research* 12(1): 13–22.
90. T. Bashir, C. Sailer, N. Loganathan, H. Bhoopalan, C. Eichenberger, U. Grossniklaus and R. Baskar. 2014. Hybridization alters spontaneous mutation rates in a parent-of-origin-dependent fashion in *Arabidopsis thaliana*. *Plant Physiology* 165(1): 424–437.
91. S.P. Singh, R. Dhakshinamoorthy, P. Jaiswal, S. Schmidt, S. Thewes and R. Baskar. 2014. The thyroxine inactivating gene, type III deiodinase, suppresses multiple signaling centers in *Dictyostelium discoideum*. *Developmental Biology* 396(2): 256–268.
92. S. Bera, T. Karthikeyan, K. Sriraman and Guhan Jayaraman. 2015. Process strategies for enhancing recombinant streptokinase production in *Lactococcus lactis* cultures using P170 expression system. *Biochemical Engineering Journal* 93: 94–101.
93. R.V. Hmar, S.B. Prasad, Guhan Jayaraman and K.B. Ramachandran. 2014. Chromosomal integration of hyaluronic acid synthesis (*HAS*) genes enhances the molecular weight of hyaluronan produced in *Lactococcus lactis*. *Biotechnology Journal* 9: 1554–1564.
94. A. Chauhan, S.S. Badle, K.B. Ramachandran and Guhan Jayaraman. 2014. The P170 expression system enhances hyaluronan molecular weight and production in metabolically-engineered *Lactococcus lactis*. *Biochemical Engineering Journal* 90: 73–78.
95. S.S. Badle, Guhan Jayaraman and K.B. Ramachandran. 2014. Ratio of intracellular precursors concentration and their flux influences hyaluronic acid molecular weight in *Streptococcus zooepidemicus* and recombinant *Lactococcus lactis*. *Bioresource Technology* 163: 222–227.

#### Proceedings of national conferences

1. Puja Kumari and Mukesh Doble. Process optimization for the production of cyclic beta glucans. *Bioprocessing India 2014*, 17–20 December 2014, ICT, Mumbai.

#### Proceedings of international conferences

1. Rakesh Nankar and Mukesh Doble. Ellagic acid interacts synergistically with pioglitazone to enhance insulin stimulated 2-NBDG uptake in 3T3L1 adipocytes. CNIT, Paris, 18–21 February 2015.
2. Govindraj and Mukesh Doble. Antimicrobial silver nitrate release coating to prevent biofilm on stainless steel orthopedic implant. Anna University, Chennai, 5–7 February 2015.
3. Cynthia Manohar and Mukesh Doble. Covalent immobilization of papain on polyurethane for antimicrobial food wrap application. Radisson Blu Plaza, Delhi, 27–30 October 2014.

4. Cynthia Manohar, V. Prabhawathi and Mukesh Doble. Enzyme immobilised polyurethane as an ureteral stent material. Anna University, Chennai, 5–7 February 2015.
5. S. Mathapati, D.K. Bishi, S. Guhathakurta, K.M. Cherian, J.R. Venugopal, S. Ramakrishna and R.S. Verma. Acellular cross-linked bovine pericardium coated with nanofibers for tissue engineering. *Annual Meeting of the International Society for Stem Cell Research (ISSCR–2013)*. Boston, Massachusetts USA, 12–15 June 2013.
6. S. Jahnavi, T.V. Kumary, T.S. Natarajan and Rama Shanker Verma. *In vitro* evaluation of decellularized bovine pericardium reinforced with PCL-chitosan polymeric blend: A biohybrid scaffold for heart valve tissue engineering. IIT Delhi, New Delhi, 27–30 October 2014.
7. S. Rajalakshmi, V. Prasanna and Rama Shanker Verma. Development and characterization of cardiogel: A nano-matrix scaffold for cardiac regeneration. IIT Delhi, ENEA and CNR Italy under the auspices of Asian Polymer Association (APA), 27–30 October 2014.
8. Pavithra Shymsunder, V. Prasanna and Rama Shanker Verma. ROMO1 universally regulates RedOx state in FA cells and also serves an inducer of NF- $\kappa$ B driven EMT factors. *26th Annual Fanconi Anemia Research fund Scientific Symposium*, Maryland, 22–24 September 2014.
9. K. Uma, D. Karunakaran and G.K. Suraishkumar. Ultradian rhythms of redox oscillations in cancer cells. *International Carcinogenesis Symposium*, ACTREC, Navi Mumbai 11–14 February 2015.
10. M. Michael Gromiha, A. Mary Thangakani, S. Kumar and D. Velmurugan. Investigations of protein aggregation using sequence and structure features. *International Conference on Intelligent Computing*, 2015.
11. Pragathi Balasubramani, V. Srinivasa Chakravarthy, Ravindran Balaraman and Ahmed Moustafa. Modeling task-specific manifestations of serotonin in basal ganglia using risk-based decision making. Quebec, Canada, CNS, 2014.
12. Ryan Philips and V. Srinivasa Chakravarthy. An activity-dependent computational model of development of the retinotopic map along the dorsoventral axis in the primary visual cortex. Quebec, Canada, CNS, 2014.
13. Alekhya Mandali, V. Srinivasa Chakravarthy and Asha Kishore. Studying the role of STN-DBS on impulsivity using a spiking neuron network model of basal ganglia. *First International Brain Stimulation Conference*, Singapore, 2–4 March 2015.
14. K. Subramaniam, Richa Maheshwari and Kumari Pushpa. FARL-11 is essential for ER integrity and niche-stem cell signaling in the *C. elegans* germline. *2014 Germ Cells Meeting*, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York, USA, 7–11 October 2014.
15. Richa Maheshwari, Kumari Pushpa and K. Subramaniam. PUF-8 promotes the expression of FARL-11, an ER protein required for germ cell proliferation. *2014 Germ Cells Meeting*. Cold Spring Harbor Laboratory, Cold Spring Harbor, New York, USA, 7–11 October 2014.

#### Distinguished visitors to the department

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1	Dr. K. Prabakaran, Chief Scientific Officer, Malladi Drugs & Pharmaceuticals	2 April 2014	Talk, 'Indian pharma: Biotechnology industry and challenges'
2	Dr. Meiyappan Lakshmanan, The Systems Biology and Bioinformatics Group, National University of Singapore	25 April 2014	Talk, 'In silico modeling and omics data analysis for rice systems agrobiotechnology'
3	Dr. Murali K. Temburni, Department of Biological Sciences and the Delaware Center for Neuroscience Research, Delaware State University, USA	24 June 2014	Talk, 'Organizing nicotinic cholinergic synapses: A new function for an old protein'
4	Dr. Sekar Ramachandran, Department of Molecular Medicine, Cornell University, USA	22 July 2014	Talk, 'Biochemical and biophysical studies on vertebrate vision'
5	Dr. Syam Prakash Somasekharan, Department of Molecular Oncology, University of British Columbia, Canada	4 August 2014	Talk, 'Sarcoma cells utilise the YB-1 translational regulator to mediate stress granule formation'
6	Dr. Shiv Kumar Viswanathan, Cincinnati Children's Hospital Medical Center, USA	18 April 2014	Talk, 'Gene therapy for sickle cell disease, on road to clinical cure: Efficacy and GLP safety'
7	Prof. Mark Eiteman, University of Georgia, USA (Fulbright–Nehru Research Excellence Scholar 2014–2015)	26 August 2014	Talk, 'Engineered microbial consortia for the selective removal of inhibitors and conversion of sugar mixtures'



Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
8	Dr. Krishna Rajarathnam, University of Texas Medical Branch, Galveston, USA	23 September 2014	Talk 'Structural insights into how chemokines combat infection: Walking the tightrope of life and death?'
9	Dr. Arjun Krishnan, Postdoctoral Fellow, Lewis-Sigler Institute for Integrative Genomics at Princeton University, USA	20 October 2014	Talk, 'Understanding multicellular function and disease with human tissue-specific networks'
10	Prof. Victor Munoz, University of California, Merced, USA	3 November 2014	Talk, 'The downhill folding scenario: Resolving protein folding motions and landscapes with nanosecond, single-molecule and atomic resolutions'
11	Dr. Sethu Pitchiaya, University of Michigan, USA	18 November 2014	Talk, 'Spatiotemporal dissection of non-coding RNA pathways using intracellular single-molecule microscopy'
12	Prof. Takeharu Nagai, Institute of Scientific and Industrial Research, Osaka University, Japan	1 December 2014	Talk, 'Revolutionary bioimaging with super-duper luminescent proteins'
13	Dr. Kannan Alpadi, Baylor College of Medicine, USA	2 December 2014	Talk, 'Organelle network biology: Organelle dynamics, communication and homeostasis'
14	Dr. Dipshikha Chakravorty, Department of Microbiology and Cell Biology and Center for Infectious Disease, IISc, Bangalore	15 December 2014	Talk, 'How important is the niche for bacterium?'
15	Dr. T.M. Murali, Associate Professor, Department of Computer Science, Virginia Tech, USA	2 January 2015	Talk, 'Signaling hypergraphs'
16	Dr. Padma Rajagopalan and Robert H. Hord, Associate Professor, Department of Chemical Engineering, Virginia Tech, USA	5 January 2015	Talk, 'The design of biomaterials to investigate healthy and impaired liver function'
17	Dr. Rajasekaran Namakkal Soorappan, Assistant Professor, University of Alabama, Birmingham, USA	7 February 2015	Talk, 'Reductive stress—new paradigm in pathophysiology: Biochemistry, genetics and transcriptional mechanisms of human heart disease'
18	Prof. Tadhg P. Begley, Department of Chemistry, Texas A&M University, USA	19 January 2015	Talk, 'Radical SAM enzymes in cofactor biosynthesis'
19	Dr. Aswin Sai Narain Seshasayee, National Centre for Biological Sciences (NCBS), Bangalore	13 February 2015	Talk, 'Evolutionary pushes, gene expression homeostasis and chromosome architecture in bacteria'
20	Prof. Srini Kaveri, Director, INSERM Unité 1138, Le Centre de Recherche des Cordeliers, Paris, France	20 February 2015	Talk, 'The role of natural IgG antibodies in immune function, dysfunction and therapy: Where do we stand after three decades?'
21	Dr. Sivaprakash Ramalingam, Ramalingaswami Re-entry Fellow and Senior Research Associate, Johns Hopkins University Medical Institutions, USA	24 February 2015	Talk, 'Precise genetic correction of disease mutations in patient-derived human-induced pluripotent stem cells using gene editing nucleases for cell-based therapy'

#### 4.3.6. Other Activities of the Department

##### International collaboration achievements

##### Faculty visits

Sl. No.	Names of the Faculty Members	Purpose of Visit	Dates and Place
1	D. Karunakaran, Mukesh Doble, Rama S. Verma and S. Mahalingam	To discuss their collaboration projects	22–26 September 2014, The Mehta Family Foundation, Houston, Texas, USA

## 4.4. DEPARTMENT OF CHEMICAL ENGINEERING

### 4.4.1. Introduction

The Department of Chemical Engineering was established in 1959. The Department has 30 faculty members who carry out research in state-of-the-art areas. The focus of the research is on energy, materials and the environment. The faculty work towards analysing these systems by understanding their behaviour at the molecular level as well as using a systems approach.

### 4.4.2. Academic Programmes

#### New courses introduced

Sl. No.	Course No.	Title
1	CH5013	Principles of Fuel Cells
2	CH5015	Process Safety
3	CH6999	Special Topics in Chemical Engineering
4	CH7999	Special Topics in Chemical Engineering
5	CH5021	Molecular Simulation of Soft Matter

#### Students on roll as of September 2014 including research scholars admitted in January 2015

Programme	I Year	II Year	III Year	IV Year	V Year and Others	Total
B.Tech.	63	68	72	64	10	277
Dual Degree	20	14	16	22	22	94
M.Tech.	39	39	—	—	—	78
M.S.	19	06	06	14	04	49
Ph.D.	23	23	13	25	28	112
<b>Total</b>	<b>164</b>	<b>150</b>	<b>107</b>	<b>125</b>	<b>64</b>	<b>610</b>

#### Names of students/scholars/post-doctoral fellows who attended conferences/workshops/seminars/symposia abroad or in India

Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference/Seminar/ Symposium/Workshop	Date and Venue	Financial Assistance from
<b>Abroad</b>					
1	K. Nagarajan	CH10D011	2014 AIChE Annual Meeting	16–21 November 2014, Atlanta, Georgia	IIT Madras
2	C.N. Pratheeba	CH10D015	12th International Conference on Combustion and Energy Utilization	29 September to 3 October 2014, Lancaster, UK	IIT Madras
3	Seelam Narasimha Reddy	CH11D005	2014 AIChE Annual Meeting	16–21 November 2014, Atlanta, Georgia	IIT Madras
4	S. Sam David	CH11D009	2014 AIChE Annual Meeting	16–21 November 2014, Atlanta, Georgia	IIT Madras
5	G. Saranya	CH11D010	International Aerosol Conference (IAC 2014)	28 August to 2 September 2014, Busan, Korea	IIT Madras
6	Vaishak Nair	CH11D012	249th ACS National Meeting & Exposition	22–26 March 2015, USA	IIT Madras

Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference/Seminar/ Symposium/Workshop	Date and Venue	Financial Assistance from
7	Venkata Sesha Praveen Bulusu	CH11D032	Electrochemical Society Annual Conference	11–15 May 2014, Orlando, USA	IIT Madras
8	Pratibha Biswal	CH11D037	15th International Heat Transfer Conference (IHTC–15)	10–15 August 2014, Kyoto, Japan	IIT Madras
9	Simi Santosh	CH12D006	5th International Conference Symposium on Advanced Control of Industrial Processes (ADCONIP 2014)	28–30 May 2014, Hiroshima, Japan	IIT Madras
10	Venkata Reddy Palleti	CH12D009	24th European Symposium on Computer Aided Process Engineering	15–18 June 2014, Budapest, Hungary	IIT Madras
11	Vir Anil Babasaheb	CH12D010	12th International Conference on nanochannels, Microchannels and Minichannels (ICNMM 2014)	3–7 August 2014, Illinois, USA	IIT Madras
12	Debayan Das	CH12D014	10th International Conference on Heat Transfer Fluid Mechanics and Thermodynamics	14–16 July 2014, Orlando, USA	IIT Madras
13	Volga	CH12D019	65th Annual International Society of Electrochemistry Meeting (ISE–65)	31 August to 5 September 2014, Switzerland	IIT Madras
14	Bontapalle Sujitkumar Anteshwarrao	CH14D001	International Fall School on Organic Electronics-(IFSOE, 2014)	21–26 September 2014, Moscow, Russia	IIT Madras
<i>M.S.</i>					
15	Daware Santosh Vasant	CH11S014	The Physics of OFT and Biological Matter	14–16 April 2014, Cambridge, UK	IIT Madras
16	Debashish Panda	CH11S015	International Conference on Chemical and Process Engineering (ICCPE 2014)	5–6 October 2014, Brussels, Belgium	IIT Madras
17	Gorugantu Sri Bala	CH12S012	AIChE Annual Meeting 2014	16–21 November 2014, Atlanta, USA	IIT Madras
<b>India</b>					
18	Mohamed Shahid U.N.	CH11S034	International Conference on Polymers and Allied Materials	28 May to 1 June 2014, IIT Patna	IIT Madras
19	Akankshya Majhi	CH12S007	International Conference on Polymer Processing and Characterization (ICPPC 2014)	10–15 October 2014, MG University, Kottayam	IIT Madras
20	Dadi V. Suriapparao	CH13S001	International Workshop on Sustainable Energy, Power and Propulsion	5–7 January 2015, Jadavpur University, Kolkata	IIT Madras
<i>Ph.D.</i>					
21	S. Sam David	CH10D009	International Conference on New Frontiers in Chemical Energy and Environmental Engg. (INCEE 2015)	20–21 March, 2015, NIT Warangal	IIT Madras
22	K. Nagarajan	CH10D011	International Conference on New Frontiers in Chemical Energy and Environmental Engg. (INCEE 2015)	20–21 March, 2015, NIT Warangal	IIT Madras
23	Rahul Trivedi	CH10D016	International Conference on New Frontiers in Chemical Energy and Environmental Engineering (INCEE 2015)	20–21 March 2015, NIT Warangal	IIT Madras
24	Seelam Narasimha Reddy	CH11D005	National Conference on Novel Process Developments for Sustainable Industrial Practice	12–13 December 2014, SV University, Tirupati	IIT Madras
25	Seelam Narasimha Reddy	CH11D005	CHEMCON 2014	24 December 2014 to 4 January 2015	IIT Madras

Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference/Seminar/ Symposium/Workshop	Date and Venue	Financial Assistance from
26	Seelam Narasimha Reddy	CH11D005	International Conference on Mineral Processing Technology 2014	12–14 March 2015	IIT Madras
27	Vaishakh Nair	CH11D012	International Workshop on Sustainable Energy, Power and Propulsion	5–9 January 2015, Jadhavpur University, Kolkata	IIT Madras
28	Vaishakh Nair	CH11D012	National Conference on Application of the Derivatives of Chitin and Chitosan (ADCC)–2014	22–23 August 2014, Gandhigram Rural Institute, Gandhigram, Tamil Nadu	IIT Madras
29	Abhishankar	CH11D016	CHEMCON–2014	27–30 December 2014, Chandigarh	IIT Madras
30	Abhishankar	CH11D016	Indian Control Conference 2015	6–7 January 2015, IIT Madras	IIT Madras
31	Chinta Sankar Rao	CH11D022	International Conference on Mathematical Modeling and Computer Simulation	8–10 December 2014, IIT Madras	IIT Madras
32	R. Savitha	CH12D004	International Conference on Advanced Oxidation Process 2014	25–28 September, 2014, Munnar	IIT Madras
33	Anil B. Vir	CH12D010	INUP Familiarization Workshop/ Hands on Training on Nanofabrication Technologies	9–18 December 2014, IISc, Bangalore	–
34	S. Manigandan	CH12D016	International Conference on Soft Materials	6–10 October 2014, MNIT, Jaipur	IIT Madras
35	Neethu Thomas	CH12D020	International Conference on Soft Materials	6–10 October 2014, MNIT, Jaipur	IIT Madras
36	Deepak Kumar Ojha	CH13D001	International Workshop on Sustainable Energy, Power and Propulsion	5–9 January 2015, Jadhavpur University, Kolkata	IIT Madras
37	Abhishek Kumar Gupta	CH13D016	3rd International Conference on Polymer–Processing and Characterization (ICPPC–2014)	10–14 October 2014, Kottayam	IIT Madras
38	R. Ashna	CH13D019	International Conference on Soft Materials	6–10 October 2014, MNIT, Jaipur	IIT Madras
39	B. Bala Shyamala	CH13D020	Indian Control Conference	5–7 January 2015, IIT Madras	IIT Madras
40	Bincy George Abraham	CH13D021	ICONTEST–2014	7–9 August 2014, IISc, Bangalore	IIT Madras
41	Chandra Shekar Besta	CH14D002	International Conference on Mathematical Modeling and Computer Simulation	8–10 December 2014, IIT Madras	IIT Madras
42	Chandra Shekar Besta	CH14D002	International Conference on Industrial and Information System (ICIIS-14)	15–17 December 2014, IIITM, Gwalior	IIT Madras
43	Indu Chanchal Polpaya	CH14D011	International Conference on Polymers and Allied Materials	30–31 May 2014, IIT Patna	IIT Madras
44	Dheeraj Kumar	CH14D401	Indian Control Conference 2015	5–7 January 2015, IIT Madras	IIT Madras
<i>PDF</i>					
45	Dhriti Chatterjee Majumdar	CH14IPF01	83rd Annual Meeting of Society of Biological Sciences	17–21 December 2014, Bhubaneswar	IIT Madras
46	Krishna Etika	CH14IPF02	2nd Young Investigator Meet on Soft Matter 2014	18–20 December 2014, Pondicherry	IIT Madras

### Name of students/scholars who won outside prizes and awards

Sl. No.	Name of the Student/Scholar	Roll No.	Name of Prize	Prize Awarded by
1	Dipin S. Pillai	CH10D017	Best Poster Award	IIT Madras-IMSc, Chennai
2	S. Narasimha Reddy	CH11D005	Best Paper Award	Taipei, Taiwan
3	Vaishakh Nair	CH11D012	Best Oral Presentation	The Gandhigram Rural Institute, Gandhigram, Tamil Nadu
4	Vaishakh Nair	CH11D012	Best Poster Presentation	Jadavpur University
5	Jason R. Picardo	CH11D026	Fulbright-Nehru Doctoral Exchange Fellowship	Fulbright-Nehru Doctoral Exchange Fellowship
6	Manigandan S.	CH12D016	Best Poster Presentation Award	Mallavia National Institute of Technology, Jaipur
7	Mohammed Samdani Shaik (Interdisciplinary)	CH13D024	Prime Minister's Fellowship for Doctoral Research	Science & Engineering Research Board (SERB)-Department of Science and Technology (DST)
8	Indu Chanchal Polpaya	CH14D011	Third Prize for Paper Presentation, ICPAM 2014	IIT Patna

### Names of students/scholars who won institute convocation/Institute Day prizes

Sl. No.	Name of the Student/Scholar	Roll No.	Name of Prize
<b>Convocation Prize 2014</b>			
1	Merin Thomas	CH09B070	B. Ravichandran Memorial Prize
2	Krishna Shrinivas	CH10B026	Reliance Heat Transfer Private Limited Prize
3	Swaroop I.R.	CH10B068	C.A. Sastry Endowment Prize
4	Rahul R.	CH12M021	Dr. K. Subba Raju Memorial Prize
5	Jyothi Latha Tamalapakula	CH09D008	Bhagyalakshmi and Krishna Ayengar Award
<b>Institute Day Prizes 2014</b>			
1	Nirmal L.	CH11B093	Dr. Anita Mehta-Damani Prize
2	Sahithi Gorthy	CH11B089	Prof. Ramanujam Memorial Award
3	Krishna Shrinivas	CH10B026	Dr. R.K. Viswanath Memorial Prize
4	Iyer Shachit Shankaran	CH09B067	Dr. Anita Mehta-Damani Prize
5	Resmi Suresh M.P.	CH12M024	Chevron Products Company Prize
6	Varun Govindarajan	CH10B072	K. Srinivasan and Indira Srivasan Prize
7	Shivani Patel	CH10B101	Mr. S. Viswanathan Prize
8	Swetha Pendyala	CH12M017	48th Indian Pharmaceutical Congress Prize for the best project in biotechnology, 2014
<b>Alumni Day Prizes 2014</b>			
1	Vulavala Midhun Reddy	CH09B076	Prof. M. Ramanujam Memorial Award
2	R. Subramanian	CH09B074	Ms D.L. Saraswati Memorial Prize

### 4.4.3. Faculty Members and Their Activities

#### Faculty members

Name and Qualifications	Major Areas of Specialisation
<b>Professors</b>	
P.S.T. Sai [Head]	Chemical reactor analysis and design
Abhijit Deshpande	Rheology of complex fluids; polymers and polymeric composites; processing flow visualization
A.R. Balakrishnan	Thermodynamics of azeotropic mixtures; two-phase flows and boiling in narrow tubes

Name and Qualifications	Major Areas of Specialisation
M. Chidambaram	Process control
A. Kannan	Mathematical modeling; simulation and optimisation of chemical processes
R. Nagarajan	Fine particle science & technology; chemical vapour deposition; process intensification using acoustic fields
T. Panda	Bioprocess optimisation; bioprocess technology; enzyme design
Preeti Aghalayam	Chemical reaction engineering
S. Pushpavanam	Modeling and simulation; nonlinear dynamics; flow visualisation
Raghunathan Rengasamy	Process systems engineering; fuel cells; computational discrete microfluidics
S. Ramanathan	Electrochemistry; chemical mechanical planarisation for semiconductor processing
R. Ravi	Applied statistical mechanics; foundations of thermodynamics and mechanics; process dynamics and control
Shankar Narasimhan	Process design; data mining; fault diagnosis
Sreenivas Jayanti	Fuel cells; combustion; energy systems
Susy Varughese	Physics and mechanics of polymeric materials; polymeric nano composites
Tanmay Basak	Microware application; mathematical modeling and simulation
Upendra Natarajan	Polymer science and engineering; molecular simulation; statistical thermodynamics of complex fluids; nanostructured hybrid composite materials
<b>Associate Professors</b>	
Arun K. Tangirala	Process systems engineering; process control, identification and monitoring; applied signal processing
Niket S. Kaisare	Catalytic combustion; micro-reactors; advanced process control; energy and fuel processing
Raghuram Chetty	Electrocatalysis; fuel cells; wastewater treatment
R. Ravikrishna	Contaminated sediment remediation; contaminant fate and transport; air pollution process and control
Sridharakumar Narasimhan	Process system engineering; optimisation; process control; fault diagnosis
<b>Assistant Professors</b>	
M.G. Basavaraja	Directed assembly of colloids; microstructure and rheology of colloids, surfactants, polymers and their mixtures; interfacial rheology; ionic liquids; particulate gels
Ethayaraja Mani	Molecular simulations; self-assembly; mathematical modeling
R. Ramnarayanan	High-resolution microscopy and spectroscopy; ideating original concepts in the life sciences; revisiting old ideas of value in the physical and chemical sciences
T. Renganathan	Multiphase systems; gasification; capture of CO <sub>2</sub>
R. Vinu	Thermo-catalytic conversion of biomass to useful intermediates; photocatalysis for environmental decontamination; microkinetic modeling of complex reactions
<b>Professors Emeriti</b>	
K. Krishnaiah	Chemical reactor analysis and design fluidization
<b>Hosted Fellows</b>	
K. Vijaya Raghavan	Environmental biotechnology; water quality and waste water treatment
<b>INSPIRE Fellows</b>	
Nirav P. Bhatt	Data analysis; process systems engineering; kinetic modeling
<b>Chevron Chair Professor</b>	
Srini Raghavan	Wet processing in semiconductor manufacturing including cmp, corrosion and electrochemistry; surface and colloidal phenomena
<b>Guest Faculty</b>	
K.S. Ravindran	Technology development and transfer to manufacturing; materials and thin film technologies quality management systems
G. Vaidyanathan	Nuclear thermal hydraulics and safety



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

Sl. No.	Co-ordinator(s)	Title	Period
<b>Workshops</b>			
1	Arun K. Tangirala	System Identification and Network Modelling	12–15 May 2014
2	Arun K. Tangirala	Data-driven Analysis of Non-linear Signals and Systems	6–7 September 2014
3	Arun K. Tangirala	Data-driven Multiscale Analysis (pre-conference tutorial), First Indian Control Conference (ICC)	4 January 2015
4	Arun K. Tangirala	ChemClave 2015	13–15 March 2015
<b>Short-term courses</b>			
1	S. Ramanathan and R. Ramnarayanan	DST SERB School on Fundamental Electrochemical Principles Applied to Problems in Science and Engineering	10–14 August 2014
2	M. Chidambaram	Process Control	15–19 December 2014
3	A. Kannan and T. Renganathan	Thermodynamic Analysis of Modern Separation Processes	24–28 November 2014

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

Sl. No.	Name of Faculty Member	Title	Institution	Period
<b>Workshops</b>				
1	Arun K. Tangirala	A Tutorial Overview of Time-Frequency Analysis and Wavelet Transforms	IISc, Bangalore	14 February 2015
2	R. Nagarajan	Annual Workshop of Deans of Alumni Relations	IIT Kanpur	19–21 September 2014
3	R. Ramnarayanan	ESTEEM2 Electron Crystallography Workshop	University of Cambridge, UK	22–25 July 2014
<b>Seminars</b>				
1	Basavaraha Madivala Gurappa	CMET Seminar	University of Delaware	30 June 2014
<b>Symposia</b>				
1	Basavaraha Madivala Gurappa	88th Colloids and Surface Symposium	Philadelphia, USA	22–25 June 2014
<b>Conferences</b>				
1	A.R. Balakrishnan	15th International Heat Transfer Conference	Kyoto, Japan	10–15 August 2014
2	Raghuram Chetty	Gordon Research Seminar and Gordon Research Conference on Fuel Cells	Bryant University in Smithfield, Rhode Island, USA	2–8 August 2014
3	P.S.T. Sai	Fifth International Conference on Chemical Engineering and Applications (CCEA 2014)	Taipei, Taiwan, Hong Kong	26–27 August 2014
4	P.S.T. Sai	Third International Conference on Chemical and Biological Processes (ICCBP 2014)	Dubai, UAE	19–21 December, 2014
5	Sreenivas Jayanti	International Flow Battery Forum 2014	Hamburg, Germany	1–2 July 2014
6	Tanmay Basak	10th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics	Florida, USA	14–16 July 2014
7	Tanmay Basak	10th Mississippi State Conference on Differential Equations and Computational Simulations	Mississippi State University, USA	23–25 October 2014

Sl. No.	Name of Faculty Member	Title	Institution	Period
<b>Others</b>				
1	S. Pushpavanam	Faculty selection meeting	Calcutta University	20 November 2014
2	S. Pushpavanam		BIT Messra, Ranchi	23–24 November 2014
3	R. Nagarajan	Investiture ceremony (chief guest)	Bala Vidya Mandir School, Adyar	20 June 2014

### Special lectures delivered by faculty members at other institutions

Sl. No.	Name of Faculty Member	Title of Lecture	Institution	Date
1	Arun K. Tangirala	On system identification under the TEQIP programme	NIT Tiruchirappalli	28 March 2015
2	R. Nagarajan	Inaugural address at TECHENOSIS 2015, inter-collegiate symposium	Tagore Engineering College, Chennai	18 March 2015
3	R. Nagarajan	Dispersion in nano-suspensions	VIT, Vellore	November 2014
4	R. Vinu	Energy and resource recovery via catalytic fast pyrolysis of polymers, biomass and algae	Institute of Chemical Technology (ICT), Mumbai	28 July 2014
5	R. Vinu	Deriving energy from biomass: From characterization to combustion, gasification and pyrolysis (invited talk at India Expo 2014)	Noida, India	4 September 2014
6	R. Vinu	Characterisation and applications of lignin-based composites	Mahathma Gandhi University, Kottayam, India	11 October 2014
7	R. Vinu	Thermochemical conversion of biomass, coal, algae and MSW to fuels and useful intermediates (invited)	IIT Madras	4 December 2014
8	R. Vinu	Fast pyrolysis of biomass for liquid fuels (invited)	BPCL—Corporate R&D Centre, Greater Noida	18 December 2014
9	Raghuram Chetty	Shape controlled palladium electrocatalysts for polymer electrolyte membrane fuel cells	IIT Guwahati	1 December 2014
10	Raghuram Chetty	Shape controlled palladium electrocatalysts for low-temperature fuel cells	Michigan State University, USA	24 July 2014

### Visits abroad by faculty members

Sl. No.	Name of Faculty Member	Place Visited	Date	Purpose of Visit	Funding from
1	A.R. Balakrishnan	Kyoto, Japan	10–15 August 2014	International conference	CPDA
2	Basavaraha Madivala Gurappa	Philadelphia, USA	22–25 July 2014	Symposium	CPDA
3	Basavaraha Madivala Gurappa	Delaware	30 June 2014	CMET Seminar	CPDA
4	Ethayaraja Mani	Philadelphia, USA	22–25 June 2014	International conference	CPDA
5	R. Nagarajan	Middle East countries and Abu Dhabi University	25 April–3 May 2014	Official visit	IIT Madras
6	R. Nagarajan	UAE	May 2014	Alumni meetings, university visits	IIT Madras
7	R. Nagarajan	USA	July 2014	Alumni meetings, university visits	IIT Madras
8	R. Nagarajan	USA	14–18 May 2014	Mehta Family Foundation and Houston Methodist Research Institute, brief visit	IIT Madras

Sl. No.	Name of Faculty Member	Place Visited	Date	Purpose of Visit	Funding from
9	Raghuram Chetty	Florida, USA	11–16 May 2014	Electrochemical Society meeting	UGC and IIT Madras
10	R. Ramnarayanan	UK	22–25 July 2014	Workshop on Electron Microscopy	CPDA
11	R. Ramnarayanan	Department of Metallurgy and Materials Science, University of Cambridge, UK	24 July 2014	Invited talk	–
12	R. Ravikrishna	San Francisco, USA	10–14 August 2014	Oral presentation at the 248th National Exposition and Meeting	CPDA
13	P.S.T. Sai	Taipei, Taiwan, Hong Kong	26–27 August 2014	International conference	CPDA
14	P.S.T. Sai	Dubai, UAE	19–21 December 2014	International conference	CPDA
15	Sreenivas Jayanti	Hamburg, Germany	1–2 July 2014	International conference	CPDA
16	Tanmay Basak	Florida, USA	14–16 July 2014	International conference	CPDA

### Honours and awards obtained by faculty members

Sl. No.	Name of Faculty Member	Name of Award	Awarded by	Awarded for	Date of Award
<b>Awards</b>					
1	Arun K. Tangirala	Junior-Level Research & Development Award	IIT Madras	Junior-level research and development	2014
2	Ethayaraja Mani	Young Faculty Recognition Award (YFRA) 2014	IIT Madras	Outstanding achievements in teaching, scholarship and creative research work	5 September 2014
3	S. Pushpavanam	Best Poster Award	IIT Madras–IMSc, Chennai	Jetting-to-dripping transition of bi-fluid flows in circular channels	21–24 July 2014
4	P. Sessa Talpa Sai	Best Paper Award	Taipei, Taiwan	Experimental investigation on segregation of binary mixture of solids by continuous liquid fluidisation	26–27 August 2014

### Books, monographs authored/co-authored

Sl. No.	Name of Faculty Member	Title	Publisher	Author/Co-author
<b>Books</b>				
1	M. Chidambaram	<i>Relay Auto Turning for Identification and Control</i>	Cambridge University Press	Co-author (Vivek Sathe and Babasaheb Ambedkar)
2	Arun K. Tangirala	<i>Principles of System Identification: Theory and Practice</i>	CRC Press, Taylor & Francis Group	Author
3	C. Lakshmana Rao	<i>Modelling of Engineering Materials</i>	John Wiley & Sons	Co-author (Abhijit P. Deshpande)

### Articles

- 1 K. Vijayaraghavan and Frankin. D. Raja. (2014). Design and development of green roof substrate to improve runoff water quality: Plant growth experiments and adsorption. *Water Research* 63: 94–101.

### Fellowships of academies and professional societies

Sl. No.	Name of Faculty Member	Year of Admission
<b>INAE</b>		
1	Shankar Narasimhan	2013
2	A.R. Balakrishnan	2003
<b>TNAsc</b>		
1	A.R. Balakrishnan	1996

Sl. No.	Name of Faculty Member	Year of Admission
<b>Institute of Engineers</b>		
1	A.R. Balakrishnan	2013
<b>CSIR—Central Institute of Mining &amp; Fuel Research, Dhanbad</b>		
1	Sreenivas Jayanti	2013–2016
<b>Raman Fellowship for Post Doctoral Research</b>		
1	Raghuram Chetty	Michigan State University, USA 2013–2014

#### Editorial boards of journals

Sl. No.	Name of Faculty Member	Position	Journal
1	A.R. Balakrishnan	Editor	<i>International Journal of Heat and Mass Transfer</i>
2	A.R. Balakrishnan		<i>International Communications in Heat and Mass Transfer</i>
3	A.R. Balakrishnan		<i>Journal of Energy, Heat and Mass Transfer</i>
4	A.R. Balakrishnan	Editor-in-Chief	<i>Journal of The Institution of Engineers (India): Series E (Chemical and Textile Engineering)</i>
5	Raghuram Chetty	Member	<i>Nano Hybrids</i>
6	Shankar Narasimhan	Member	<i>ICE, Advances in Chemical Engineering</i>
7	Tanmay Basak	Associate Editor	<i>International Journal of Heat and Mass Transfer</i>
8			<i>International Communications in Heat and Mass Transfer</i>

#### 4.4.4. Design and Development Activities

##### New facilities added or major equipment procured

Sl. No.	Name of Equipment	Value (lakhs of ₹)
1	High pressure interchangeable SS and glass reactor (Amar Equipments)	8.75
2	UV–visible diode array spectrophotometer (Agilent Technologies)	5.17
3	Gas chromatograph with flame ionisation and thermal conductivity detectors (GC-FID/TCD) (Agilent Technologies)	8.37

##### Patents filed

Sl. No.	Name of Faculty Member	Title of Patent
1	S. Ramanathan	Lanthanum doping of ceria abrasive to obtain robust CMP polish rates
2	Sreenivas Jayanti	Auto thermal, dual reformer concept for efficient generation of hydrogen for high-temperature PEM fuel cells

#### 4.4.5. Research and Consultancy

##### Sponsored research projects

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Co-ordinators
1	Large-amplitude oscillatory shear of physically aggregating complex fluids	2014–2017	DST	54.26	Abhijit P. Deshpande, Basavaraja M. Gurrappa
2	Institute research and development junior-level award	2014–2017	Research Fund	20	Arun K. Tangirala
3	Nanoparticle films for water evaporation retardation-film elasticity, rupture and re-formation	2013–2016	CSIR	27.4	Basavaraja M. Gurappa
4	Rheology and microstructure of cellulose–ionic liquid mixtures	2013–2016	BRNS	32.75	Basavaraj M. Gurappa (PI), Abhijit P. Deshpande (Co-PI)

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Co-ordinators
5	Center for research on confined soft matter	2014–2016	Team Research Project	200	Basavaraja M. Gurappa, Abhijit P. Deshpande, Ethayaraja Mani, Sunil Kumar P.B., Dilip Kumar Sathapathy, Aditi Simha, Nandita Madhavan, Edamana Prasad
6	Self-assembly of Janus colloids	2012–2015	DST	55.00	Ethayaraja Mani
7	Process intensification	2014–2016	Alumni Association	3.05	Nagarajan R.
8	Model order reduction for convection diffusion process with applications to reformer	2015–2017	Nissan Research Support Program	10.73	Niket S. Kaisare, Sridharakumar Narasimhan
9	Multi-scale modeling analysis and control of reacting systems for energy applications	2014–2016	New Faculty Initiation Grant	5.00	Niket S. Kaisare
10	Identification of heterogeneous reaction systems based in multi-sensor data—INSPIRE Faculty Award	2013–2018	DST	86.27	Nirav Pravinbhai Bhat
11	DAE—Graduate Gellowship Scheme (DGFS)	—	Board of Research in Nuclear Sciences	3.80	S. Pushpavanam
12	Elucidation of physio-chemical mechanisms in absorption of carbon dioxide using microchannels for optimal design of absorption systems	2012–2015	DST	62.00	S. Pushpavanam, Abhijit P. Deshpande
13	Svagata.eu—Experience Europe as an Indian	2013–2017	European Commission	4.00	S. Pushpavanam
14	Understanding dynamic drop formation in 2-D channels and development of a rational design framework	2014–2017	DST	39.62	Raghunathan Rengaswamy
15	Next-generation green energy conversion devices	2015–2016	Exploratory Research Project	10.00	Raghunathan Rengasamy
16	Titania nanotubes as an alternative catalyst support for direct methanol fuel cells	2013–2016	Ministry of New and Renewable Energy	52.12	Raghuram Chetty (PI), S. Ramaprabhu, PH (Co-PI)
17	High-resolution scanning electron microscope (HR-SEM)	2015–2016	Maintenance of Capital Equipment	5.16	Raghuram Chetty
18	Characterisation and modification of ceria particles for STI CMP	2011–2014	DST+NRF	31 (+40 million KW)	R. Ramanathan, Tanmay Basak, Jin Goo Park (Korean PI)
19	PVD—electrochemical hybrid method to eliminate toxic H <sub>2</sub> Se in CIGS solar cell fabrication process	2013–2016	DST—SERI	93.90	S. Ramanathan, Kasi Viswanathan
20	Water purification facility (MilliQ Integral)	2014–2015	Maintenance of Capital Equipment	1.3	Ramanathan S.
21	Gas Chromatography—Mass Spectrometry (GC—MS)	2015–2016	Maintenance of Capital Equipment	1.15	Ravikrishna R.
22	Unsteady state phase holdup characteristics of three-phase inverse fluidised bed	2012–2016	New Faculty Scheme	5.00	Renganathan T.
23	GTWG proposal on advance coal technology	2014–2017	DST	63.63	Sreenivas Jayanti, Preeti Aghalayam
24	Control and operation of urban water distribution networks	2014–2017	DST	32.91	Sridharakumar Narasimhan, Shankar Narasimhan, Murty B.S.

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Co-ordinators
25	Experiment design using convex optimisation	2013–2016	Board of Research in Nuclear Sciences	19.16	Sridharkumar Narasimhan
26	Improving targeting community health through a women's cancer screening programme	2014–2015	Socially Relevant Projects	3.00	Sridharakumar Narasimhan, Basavaraja M. Gurappa
27	Development of value-added recycled product based on polymeric composites used in aerospace application	2012–2015	Aeronautics Research & Development Board	34.7	Susy Varughese
28	Molecular interaction between water soluble polymers and ionic surfactants: Insights from atomistic molecular dynamics simulation	2013–2017	DST	17.00	Upendra Natarajan
29	Fundamentals of fast pyrolysis of algal biomass	2014–2015	Chevron Products Corporation	15.00	Vinu R., Preeti Aghalayam
30	Fundamentals of co-processing of biomass residues with waste polymers via fast pyrolysis for biofuels production and resource recovery	2013–2015	DST	52.00	R. Vinu, S. Ramanathan
31	D-Gas Chromatograph–Mass Spectrometer (2D-GC-MS)	2015–2016	Maintenance of Capital Equipment	1.7	Vinu R.
32	Fundamentals of catalytic fast pyrolysis of biomass to biofuels and intermediates using a micropyrolysis reactor	2012–2015	New Faculty Scheme	20	
33	2D-Gas Chromatograph–Mass Spectrometre (2D-GC-MS)	2015–2016	Maintenance of Capital Equipment	1.7	
34	Design and development of hybrid biofilter to treat polluted urban runoff: Role of soil, plants microbes and sorbent materials	2013–2016	DST	13.75	K. Vijayaraghavan
35	Green roofs: An extensive study to assess the role of substrate, plants and soil microbes to improve runoff quality	5 years	DBT, GoI	74.50	

#### Industrial consultancy projects (ongoing and new)

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Co-ordinators
1	Performance evaluation studies of heat and mass transfer equipment	2013–2016	Common Code	0	Kannan A.
2	Feasibility study of UCG in India	2014–2015	Bharat Heavy Electricals Ltd.	4.69	Preethi Aghalayam
3	Assessment of flow regimes in horizontal boiling tube	2014–2017	Common Code	0	Sreenivas Jayanti

#### RBIC projects (ongoing and new)

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Co-ordinators
1	Microstructure characterisation of emulsion using interfacial rheology	2014–2015	Unilever Industries Private Limited	16.1	Basavaraja M. Gurappa, Abhijit P. Deshpande
2	Design of self-foaming liquid hand wash: Effect of surfactant type and concentration on interfacial properties and stability	2014–2015	Hindustan Unilever Limited	16.1	Basavaraja M. Gurappa, Pushpavanam S.



Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Co-ordinators
3	RBIC project on rapid diagnostics of batteries for efficient power management	2014–2015	U.S. Army International Technology Center Pacific (ITC–PAC)	51	Raghunathan Rengasamy
4	Performance guarantee testing of induced draught concrete cross-flow towers	2015–2015	Va Tech Wabag Limited	6.4	Kannan A.
5	Megasonic cleaning: Phase II	2014–2015	Crest Ultrasonics Corporation	2.1	Nagarajan R.
6	Sensor network audit for cooling subsystems	2014–2015	IIT Bombay	12	Sridharakumar Narasimhan
7	Improving the selectivity of ethylbenzene hydroperoxide during the oxidation of ethylbenzene in the SMPO process	2014–2015	Shell India Markets Private Limited	25.0	Vinu R.

#### Retainer consultancy (ongoing and new)

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Co-ordinators
1	Design of chlorine-di-oxide generator	2015–2015	Vasu Chemical Industries	5.62	T. Renganathan, K. Krishnaiah

#### Exchange programmes with other institutions under MoUs

Sl. No.	Name of Faculty Member	Name of University/Institution Which Has MoU
1	R. Nagarajan	University of New South Wales, Australia
2	R. Nagarajan	University of Southampton, UK
3	R. Nagarajan	Seoul National University, Korea
4	R. Nagarajan	University of New South Wales, Australia
5	R. Nagarajan	ENSAM, France
6	R. Nagarajan	NTU, Singapore
7	R. Nagarajan	Curtin University, Australia
8	R. Nagarajan	Purdue University
9	R. Nagarajan	University of Arizona, USA
10	R. Nagarajan	University of Technology, Sydney, JDP
11	R. Nagarajan	Cold Spring Harbour Laboratory, USA
12	Sridharakumar Narasimhan	Claude Bernard Lyon 1 University, France
13	Sreenivas Jayanti	Loughborough University, UK
14	R. Ravikrishna	Louisiana State University, USA
15	S. Pushpavanam	Caledonian College of Engineering, Oman

#### Research publications

Papers published in refereed national journals:	6
Papers published in refereed international journals:	84
Papers presented at national conferences:	7
Papers presented at international conferences:	39

#### Papers published in refereed national journals

1. J. Kodavaty and A.P. Deshpande. 2014. Mechanical and swelling properties of poly (vinyl alcohol) and hyaluronic acid gels used in biomaterial systems: A comparative study. *Defence Science Journal* 64(3): 222–229.
2. S. Hazarika and M. Chidambaram. 2015. Static decouplers with p-pi dual loop controllers for unstable system. *Indian Chemical Engineer* 14 pp.

3. S. Santosh and M. Chidambaram. 2015. Tuning of proportional integral derivative controllers for critically damped second-order plus time delay systems. *Indian Chemical Engineer* 57(1): 32–51.
4. V.D. Ram, A. Karlmarx and M. Chidambaram. 2014. Identification of unstable second-order transfer function model with a zero by optimization method. *Indian Chemical Engineer* 11p.
5. R. Ramnarayanan. 2014. Culture, science and music in education. *Journal of Current Science* 107.
6. C. Beula and P.S.T. Sai. 2014. Kinetics of esterification of acetic acid and ethanol with a homogeneous acid catalyst. *Indian Chemical Engineer* 20 pp.

#### Papers published in refereed international journals

1. A. Majhi, T.K. Pardhi and A.P. Deshpande. 2015. Analysis of squeeze flow experiments with different model fluids between solid surfaces and fabrics. *International Journal of Multiphase Flow* 68: 93–99.
2. J. Kodavaty and A.P. Deshpande. 2014. Regimes of microstructural evolution as observed from rheology and surface morphology of crosslinked poly(vinyl alcohol) and hyaluronic acid blends during gelation. *Journal of Applied Polymer Science* doi:10.1002/APP.41081
3. A.J. Jacob, A.P. Deshpande and L. Bouteiller. 2014. Large-amplitude oscillatory shear of supramolecular materials. *Journal of Non-Newtonian Fluid Mechanics* 206: 40–56.
4. M. Gupta, A.P. Deshpande and P.B.S. Kumar. 2014. Rheology of concentrated sulfonated poly (ether ether ketone) solutions. *Journal of Applied Polymer Science* 137(7): 40044-1–40044-10.
5. K.A.N. Iyer, R. Pantina and A.P. Deshpande. 2014. Modelling and simulation of drop spreading on fibrous porous media. *Journal of the Textile Institute* 105(3): 294–303.
6. S. Kaw, A.K. Tangirala and A. Karimi. 2014. Detection of model-plant mismatch in model-based control schemes using plant-model ratio *Journal of Process Control* 24: 1720–1732.
7. R. Kannan and A.K. Tangirala. 2014. Correntropy-based partial directed coherence for testing multivariate Granger causality in nonlinear processes. *Physical Review E: Statistical, Nonlinear, and Soft Matter Physics* 89(6): 062144.
8. S. Kaw, A.K. Tangirala and A. Karimi. 2014. Improved methodology and set-point design for diagnosis of model-plant mismatch in control loops using plant-model ratio. *Journal of Process Control* 24(11): 1720–1732.
9. M. Aravinthan, M. Venkatesan, S.K. Das and A.R. Balakrishnan. 2014. Experimental investigation of subcooled flow boiling in a minichannel. *Heat Transfer Engineering* 36: 408–417.
10. Venkateshwar Rao Dugyala and Madivala G. Basavaraj. 2014. Control over coffee-ring formation in evaporating liquid drops containing ellipsoids. *Langmuir* 30(29): 8680–8686.
11. Trivikram Reddy Nallamilli, Ethayaraja Mani and Madivala G. Basavaraj. 2014. A model for the prediction of droplet size in pickering emulsions stabilized by oppositely charged particles. *Langmuir* 30(31): 9336–9345.
12. Venkateshwar Rao Dugyala and Madivala G. Basavaraj. 2015. Evaporation of sessile drops containing colloidal rods: Coffee-ring and order-disorder transition. *The Journal of Physical Chemistry B* 119(9): 3860–3867.
13. M.G. Basavaraj, E. Mani, M. Sabapathy and S.D.C. Pushpam. 2015. Synthesis of single and multipatch particles by dip-coating method and self-assembly thereof. *Langmuir* 31(4): 1255–1261.
14. Madivala G. Basavaraj, Naa Larteokor McFarlane, Matthew L. Lynch and Norman J. Wagner. 2014. Nanovesicle formation and microstructure in aqueous ditallowethylesterdimethylammonium chloride (DEEDMAC) solutions. *Journal of Colloid and Interface Science* 429(1): 17–24.
15. V. Dhanya Ram and M. Chidambaram. 2014. Simple method of designing centralized PI controllers for multivariable systems based on SSGM. *ISA Transactions* doi:10.1016/J.ISATRA.2014.11.019
16. V.D. Ram, C. Rajapandiyam and M. Chidambaram. 2015. Steady-state gain identification and control of multivariable unstable systems. *Chemical Engineering Communications* 202(2): 151–162.
17. N. Thanga Mani and M. Chidambaram. 2014. Discrimination of three different power-law kinetic models for hydrocracking of asphaltenes by periodic operation. *Petroleum Science and Technology* 32(19): 2345–2354.
18. K. Aravamudan, V. Harikumar, B. Kumar, L. Philip, S.M. Bhallamudi and K.S. Reddy. 2014. Simulation of a cross flow wind aided evaporator. *Desalination* 340(1): 18–29.
19. S. Balakrishnan, R. Nagarajan and K. Karthick. 2015. Mechanistic modeling, numerical simulation and validation of slag-layer growth in a coal-fired boiler. *Energy* 81: 462–470.
20. Jyoti Kumari, Deepak Kumar, Ankita Mathur, Arif Naseer, Ravi Ranjan Kumar, Prathna, Thanjavur Chandrasekaran, Gouri Chaudhuri, Mrudula Pulimi, Ashok M. Raichur, S. Babu, Natarajan Chandrasekaran, R. Nagarajan and Amitava Mukherjee. 2014. Cytotoxicity of TiO<sub>2</sub> nanoparticles towards freshwater sediment microorganisms at low exposure concentrations. *Environmental Research* 135: 333–345.
21. Jay Karen Maria William, Swaminathan Ponmani, Robello Samuel, R. Nagarajan and Jitendra S. Sangwai. 2014. Effect of CuO and ZnO nanofluids in xanthan gum on thermal, electrical and high pressure rheology of water-based drilling fluids. *Journal of Petroleum Science and Engineering* 117: 15–27.

22. R. Nagarajan. 2014. Cleaning performance of high-frequency, high-intensity 360 kHz system on removal of nano-dimensional contaminants from various surfaces. *International Journal of Mechanical, Aerospace, Industrial and Mechatronics Engineering* 9(3): 355–359.
23. S. Balakrishnan and R. Nagarajan. 2014. Role of bouncing potential in molten ash implication. *Chemical Engineering Communications* doi:10.1080/00986445.2014.927358
24. S. Balakrishnan and R. Nagarajan. 2014. Effect of surface roughness and surface energy on molten fly ash deposition. *International Journal of Advances in Engineering and Sciences & Applied Mathematics* 6(1): 41–48.
25. Kannan Deepa and Tapobrata Panda. 2014. Synthesis of gold nanoparticles from different cellular fractions of *Fusarium oxysporum*. *Journal of Nanoscience and Nanotechnology* 14(5): 3455–3463.
26. A. Seenivasan, Sathyanarayana N. Gummadi, Tapobrata Panda and Thomas Théodore. 2015. Quantification of lovastatin produced by *Monascus purpureus*. *Open Biotechnology Journal* 9(1): 6–13.
27. Dipin S. Pillai, J.R. Picardo and S. Pushpavanam. 2014. Shifting and breakup instabilities of squeezed elliptic jets. *International Journal of Multiphase Flow* 67: 189–199.
28. M.V.S.R. Ravi Kanth, S. Pushpavanam, Shankar Narasimhan and B. Narasimha Murthy. 2014. A robust and efficient algorithm for computing reactive equilibria in single and multi phase systems. *Industrial and Engineering Chemistry Research* 53(39): 15278–15286.
29. P. Garg, J.R. Picardo and S. Pushpavanam. 2014. Vertically stratified two-phase flow in a curved channel: Insights from a domain perturbation analysis. *Physics of Fluids* 26: 124106.
30. P. Garg, J.R. Picardo and S. Pushpavanam. 2015. Chaotic mixing in a planar, curved channel using periodic slip. *Physics of Fluids* 27(3): 1.4915902.
31. A.B. Vir, S.R. Kulkarni, J.R. Picardo, A. Sahu and S. Pushpavanam. 2014. Holdup characteristics of two-phase parallel microflows. *Microfluidics and Nanofluidics* 16(6): 1057–1067.
32. Anil B. Vir, A.S. Fabiyan, J.R. Picardo and S. Pushpavanam. 2014. Performance comparison of liquid-liquid extraction in parallel microflows. *Industrial and Engineering Chemistry Research* 53(19): 8171–8181.
33. S. Pushpavanam and Guy B. Marin. 2014. Preface. *Chemical Engineering Science* 110: 1.
34. A. Manokaran, S. Pushpavanam and P. Sridhar. 2015. Dynamics of anode–cathode interaction in a polymer electrolyte fuel cell revealed by simultaneous current and potential distribution measurements under local reactant-starvation conditions. *Journal of Applied Electrochemistry* 45(4): 353–363.
35. R. Chetty, K.K. Maniam, W. Schuhmann and M. Muhler. 2015. Oxygen–plasma-functionalized carbon nanotubes as supports for platinum–ruthenium catalysts applied in electrochemical methanol oxidation. *ChemPlusChem* 80(1): 130–135.
36. A. Fazil and R. Chetty. 2014. Synthesis and evaluation of carbon nanotubes supported silver catalyst for alkaline fuel cell. *Electroanalysis* 26(11): 2380–2387.
37. K.K. Maniam and R. Chetty. 2014. Palladium nanodendrites deposited on electrochemically activated carbon-based support for electrocatalytic applications (conference paper). *ECS Transactions* 61(12): 11–20.
38. K.K. Maniam, V. Muthukumar and R. Chetty. 2014. Approaches towards improving the dispersion of electrodeposited palladium on carbon supports. *Energy Procedia* 54: 281–291.
39. K.S. Rajmohan and R. Chetty. 2014. Nitrate reduction at electrodeposited copper on copper cathode. *ECS Transactions* 59: 397–407.
40. S. Ramanathan and Fathima Fasmin. 2015. Detection of nonlinearities in electrochemical impedance spectra by Kramers Kronig transforms. *Journal of Solid State Electrochemistry* doi:10.007/S10008-015-2824-9
41. Ramachandran Manivannan, Byoung-Jun Cho, Xiong Hailin, Srinivasan Ramanathan, Jin-Goo Park. 2014. Characterization of non-amine-based post-copper chemical mechanical planarization cleaning solution. *Microelectronic Engineering* 122: 33–39.
42. B.V.S. Praveen, J.G. Park and S. Ramanathan. 2014. Effect of La doping of ceria abrasives for STI CMP. *ECS Transactions* 61(17): 27–35.
43. Shachit S. Iyer, T. Renganathan, S. Pushpavanam, Mantravadi Vasudeva Kumar and Niket Kaisare. 2015. Generalized thermodynamic analysis of methanol synthesis: Effect of feed composition. *Journal of CO2 Utilization* doi:10.1016/J.JCOU.2015.01.006
44. R. Guruprasad, T. Renganathan and S. Pushpavanam. 2014. Generalized thermodynamic analysis of high-pressure air-blown gasifier. *Industrial and Engineering Chemistry Research* 53(49): 18750–18760.
45. J. Dhanalakshmi, P.S.T. Sai and A.R. Balakrishnan. 2014. Effect of bivalent cation inorganic salts on isobaric vapour–liquid equilibrium of methyl acetate–methanol system. *Fluid Phase Equilibria* 379: 112–119.
46. A. Srikanth, S. Narasimhan, S. Narasimhan and S. Murthy Bhallamudi. 2014. Optimization of unloading operations in petroleum product storage terminals. *Industrial and Engineering Chemistry Research* 53(35): 13728–13735.
47. V.R. Palleti, S. Narasimhan and R. Rengaswamy. 2014. Optimal sensor placement for contamination detection and identification in water distribution networks. *Computer Aided Chemical Engineering* 33: 1447–1452.

48. E. Harikishan Reddy, Sreenivas Jayanti and Dayadeep S. Monder. 2014. Thermal management of high-temperature polymer electrolyte membrane fuel cell stacks in the power range of 1–10 kWe. *International Journal of Hydrogen Energy* 39(35): 20127–20138.
49. K. Srinivasan and S. Jayanti. 2015. An automated procedure for the optimal positioning of guide plates in a flow manifold using Box complex method. *Applied Thermal Engineering* 76: 292–300.
50. R.J. Basavaraja and S. Jayanti. 2015. Comparative analysis of four gas-fired, carbon capture-enabled power plant layouts. *Clean Technologies and Environmental Policy* doi:10.1007/s10098-015-0936-7
51. S. Anupriya and S. Jayanti. 2014. Experimental and modelling studies of gas-liquid vertical annular flow through a diverging section. *International Journal of Multiphase Flow* 67: 180–190.
52. R.J. Basavaraja and S. Jayanti. 2015. Viability of fuel switching of a gas-fired power plant operating in chemical looping combustion mode. *Energy* 81: 213–221.
53. R.J. Basavaraj and S. Jayanti. 2014. Syngas-fueled, chemical-looping combustion-based power plant lay-out for clean energy generation *Clean Technologies and Environmental Policy* doi:10.1007/s10098-014-0781-0
54. V. Prabu and S. Jayanti. 2014. Heat-affected zone analysis of high ash coals during ex situ experimental simulation of underground coal gasification. *Fuel* 123(1): 167–174.
55. T. Jyothi Latha and S. Jayanti. 2014. Hydrodynamic analysis of flow fields for redox flow battery applications batteries. *Journal of Applied Electrochemistry* 44(9): 995–1006.
56. T. Jyothi Latha and S. Jayanti. 2014. Ex situ experimental studies on serpentine flow field design for redox flow battery systems. *Journal of Power Sources* 248: 140–146.
57. T. Abburi and S. Narasimhan. 2014. Optimal sensor scheduling in batch processes using convex relaxations and Tchebycheff systems theory. *IEEE Transactions on Automatic Control* 59(11) 6882823: 2978–2983.
58. S. Munusamy, S. Narasimhan and N.S. Kaisare. 2014. Order reduction and control of hyperbolic, counter-current distributed parameter systems using method of characteristics. *Chemical Engineering Science* 110: 153–163.
59. M. Nabil, S. Narasimhan and S. Skogestad. 2014. Profitable and dynamically feasible operating point selection for constrained processes. *Journal of Process Control* 24(5): 531–541.
60. S. Akhilesan, C. Lakshmana Rao and S. Varughese. 2014. Electromechanical behavior of polyaniline/poly(vinyl alcohol) blend films under static, dynamic and time-dependent strains. *Smart Materials and Structures* 23(7): 075016.
61. D. Ramakrishna, Tanmay Basak, S. Roy and E. Momoniat. 2014. Analysis of thermal efficiency via analysis of heat flow and entropy generation during natural convection within porous trapezoidal cavities. *International Journal of Heat and Mass Transfer* 77: 98–113.
62. Monisha Roy, Tanmay Basak, S. Roy and I. Pop. 2015. Analysis of entropy generation for mixed convection in a square cavity for various thermal boundary conditions. *Numerical Heat Transfer, Part A: Applications* 68(1): 44–74.
63. Pratibha Biswal and Tanmay Basak. 2015. Entropy generation based approach on natural convection in enclosures with concave/convex side walls. *International Journal of Heat and Mass Transfer* 82: 213–235.
64. Monisha Roy, S. Roy and Tanmay Basak. 2015. Role of various moving walls on energy transfer rates via heat flow visualisation during mixed convection in square cavities. *Energy* 82: 1–22.
65. Abhishek Kumar Singh, Tanmay Basak, Avijit Nag and S. Roy. 2015. Role of entropy generation on thermal management during natural convection in tilted porous square cavities. *Journal of the Taiwan Institute of Chemical Engineers* doi:10.1016/j.jtice.2014.12.026
66. A.K. Singh, S. Roy, T. Basak and E. Momoniat. 2014. Role of entropy generation on thermal management during natural convection in a tilted square cavity with isothermal and non-isothermal hot walls. *Numerical Heat Transfer, Part A: Applications* 66(11): 1243–1267.
67. Madhuchhanda Bhattacharya, Tanmay Basak and Subramanian Sriram. 2014. Generalized characterization of microwave power absorption for processing of circular shaped materials. *Chemical Engineering Science* 118: 257–279.
68. R. Chockalingam and U. Natarajan. 2015. Dynamics of conformations, hydrogen bonds and translational diffusion of poly(methacrylic acid) in aqueous solution and the concentration transition in MD simulations. *Molecular Physics* 13p doi:10.1080/00268976.2015.1024776.
69. P. Sappidi and U. Natarajan. 2014. Influence of hydrogen bonding on the structural transition of poly(methacrylic acid) chain in water–ethanol solution by molecular dynamics simulations. *Molecular Simulation* 1476–1487 doi:10.1080/08927022.2014.9920918.
70. R. Chockalingam and U. Natarajan. 2014. Self-association behaviour of atactic polymethacrylic acid in aqueous solution investigated by atomistic molecular dynamics simulations. *Molecular Simulation* 1110–1121 doi:10.1080/08927022.2014.947481.



71. M.A. Philip, U. Natarajan and R. Nagarajan. 2014. Acoustically enhanced particle dispersion in polystyrene/alumina nanocomposites. *Advances in Nano Research: An International Journal* 2(2): 121–133 doi.org/10.12989/anr.2014.2.2.121.
72. V. Nair, A. Panigrahy and R. Vinu. 2014. Development of novel chitosan–lignin composites for adsorption of dyes and metal ions from wastewater. *Chemical Engineering Journal* 254: 491–502.
73. D.V. Suriapparao, D.K. Ojha, T. Ray and R. Vinu. 2014. Kinetic analysis of co-pyrolysis of cellulose and polypropylene. *Journal of Thermal Analysis and Calorimetry* doi:10.1007/s10973-014-3866-4
74. A.K. Tripathi and R. Vinu. 2015. Characterization of thermal stability of synthetic and semi-synthetic engine oils. *Lubricants* 3: 54–79.
75. D.K. Ojha and R. Vinu. 2015. Resource recovery via catalytic fast pyrolysis of polystyrene using zeolites. *Journal of Analytical and Applied Pyrolysis* DOI:10.1016/j.jaap.02.024.
76. D.V. Suriapparao, N. Pradeep and R. Vinu. 2015. Bio-oil production from *Prosopis juliflora* via microwave pyrolysis. *Energy Fuels* doi:10.1021/acs.energyfuels.5b00357
77. K. Vijayaraghavan, Y. Premkumar and J. Jegan. 2015. Malachite green and crystal violet biosorption onto coco-peat: Characterization and removal studies. *Desalination and Water Treatment* 9 pp.
78. K. Vijayaraghavan and F.D. Raja. 2015. Pilot-scale evaluation of green roofs with sargassum biomass as an additive to improve runoff quality. *Ecological Engineering* 75: 70–78.
79. K. Vijayaraghavan and F.D. Raja. 2014. Design and development of green roof substrate to improve runoff water quality: Plant growth experiments and adsorption. *Water Research* 63: 94–101.
80. K. Vijayaraghavan, U.M. Joshi, H. Ping, S. Reuben and D.F. Burger. 2014. In situ removal of dissolved and suspended contaminants from a eutrophic pond using hybrid sand-filter. *Journal of Environmental Science and Health–Part A: Toxic/Hazardous Substances and Environmental Engineering* 49(10): 1176–1186.
81. K. Vijayaraghavan and U.M. Joshi. 2014. Application of *Ulva* sp. biomass for single and binary biosorption of chromium(III) and manganese(II) ions: Equilibrium modeling. *Environmental Progress and Sustainable Energy* 33(1): 147–153.
82. K. Vijayaraghavan and U.M. Joshi. 2014. Can green roof act as a sink for contaminants? A methodological study to evaluate runoff quality from green roofs. *Environmental Pollution* 194: 121–129.
83. K. Vijayaraghavan and F.D. Raja. 2014. Experimental characterisation and evaluation of perlite as a sorbent for heavy metal ions in single and quaternary solutions. *Journal of Water Process Engineering* 4(c): 179–184.
84. K. Vijayaraghavan and Frankin. D. Raja. (2014). Design and development of green roof substrate to improve runoff water quality: Plant growth experiments and adsorption. *Water Research* 63: 94–101.

#### Papers presented at national conferences

1. P. Satheesh Kumar and Arun K. Tangirala. 2015. Identification of ARX models from small samples using compressed sensing techniques. *Indian Control Conference, IIT Madras, 5–7 January 2015.*
2. T.G. Anjali and M.G. Basavaraj. 2014. Three phase contact angle measure of shape anisotropic hematite particles using gel trapping technique. *CHEMCON 2014, Chandigarh, 27–30 December 2014.*
3. S. Ramanathan. 2014. Detection of nonlinearities in electrochemical impedance spectra using Kramers Kronig Transforms. *ICONEST Conference, IISc, Bangalore, 6–8 August 2014.*
4. S. Narasimha Reddy, Harshendruhela Indraganti and P.S.T. Sai. 2014. Liquid fluidized binary mixtures in which coarser component may be flotsam. *CHEMCON 2014, Chandigarh, 27–30 December 2014.*
5. S. Narasimha Reddy and P.S.T. Sai. 2014. Segregation of binary mixtures of solids in continuous liquid fluidized beds. *Novel Process Developments for Sustainable Industrial Practice (NDSIP-14), Tirupathi, 12–13 December 2014.*
6. C. Beula, P.S.T. Sai. 2014. Enhancement of esterification of acetic acid with ethanol catalysed by Bronsted acidic ionic liquids. *CHEMCON 2014, Chandigarh, India, 27–30 December 2014.*
7. Vaishakh Nair and R. Vinu. 2014. Novel chitosan–alkali lignin composites for adsorption of industrial effluents from wastewater. *National Conference on Application of the Derivatives of Chitin and Chitosan 22–23 August 2014, Gandhigram Rural Institute, Tamilnadu.*

#### Papers presented at international conferences

1. Santosh V. Daware and M.G. Basavaraja. 2014. Pickering emulsion by arresting phase separation using anisotropic particles. *The Physics of Soft Matter, IOP Biological Physics Group, Homerton College, Cambridge, UK, April 2014.*
2. Trivikram Reddy and M.G. Basavaraja. 2014. Limited coalescence model for emulsions stabilized by oppositely charged particles. *ACS Colloid and Surface Science Symposium, University of Pennsylvania, Philadelphia, USA, 22–25 June 2014.*

3. Trivikram Reddy and M.G. Basavaraja. 2014. Control of droplet size in Pickering emulsions using oppositely charged particles. *International Conference on Soft Matter (ICSM 2014)*, NIT Jaipur, 6–10 October 2014.
4. R. Ashna and M.G. Basavaraja. 2014. Synthesis of polystyrene nanoparticles by nano precipitation from expended polystyrene wastes. *International Conference on Soft Materials*, MNIT, Jaipur, 6–10 October 2014.
5. T.G. Anjali and M.G. Basavaraj. 2014. Influence of particle change in Pickering emulsions stabilized by shape anisotropic particles. *ICSM, 2014 International Conference on Soft Materials 2014*, MNIT, Jaipur, 6–10 October.
6. C.S. Besta and M. Chidambaram. 2014. Centralized P/PI control system design based on equivalent transfer functions for unstable TITO process. *Ninth International Conference on Industrial and Information Systems, ICIIS 2014* (article no. 7036613), Gwalior, India, 15–17 December 2014 and 9 February 2015.
7. C. Sankar Rao and M. Chidambaram. 2014. Experimental application of sub-space model identification of an unstable system. *International Conference on Mathematical Modeling and Computer Simulation*, IIT Madras, 8–10 December 2014.
8. Ethayaraja Mani and S. Manigandan. 2014. Synthesis and self-assembly of patchy colloids: Experiments and simulations. *ACS Colloid and Surface Science Symposium*, University of Pennsylvania, Philadelphia, USA, 22–25 June 2014.
9. Neethu Thomas and Ethayaraja Mani. 2014. Kinetic modeling of growth of gold nanorods. *International Conference on Soft Materials (ICSM 2014)*, MNIT, Jaipur, Rajasthan, 6–10 October 2014.
10. R. Nagarajan. 2014. Use of ultrasonis for treatment of leather-dyeing effluent. *Second European Conference on Sustainability, Energy and the Environment 2014*, Brighton, UK, 3–6 July 2014.
11. Anil B. Vir, J.R. Picardo and S. Pushpavanam. 2014. Influence of Marangoni flow on extraction and reaction in microchannels. *ASME International Conference on Nanochannels, Microchannels and Minichannels (ICNMM-2014)*, Chicago, Illinois, USA, 3–7 August.
12. Niveda Lakshmanan, C.N. Pratheeba and P. Aghalayam. 2014. Transient modeling and NO<sub>x</sub> reduction in automobile exhaust. *12th International Conference on Combustion and Energy Utilization (ICCEU)*, Lancaster, UK, 29 September to 3 October 2014.
13. R. Vishnu, R.I. Sujith and P. Aghalayam. 2014. Investigation of flame dynamics in a v - Flame combustor during combustion instability. *ASME 2014 Gas Turbine India Conference, GTINDIA 2014*, New Delhi, India, 15–17 December 2014.
14. Ashutosh Singh and S. Pushpavanam. 2014. Interface dynamics approach for predicting stability of two immiscible superposed fluid flows in a rectangular channel. *International Conference on Mathematical Modelling and Computer Simulation with Applications*, IIT Kanpur, 31 December to 2 January 2014.
15. D.S. Pillai and S. Pushpavanam. 2014. Jetting-to-dripping transition of bi-fluid flows in circular channels. *Dynamics Days Asia Pacific-08 (DDAP 08)*, IIT Madras-IMSc, Chennai, India, 21–24 July 2014.
16. P. Garg, J.R. Picardo and S. Pushpavanam. 2014. Chaotic mixing in a curved channel with slip surfaces. *Dynamics Days Asia Pacific-08 (DDAP 08)*, IIT Madras-IMSc, Chennai, India, 21–24 July 2014.
17. B. Dinesh and S. Pushpavanam. 2014. Stability of axisymmetric core-annular flow. *Dynamics Days Asia Pacific-08 (DDAP 08)*, IIT Madras-IMSc, Chennai, India, 21–24 July 2014.
18. Raghuram Chetty, M. Kranthi Kumar and M. Volga. 2014. Palladium nanodendrites for electrocatalytic applications. *Electrochemical Society (ECS)-225th Meeting* (in the Characterization of Interfaces and Interphases session), Orlando, Florida, USA, 11–16 May 2014.
19. Raghuram Chetty and Lawrence Drzal. 2014. Oxygen plasma-functionalised graphene nanoplatelets as support for PT catalyst (ECS) 225th Meeting (in the Carbon Nanostructures for Energy Conversion session), Orlando, Florida, USA, 11–16 May 2014.
20. G. Keerthiga, B. Viswanathan and R. Chetty. 2014. Electrochemical reduction of CO<sub>2</sub> on modified Zn/Cu electrodes. *International Conference on Electrochemical Science and Technology (ICONTEST-14)*, IISc, Bangalore, India, August 2014.
21. Bincy George Abraham, S.H. Gopinath and Raghuram Chetty. 2014. Pt electro-deposited on titania nanotubes for the electr-chemical oxidation of methanol. *International Conference on Electrochemical Science and Technology*, IISc, Bangalore, 7–9 August 2014.
22. Fathima Fasmin and S. Ramanathan. 2014. Detection of nonlinearities in electrochemical impedance spectra using Kramers Kronig transforms. *ICONEST 2014*, Bangalore, India, 6–8 August 2014.
23. B.V.S. Praveen, Jin Goo Park and S. Ramanathan. 2014. Effect of La doping of ceria abrasives. *STI CMP Selectivity*, 61(17): 27–35, Orlando, FL, USA, May 2014.
24. S. Noyel Victoria, Roberto Garrappa, Vimala Ramani and S. Ramanathan. 2014. Analytical and numerical solutions of some fractional differential equations occurring in electrochemical analysis. *10th Differential Equations & Computational Simulations (DECS)*, Mississippi State University, USA, 23–25 October 2014.
25. G. Saranya, Arun K. Devassikutty, T. Swaminathan and R. Ravikrishna. 2014. Emission of fungal spores from simulated solid waste on different surfaces. *International Aerosol Conference 2014*, South Korea, 28 August to 2 September 2014.



26. K. Nagarajan, K. Krishniah and T. Renganathan. 2015. Holdup characteristics in continuous counter current liquid–solid system operating in free mode. *International Conference on New Frontiers in Chemical Energy and Environmental Energy INCEE 2014*, NIT Warangal, 20–21 March 2014.
27. S. Narasimha Reddy and P.S.T. Sai. 2014. Segregation of binary mixture of solids in flotsam-rich continuous liquid fluidised beds. *14 AICHE Annual Meeting*, Atlanta, USA, 16–21 November 2014.
28. K. Srinivasan, V. Balamurugan and S. Jayanti. 2014. Flow control in T-junction using CFD-based optimization. *Fifth International Conference and 41st National conference on Fluid Mechanics and Fluid Power FMFP–2014*, Kanpur, India, 12–14 December 2014.
29. S. Jayanti and T. Jyothi Latha. 2014. Designing flow fields for all- liquid redox flow battery systems. *International Flow Battery Forum*, Hamburg, Germany, July 2014.
30. A. Kumar, M. Nabil and S. Narasimhan. 2014. Economical and plant friendly input design for system identification. *13th European Control Conference, ECC 2014; Strasbourg Convention and Exhibition Center, Place de Bordeaux, Strasbourg, France, 24–27 June 2014.*
31. R. Piramuthu Raja Ashok and Susy Varughese. 2014. Rheological behavior of PEDOT: PSS dispersion with secondary additives. *International Conference on Polymers and Allied Materials*, IIT Patna, May 2014.
32. T. Basak, S. Panda, S. Srirama and M. Bhattacharya. 2014. Analysis on effect of shapes for microwave-assisted food processing of 2D samples. *10th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics*, Florida, 14–16 July 2014.
33. P. Biswal and T. Basak. 2014. Numerical simulations on heat flow visualization and entropy generation during natural convection in enclosures with curved side walls. *10th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics*, Florida, 14–16 July 2014.
34. P. Biswal and T. Basak. 2014. Analysis of heat function boundary conditions on invariance of heat flow in square enclosures with various thermal boundary conditions. *15th International Heat Transfer Conference (IHTC-15)*, Kyoto, Japan, 10–15 August 2014.
35. D. Das and T. Basak. 2014. Analysis of thermal mixing via Bejan’s heatline during natural convection within square cavities with discrete heat sources. *10th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics*, Florida, 14–16 July 2014.
36. R. Chockalingam and U. Natarajan. 2015. Structure and thermodynamic investigations on symmetric poly(styrene-*block*-acrylic acid) (PS-*b*-PAA) micelle in salt-free aqueous solutions. *International Symposium on Polymer Science and Technology Macro-2015*, Indian Association for the Cultivation of Science, Kolkata, 23–26 January 2015.
37. G. SriBala and R. Vinu. 2014. Kinetic modeling of acid hydrolysis of biomass via conventional and non-conventional techniques. *AICHE Annual Meeting 2014*, Atlanta, GA, USA, 18 November 2014.
38. D.K. Ojha and R. Vinu. 2014. Production of high-quality bio-oil via fast copyrolysis of cellulose and polypropylene. *International Workshop on Sustainable Energy, Power and Propulsion*, Jadavpur University, Kolkata, 5–7 January 2014.
39. Vaishakh Nair and R. Vinu. 2015. In situ catalytic fast pyrolysis of lignin for the production of phenols using oxide catalysts. *249th ACS National Meeting*, Denver, Colorado, USA, 22–26 March 2015.

### Distinguished visitors to the department

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit/Name of Seminar
1	Dr Suresh K. Bhatia, Professor, University of Queensland, Australia and presently Chevron Chair Professor	15 April 2014	Quantum Molecular Sieves of Light Isotopes
2		17 April 2014	How water Adsorbs in Hydrophobic Nanospaces?
3	K.A. Natarajan, Emeritus Professor and NASI Senior Scientist Platinum Jubilee Fellow, IISc, Bangalore	22 April 2014	Biology–Materials Interface
4	Prof. Srini Raghvan, University of Arizona	August 2014	Chevron Chair Professor
5	Mr. Sanjay Venugopal, Yokogawa IA Technologies Limited, Bangalore	1 May 2014	Emerging Opportunities for Chemical Engineers
6	Vijay A. Sethuraman, School of Engineering, Brown University	2 May 2014	Methods for Discovering Chemical and Mechanical Degradation Mechanisms in Lithium-Ion Batteries
7	Ranganathan Gopalakrishnan, Postdoc, California Institute of Technology, USA	5 June 2014	Diffusion-Limited Transport in Aerosol Systems: Effect of Shape and Potential Interactions

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit/Name of Seminar
8	Dr. D.V. Satya Gupta, Business Development Director, Baker Hughes Pressure Pumping, USA	2 September 2014	Stimulation of Unconventional Shales
9	Dr. Srivatsan Kidambi, Faculty Member, Department of Chemical and Biomolecular Engineering, University of Nebraska, Lincoln, USA	10 September 2014	Engineering Novel Polyelectrolyte Multilayer Films for Tissue Engineering and Drug Delivery Applications
10	Rajnish Kumar, National Chemical Laboratory	26 September 2014	Natural Gas Hydrates: Opportunities for Innovative Energy Solutions
11	Dr. Peter B. Lillehoj, Assistant Professor, Institute of International Health at Michigan State University, USA	10 October 2014	Interaction with head and faculty members
12	Dr. Robert Burford, School of Chemical Engineering, Cooperative Research Center for Polymers, Australia	15 October 2014	Presenting their value proposition and discussing specific areas of interest
13	Hari Prasad Dasari, DST-INSPIRE Faculty, Department of Chemical Engineering, NIT, Warangal	20 October 2014	Ceria-Based Materials and Their Applications
14	Dr. Sarath Guttikumda, Director, Urban Emissions.info, Adjunct Associate Professor, IIT Bombay, Technical Advisor, India Program of Clean Air Asia	1 December 2014	Air Quality Modeling and Management in India
15	Dr. Sumesh P. Thampi, Postdoctoral Research Assistant at the Department of Physics, University of Oxford	27 January 2015	Active Turbulence
16	Gene Bunin, independent researcher in China	20 January 2015	Experimental Optimisation: State of the Art and Research Challenges
17	Dr Siva Rama Krishna Perala, Postdoctoral Associate at MIT, Cambridge	16 February 2015	Arrested Wet Chemical Precipitation of Metal Nanoparticles
18	Satyavrata Samavedi, Postdoctoral Research Associate, Rensselaer Polytechnic Institute, Troy, New York	29 March 2015	Gradient Biomaterials for the Potential Regeneration of Tissue Transitions

#### 4.4.6. Other Activities of the Department/Centre

##### Faculty and staff members

Sl. No.	Description
1	A delegation from the University of Manchester visited the department on 8 September 2014. The objectives were exploration of joint research projects, co-supervision of Ph.D. students, research workshops and two-way staff exchanges, including Dr. James Winterburn, of the Chemical Engineering Department.
2	Delegates from Louisiana State University, USA visited the department on 27 January 2015 to meet the faculty and the Head of the Department.
3	The term of Dr. R. Nagarajan as Dean (I&AR) was extended for a further period of 1 year with effect from 6 September 2014.
4	Dr. S. Niket Kaisare was appointed an Associate Professor in the Department of Chemical Engineering with effect from the forenoon of 3 November 2014.
5	Dr. Preethi Aghalayam and Dr. S. Ramanathan were appointed Professors with effect from the afternoon of 18 July 2014.

##### Results obtained in research work (from M.S. and Ph.D theses) of scholars/faculty members

Sl. No.	Item
<b>Ph.D.</b>	
1	Dr M. Kranthi Kumar, former doctoral student of the Department of Chemical Engineering was chosen for the 2014 doctoral-level Innovative Student Project Award by INAE for his Ph.D. thesis titled <i>Development of Shape Controlled Palladium Structures as Electrocatalysts for Fuel Cell Applications</i> . He was guided by Dr. Raghuram Chetty.

Sl. No.	Item
2	M. Kranthi Kumar (former student of Dr. Raguram Chetty) was awarded the Gandhian Young Technological Innovation 2015 Award for his Ph.D. thesis titled <i>Development of Shape Controlled Palladium Structures as Electrocatalysts for Fuel Cell Applications</i> . The award was presented by Dr. R.A. Mashelkar at Rashtrapati Bhavan, New Delhi on 8 March 2015.
3	A new product for the IC fabrication process, i.e. a slurry with a high oxide-to-nitride polish rate selectivity, was developed, and the mechanism of high selectivity was identified in B.V.S. Praveen's Ph.D. thesis, <i>Characterisation and Modification of Ceria Abrasives for Shallow Trench Isolation Chemical Mechanical Polishing</i> .
4	Chandrasekaran S, Ramanathan S. and Tanmay Basak: Experimental Studies on Microwave Heating of Metals and Graphite Based Powder Mixtures.
5	Dhanalakshmi J., Balakrishnan A.R. and Sai P.S.T.: Effect of Entrainers on Isobaric Vapour Liquid Equilibrium of Non-Aqueous Azeotropic Mixtures.
6	Jyothi Latha Tamalapakular and Sreenivas Jayanthi: Experimental and Numerical Investigations on Flow Field Designs for Redox Flow Battery Systems.
7	Seenivasan A. and Panda T.: Studies on Biosynthesis of Lovastatin and its analogues
8	Sudhakar M., Sridharkumar Narasimhan and Niket S. Kaisare: Model Order Reduction and Model Based Control of First Order Hyperbolic Distributed Parameter Systems.

#### M.S.

- 1 Abhinav Garg and Arun K. Tangirala: Causality Analysis for Topology Reconstruction and Interaction Assessment.
- 2 Gokul Siva Sankar G., Sridharakumar Narasimhan and Shankar Narasimhan: Model Predictive Control of Water Supply Networks.
- 3 Harikrishna Reddy B. and Nagarajan R.: Modeling and CFD Simulation of Enhanced Spray Drying Process.
- 4 Vishnu R. and Preethi Aghalayam: Experimental Study on Combustion Dynamics of a Ducted Lean Premixed V-Flame.
- 5 Kishore S., Sai P.S.T. and Selvaraju P.: Study on Reaction of Hydrogen Bubble With Flowing Sodium
- 6 Sriram S. and Tanmay Basak: Material Invariant Characterization of Microwave Power Within Circular Cross-Section

#### Socially relevant activities carried out by the department

- 1 Mr R. Selva Ganapathy, Junior Technical Superintendent, Department of Chemical Engineering, was declared the Winner of the Volunteer Hero 2013 Award by iVolunteer for his volunteer work for AID India, with whom he has been volunteering for more than 10 years. The award comprises a certificate and a sponsored trip to attend the world's biggest conference on volunteering, 'The Points of Light', held at Atlanta, USA, during 16–18 June 2014.
- 2 Mr R. Selva Ganapathy, Junior Technical Superintendent, was selected to represent Tamilnadu in the Senior Archery Nationals at New Delhi, during 15–19 October 2014.
- 3 Ms Saraswathi M., Senior Assistant, was selected by the Institute to participate (badminton) in the 22nd Inter IIT Staff Sports Meet–2014 held at IIT Bombay during 22–26 December 2014.
- 4 Dr. Abhijit P. Deshpande and Dr. Susy Varughese: Prakriti is the Wildlife Club of IIT Madras. It was founded in April 2002 by a group of wildlife enthusiasts comprising students, faculty members, staff, members residents and alumni of IIT Madras. The formation of the club was spurred by a growing recognition of the need to protect the unique biodiversity of the IIT Madras campus. This club organises an annual bird watching training programme for campus children, students of KV, IIT Madras and Vanavani in the age group of 6 and above within the campus for one week during the summer vacation from 6:30 to 8:00 am.

#### International collaboration

##### Faculty visits

Sl. No	Name of the Faculty Member	Purpose of Visit	Date and Place
1	Arun K. Tangirala	DAAD research stay	6 May to 16 July 2014, Munich, Germany
2	R. Nagarajan	CERN Supercollider facility and EPFL	4–6 September 2014, Switzerland
3	Sridharakumar Narasimhan	DAAD–IIT exchange	30 May–16 July 2014, Aachen, Germany
4.	Sridharakumar Narasimhan	Faculty exchange scheme	1 June to 15 July 2014, RWTH, Aachen, IIT-TU

## Student visits

Sl. No.	Name of the Scholar/Roll No.	Purpose of Visit	Date and Place
1	Bulusu Venkata Sesa Praveen, CH11D032	DST-NRF project	9–9 June 2014, Hanyang University, Korea
2	M.P. Reshmi Suresh, CH12D024	Internship	1 June to 6 July 2014, Concordia University, Montreal, Canada
3	Tanneru Hemanth Kumar, CH11D031	Internship	1 June to 31 July 2014, Concordia University, Montreal, Canada
4	Bhagavatula N.V.S.S.R. Dinesh, CH12D025	Project work	1 August to 31 October 2014, University of Luxembourg
5	R. Savitha, CH12D004	Visiting scholar	20 October–20 April 2014, Dublin City University, Ireland
6	M. Danny Raj, CH11D038	Visiting scholar	1 February to 4 July 2015, West Virginia University, USA
7	G. Swaminathan Bharadwaj, CH11D036	Co-Tutorial Programme	1 December 2014 to 31 May 2015, Tokyo Metropolitan University, Japan

## Activities initiated

As an initiative of Swatch Bharath, cleaning of the laboratories and workshop was carried out.

## 4.5. DEPARTMENT OF CHEMISTRY

### 4.5.1. Introduction

The Department of Chemistry was a part of the Department of Chemical Engineering during the period 1959–1961 and was established as an independent department in the year 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).

The department offers M.Sc. and Ph.D. programmes in chemistry. As of date, 765 students have graduated with the M.Sc. degree and 566 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). Presently, the department is very well equipped, with modern instrumentation facilities, and is actively engaged in performing quality teaching and research in frontier areas.

### 4.5.2. Academic Programmes

Students on roll as of September 2014 + M.S. and Ph.D. scholars admitted in January 2015

Programme	I Year	II Year	III Year	IV Year	V Year and Others	Total
M.Sc.	52	46	—	—	—	98
Ph.D.	67	35	46	44	57	249
<b>Total</b>	<b>119</b>	<b>81</b>	<b>46</b>	<b>44</b>	<b>57</b>	<b>347</b>

#### Endowment prizes instituted

Keshav–Ranganath Excellence in Research Award for two research scholars and the respective guides

Cash awards for postgraduate scholar (₹25,000) and faculty guide (₹25,000), which will be credited to the PCF account

#### Names of students/scholars who attended conferences/workshops/seminars/symposia abroad or in India

Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference/Seminar/ Symposium/Workshop	Date and Venue	Financial Assistance from
<b>Abroad</b>					
1	Pavan Kumar Mandali	CY10D044	Shastri Student Internship (SSIP 2013–2014)	20 March to 19 June 2014, Canada	—
2	Benke Bahiru Punja	CY09D026	Ninth International Symposium on Macrocyclic and Supramolecular Chemistry	7–11 June 2014, Shanghai, China	—
3	Ananya Bakshi	CY11D042	Gordon Research Conference on Noble Metal Nanoparticles	14–20 June 2014, Mount Holyoke College, USA	—
4	Indranath Chakraborty	CY11D060	Gordon Research Conference on Noble Metal Nanoparticles	14–20 June 2014, Mount Holyoke College, USA	—
5	Radha Gobinda Bhuiin	CY10D047	62nd ASMS Conference	15–19 June 2014, USA	—
6	Rahul N.	CY12D022	62nd ASMS Conference	15–19 June 2014, USA	—

Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference/Seminar/ Symposium/Workshop	Date and Venue	Financial Assistance from
7	Indranath Chakraborty	CY11D060	Visit to lab for research work	20–28 June 2014, University of Toledo, USA	—
8	Ananya Bakshi	CY11D042	Visit to lab for research work	20–28 June 2014, University of Toledo, USA	—
9	Avijit Baidya	CY13D043	Visit to lab for research work	22 June to 17 September 2014, Aalto University, Finland	—
10	Ayan Dasgupta	CY12D006	19th International Symposium on Homogeneous Catalysis (ISHC–XIX)	6–11 July 2014, Ottawa, Canada	—
11	Avik Kumar Pati	CY11D049	25th IUPAC Symposium on Photochemistry	13–18 July 2014, Bordeaux, France	—
12	Jitendriya Swain	CY10D035	25th IUPAC Symposium on Photochemistry	13–18 July 2014, Bordeaux, France	—
13	Vikram Singh	CY11D091	25th IUPAC Symposium on Photochemistry	13–18 July 2014, Bordeaux, France	—
14	Ramanjaneyulu C.	CY11D029	23rd International Symposium on Gas Kinetics and Related Phenomena (GK-2014)	20–25 July 2014, University of Szeged, Hungary	—
15	Srinivasulu Gonu	CY10D015	GK-2014	20–25 July 2014, University of Szeged, Hungary	—
16	Sudhakar G.	CY09D001	GK-2014	20–25 July 2014, University of Szeged, Hungary	—
17	Avijit Baidya	CY13D043	Research programme	July–September 2014, Aalto University, Finland	—
18	Arathala Parandhaman	CY11D008	GK-2014	20–25 July 2014, University of Szeged, Hungary	—
19	Surya Kumar V.	CY13D070	Research work	1 August 2014 to 31 January 2015, Dublin City University, Ireland	—
20	Radha Gobinda Bhuin	CY10D047	Experiment, ‘VUV spectroscopy of astrochemical ices’	5–11 August 2014, NSRRC, Taiwan	—
21	Radha Gobinda Bhuin	CY10D047	Studying the properties of ice films using an ion-surface scattering apparatus	13 August to 12 October 2014, SNU, South Korea	—
22	Akhil Pratap Singh	CY11D039	Annual Gordon Research Conference	17–22 August 2014, River Resort, Newry, ME, USA	—
23	Rabin Rajan J. Methikkalam	CY11D075	IMSC-2014	24–29 August 2014, Geneva, Switzerland	—
24	Dipak Kumar Roy	CY11D056	International Meeting on Boron (IMEBORON-XV)	24–28 August 2014, Prague, Czech Republic	—
25	Anju R.S.	CY11D045	IMEBORON-XV	24–28 August 2014, Prague, Czech Republic	—
26	Kaviya S.	CY11D064	ESONN 2014	24 August to 13 September 2014, Grenoble, France	—
27	Balaganesh M.	CY10D024	Short visit to Dr. Ludovic Biennier’s lab	31 August to 28 November 2014, University of Rennes I, France	—
28	Naganna N.	CY09D030	15th Tetrahedron Symposium—Asia Edition	28–31 October 2014, Singapore Expo, Singapore	—
29	Devi Sirisha Janni	CY08D031	15th Tetrahedron Symposium—Asia Edition	28–31 October 2014, Singapore Expo, Singapore	—



Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference/Seminar/ Symposium/Workshop	Date and Venue	Financial Assistance from
30	Sitakanta Satapathy	CY13D030	Seventh International Symposium on Macro and Supermolecular Architectures and Materials (MAM 2014)	23–27 November 2014, Johannesburg, South Africa	—
31	Nivarthi Ramesh	CY09D063	MAM 2014	23–27 November 2014, Johannesburg, South Africa	—
32	Amit Banerjee	CY09D040	Eighth Singapore International Chemistry Conference (SICC-8)	14–17 December 2014, National University of Singapore (NUS)	—
33	Surya Srinivas Kotha	CY10D053	Eighth Singapore International Chemistry Conference (SICC-8)	14–17 December 2014, NUS, Singapore	—
34	Kaviya S.	CY11D064	Endeavour Research Fellowship 2015	January–June 2015, University of Western Australia	—
35	Nitin Balkrushna	CY10D012	IV International Conference on Multifunctional, Hybrid and Nano Materials (Hybrid Materials 2015)	9–13 March 2015, Sitges, Spain	—
36	Tufan Ghosh	CY11D090	PITTCON Conference & Expo 2015	8–12 March 2015, New Orleans, Louisiana, USA	—
37	Chary Mamillapalli N.	CY11D053	Anatolian Conference on Synthetic Organic Chemistry (ACSOC-2015)	16–19 March 2015, Antalya, Turkey	—
38	Suresh Babu Bemineni	CY11D034	ACSOC-2015	16–19 March 2015, Antalya, Turkey	—
<b>India</b>					
1	S. Kaviya	CY11D064	Nature-Inspired Initiatives in Chemical Trends (NIICT–2014)	2–5 March 2014, Andhra Pradesh	—
2	B. Sindhura	CY12D032			
3	Nidhi Sharma	CY11D073			
4	Indranath Chakraborty	CY11D060	International Conference on Nano Science & Technology (ICONSAT-2014)	2–6 March 2014, Mohali, Punjab	—
5	Anirban Som	CY10D022			
6	Kaviya S.	CY11D064	VI National Symposium for Materials Research Scholars—MR 14	12–14 May 2014, IIT Bombay	—
7	Rajeshkhanna G.	CY11D076	Indian Section of the Electrochemical Society	13–15 May 2014, Kodaikanal	—
8	Umesh Babu	CY10D056	Workshop on Advances in Batteries and Supercapacitors	13–15 May 2014, Kodaikanal	—
9	Sourav Khan	CY11D086	ICONEST-2014	7–9 August 2014, Bangalore	—
10	Umesh Babu	CY10D056	ICONEST-2014	7–9 August 2014, IISc, Bangalore	—
11	Rajeshkhanna G.	CY11D076	ICONEST-2014	7–9 August 2014, Bangalore	—
12	Kaviya S.	CY11D064	Winter School 2014	1–5 December 2014, JNCASR, Bangalore	—
13	Subrat Kumar Barik	CY12D091	International Conference of Structural and Inorganic Chemistry	4–5 December 2014, NCL and IISER Pune	—
14	Subrat Kumar Barik	CY12D091	International Conference of Structural and Inorganic Chemistry	4–5 December 2014, NCL and IISER Pune	—

Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference/Seminar/ Symposium/Workshop	Date and Venue	Financial Assistance from
15	Subrat Kumar Barik	CY12D091	International Conference of Structural and Inorganic Chemistry	4–5 December 2014, NCL and IISER Pune	—
16	Indranath Chakraborty	CY11D060	Seventh Bangalore NANO	5–6 December 2014, Bangalore	—
17	Ananya Bakshi	CY11D042	Seventh Bangalore India NANO	5–6 December 2014, Bangalore	—
18	Pappuru Sreenath	CY11D023	13th Eurasia Conference on Chemical Sciences	14–18 December 2014, IISc, Bangalore	—
19	Rongala Ramalakshmi	CY13D027	13th Eurasia Conference on Chemical Sciences	14–18 December 2014, IISc, Bangalore	—
20	Dipak Kumar Roy	CY11D056	13th Eurasia Conference on Chemical Sciences	14–18 December 2014, IISc, Bangalore	—
21	Balaganesh M.	CY10D024	13th Eurasia Conference on Chemical Sciences	14–18 December 2014, IISc, Bangalore	—
22	Dipa Mandal	CY10D030	13th Eurasia Conference on Chemical Science	14–18 December 2014, IISc, Bangalore	—
23	Bijja Rajashekar	CY09D062	13th Eurasia Conference on Chemical Sciences	14–18 December 2014, IISc, Bangalore	—
24	Siripina Vijaya Kumar	CY13D029	13th Eurasia Conference on Chemical Sciences	14–18 December 2014, IISc, Bangalore	—
25	Arathala Parandhaman	CY11D008	13th Eurasia Conference on Chemical Sciences	14–18 December 2014, IISc, Bangalore	—
26	Srinivasulu Gonu	CY10D015	13th Eurasia Conference on Chemical Sciences	14–18 December 2014, IISc, Bangalore	—
27	Chokkapu Eswara Rao	CY11D011	13th Eurasia Conference on Chemical Sciences	14–18 December 2014, IISc, Bangalore	—
28	Madhumita Tarai	CY12D020	National Workshop on Fluorescence and Raman Techniques–2014	15–19 December 2014, IISER Pune	—
29	Umesh Babu	CY10D056	Second International Conference on Nanostructured Materials and Nanocomposites—ICNM 2014	19–21 December 2014, Mahatma Gandhi University, Kottayam	—
30	Amaresh Chandra Prathan	CY13IPF01	22nd National Symposium on Catalysis (CATSYMP 22)	7–9 January 2015, CSIR-CSMCRI, Bhavnagar	—
31	Rajeshkumar P.	CY11D077	CATSYMP-22	7–9 January 2015, CSIR-CSMCRI, Bhavnagar	—
32	Amit Banerjee	CY09D040	10th International Symposium on Bio-organic Chemistry (ISBOC-10)	11–15 January 2015, IISER Pune	—
33	Avik Kumar Pati	CY11D049	Time and Spatially Resolved Molecular Science	12–14 January 2015, IISc, Bangalore	—
34	Vivek Anand	CY13D073	MICRA 2015	21–27 January 2015, IACS, Kolkata	—
35	Anju T.R.	CY12D003	MICRA 2015	21–27 January 2015, IACS, Kolkata	—
36	Shridevi S. Bhat	CY12D031	17th CRSI National Symposium in Chemistry	3–10 February 2015, NCL, Pune	—
37	Deplanjan Sarkar	CY12D055	17th CRSI National Symposium in Chemistry	3–10 February 2015, NCL, Pune	—
38	Sindhura B.	CY12D032	17th CRSI National Symposium in Chemistry	3–10 February 2015, NCL, Pune	—

Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference/Seminar/ Symposium/Workshop	Date and Venue	Financial Assistance from
39	Nidhi Sharma	CY11D073	17th CRSI National Symposium in Chemistry	3–10 February 2015, NCL, Pune	—
40	Rahul N.	CY12D022	17th CRSI National Symposium in Chemistry	3–10 February 2015, NCL, Pune	—
41	Ramya K.	CY13D063	Indo–Australian Conference on Biomaterials, Tissue Engineering Drug Delivery Systems & Regenerative Medicine 2015	5–7 February 2015, Anna University, Chennai	—
42	Madhumita Tarai	CY12D020	International Conference on Perspectives in Chemometrics 2015	10–12 February 2015, SRM University, Chennai	—
43	Rabin Rajan J. Methikkalam	CY11D075	Collaborative work, Physical Research Lab, Department of Space	11 February to 6 March 2015, Ahmedabad	—
44	Amitava Srimany	CY11D004	International Symposium on Nanotechnology & Cancer Theranostics (ISNACT-2015)	19–21 February 2015, IIT Bombay	—
45	Aravindan N.	CY12D082	REACH 2015: An International Symposium on Recent Advances in Chemistry	3–5 March 2015, NEHU, Shillong	—
46	Ashis Das	CY12D083	REACH 2015	3–5 March 2015, NEHU, Shillong	—
47	Subrata Mondal	CY11D088	REACH 2015	3–5 March 2015, NEHU, Shillong	—
48	Prashant Kumar	CY12D021	REACH 2015	3–5 March 2015, NEHU, Shillong	—
49	Geevarghese V. Jacob	CY11D058	REACH 2015	3–5 March 2015, NEHU, Shillong	—
50	Sanjeeb Sutradhar	CY12D027	REACH 2015	3–5 March 2015, NEHU, Shillong	—
51	Somenath Panda	CY12D033	REACH 2015	3–5 March 2015, NEHU, Shillong	—

#### Names of students/scholars who won outside prizes and awards

Sl. No.	Name of the Student/ Scholar	Roll No.	Name of Prize	Prize Awarded by
1	Pappuru Sreenath	CY11D023	Best Poster Award (NIICT–2014)	—
2	Kaviya S.	CY11D064	Best Poster Award (NIICT–2014)	—
3	Ananya Bakshi	CY11D042	Best Poster Award	Bangalore India Nano
4	Subrat Kumar	CY12D091	A CrystEngComm Poster Prize	CSIR-National Chemical Laboratory and IISER Pune
5	Anju R.S.	CY11D045	A CrystEngComm Poster Prize	CSIR-National Chemical Laboratory and IISER Pune
6	Indranath Chakraborty	CY11D060	NanoScience Fellowship Award	Malhotra Weikfield Foundation
7	Amaresh Chandra Pradhan	CY13IPF01	Hindustan Platinum Award	22nd National Symposium on Catalysis, CSIR-CSMCRI, Bhavnagar
8	Rajeshkhanna G.	CY11D076	Best Poster Award	5th Interdisciplinary Symposium on Materials Chemistry, BARC, Mumbai
9	Ananya Bakshi	CY11D042	Best Poster Award	Bangalore India Nano, Bangalore
10	Rahul N.	CY12D022	Royal Society of Chemistry Poster Prize	National Chemical Laboratory, Pune
11	Indranath Chakraborty	CY11D060	Malhotra Weikfield Foundation NanoScience Fellowship Award	7th Bangalore India Nano 2014

## Names of students/scholars who won institute convocation/Institute Day prizes

Sl. No.	Name of the Student/Scholar	Roll No.	Name of Prize	Name of Donor
1	Anindita Mahapatra	CY14C003	Prof. G. Sundararajan Merit Scholarship	IIT Madras
2	Manisha Samanta	CY13C018	Prof. G. Sundararajan Merit Scholarship	IIT Madras
3	Keshav Kumar	CY09D039	Prof. Ramamurthy Endowment Prize	IIT Madras
4	Sayantana Biswas	CY12C036	Prof. Ramamurthy Prize	IIT Madras

### 4.5.3. Faculty and Their Activities

#### Faculty

Name and Qualifications	Major Areas of Specialization (only 3 areas)
<b>Professors</b>	
M.N. Sudheendra Rao, Ph.D. (IISc, Bangalore)	Inorganic chemistry
N. Chandrakumar, Ph.D. (IIT Kanpur)	Magnetic resonance imaging and spectroscopy
S. Sankararaman, Ph.D. (Victoria, Canada)	Synthetic and mechanistic organic chemistry
R. Dhamodharan, Ph.D. (University of Massachusetts, USA)	Chemistry of macromolecules
A.K. Mishra, Ph.D. (IIT Kanpur)	Fluorescence spectroscopy
T. Pradeep, Ph.D. (IISc, Bangalore)	Solid state chemistry; materials science
M.V. Sangaranarayanan, Ph.D. (IISc, Bangalore)	Electrochemistry
U.V. Varadaraju, Ph.D. (IISc, Bangalore)	Solid state chemistry; materials science
P. Selvam, Ph.D. (IIT Madras)	Catalysis; solid state chemistry
Archita Patnaik, Ph.D. (BHU)	Physical chemistry; colloid and interface science; nanoscience and nanotechnology
S. Baskaran, Ph.D. (IIT Kanpur)	Organic synthesis and asymmetric synthesis
Indrapal Singh Aidhen, Ph.D. (University of Pune)	Synthetic organic chemistry
K. Mangala Sunder, Ph.D. (McGill, Canada)	Theoretical spectroscopy
K. Vidyasagar, Ph.D. (IISc, Bangalore)	Solid state chemistry
P. Bhyrappa, Ph.D. (IISc, Bangalore)	Bioinorganic and supramolecular chemistry; materials chemistry
G. Ranga Rao, Ph.D. (IISc, Bangalore)	Materials chemistry; solid state electrochemistry; surface chemistry and heterogeneous catalysis
Sanjay Kumar, Ph.D. (IIT Kanpur)	Theoretical chemistry; quantum chemistry
<b>Associate Professors</b>	
N. Narasimha Murthy, Ph.D. (IISc, Bangalore)	Bio-inorganic chemistry; inorganic chemistry; spectroscopy
Dillip Kumar Chand, Ph.D. (IIT Kanpur)	Supramolecular chemistry; inorganic chemistry
G. Sekar, Ph.D. (IIT Kanpur)	Enantioselective organic synthesis
Sundaragopal Ghosh, Ph.D. (IIT Bombay)	Organometallic and metalloborane chemistry
B. Rajakumar, Ph.D. (IISc, Bangalore)	Atmospheric chemistry; gas-phase kinetic and high-resolution cavity ring down spectroscopy; computational chemistry
K.M. Muraleedharan, Ph.D. (RRL, Thiruvananthapuram)	Medicinal chemistry; bio-organic chemistry
Edamana Prasad, Ph.D. (RRL, Thiruvananthapuram)	Divalent lanthanide and dendrimer chemistry
<b>Assistant Professors</b>	
Amrendra Vijay, Ph.D. (IISc, Bangalore)	Theoretical physical chemistry
Arti Dua, Ph.D. (IISc, Bangalore)	Statistical mechanics; polymer theory; stochastic processes
Nandita Madhavan, Ph.D. (University of Illinois, Urbana Champaign, USA)	Oligopeptide synthesis; polymer chemistry; organic materials
Ramesh Gardas, Ph.D. (South Gujarat University)	Solution thermodynamics; ionic liquids
Pazhamalai Anbarasan, Ph.D. (IISc, Bangalore)	Organic synthesis

Name and Qualifications	Major Areas of Specialization (only 3 areas)
Beeraiah Baire, Ph.D. (IISc, Bangalore)	Organic synthesis
R. Kothandaraman, Ph.D. (IISc, Bangalore)	Electrochemical systems and electrocatalysis
P. Venkatakrishnan, Ph.D. (IIT Kanpur)	Organic functional materials
Md. Mahinddin Baidya, Ph.D. (CLMU, Munich, Germany)	Organic synthesis

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

Sl. No.	Coordinator(s)	Title	Period
<b>Meetings</b>			
1	U.V. Varadaraju	The Theme Meeting on Recent Trends on Spectroscopy (RTS 2014)	20–21 June 2014
2	P. Selvam	PAC (Physical Chemistry)—DST meeting	9–10 January 2015
<b>Conferences</b>			
1	T. Pradeep	The Second International Conference on Emerging Technologies for Clean Water	23–24 October 2014
2	S. Sankararaman, S. Baskaran	10th NOST Conference for Research Scholars (J-NOST 2014)	4–6 December 2014
<b>Symposia</b>			
1	Ramesh Gardas	Chemistry In-house Symposium	13 August 2014
2	P. Selvam	RSC Road Show and Symposium Series	10 November 2014

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

Sl. No.	Faculty Member	Title	Institution	Period
<b>Meetings</b>				
1	Sundargopal Ghosh	Collaboration work Prof. Nagendran (Inorganic Division) at IIT Delhi	IIT Delhi	21–24 April 2014
2	T. Pradeep	Indo–Japan Co-operative Science Programme (IJCSP) project review meeting	International Advanced Research Centre for Power Metallurgy and New Materials (ARCI), Hyderabad	—
3	T. Pradeep	Fourth Advisory Board Meeting of Institute of Life Sciences	Ahmedabad University, Ahmedabad	5 May 2014
4	M.V. Sangaranarayanan	Meeting	Madura College, Madurai	5–6 May 2014
5	M.V. Sangaranarayanan	Selection Committee	CECRI, Karaikudi	9 May 2014
6	S. Sankararaman	Faculty Selection Committee meeting	IISER, Bhopal	13–15 May 2014
7	M.V. Sangaranarayanan	Meeting	Madura College, Madurai	16 May 2014
8	M.V. Sangaranarayanan	Research Council Meeting	CECRI, Karaikudi	3 June 2014
9	Dillip Kumar Chand	PAC Meeting of DST/SERB in Inorganic Chemistry	Madurai Kamaraj University, Madurai	6 June 2014
10	M.V. Sangaranarayanan	Meeting	MS University, Tirunelveli	30 June 2014
11	Nandita Madhavan	Kaleidoscope-Discussion meeting in chemistry	International Centre, Goa	3–4 July 2014
12	P. Bhyrappa	Expert Committee meeting	CSIR-CSMCRI, Bhavnagar	16–18 July 2014
13	B. Rajakumar	DST INSPIRE science camp	Vikrama Simhapuri University, Nellore	28 July 2014
14	S. Sankararaman	DST meeting	Pune	7–9 August 2014
15	S. Baskaran	Viva	Kottayam	13–14 August 2014
16	S. Sankararaman	Ph.D. viva voce exam	IIT Guwahati	16 August 2014

Sl. No.	Faculty Member	Title	Institution	Period
17	U.V. Varadaraju	Selection Committee meeting	NIT, Manipur	27–28 August 2014
18	A.K. Mishra	Ph.D. viva	IGCAR, Kalpakkam	28 August 2014
19	Indrapal Singh	Ph.D. viva	BHU, Banaras	3–4 September 2014
20	Sundargopal Ghosh	Ph.D. viva	IISc, Bangalore	12 September 2014
21	Sundargopal Ghosh	Ph.D. viva	IISc, Bangalore	19 September 2014
22	A.K. Mishra	Ph.D. viva	Annamalai University, Chidambaram	22 September 2014
23	Sundargopal Ghosh	Collaborative research work	IISc, Bangalore	1 October 2014
24	A.K. Mishra	Ph.D. viva voce exam	JNTU, Hyderabad	10 October 2014
25	G. Sekar	Ph.D. viva	JNTUA, Anantapuramu	14 October 2014
26	A.K. Mishra	Ph.D. viva	IISER, Pune	28 October 2014
27	N. Chandrakumar	Faculty Assessment Committee Meeting	IIT Roorkee	30 October 2014
28	P. Bhyrappa	Advisor Combined Geoscientist and Geologist Examination 2014	UPSC Office, New Delhi	17–21 November 2014
29	N. Chandrakumar	Selection Committee meeting	IISc, Bangalore	8 December 2014
30	M.V. Sangaranarayanan	Research Council meeting and Selection Committee meeting	CECRI, Karaikudi	9 December 2014
31	G. Ranga Rao	Interview	CECRI, Karaikudi	9–11 December 2014
32	G. Sekar	Synopsis meeting	VIT, Vellore	15 December 2014
33	P. Bhyrappa	CSIR pre-examination meeting	NIIST, Thiruvananthapuram	27–29 December 2014
34	K. Mangala Sunder	Discussion of MOOCs	IISc, Bangalore	5 January 2015
35	A.K. Mishra	Ph.D. viva	IIT Hyderabad	7 January 2015
36	R. Dhamodharan	Ph.D. viva	IISc., Bangalore	20 January 2015
37	N. Chandrakumar	CSIR Selection Committee meeting	Delhi	21–22 January 2015
38	Sundargopal Ghosh	Monitor the DST Project	Science and Engineering Research Board (SERB)	10–11 February 2015
39	A.K. Mishra	Academic Audit of KIIT	KIIT, Bhubaneswar	13–15 February 2015
40	U.V. Varadaraju	Science Day celebrations (chief guest)	CECRI, Karaikudi	27 February 2015
41	Indrapal Singh Aidhen	IIT-H recruitment meeting	IIT Hyderabad	27 February 2015
42	P. Selvam	80th Annual Meeting—The Society of Chemical Engineers	Japan, Tokyo	19–21 March 2015
<b>Workshops</b>				
1	P. Selvam	UK–India–Brazil–Africa workshop, 'The Use of Green Chemistry for the Sustainable Production of Biofuels'	Durban	21–22 August 2014
2	B. Rajakumar	Science Academies lecture workshop, 'Spectroscopy and Its Applications'	Loyola College, Chennai	27–28 January 2015
3	B. Rajakumar	Two-day lecture workshop	Periyar Government Arts College, Cuddalore	29–30 January 2015
<b>Seminars</b>				
1	K.M. Muraleedharan	One-day national seminar on recent trends in chemicals	Nirmalagiri College	24 March 2014



Sl. No.	Faculty Member	Title	Institution	Period
2	P. Anbarasan	One-day national seminar on catalysis and catalysed reactions	MK University, Madurai	28 March 2014
3	G. Sekar	One-day national seminar on catalysis and catalysed reactions	MK University, Madurai	28 March 2014
4	A.K. Mishra	Seminar, 'Curricular Reforms in Higher Education'	Ravenshaw University, Odisha	16–17 May 2014
5	B. Rajakumar	Seminar in DST INSPIRE programme	Nellore	August 2014
6	B. Rajakumar	National seminar, 'Water crisis: The challenges ahead of global governance'	PSGR Krishnammal College for Women, Coimbatore	27–28 August 2014
7	K.M. Muraleedharan	Indo–French seminar, 'New Trends in Chemistry and Chemical Biology with a Special Focus on CNS Disorders'	CSIR–IICT, Puduchery	10–11 November 2014
8	Indrapal Singh Aidhen	Indo–French seminar, 'New Trends in Chemistry and Chemical Biology with a Special Focus on CNS Disorders'	CSIR–IICT, Puduchery	10–11 November 2014
9	B. Rajakumar	EURASIA 13	IISc, Bangalore	14–19 December 2014
10	B. Rajakumar	Structure and Dynamics of Molecules and Clusters (SDMC)	Nainital, India	19–22 February 2015
<b>Symposia</b>				
1	B. Rajakumar	International Symposium on Gas Kinetics and Related Phenomena (GK-2014)	University of Szeged, Hungary	20–25 July 2014
2	K.M. Muraleedharan	National symposium, 'Transcending Frontiers in Organic Chemistry' (TFOC-2014)	NIIST, Thiruvananthapuram	9 October 2014
3	B. Rajakumar	National Symposium on Radiation and Photochemistry (NSRP)	IIT Kanpur	9–11 March 2015
<b>Conferences</b>				
1	K.M. Muraleedharan	National Conference on Computer Aided Drug Design & Development	Thiruvananthapuram	27 March 2014
2	S. Baskaran	XVI Organic Chemistry Conference	NOST, Agra	4–7 April 2014
3	Nandita Madhavan	XVI Organic Chemistry Conference	NOST, Agra	4–7 April 2014
4	G. Sekar	XVI Organic Chemistry Conference	NOST, Agra	4–7 April 2014
5	P. Anbarasan	XVI Organic Chemistry Conference	NOST, Agra	4–7 April 2014
6	P. Selvam	Fifth IUPAC Conference on Green Chemistry	Durban	17–21 August 2014
7	R. Dhamodharan	National Conference on Applications of the Derivatives of Chitin and Chitosan (ADCC-2014)	Dindigul	22–23 August 2014

Sl. No.	Faculty Member	Title	Institution	Period
8	P. Selvam	Chemeca 2014 Conference, 'Processing Excellence: Powering Our Future'	Chemeca 2014 Conference, Perth	28 September to 1 October 2014
9	Sundargopal Ghosh	International Conference on structural and inorganic chemistry	CSIR-NCL, IISER Pune	4-5 December 2014
10	K.M. Muraleedharan	13th Eurasia Conference on Chemical Sciences	IISc, Bangalore	14-18 December 2014
11	B. Rajakumar	Recent Advances in Chemistry (REACH)	Shillong, India	3-5 March 2015

### Special lectures delivered by faculty members at other institutions

Sl. No.	Name of Faculty Member	Topic	Institution	Date
1	Archita Patnaik	Engineering molecules via self-assembly	Nurul Islam University, Kanyakumari, Tamil Nadu	8 June 2014
2	K.M. Muraleedharan	Recent trends in organic and bio-organic chemistry	Institute of Basic Sciences, Kottayam	18-20 July 2014
3	P. Venkatakrishnan	Self-assembly in solution	IIT Madras	13 August 2014
4	A.K. Mishra	Talk in recent trends in chemistry	AVVM Sri Pashpam College, Poondi	26 September 2014
5	B. Rajakumar	Invited talk	Christian College, Kerala	16-17 October 2014
6	Sundargopal Ghosh	Invited lecture	IACS and IIT Kharagpur	18-21 October 2014
7	P. Venkatakrishnan	Synthesis and nanoscale self-assembly of functional molecules	IIT Madras	10 November 2014
8	Prasad Edamana	Invited talk at 8th Asian Photochemistry Conference 2014	CSIR National Institute for Interdisciplinary Science and Technology, Thiruvananthapuram	11-13 November 2014
9	Sundargopal Ghosh	Invited lecture	IIT Bombay	9-11 December 2014
10	P. Venkatakrishnan	Organic nanodots: Two-photon brilliance and bio-imaging	MG University, Kottayam	14 December 2014
11	Archita Patnaik	Understanding charge transport in donor-acceptor dyads	SRM University, Chennai	23 December 2014
12	P. Venkatakrishnan	Lecture on functional organic materials	BS Abdur Rahman University, Vandalur	5 January 2015
13	P. Selvam	Advanced porous materials	International Workshop on Advanced Porous Materials, Busan	8-10 January 2015
14	S. Sankararaman	Invited talk	St. Xavier's College, Tirunelveli	9 January 2015
15	S. Sankararaman	Invited lecture	IISER Bhopal	12-14 January 2015
16	P. Selvam	Green chemistry and catalysis for sustainability	First DCU Water Institute & Ireland India Institute Joint Public Lecture, Dublin	21 January 2015
17	P. Selvam	Nano- and nanoporous materials: Applications in catalysis	Flow Chemistry India 2014, Hyderabad	23-24 January 2014
18	N. Chandrakumar	Invited lecture	CEERI, Pilani	23 January 2015
19	Sundargopal Ghosh	Invited lecture	IIT Indore	29 January 2015
20	P. Anbarasan	Invited lecture	SBK College, Aruppukottai	13 February 2015

Sl. No.	Name of Faculty Member	Topic	Institution	Date
21	Sundargopal Ghosh	Invited lecture	University of Burdwan, West Bengal	18–20 February 2015
22	Beeraiah Baire	A mild approach to 2-acylfurans via Brønsted acid promoted interrupted Meyer-Schuster rearrangement of propargyl alcohols	Department of Chemistry, Noble College, Krishna University, AP	21–22 February 2015
23	Beeraiah Baire	Synthetic approaches to spiropreussione B, 2-acylfurn National products and an anticancer agent siramesin	CiHS-2014, IIT Madras	18 August 2014

### Visits abroad by faculty members

Sl. No.	Name of Faculty Member	Country Visited	Date	Purpose of visit	Funding from
1	T. Pradeep	University of Johannesburg, South Africa	7–22 May 2014	Meeting on DST/NRF Chair in Nanotechnology for Water	—
2	T. Pradeep	Buenos Aires, Argentina	11–16 May 2014	Fifth International Congress on Arsenic in the Environment (As2014)	—
3	P. Selvam	Brunel University, UK	19–23 May 2014	Discussion meeting	—
4	P. Selvam	Dublin City University, Ireland	25–31 May 2014	Discussion on synthesis, characterisation and testing of integrated photocatalytic adsorbents (IPCSs) for water and wastewaters	—
5	Sundargopal Ghosh	University of Wurzburg, Germany	1 June 2014 to 31 August 2014	Alexander Von Humboldt Research Fellowship	—
6	T. Pradeep	London, UK	23–24 June 2014	Symposium at the Royal Society of Chemistry	—
7	T. Pradeep	Edmonton, Canada	30 June to 30 July 2014	Talk at the University of Alberta	—
8	B. Rajakumar	Szeged–Budapest, Hungary	20–25 July 2014	Poster presentation at International Symposium on Gas Kinetics and Related Phenomena	—
9	P. Selvam	Durban, South Africa	17–22 August 2014	Fifth IUPAC International Conference on Green Chemistry	—
10	P. Selvam	Durban, South Africa	17–22 August 2014	UK–India–Brazil–Africa Workshop on the Use of Green Chemistry for the Sustainable Production of Bilfuels	—
11	P. Selvam	Mauritius	31 August to 5 September 2014	International Conference on Nanomaterials (ICNM 2014)	—
12	P. Selvam	Perth, Australia	28 September to 1 October 2014	Chemeca 2014	—
13	P. Selvam	Sendai International Center, Sendai, Japan	7–10 October 2014	International Conference on Global/Local Innovations for Next Generation Automobiles	—
14	T. Pradeep	Jeju Island, South Korea	26–29 October 2014	Asian Conference of Nanotechnology 2014 (AsianNANO 2014)	—
15	M.V. Sangaranarayanan	Chulabhorn Research Institute, Bangkok, Thailand	24–26 November 2014	International Conference of Asian Environmental Chemistry 2014	—

Sl. No.	Name of Faculty Member	Country Visited	Date	Purpose of visit	Funding from
16	Indrapal Singh Aidhen	Singapore	14–17 December 2014	Eighth Singapore International Chemistry Conference (SICC-8), Singapore	—
17	T. Pradeep	Washington, DC, USA	17–19 December 2014	Engineering Grand Challenge Scholars Programme	—
18	P. Selvam	Brief visit	17–24 January 2015	Dublin City University, Ireland	—
19	T. Pradeep	Tokyo, Japan	15–18 March 2015	18th Meeting of the Japan–India Science Council	—
20	P. Selvam	Symposium, 'Advances in Electrical Energy Conversion and Storage'	19–21 March 2015	Fukuoka, Japan	—
21	Sundargopal Ghosh	Exchange visit	23 March to 6 April 2015	University of Rennes 1, France	—

### Honours and awards received by faculty members

Sl. No.	Faculty Member	Name of Award	Awarded by	Awarded for	Date of Award
<b>Honours</b>					
1	Archita Patnaik	Chemical Sciences Subject Expert Committee member	DST WOS–A Programme	—	2013–2015
2	Archita Patnaik	CSIR Physical Sciences Subject Expert Committee member	CSIR	SRF and RA selection	2012 onwards
3	Ramesh Gardas	Certificate of excellence in reviewing	Elsevier	Outstanding contribution to the quality of the journals <i>Fluid Phase Equilibria</i> and <i>Journal of Molecular Liquids</i>	2013
4	Prasad Edamana	First Head of Teaching Learning Centre	IIT Madras	—	—
5	P. Selvam	Advisory Panel member	Dublin City University's Research College, Ireland	—	2014 onwards
6	P. Selvam	Member	The University of Queensland and India Delegation to Brisbane (Australia)	—	2014
7	P. Selvam	Member	UK Science & Innovation Network/RSC delegation to Durban (South Africa)	—	2014
8	P. Selvam	Speaker	<i>The New Indian Express</i> ThinkEdu Conclave, Chennai	—	2014
9	T. Pradeep	—	Invited to serve on the advisory board of <i>Nanoscale</i>	<i>A Royal Society of Chemistry (RSC) Journal</i>	—
10	P. Selvam	Invited Speaker	International Conference on Emerging Environmental & Advanced Oxidation Technology, Chennai	—	29–30 September 2014
11	P. Selvam	Invited Speaker	International Conference on Nanomaterials for Health, Energy and Environment, Mauritius	—	31 August to 5 September 2014.

Sl. No.	Faculty Member	Name of Award	Awarded by	Awarded for	Date of Award
12	P. Selvam	Invited Speaker	International Conference on Advances in New Materials, University of Madras, Chennai	—	20–21 June 2014
<b>Awards</b>					
1	Sundargopal Ghosh	Institute Research & Development Awards (IRDA)	IRDA	—	—
2	G. Sekar	CRSI Bronze Medal	CRSI, NCL, Pune	—	—
3	P. Selvam	Royal Society of Chemistry award for service	Royal Society of Chemistry, Manchester, UK	—	—
4	T. Pradeep	Fellow of the Royal Society of Chemistry	Royal Society of Chemistry, London	—	—
5	T. Pradeep	Member of the Graduate Faculty	Purdue University, USA	—	—
6	T. Pradeep	J.C. Bose Fellowship	DST	—	—

#### Books, monographs authored/co-authored

Sl. No.	Faculty Member	Title	Publisher	Author/Co-author
Books				
1	T. Pradeep	<i>Aquananotechnology: Global Prospects</i>	CRC Press	David E. Reisner
2	P. Selvam	<i>Micro- and Nano-Engineering of Fuel Cells</i> (Chapter 5, pp. 131–157)	CRC Press	B. Kuppan
3	G. Sekar	<i>Domino Reactions: Concept for Efficient Organic Synthesis 2nd Edition—Oxidation and Reduction Reactions in Domino Processes</i>	Wiley-VCH	Karthikeyan I., Ganapathy D.
4	S. Ghosh	<i>In Molecular Metal–Metal Bonds, Compounds, Synthesis, Properties</i>	Wiley-VCH, UK	D.K. Roy

#### Fellowships of academies and professional societies

Sl. No.	Faculty Member and Fellowship	Year of Admission
1	P. Selvam, elected Fellow, Madras Science Foundation, Chennai	2015
2	P. Selvam, Dublin City University's Research College & Advisory Panel member, Ireland	2014
3	P. Selvam, member, University of Queensland and India Delegation to Brisbane (Australia)	2014
4	P. Selvam, member, UK Science & Innovation Network/RSC delegation to Durban (South Africa)	2014
5	P. Selvam, Speaker, <i>The New Indian Express</i> ThinkEdu Conclave, Chennai	2014
6	T. Pradeep, invited to serve on the Advisory Board of <i>Nanoscale</i> , a Royal Society of Chemistry (RSC) journal	—

#### Editorial boards of journals

Sl. No.	Name of Faculty Member	Position (Editor/Member)	Journal
1	T. Pradeep	Associate Editor	<i>ACS Sustainable Chemistry &amp; Engineering</i>
2	T. Pradeep	Associate Editor	<i>New Journal of the American Chemical Society, ACS Sustainable Chemistry &amp; Engineering</i>
3	A.K. Mishra	Editorial Board member	<i>Indian Journal of Chemistry A</i>
4	Indrapal Singh Aidhen	Editorial Board member	<i>Indian Journal of Chemistry B</i>

#### 4.5.4. Design and Development Activities

##### Patents filed

Sl. No.	Name of Faculty Member	Topic of Patent
1	P. Bhyrappa and V. Velkannan	A chromatographic method for separation of $\beta$ -dibromo- and tribromo- <i>meso</i> -tetraphenylporphyrins, patent application no. 373/CHE/2015

#### 4.5.5. Research and Consultancy

##### Sponsored research projects (ongoing and new)

Sl. No.	Title	Period (years)	Funding Agency	Amount (lakhs of ₹)	Co-ordinators
<b>New</b>					
1	Self-assembled Coordination Cages for the Sustainable Development of Green Chemical Reactors	1	Shastri Indo Canadian Institute	5.6	Dillip Kumar Chand
2	J.C. Bose Fellowship	5	Department of Science and Technology (DST)	73.5	N. Chandrakumar
3	Rhodamine-Based Fluorescent Chemosensors: Synthesis, Special Characterization, Fluorescence Studies	3	DST	25.0	Prasad Edamana
4	Functionalized Fullerenes Targeting Nanomorphology in Polymer Solar Cells	3	Council of Scientific and Industrial Research (CSIR)	14.0	P. Venkatakrishnan
5	Polynuclear Transition Metal Complexes for Electrochemical Reduction of Oxygen	3	DST	25.0	R. Kothandaraman
6	Synthetic Approches Towards Aromatic Polyketides: Indigotides A–F (under start-up research grant)	3	DST	25.0	P. Anbarasan
7	Organic Synthesis in Chiral Melts and Solid Mixtures	3	DST	40.5	S. Baskaran
8	From Self-assembled Coordination Cages to Molecular Decorations	3	DST	34.2	Dillip Kumar Chand
9	Soft Ionization Ion Mobility Mass Spectrometry of Atomically Precise Clusters of Noble Metals	3	DST	621.1	T. Pradeep
10	Novel Copper Catalysed Domino Oxidative Co-insertion/C–H Functionalisation: Total Synthesis	3	DST	25.0	G. Sekar
11	The Dehydro Diels-Alder (DDA) Reaction: Synthesis of Polycyclic, Poly-substituted Phenols	4	CSIR	12.0	Beeraiiah Baire
12	Transition Metal Catalysed C-h Bond Activation: Formation of Carbon–Heteroatom Bonds	4	CSIR	20.9	Md. Mahiuddin Baidya
13	Rechargeable Zinc–Air Battery with Novel 3D Zinc Electrodes Structure and Durable Bipolar Cathode	2	CSIR	3.0	R. Kothandaraman
14	Analysis of Chemically Modified Electrode for Sensing Applications	3	CSIR	3.0	M.V. Sangaranarayanan
15	Solution-Processable All-Organic Fullerene-free Nanocomposites for Organic Filed Effect Transistors	3	DST	53.9	P. Venkatakrishnan
16	Platinum-Loaded Folamers as New Generation Cancer Chemotherapeutic Agents	1	Exploratory Research Project	10.0	K.M. Muraleedharan



Sl. No.	Title	Period (years)	Funding Agency	Amount (lakhs of ₹)	Co-ordinators
17	Can Self-assembled Lower Generation Dendritic Gels Act as Drug Carriers?	1	Exploratory Research Project	10.0	Prasad Edamana
<b>Ongoing</b>					
1	Low-Energy Ion Collisions on Molecular Solids: Chemical Reactions, Phase Transformations	5	DST	494.5	T. Pradeep
2	Phase-II of the Facility on Spatially Resolved Magnetic Resonance	5	DST	1349.7	N. Chandrakumar
3	Water Purification Using Nanotechnology	5	DST	1081.0	T. Pradeep
4	Metal Nanoclusters for Fluorescence, Catalysis and Heavy Metal Scavenging	4	DST	42.8	T. Pradeep
5	Asymmetric Trifluoromethylation Using Transition Metal Catalyst	3	New Faculty Scheme	19.0	P. Anbarasan
6	N-heterocyclic Carbene Ligands and Their Lanthanide Ion Complexes: Synthesis, Structure, Redox	3	DST	45.9	S. Sankararaman
7	Design and Development of a Modular Fibre-Optic Based Multipurpose Optical Spectrometer for Electronic Absorption and Emission Spectroscopy and its Application to the Analysis of Multifluorophoric Systems	3	CSIR	25.2	A.K. Mishra
8	High Temperature and High Pressure Thermodynamic Properties of Energetic Nitrogen-Rich Ionic	3	DST	27.0	Ramesh Gardas
9	Measurement of Atmospheric Lifetimes of Hydrofluoroolefines (HFOS), Hydrofluoroethers (HFES)	3	Board of Research in Nuclear Technology	33.6	B. Rajakumar
10	Functionalized Poly(phenylene) Dendrimers And Dendrimer-Porphyrin Assemblies	3	CSIR	5.8	P. Bhyrappa
11	Experimental Measurement and Prediction of Thermo, Physical and Electrochemical Properties	3	University Grants Commission	6.1	Ramesh Gardas
12	Electrospun <i>Calotropis</i> Nanofiber Scaffolds for Applications in Tissue Engineering	4	Department of Biotechnology	25.9	T. Pradeep
13	Transition Metal-Catalysed Asymmetric Trifluoromethylation and Perfluoroalkylation of Activated Alkenes: Application towards the Asymmetric Synthesis of Trifluoromethylated Building Blocks and Bioactive Natural Products	3	CSIR	24.4	P. Anbarasan
14	Luminescent Poly(Aryl Ether) Dendron Based Gel Systems for Nanoparticle Stabilisation	3	CSIR	17.5	Prasad Edamana
15	A Nanocomposite Material for High Power Lithium Battery Cathodes	3	DST	35.2	P. Selvam
16	Electrochemical Synthesis of Nanomaterials at Liquid/Liquid Interfaces and Applications	3	DST	46.2	M.V. Sangaranarayanan
17	Quantum Cluster Solar Cells	3	DST	165.6	T. Pradeep

Sl. No.	Title	Period (years)	Funding Agency	Amount (lakhs of ₹)	Co-ordinators
18	Design and Development of Novel Tetradentate P and P,N-Ligands or Iron Catalysed Asymmetric	3	Board of Research in Nuclear Technology	17.0	P. Anbarasan
19	Thermal Decomposition Studies of Alkyl Silanes and Alkyl Phenols Behind the Reflected Shock Waves	3	CSIR	24.4	B. Rajakumar
20	New and General Strategy for the Synthesis of Centrolobine Analogues and Other	3	Board of Research in Nuclear Technology	32.1	Indrapal Singh Aidhen
21	Investigations of Transition Metal-Catalysed Reactivity of A-diazominies Derived from 1,2,3	3	DST	54.1	P. Anbarasan
22	Organised CBT-Noble Metal Cluster Conjugates	3	DST	40.1	T. Pradeep
23	Establishment of Pulsed Laser Photolysis-Laser Induced Fluorescence Spectrometer and Measurement		Ministry of Earth Sciences	114.1	B. Rajakumar
24	Novel Methodology and Applications in Magnetic Resonance Spectroscopy and Imaging	3	DST	27.0	N. Chandrakumar
25	Study of the Response of ESPT Fluorescence Probes towards Composition Morphology and Associated Physical Properties of Lipid Bilayer Membranes	3	DST	55.0	A.K. Mishra
26	Nanomolecular Aggregates from Lycolipid Mimics and Cyclic Peptides with Applications in Drugs	3	DST	49.8	K.M. Muraleedharan
27	Investigation of Atmospheric Lifetimes and Global Warming Potentials of Biogenically Emitted	3	DST	123.7	B. Rajakumar
28	Design, Synthesis and Application of New Classes of Easily Recoverable and Reusable Transition	3	DST	49.4	G. Sekar
29	Synthesis Fabrication and Performance Evaluation of Dye-Sensitised Solar Cell (DSSC) with Ionic	3	DST	407.5	Prasad Edamana
30	Iron-Containing Nanostructured Catalysts for Environmental Protection	2	DST	22.0	P. Selvam
31	Iron-catalysed C-H Functionalisation and C-N Bond Formation Through Controlled Carbon and Nitrogen	3	DST	53.0	G. Sekar
32	Thermal Decomposition Studies of Alternatives of Chlorofluorocarbons (CFCs) in the Temperature	3	Defence Research and Development Organisation	95.6	B. Rajakumar
33	New Modes of the Dehydro Diels-Alder (DDA) Reaction Synthesis of Polycyclic Poly-substituted	3	New Faculty Scheme	25.0	Beeraiiah Baire
34	New Acceptor-Donor-acceptor (A-D-A) Type Small Molecule Acceptors for Organic Solar Cells	3	New Faculty Scheme	26.0	P. Venkatakrisnan
35	Asymmetric Green Catalysis in the Development of Nitroso and Thionitroso Chemistry for Organic	3	New Faculty Scheme	25.0	Md. Mahiuddin Baidya

Sl. No.	Title	Period (years)	Funding Agency	Amount (lakhs of ₹)	Co-ordinators
36	Functional Organic Materials for Electronics, Photonics and Energy	3	New Faculty Improvement Grant	5.0	P. Venkatakrishnan
37	Synthetic Organic Chemistry	3	New Faculty Improvement Grant	5.0	Beeraiah Baire
38	Organic Synthesis and Catalysis	3	New Faculty Improvement Grant	5.0	Md. Mahiuddin Baidya

#### Industrial consultancy projects (ongoing and new)

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹)
<b>New</b>				
1	T. Pradeep	TEM/MALDI/Raman	Common Code	5.0
2	Head, Chemistry	NMR/Mass Spectrum	Common Code	5.0
3	Head, Chemistry	Common Code	Common Code	5.0
4	R. Dhamodharan	Specific Pyrophoric Property of Directly Reduced Iron	Common Code	5.0
5	Head, Chemistry	CNMR/Mass Spectrum/FTIR/CHN/SXRD/PXRD/TGA & DSC/TPD & TPR/Sorptometer, UV-vis, etc	Common Code	5.0
6	Head, Chemistry	Common Code (NMR/MARS Spectral FTIR/CHN/SXED)	Common Code	5.0
7	T. Pradeep	TEM/MALDI/Raman	Common Code	5.0
<b>Ongoing</b>				
1	Head, Chemistry	NMR/Mass Spectrum/FT112/CHN/SXRD/PXRD	Common Code	0.0
2	Head, Chemistry	Common Project	Common Code	1.5
3	Head, Chemistry	NMR, Mass Spectrum, FTIR, CHN, SXRD, PXRD, TGA & DSC, TPD & TPR, Sorptometer, UV-vis, etc..	Common Code	0.0
4	Head, Chemistry	NMR, Mass Spectrum, FTIR, CHN, SXRD, PXRD, TGA & DSC, TPD & TPR, Sorptometer, UV-vis, etc.	Common Code	0.5

#### RBIC projects (ongoing and new)

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹)
<b>New</b>				
	T. Pradeep	Improve Rubber to Steel Bonding in Steel Radial Tyres Through Scientific Understanding	Madras Rubber Factory Limited	47.8
<b>Ongoing</b>				
	S. Baskaran	Synthetic Route for APIs	Apex Laboratories India Private Limited	0.7
	G. Ranga Rao	Development of Rare Earth Composites for Hydrogen Generation Utilising Solar Energy	Bharath Heavy Electricals Limited	9.6

#### Retainer consultancy (ongoing and new)

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹)
<b>New</b>				
1	T. Pradeep	Improve Rubber to Steel Bonding in Steel Radial Tyres through Scientific Understanding	Madras Rubber Factory Limited	50.6
<b>Ongoing</b>				
2	R. Kothandaraman	Novel Method of Directly Converting Rice Husks to Carbon Encapsulated Nano-structured Silicon for	Sky Solar & Power India Limited	3.6

## Research publications of faculty members and research scholars

Papers published in refereed national journals:	6
Papers published in refereed international journals:	192
Papers presented at national conferences:	4
Papers presented at international conferences:	9

### Papers published in refereed national journals

1. K. Kumar, P. Bairi, K. Ghosh, K.K. Mishra and A.K. Mishra. 2014. Classification of aqueous-based ayurvedic preparations using synchronous fluorescence spectroscopy and chemometric techniques. *Current Science*.
2. G. Sudhakar and B. Rajakumar. 2014. Thermal decomposition of 1-chloropropane behind the reflected shock waves in the temperature range of 1015–1220 K: Single pulse shock tube and computational studies. *Journal of Chemical Sciences* 126: 897–909.
3. M.C. Naranthatta, V. Ramkumar and D.K. Chand. 2015. Role of peripheral phenanthroline groups in the self-assembly of self-assembled molecular triangles. *Journal of Chemical Sciences* 127: 273–280.
4. K.K.V. Chakrahari, R. Ramalakshmi, D. Sharmila and S. Ghosh. 2014. Dimetallaheteroborane clusters containing group 16 elements: A combined experimental and theoretical study. *Journal of Chemical Sciences* 126: 1597.
5. S.K. Barik, D.K. Roy, D. Sharmila, R. Ramalakshmi, K.K.V. Chakrahari, S.K. Mobin and S. Ghosh. 2014. Synthesis, characterization and electronic structures of Rh and Co analogs of decaborane-14. *Proceedings of the National Academy of Sciences, India* 84: 121.
6. K. Shakeela, A. Sri Dithya, Ch. Jagadeeswara Rao and G. Ranga Rao. 2015. Electrochemical behaviour of Cu(II)/Cu(I) redox couple in 1-hexyl-3-methylimidazolium chloride ionic liquid. *Journal of Chemical Sciences* 127: 133–140.

### Papers published in refereed international journals

1. A.K. Pati, S.J. Gharpure and A.K.s Mishra. 2015. On the photophysics of butadiyne bridged pyrene-phenyl molecular conjugates: Multiple emissive pathways through locally excited, intramolecular charge transfer, and excimer states. *Faraday Discussions*.
2. J. Swain, M. Kamalraj, H.S.P. Rao and A.K. Mishra. 2015. Effect of a glucose–triazole-hydrogenated cardanol conjugate on lipid bilayer membrane organization and thermotropic phase transition. *Journal of Molecular Structure*.
3. U. Subuddhi, P.K. Vuram, A.K. Mishra and A. Chadha. 2014. Disaggregation induced solvatochromic switch: A study of dansylated polyglycerol dendrons in binary solvent mixture. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*.
4. K.S. Chatterjee, A.K. Pati and A.K. Mishra. 2014. Meta effect of absorption energy in donor–acceptor substituted benzenoids: A computational study of its dependence on acceptor strength, solvent polarity and conjugation length. *The Journal of Organic Chemistry*.
5. N. Venkatesan, V. Singh, P. Rajakumar and A.K. Mishra. 2014. Isobenzotriazolophanes: A new class of fluorescent cyclophanes as sensors for aromatic nitro explosives–picric acid. *RSC Advances*.
6. J. Swain, M. Kamalraj, H.S.P. Rao and A.K. Mishra. 2014. Thermotropic gelation induced changes in micro-polarity and microviscosity of hydrogel derived from glucose–triazole-hydrogenated cardanol conjugate: A study using fluorescent molecular probe. *RSC Advances*.
7. A.K. Pati, J. Gharpure and A.K. Mishra. 2014. Substituted diphenyl butadiynes: A computational study of geometries and electronic transitions using DFT/TD-DFT. *Physical Chemistry Chemical Physics*
8. J. Swain, S.R. Borkar, I.S. Aidhen and A.K. Mishra. 2014. A molecular level understanding of interaction of FTY720 (fingolimod hydrochloride) on DMPC multilamellar vesicles. *RSC Advances*.
9. Nirod Kumar Sarangi, Nivarthi Ramesh and Archita Patnaik. 2015. Structure and dynamics of H<sub>2</sub>O vis-à-vis phenylalanine recognition at a DPPC lipid membrane via interfacial H-bond types: Insights from polarized FT-IRRAS and ADMP simulations. *The Journal of Chemical Physics* 142(024702): 1–18.
10. Nivarthi Ramesh and Archita Patnaik. 2014. Tailoring recognition clefts from non-specific recognition matrices in mixed molecular arrays. *Analyst* 139: 5772–5780.
11. Nirod Kumar Sarangi and Archita Patnaik. 2014. Bio-inspired Janus gold nanoclusters with lipid and amino acid functional capping ligands: Micro-voltammetry and *in situ* electron transfer in a biogenic environment. *RSC Advances*. 4: 29463–29473.
12. R. Sivasubramanian and M.V. Sangaranarayanan. 2014. Electrochemical sensing of nitrite ions using tin sub-microparticles modified glassy carbon electrodes. *Electroanalysis* 26: 2358–2364.

13. R. Sivasubramanian and M.V. Sangaranarayanan. 2015. A facile formation of silver dendrites on indium tin oxide electrodes using electrode position and amperometric sensing of hydrazine. *Sensors and Actuators B*. 213: 92–101.
14. K. Saravanakumar, L. Rajendran and M.V. Sangaranarayanan. 2015. Current–potential response and concentration profiles of redox polymer mediated enzyme catalysis in biofuel cells: Estimation of Michaelis-Menten constants. *Chemical Physics Letters* 621: 117–123.
15. Ashis Das and M.V. Sangaranarayanan. 2015. Electroanalytical sensor based on unmodified screen printed carbon electrodes for the determination of Levo-Thyroxine. *Electroanalysis* 27: 360–367.
16. P. Bhyrappa, U.K. Sarangi and B. Varghese. 2014. Switching nonplanarity of the macrocycle to planar conformation in the cobalt(II) and copper(II)  $\beta$ -tetra(2'-thienyl)-meso-tetraphenylporphyrin/C60 cocrystallates. *European Journal of Inorganic Chemistry* 5646–5650.
17. P. Bhyrappa, U.K. Sarangi, V. Velkannan and V. Ramkumar. 2014.  $\beta$ -Tetrasubstituted meso-tetra(4'-n-butylphenyl)porphyrins and their metal complexes: Synthesis and structural properties. *European Journal of Inorganic Chemistry* 5760–5770.
18. V. Velkannan and P. Bhyrappa. 2015. Unsymmetrically mixed  $\beta$ -octasubstituted meso-tetraphenylporphyrins: Structural and electrochemical redox properties. *Polyhedron* 87: 170–180.
19. P. Bhyrappa, U.K. Sarangi and B. Varghese. 2015. Mixed  $\beta$ -pyrrole substituted meso-tetraphenylporphyrins and their metal complexes: Synthesis, structures and electrochemical redox properties. *Inorganica Chimica Acta* 426: 171–182.
20. K. Karunanithi and P. Bhyrappa. 2015. Structural elucidation of a few electron-deficient porphyrin/fullerene cocrystallates: Influence of fullerene on the porphyrin ring conformation. *Inorganica Chimica Acta* 427: 41–51.
21. D. Balamurugan and K.M. Muraleedharan. 2015. Can helical peptides unwind one turn at a time? Controlled conformational transitions in  $\alpha,\beta(2,3)$ -hybrid peptides. *Chemistry: A European Journal*.
22. M.R. Dash, M. Balaganesh and B. Rajakumar. 2014. Rate coefficients for the gas-phase reaction of OH radical with  $\alpha$ -Pinene: An experimental and computational study. *Molecular Physics* 112: 1495–1511.
23. M. Balaganesh and B. Rajakumar. 2014. Mechanism, kinetics and atmospheric fate of CF<sub>3</sub>CH=CH<sub>2</sub>, CF<sub>3</sub>CF=CH<sub>2</sub>, and CF<sub>3</sub>CF=CF<sub>2</sub> by its reaction with OH-radicals: CVT/SCT/ISPE and hybrid meta-DFT methods. *Journal of Molecular Graphics and Modelling* 48: 60–69.
24. M.R. Dash and B. Rajakumar. 2014. Theoretical investigations on the kinetics of p-cymene + OH reaction. *Chemical Physics Letters* 597: 75–85.
25. M. Balaganesh, M.R. Dash and B. Rajakumar. 2014. Experimental and computational investigation on the gas phase reaction of ethyl formate with Cl atoms. *The Journal of Physical Chemistry A* 118: 5272–5278.
26. M.R. Dash and B. Rajakumar. 2014. Reaction kinetics of Cl atoms with limonene: An experimental and theoretical study. *Atmospheric Environment* 99: 183–195.
27. M.R. Dash and B. Rajakumar. 2015. Abstraction and addition kinetics of C<sub>2</sub>H radicals with CH<sub>4</sub>, C<sub>2</sub>H<sub>6</sub>, C<sub>3</sub>H<sub>8</sub>, C<sub>2</sub>H<sub>4</sub> and C<sub>3</sub>H<sub>6</sub>: CVT/SCT/ISPE and hybrid meta-DFT methods. *Physical Chemistry Chemical Physics* 17: 3142–3156.
28. M.R. Dash and B. Rajakumar. 2015. Experimental and computational investigation on the gas phase reaction of p-cymene with Cl atoms. *The Journal of Physical Chemistry A* 119: 559–570.
29. M.R. Dash and B. Rajakumar. 2015. Theoretical investigations of the gas phase reaction of limonene (C<sub>10</sub>H<sub>16</sub>) with OH radical. *Molecular Physics* doi:10.1080/00268976.2015.1014002
30. N.B. Padalwar, B. Akkisetty and K. Vidyasagar. 2014. Syntheses and characterization of silver phenylphosphonates and phenylarsonates, Ag<sub>x</sub>H<sub>4-x</sub>(O<sub>3</sub>PPh)<sub>2</sub> (x = 1–4) and Ag<sub>x</sub>H<sub>4-x</sub>(O<sub>3</sub>AsPh)<sub>2</sub> (x = 2, 4). *Zeitschrift für anorganische und allgemeine Chemie* 640: 2876–2881.
31. J.P. Yohannan and K. Vidyasagar. 2015. Syntheses and characterization of one-dimensional alkali metal antimony(III) thioantimonates(IV), A<sub>2</sub>Sb<sub>2</sub>Sn<sub>3</sub>S<sub>10</sub> (A = K, Rb, Cs). *Journal of Solid State Chemistry* 221: 426–432.
32. S.A. Mohitkar and K. Vidyasagar. 2015. Solid-state synthesis and lanthanide photoluminescence of doped yttrium molybdo-antimonites, Y<sub>2-n</sub>AnMo<sub>4</sub>Sb<sub>2</sub>O<sub>18</sub> (A = Pr, Sm, Eu, Tb, Dy, Ho, and Er; n = 0.02–2) solid solutions. *Journal of Luminescence* 161: 180–186.
33. A. Pal, P.K. Mandali, D.K. Chand and G.S. Hanan. 2015. A facile route to substituted bidentate and tridentate ligands capable of forming larger chelate rings with transition metal ions. *Synlett*.
34. S. Ganta and D.K. Chand. 2015. Nanoscale metallogel via self-assembly of self-assembled trinuclear coordination rings: Multi-stimuli-responsive soft materials. *Dalton Transactions* 44.
35. P.K. Mandali and D.K. Chand. 2015. Palladium nanoparticles catalyzed synthesis of benzofurans by a domino approach. *Synthesis* 47: 1661–1668.



36. H. Dasary, R. Jagan and D.K. Chand. 2015. Octadecanuclear gear wheels by self-assembly of self-assembled "double saddle"-type coordination entities: Molecular rangoli. *Chemistry: A European Journal* 21: 1499–1507.
37. Christy George and N. Chandrakumar. 2014. Chemical shift resolved 19F NMR between 13.5–135 MHz: ODNP enhanced diagonal suppressed correlation spectroscopy. *Angewandte Chemie International Edition* 53: 8441.
38. Abhishek Banerjee and N. Chandrakumar. 2014. Ultrafast homonuclear correlation spectroscopy with diagonal suppression. *The Journal of Chemical Physics* 140: 231103.
39. Abhishek Banerjee and N. Chandrakumar. 2014. Volume localized spin echo correlation spectroscopy with suppression of 'diagonal' peaks. *Journal of Magnetic Resonance* 239: 69.
40. Christy George and N. Chandrakumar. 2014. Adequate CR: 13C connectivity mapping in indirect detection mode with composite refocusing. *Magnetic Resonance in Chemistry* 52: 241.
41. S. Parimala and P. Selvam. 2015. Crystal structure of Mo(C<sub>9</sub>H<sub>9</sub>NO<sub>2</sub>)O<sub>2</sub>(H<sub>2</sub>O). *Acta Crystallographica* E71: m35–m36.
42. S. Parimala and P. Selvam. 2015. Crystal structure of [V(C<sub>7</sub>H<sub>5</sub>O<sub>2</sub>)(C<sub>9</sub>H<sub>9</sub>NO<sub>2</sub>)O]. *Acta Crystallographica* E71: m104–m105.
43. N. Saravanan and P. Selvam. 2014. Crystal structure of bis(acetato-kO)-diaqua(2,2'-bipyridine-k<sub>2</sub>N,N)-manganese(II). *Acta Crystallographica* E70: m326–m327.
44. A.Y. Stakheev, D.A. Bokarev, A.I. Mytareva, R.K. Parsapur and P. Selvam. 2014. Combining NOx SCR and NH<sub>3</sub>-slip oxidation activity of composite [Fe-Beta + Fe(Mn)MCM-48] catalyst. *Mendeleev Communications* 24.
45. A.I. Mytareva, G.N. Baeva, G.O. Bragina, P. Selvam, D.A. Bokarev and A.Y. Stakheev. 2014. Fast and standard SCR in NH<sub>3</sub>-DeNO<sub>x</sub>: Pathways discrimination as the key step for understanding of kinetics. *Mendeleev Communications* 24: 311–312.
46. S. Mahendran and P. Selvam. 2014. Dehydration of glycerol over silicotungstic acid-supported silica. *Advanced Porous Materials* 2: 1–6.
47. N.V. Krishna and P. Selvam. 2014. Physico-chemical characteristics of novel ordered mesoporous silicate, IITM-56: The effect of synthesis parameters. *Advanced Porous Materials* 2: 106–112.
48. P.R. Murthy, N.V. Krishna, K. Devaki and P. Selvam. 2014. Synthesis, characterization and applications of novel ordered mesoporous carbon, NCCR-56. *Advanced Porous Materials* 2: 124–129.
49. Prasanta Kundu and Arti Dua. 2014. Weak polyelectrolytes in the presence of counterion condensation with ions of variable size and polarizability. *Journal of Statistical Mechanics: Theory and Experiment* P07023.
50. Pratap K. Chhotaray and Ramesh L. Gardas. Structural dependence of protic ionic liquids on surface, optical and transport properties. *Journal of Chemical and Engineering Data*.
51. Vickramjeet Singh, Pratap K. Chhotaray and Ramesh L. Gardas. October 2015. Volumetric and ultrasonic properties of ternary sucrose–water–protic ionic liquid solutions. *The Journal of Chemical Thermodynamics*, 89: 60–68.
52. Vickramjeet Singh, Pratap K. Chhotaray and Ramesh L. Gardas. June 2015. Effect of protic ionic liquid on the volumetric properties of ribose in aqueous solutions. *Thermochimica Acta* 610: 69–77.
53. Akash Kumar Gupta and Ramesh L. Gardas. 2015. The constitutive behavior of ammonium ionic liquids: A physicochemical approach. *RSC Advances* 5(58): 46881–46889.
54. Vickramjeet Singh, Parampaul K. Banipal, Tarlok S. Banipal and Ramesh L. Gardas. Volumetric properties of disaccharides in aqueous solutions of benzyltrimethylammonium acetate as a function of temperature. *Journal of Chemical and Engineering Data*.
55. Vickramjeet Singh, Gyanendra Sharma and Ramesh L. Gardas. Thermodynamic and ultrasonic properties of ascorbic acid in aqueous protic ionic liquid solutions. *PLOS ONE*.
56. V. Sivabalan Sakthivel, P.K. Chhotaray, Sugirtha Velusamy, R.L. Gardas and J.S. Sangwai. July 2015. Synergistic effect of lactam, ammonium and hydroxyl ammonium based ionic liquids with and without NaCl on the surface phenomena of crude oil/water system. *Fluid Phase Equilibria* 398: 80–97.
57. V. Avula, R.L. Gardas and J.S. Sangwai. June 2015. An efficient model for the prediction of CO<sub>2</sub> hydrate phase stability conditions in the presence of inhibitors and their mixtures. *The Journal of Chemical Thermodynamics* 85: 163–170.
58. V. Syamala, L. Venkatramana, C. Narasimha Rao, K. Sivakumar, P. Venkateswarlu and R.L. Gardas. July 2015. Effect of various substituents on benzene ring and their impact on volumetric, acoustic and transport properties of binary liquid mixtures with dimethylacetamide. *Fluid Phase Equilibria* 397: 68–80.
59. L. Venkatramana, Narasimha Rao Chittluri, R.L. Gardas and K.S. Kumar. July 2015. FT-IR study of excess thermodynamic properties of binary liquid mixtures of p-xylene with 1-alkanols at 303.15 K. *Journal of Molecular Liquids* 207: 171–176.



60. S. Sakthivel, Sugirtha Velusamy, R.L. Gardas and J.S. Sangwai. March 2015. Adsorption of aliphatic ionic liquids at low waxy crude oil–water interfaces and the effect of brine. *Colloids and Surfaces A: Physicochemical and Engineering Aspects* 468: 62–75.
61. Vickramjeet Singh, Dharmendra Singh and R.L. Gardas. February 2015. Effect of DBU (1,8-diazobicyclo[5.4.0]undec-7-ene) based protic ionic liquid on the volumetric and ultrasonic properties of ascorbic acid in aqueous solution. *Industrial & Engineering Chemistry Research* 54(7): 2237–2245.
62. Suresh Ryshetti, R.L. Gardas and Savitha Jyostna Tangeda. March 2015. Effect of temperature on solvation behavior of diclofenac sodium salt in aqueous glycine and L-proline solutions. *The Journal of Chemical Thermodynamics* 82: 125–133.
63. Dharmendra Singh, Vickramjeet Singh and R.L. Gardas. April 2015. Volumetric and acoustic properties of DBU (1,8-diazobicyclo[5.4.0]undec-7-ene) based protic ionic liquid in water at T = (293.15 to 328.15) K. *Journal of Solution Chemistry* 44(3–4): 634–651.
64. Zuber Vaid, R.L. Gardas, Naved I. Malek and Sushma P. Ijardar. April 2015. Composition and temperature dependence excess properties of binary mixtures of imidazolium based ionic liquids: [Cnmim][PF6] + propylamine. *Journal of Solution Chemistry* 44(3–4): 718–741.
65. P. Vasundhara, C. Narasimha Rao, L. Venkatramana, K. Sivakumar, P. Venkateswarlu and R.L. Gardas. February 2015. Thermodynamic properties of binary mixtures of aniline with halogenated aromatic hydrocarbons: Measurements and correlations. *Journal of Molecular Liquids* 202: 158–164.
66. L. Venkatramana, R.L. Gardas, C. Narasimha Rao, K. Sivakumar and K. Dayananda Reddy. February 2015. A study on excess properties of aliphatic chlorinated compounds with benzylalcohol at various temperatures. *Journal of Solution Chemistry* 44(2): 327–359.
67. Vickramjeet Singh, P.K. Chhotaray and R.L. Gardas. February 2015. Effect of protic ionic liquid on the volumetric properties and taste behaviour of sucrose. *Food Chemistry* 169: 478–483.
68. S. Sakthivel, Sugirtha Velusamy, R.L. Gardas and J.S. Sangwai. January 2015. Use of aromatic ionic liquids in the reduction of surface phenomena of crude oil–water system and their synergism along with brine. *Industrial & Engineering Chemistry Research* 54(3): 968–978.
69. Somenath Panda and R.L. Gardas. January 2015. Measurement and correlation for the thermophysical properties of novel pyrrolidonium ionic liquids: Effect of temperature and alkyl chain length on anion. *Fluid Phase Equilibria* 386: 65–74.
70. Vickramjeet Singh, P.K. Chhotaray, Parampaul K. Banipal, Tarlok S. Banipal and R.L. Gardas. January 2015. Volumetric properties of amino acids in aqueous solutions of ammonium based protic ionic liquids. *Fluid Phase Equilibria* 385: 258–274.
71. Dasthaiah Keshapolla, Vickramjeet Singh, Akash Gupta and R.L. Gardas. January 2015. Apparent molar properties of benzyltrimethylammonium based protic ionic liquids in water and ethanol at different temperatures. *Fluid Phase Equilibria* 385: 92–104.
72. Gyanendra Sharma, Vickramjeet Singh and R.L. Gardas. January 2015. Apparent molar properties of aqueous protic ionic liquid solutions at t = (293.15 to 328.15) K. *Ionics* (accepted manuscript).
73. Dasthaiah Keshapolla and R.L. Gardas. April 2015. Study on solvation behavior of benzyl methyl ammonium carboxylate ionic liquids in N, N-dimethylformamide by physicochemical properties. *Journal of Solution Chemistry* 44(3–4): 469–494.
74. Suresh Ryshetti, Bharath Kumar Chennuri, Raghuram Noothi, Savitha Jyostna Tangeda and R.L. Gardas. December 2014. Volumetric properties of betaine hydrochloride drug in aqueous NaCl and KCl solutions at different temperatures. *Thermochimica Acta* 597: 71–77.
75. Dasthaiah Keshapolla and R.L. Gardas. December 2014. Apparent molar volumes and isentropic compressions of benzylalkylammonium ionic liquids in dimethylsulfoxide from 293.15 K to 328.15 K. *Fluid Phase Equilibria* 383: 32–42.
76. Venkataramana Avula, R.L. Gardas and J.S. Sangwai. November 2014. An improved model for the phase equilibrium of methane hydrate inhibition in the presence of ionic liquids. *Fluid Phase Equilibria* 382: 187–196.
77. Dasthaiah Keshapolla, Vickramjeet Singh and Ramesh L. Gardas. November 2014. Volumetric, acoustic and transport properties of binary mixtures of benzyltrimethylammonium based ionic liquids with N,N-dimethylformamide at temperature from 293.15 to 328.15 K. *Journal of Molecular Liquids* 199: 330–338.
78. S. Sakthivel, Sugirtha Velusamy, R.L. Gardas and J.S. Sangwai. September 2014. Experimental investigation on the effect of aliphatic ionic liquids on the solubility of heavy crude oil using UV–visible, FT-IR, and <sup>13</sup>C-NMR spectroscopy. *Energy & Fuels* 28(9): 6151–6162.
79. L. Venkatramana, R.L. Gardas, C. Narasimha Rao and K. Sivakumar. March 2015. Excess volume and isentropic compressibility study of ternary mixtures containing N-methylcyclohexylamine, chlorobenzene and 1-alkanols. *Physics and Chemistry of Liquids* 53(2): 207–220.

80. L. Venkatramana, C. Narasimha Rao, Kasibhatta Siva Kumar and R.L. Gardas. November 2014. Excess thermodynamic properties of ternary mixtures of n-methylcyclohexylamine and toluene with 1-alcohols. *Bulletin of the Chemical Society of Japan* 87(11): 1265–1272.
81. S. Sakthivel, Sugirtha Velusamy, R.L. Gardas and J.S. Sangwai. July 2014. Eco-efficient and green method for the enhanced dissolution of aromatic crude oil sludge using ionic liquids. *RSC Advances* 4(59): 31007–31018.
82. Sumit K. Swarnkar, S.S. Murthy, R.L. Gardas and G. Venkatarathnam. November 2014. Performance of a vapour absorption refrigeration system operating with ionic liquid–ammonia combination with water as cosolvent. *Applied Thermal Engineering* 72(2): 249–256.
83. R.S.C. Bose, R. Kumaresan, K.A. Venkatesan, R.L. Gardas, M.P. Antony and P.R. Vasudeva Rao. October 2014. Insights into the extraction of Am(III) by aliquat-336 based ionic liquids. *Separation Science and Technology* 49(15): 2338–2345.
84. Suresh Ryshetti, Akash Gupta, Savitha Jyostna Tangeda and R.L. Gardas. October 2014. Acoustic and volumetric properties of betaine hydrochloride drug in aqueous D(+)-glucose and sucrose solutions. *The Journal of Chemical Thermodynamics* 77: 123–130.
85. Pratap K. Chhotaray, Shankar Jella and R.L. Gardas. July 2014. Physicochemical properties of low viscous lactam based ionic liquids. *The Journal of Chemical Thermodynamics* 74: 255–262.
86. S. Karlapudi, R.L. Gardas, P. Venkateswarlu and K. Siva Kumar. June 2014. Excess thermodynamic properties and FT-IR spectroscopic study of binary liquid mixtures of dichloro and trichlorobenzenes with 1-nonanol at T = (298.15, 303.15 and 308.15) K. *Journal of Molecular Liquids* 194: 227–233.
87. Pratap K. Chhotaray and R.L. Gardas. May 2014. Thermophysical properties of ammonium and hydroxylammonium protic ionic liquids. *The Journal of Chemical Thermodynamics* 72: 117–124.
88. L. Venkatramana, R.L. Gardas, K. Sivakumar and K. Dayananda Reddy. April 2014. Thermodynamics of binary mixtures: The effect of substituents in aromatics on their excess properties with benzylalcohol. *Fluid Phase Equilibria* 367: 7–21.
89. L. Venkatramana, K. Sivakumar, R.L. Gardas and K. Dayananda Reddy. April 2014. Effect of chain length of alcohol on thermodynamic properties of their binary mixtures with benzylalcohol. *Thermochimica Acta* 581: 123–132.
90. Vickramjeet Singh, Pratap K. Chhotaray and R.L. Gardas. April 2014. Solvation behaviour and partial molar properties of monosaccharides in aqueous protic ionic liquid solutions. *The Journal of Chemical Thermodynamics* 71: 37–49.
91. R.S. Anju, B. Mondal, K. Saha, S. Panja, B. Varghese and S. Ghosh. 2015. Hydroboration of alkynes with zwitterionic ruthenium-borate complex: Novel vinylborane complexes. *Chemistry: A European Journal*.
92. R. Ramalakshmi, B. Mondal, M. Bhattacharyya, B. Varghese and S. Ghosh. 2015. Neutral heterometallic cluster containing ketenylidene ligand: [CP\*MO(CO)<sub>2</sub>(μ-H)RU<sub>2</sub>(CO)<sub>6</sub>(μ<sub>3</sub>-η<sup>1</sup>-CCO)] (CP\* = η<sup>5</sup>-C<sub>5</sub>ME<sub>5</sub>). *Journal of Organometallic Chemistry*.
93. C. Arivazhagan, R. Borthakur and S. Ghosh. 2015. Ferrocene and triazole appended rhodamine based multisignalling sensors for Hg<sup>2+</sup> and their application in live cell imaging. *Organometallics* 34: 1147.
94. D.K. Roy, B. Mondal, A. De, S. Panda and S. Ghosh. 2015. A novel neutral zirconaborane [(Cp<sub>2</sub>Zr)2B<sub>5</sub>H<sub>11</sub>]: An arachno-B<sub>3</sub>H<sub>9</sub> analogue (Cp = η<sup>5</sup>-C<sub>5</sub>H<sub>5</sub>). *Organometallics* 34: 908.
95. R.S. Anju, K. Saha, B. Mondal, T. Roisnel, Je-F. Halet and S. Ghosh. 2015. In search for new bonding modes of the methylenedithiolato ligand: Novel tri- and tetra- metallic clusters. *Dalton Transactions*.
96. B. Mondal, B. Mondal, K. Pal, B. Varghese and S. Ghosh. 2015. An electron-poor di-molybdenum triple-decker with a puckered [B<sub>4</sub>Ru<sub>2</sub>] bridging ring is an oblatocloso cluster. *Chemical Communications* 51: 3828.
97. D. Sharmila, B. Mondal, R. Ramalakshmi, S. Kundu, B. Varghese and S. Ghosh. 2015. First-row transition-metal–diborane and –borylene complexes. *Chemistry: A European Journal* 21: 5074.
98. R. Ramalakshmi, M. Bhattacharyya, C.E. Rao and S. Ghosh. 2015. Synthesis, structure and chemistry of low-boron containing molybdo-borane: Arachno-[Cp\*Mo(CO)<sub>2</sub>B<sub>3</sub>H<sub>8</sub>]. *Journal of Organometallic Chemistry*.
99. D.K. Roy, B. Mondal, R.S. Anju and S. Ghosh. 2015. Chemistry of diruthenium and dirhodium analogues of pentaborane(9): Synthesis and characterization of metal N,S-heterocyclic carbene and B-agostic. *Chemistry: A European Journal* 21: 3640.
100. S.J. Ponniah, S.K. Barik, R. Borthakur, A. Thakur, B. Garai, S. Jana and S. Ghosh. 2015. Unprecedented ferrocene-quinoline conjugates: Facile proton conduction via 1D helical water chains and selective chemosensor for Zn(II) ion in water. *RSC Advances* 5: 15690.
101. S.K. Barik, D. K. Roy and S. Ghosh. 2015. Chemistry of group 9 dimetallaborane analogues of octaborane(12). *Dalton Transactions* 44: 669.
102. Ch.E. Rao, K. Yuvaraj and S. Ghosh. 2015. Diruthenium analogues of hexaborane(10) and pentaborane(9): Synthesis and structural characterization of [(1,2-Cp\*Ru)2B<sub>2</sub>H<sub>6</sub>S<sub>2</sub>] and [(2,3-Cp\*Ru)2B<sub>3</sub>H<sub>6</sub>(μ-η<sup>1</sup>-EPh)], (E = S, Se and Te) (Cp\* = η<sup>5</sup>-C<sub>5</sub>Me<sub>5</sub>). *Journal of Organometallic Chemistry* 776: 123.

103. K. Yuvaraj, D.K. Roy, C. Arivazhagan, B. Mondal and S. Ghosh. 2015. Chemistry of early and late transition metallaboranes: Synthesis and structural characterization of periodinated dimolybdo-borane [(Cp\*Mo)2B4H3I5]. *Pure and Applied Chemistry* 87: 195.
104. H. Braunschweig, S. Ghosh, J.O.C. Jimenez-Halla, J.H. Klein, C. Lambert, K. Radacki, A. Steffen, A. Vargas and J. Wahler. 2015. A combined experimental and theoretical study on the isomers of 2,3,4,5-tetra-carba-nido-hexaborane(6) derivatives and their photophysical properties. *Chemistry: A European Journal* 20: 218.
105. R.S. Anju, K. Saha, B. Mondal, V. Dorcet, T. Roisnel, J.-F. Halet and S. Ghosh. 2014. Chemistry of diruthenium analogue of pentaborane(9) with heterocumulenes: Towards novel trimetallic cubane-type clusters. *Inorganic Chemistry* 53: 10527.
106. D.K. Roy, R. Jagan and S. Ghosh. 2014. Fused metallaborane clusters of group 9 and 8 transition metals. *Journal of Organometallic Chemistry* 772: 242.
107. K. Yuvaraj, D.K. Roy, V.P. Anju, B. Mondal, B. Varghese and S. Ghosh. 2014. Mixed-metal chalcogenide tetrahedral clusters with an exo-polyhedral metal fragment. *Dalton Transactions* 43: 17184.
108. S.J. Ponniah, S.K. Barik, A. Thakur, R. Ganesamoorthi and S. Ghosh. 2014. Triazolyl alkoxy fischer carbene complexes in conjugation with ferrocene/pyrene as sensory units: Multifunctional chemosensor for Pb(II) and Zn(II) ions. *Organometallics* 33: 3096.
109. D. Sharmila, R. Ramalakshmi, K.K.V. Chakrahari, B. Varghese and S. Ghosh. 2014. Synthesis, characterization and crystal structure analysis of cobaltaboranes and cobaltaheteroboranes. *Dalton Transactions* 43: 9976.
110. Hassan Rabaâ, S. Ghosh, Dage Sundholm, J.-F. Halet and J.-Y. Saillard. 2014. Addition and elimination reactions of H<sub>2</sub> in ruthenaborane clusters: A computational study. *Journal of Organometallic Chemistry* 761: 1.
111. N. Vidhya Lakshmi, D. Mandal, S. Ghosh and E. Prasad. 2014. Multi-stimuli responsive organometallic gels based on ferrocene linked poly(aryl ether) dendrons: Reversible redox switching and Pb<sup>2+</sup> ion sensing. *Chemistry: A European Journal* 20: 9002.
112. V.P. Anju, S.K. Barik, B. Mondal, V. Ramkumar and S. Ghosh. 2014. Metallaboranes from metal carbonyl compounds and their utilization as catalysts for alkyne cyclotrimerization. *ChemPlusChem* 79: 546.
113. R.S. Anju, D.K. Roy, B. Mondal, K. Yuvaraj, C. Arivazhagan, K. Saha, B. Varghese and S. Ghosh. 2014. Reactivity of diruthenium and dirhodium analogues of pentaborane(9): Agostic versus boratrane complexes. *Angewandte Chemie International Edition* 53: 2873.
114. D.K. Roy, S.K. Barik, B. Mondal, B. Varghese and S. Ghosh. 2014. A novel heterometallic  $\mu_9$ -boride cluster: Synthesis and structural characterization of [( $\eta^5$ -C<sub>5</sub>Me<sub>5</sub>Rh)<sub>2</sub>{Co<sub>6</sub>(CO)<sub>12</sub>}( $\mu$ -H)(BH)B]. *Inorganic Chemistry* 53: 667.
115. D.K. Roy, J.-F. Halet and S. Ghosh. 2014. Beyond the icosahedron: The quest for high-nuclearity supraicosahedral in metallaboranes. *Journal of Cluster Science* 25: 225.
116. A. Thakur, D. Mandal, P. Deb, B. Mondal and S. Ghosh. 2014. Synthesis of triazole linked fluorescent amino acid and carbohydrate bio-conjugates: A highly sensitive and skeleton selective multi-responsive chemosensor for Cu(II) and Pb(II)/Hg(II) ion. *RSC Advances* 4: 1918.
117. K.K.V. Chakrahari, D. Sharmila, S.K. Barik, B. Mondal, B. Varghese and S. Ghosh. 2014. Hypoelectronic metallaboranes: Synthesis, structural characterization and electronic structures of metal-rich cobaltaboranes. *Journal of Organometallic Chemistry* 749: 188.
118. V. Erapalapati and N. Madhavan. 2015. Versatile soluble oligomeric styrene supports for peptide synthesis. *Journal of Polymer Science Part A: Polymer Chemistry*.
119. H. Behera, V. Ramkumar and N. Madhavan. 2015. Cation transporting peptides: Scaffolds for functionalized pores? *Chemistry: A European Journal*.
120. B.P. Benke and N. Madhavan. 2015. Aminobenzoic acid incorporated octapeptides for cation transport. *Bioorganic & Medicinal Chemistry* 23: 1413–1420.
121. N. Naganna and N. Madhavan. 2014. Soluble non-crosslinked poly(norbornene) supports for peptide synthesis with minimal reagents. *The Journal of Organic Chemistry*. 79: 11549–11557.
122. A. Parashar, S.K. Gade, M. Potnuru, N. Madhavan and K.M. Manoj. 2014. The curious case of benzbromarone: Insight into super inhibition of cytochrome P450. *PLOS ONE* 9: e89967.
123. Michae Wleklinski, Yafeng Li, Soumabha Bag, Depanjan Sarkar, Rahul Narayanan, T. Pradeep and R.G. Cooks. 2015. Zero volt paper spray ionization and its mechanism. *Analytical Chemistry*.
124. R.G. Hemalatha, Hemanta R. Naik, Vasundhara Mariappa and T. Pradeep. 2015. Rapid detection of *Fusarium* wilt in basil (*Ocimum* sp.) leaves by desorption electrospray ionization mass spectrometry (DESI MS) imaging. *RSC Advances*.



125. S. Balaji, A. Surejan, L. Philip and T. Pradeep. 2015. Rapid synthesis of C-TiO<sub>2</sub>: Tuning the shape from spherical to rice grain morphology for visible light photocatalytic application. *ACS Sustainable Chemistry & Engineering*.
126. Jyoti Sarita Mohanty, A. Baksi, H. Lee and T. Pradeep. Clusters protected with mixed proteins exhibiting intense photoluminescence. *RSC Advances* 5: 48039–48045.
127. Soujit Sen Gupta, Indranath Chakraborty, S.M. Maliyekkal, T.A. Maark, D.K. Pandey, S.K. Das and T. Pradeep. 2015. Simultaneous dehalogenation and removal of persistent halocarbon pesticides from water using graphene nanocomposites: A case study of lindane. *ACS Sustainable Chemistry & Engineering*.
128. Radha Gobinda Bhuin, Rabin Rajan J. Methikkalam, Bhalamurugan Sivaraman and T. Pradeep. 2015. Interaction of acetonitrile with water–ice: An infrared spectroscopic study. *The Journal of Physical Chemistry C*.
129. Mohamad A. Kabbani, Chandra Sekhar Tiwary, Pedro A.S. Autreto, Gustavo Brunetto, Anirban Som, K.R. Krishnadas, Sehmus Ozden, Ken Hackenberg, Yongi Gong, Douglas S. Galvao, Robert Vajtai, Ahmad T. Kabbani, T. Pradeep and Pulickel M. Ajayan. 2015. Ambient solid-state mechano-chemical reactions between functionalized carbon nanotubes *Nature Communications*.
130. Kamalesh Chaudhari and T. Pradeep. 2015. Initial growth kinetics of luminescent quantum clusters of silver within albumin family protein templates. *The Journal of Physical Chemistry C*.
131. K.C. Krishnapriya, A. Baksi, S. Chaudhari, Soujit Sen Gupta and T. Pradeep. 2015. Translocation of uranium from water to foodstuff while cooking. *Journal of Hazardous Materials*.
132. K. Chaudhari and T. Pradeep. 2015. *In vitro* co-localization of plasmonic nano-bio labels and biomolecules using plasmonic and Raman scattering microspectroscopy. *Journal of Biomedical Optics* 20.
133. Hook F. (Meliaceae), P. Mohana Kumara, Amitava Srimany, G. Ravikanth, R. Uma Shaanker and T. Pradeep. 2015. Ambient ionization mass spectrometry imaging of rohitukine, a chromone anti-cancer alkaloid, during seed development in *Dysoxylum binectariferum*. *Phytochemistry* 0031: 9422.
134. A. Baksi, Anuradha Mitra, Jyoti Sarita Mohanty, H. Lee, Goutam De and T. Pradeep. 2014. Size evolution of protein protected gold clusters in solution: A combined SAXS-MS investigation. *The Journal of Physical Chemistry C*.
135. Amitava Srimany, Balasubramanyam Jayashree, Subramanian Krishnakumar, Sailaja Elchuri and T. Pradeep. 2014. Identification of effective substrates for the direct analysis of lipids from cell lines using desorption electrospray ionization mass spectrometry. *Rapid Communications in Mass Spectrometry* 29: 349–356.
136. Radha Gobinda Bhuin, Bhalamurugan Sivaraman, J.-I. Lo, B.N. Raja Sekhar, B.-M. Cheng, T. Pradeep and Nigel Mason. 2014. Vacuum ultraviolet photoabsorption of interstellar icy thiols. *The Journal of Chemical Physics* 141: 231101.
137. Atanu Ghosh, Jukka Hassinen, Petri Pulkkinen, Heikki Tenhu, Robin H.A. Ras and T. Pradeep. 2014. Simple and efficient separation of atomically precise noble metal clusters. *Analytical Chemistry* 86: 12185–12190.
138. K. Chaudhari and T. Pradeep. 2014. Optical rotation by plasmonic circular dichroism of isolated gold nanorod aggregates. *Applied Physics Letters* 105: 203105 (1–4).
139. J.R. Swathy, M. Udhaya Sankar, A. Chaudhary, Sahaja Aigal, S. Anshup and T. Pradeep. 2014. Antimicrobial silver: An unprecedented anion effect. *Scientific Reports (Nature)* 4: 7161.
140. Atanu Ghosh, Vedhakkani Jeseentharani, Mohd Azhardin Ganayee, Rani Hemalatha, K. Chaudhari, Cherianath Vijayan and T. Pradeep. 2014. Approaching sensitivity of tens of ions using atomically precise cluster-nanofiber composites. *Analytical Chemistry* 86: 10996–11001.
141. Sreya Sarkar, Indranath Chakraborty, Manoj Kumar Panwar and T. Pradeep. 2014. Isolation and tandem mass spectrometric identification of a stable monolayer protected silver–palladium alloy cluster. *The Journal of Physical Chemistry Letters* 5: 3757–3762.
142. Indranath Chakraborty and T. Pradeep. 2014. Reversible formation of Ag<sub>44</sub> from selenolates. *Nanoscale* 6: 14190–14194.
143. Indranath Chakraborty, Shrabani Mahata, Anuradha Mitra, Goutam De and T. Pradeep. 2014. Controlled synthesis and characterization of the elusive thiolated Ag<sub>55</sub> cluster. *Dalton Transactions* 43: 17904–17907.
144. A. Baksi, M.S. Bootharaju, Xi Chen, Hannu Hakkinen and T. Pradeep. 2014. Ag<sub>11</sub>(SG)<sub>7</sub>: A new cluster identified by mass spectrometry and optical spectroscopy. *The Journal of Physical Chemistry C*.
145. Anyin Li, Zane Baird, Soumabha Bag, Depanjan Sarkar, Anupama Prabhat, T. Pradeep and R.G. Cooks. 2014. Using ambient ion beams to write nanostructured patterns for surface enhanced Raman spectroscopy. *Angewandte Chemie International Edition*.
146. K. Chaudhari and T. Pradeep. 2014. Spatiotemporal mapping of three dimensional rotational dynamics of single ultrasmall gold nanorods. *Scientific Reports (Nature)*.

147. Atanu Ghosh and T. Pradeep. 2014. Synthesis of atomically precise silver clusters using the miscibility principle. *European Journal of Inorganic Chemistry*.
148. Atanu Ghosh, T. Pradeep and Jaydeb Chakrabarti. 2014. Coalescence of atomically precise clusters on graphenic surfaces. *The Journal of Physical Chemistry C*. 118: 13959–13964.
149. Indranath Chakraborty, Radha Gobinda Bhui, Shridevi Bhat and T. Pradeep. 2014. Blue emitting undecaplatinum cluster. *Nanoscale*.
150. Indranath Chakraborty, Jayanthi Erusappan, Anuradha Govindarajan, K.S. Sugi, Thumu Udayabhaskararao, Atanu Ghosh and T. Pradeep. 2014. Emergence of metallicity in silver clusters in the 150 atom regime: A study of differently sized silver clusters. *Nanoscale* 6: 8024–8031.
151. Anirban Som, Akshaya Kumar Samal, Thumu Udayabhaskararao, M.S. Bootharaju and T. Pradeep. 2014. Manifestation of the difference in reactivity of silver clusters in contrast to its ions and nanoparticles: The growth of metal tipped Te nanowires. *Chemistry of Materials* 26: 3049–3056.
152. Ammu Mathew and T. Pradeep. 2014. Noble metal clusters: Applications in energy, environment and biology. *Particle & Particle Systems Characterization*.
153. R. Narayanan, D. Sarkar, R.G. Cooks and T. Pradeep. 2014. Molecular ionization from carbon nanotube paper. *Angewandte Chemie International Edition* 53: 5936–5940.
154. Jukka Hassinen, Petri Pulkkinen, Elina O. Kalenius, T. Pradeep, Heikki Tenhu, Hannu J. Häkkinen and Robin H.A. Ras. 2014. Mixed-monolayer-protected Au<sub>25</sub> clusters with bulky calix[4]arene functionalities. *Journal of Physical Chemistry Letters* 5: 585–589.
155. Robin John, Dhanraj B. Shinde, Lili Liu, Feng Ding, Zhiping Xu, Cherianath Vijayan, Vijayamohan K. Pillai and T. Pradeep. 2014. Sequential electrochemical unzipping of SWNTs to graphene ribbons revealed by *in-situ* Raman spectroscopy and imaging. *ACS Nano* 8: 234–242.
156. Ammu Mathew, Ganapati Natarajan, Lauri Lehtovaara, Hannu Hakkinen, Ravva Mahesh Kumar, Venkatesan Subramanian, Abdul Jaleel and T. Pradeep. 2014. Supramolecular functionalization and concomitant enhancement in properties of Au<sub>25</sub> clusters. *ACS Nano* 8: 139–152.
157. Soumabha Bag, Radha Gobinda Bhui, Rabin Rajan J. Methikkalam, Luke Kephart, Jeff Walker, Kevin Kuchta, Dave Martin, Jian Wei and T. Pradeep. 2014. Development of ultralow energy (1–10 eV) ion scattering spectrometry coupled with reflection absorption infrared spectroscopy and temperature programmed desorption for the investigation of molecular solids. *Review of Scientific Instruments* 85: 014103.
158. K.R. Krishnadas, Thumu Udayabhaskararao, Susobhan Choudhury, Nirmal Goswami, Samir Kumar Pal and T. Pradeep. 2014. Luminescent AgAu alloy clusters derived from Ag nanoparticles: Manifestations of tunable AuI–CuI metallophilic interactions. *European Journal of Inorganic Chemistry* 5: 908–916.
159. P. Lasitha and Edamana Prasad. 2015. Orange red emitting naphthalene diimide derivative containing dendritic wedges: Aggregation induced emission (AIE) and detection of picric acid (PA). *RSC Advances*.
160. B. Vivek and Edamana Prasad. 2015. Reusable self-healing hydrogels realized via *in-situ* polymerization. *The Journal of Physical Chemistry B* 119: 4881.
161. S. Kaviya and Edamana Prasad. 2015. Biogenic synthesis of ZnO–Ag nano custard apples for efficient photocatalytic degradation of methylene blue by sunlight irradiation. *RSC Advances* 5: 17179.
162. Tufan Ghosh and Edamana Prasad. 2015. White light emission from unmodified graphene quantum dots. *The Journal of Physical Chemistry C* 119: 2733.
163. Partha Malakkar and Edamana Prasad. 2015. Self-assembly and gelation of poly(aryl ether) dendrons containing hydrazide units: Factors controlling the formation of helical structures. *Chemistry: A European Journal* 21: 5093.
164. S. Kaviya and Edamana Prasad. 2014. Sequential detection of Fe<sup>3+</sup> and As<sup>3+</sup> ions by naked eye through aggregation and dis-aggregation of biogenic gold nanoparticles. *Analytical Methods* 7: 168.
165. P. Rajamalli, P. Malakar, S. Atta and E. Prasad. 2014. Metal induced gelation from pyridine cored poly(aryl ether) dendrons with *in situ* synthesis and stabilization of hybrid hydrogel composites. *Chemical Communications* 50: 11023.
166. Tufan Ghosh, Sandeepan Maity and Edamana Prasad. 2014. Rate and mechanistic investigation of Eu(OTf)<sub>2</sub> mediated reduction of graphene oxide at room temperature. *The Journal of Physical Chemistry B* 118: 5524.
167. N. Vidhya Lakshmi, Dipendu Mandal, S. Ghosh and Edamana Prasad. 2014. Multi-stimuli responsive organometallic gels based on ferrocene linked poly(aryl ether) dendrons: Reversible redox switching and Pb<sup>2+</sup> ion sensing. *Chemistry: A European Journal* 20: 9002.
168. S. Kaviya and Edamana Prasad. 2014. Sunlight induced synthesis of reversible and reusable bio-capped nanoparticles for metal ion detection and SERS studies. *ACS Sustainable Chemistry and Engineering* 2: 699.
169. Chanchal Agarwal and Edamana Prasad. 2014. Metal ion detection by naphthylthiourea derivatives through ‘turn-on’ excimer emission. *RSC Advances* 4: 8015–8022.

170. M.P. Karthikayini, Venkateshkumar Prabhakaran, Vijay K. Ramani and Kothandaraman Ramanujam. 2015. Controlling the nitrogen content of metal–nitrogen–carbon based non-precious-metal electrocatalysts via selenium addition. *Journal of the Electrochemical Society*.
171. P. Hari Krishna Charan and G. Ranga Rao. 2014. Synthesis of CuNi and CuNi/SBA-15 by aqueous method at room temperature and their catalytic activity. *Microporous and Mesoporous Materials* 200: 101–109.
172. Ediga Umeshbabu, G. Rajeshkhanna and G. Ranga Rao. Urchin and sheaf-like NiCo<sub>2</sub>O<sub>4</sub> nanostructures: Synthesis and electrochemical energy storage application. *International Journal of Hydrogen Energy* 39: 15627–15638.
173. P. Justin, P. Hari Krishna Charan and G. Ranga Rao. 2014. Activated zirconium carbide promoted Pt/C electrocatalyst for oxygen reduction. *Applied Catalysis B: Environmental* 144: 767–774.
174. Sayan Dutta, S.S. Kotha and G. Sekar. 2015. Metal free one-pot synthesis of  $\alpha$ -ketoamides from terminal alkenes. *RSC Advances*.
175. G. Kumar and G. Sekar. 2015. Pd-catalyzed direct C2-acylation and C2,C7-diacylation of indoles: Pyrimidine as easily removable C–H directing group. *RSC Advances* 5: 28292.
176. K. Surya Srinivas, B. Sindhurs and G. Sekar. 2015. Iron-catalyzed direct synthesis of amides from methy-larenes. *Advanced Synthesis & Catalysis* 357.
177. Somraj Guha, V. Rajeshkumar, S.S. Kotha and G. Sekar. 2015. A versatile and one-pot strategy to synthesize  $\alpha$ -amino ketones from benzylic secondary alcohols using n-bromosuccinimide. *Organic Letters* 17: 406.
178. Nidhi Sharma, Nabajit Lahiri, K. Surya Srinivas and G. Sekar. 2015. Copper-catalyzed one-pot synthesis of  $\alpha$ -ketoamides from 1-arylethanol. *Synthesis* 47: 726.
179. I. Karthikeyan, D. Arun Prasath and G. Sekar. 2015. An efficient synthesis of pyrido[1,2-a]indoles through aza-Nazarov type cyclization. *Chemical Communications* 51: 1701.
180. D. Ganapathy, S.S. Kotha and G. Sekar. 2015. Stable palladium nanoparticles catalyzed synthesis of benzo-nitriles using K<sub>4</sub>[Fe(Cn)<sub>6</sub>]. *Tetrahedron Letters* 56: 175.
181. N.C. Mamillapalli and G. Sekar. 2014. Metal free chemoselective reduction of  $\alpha$ -keto amides using TBAF catalyst. *RSC Advances* 4: 61077.
182. I. Karthikeyan and G. Sekar. 2014. Iron catalyzed C–H bond functionalization for the exclusive synthesis of pyrido[1,2-a]indoles or triarylmethanols. *European Journal of Organic Chemistry*. 8055.
183. Rajesh Kumar, S. Chandrasekar and G. Sekar. 2014. An efficient route to synthesize isatins by metal-free, iodine-catalyzed sequential C(sp<sup>3</sup>)–H oxidation and intramolecular C–N bond formation of 2'-aminoacetophenones. *Organic & Biomolecular Chemistry* 12: 8512.
184. S.S. Kotha, S. Chandrasekar, Samrat Sahu and G. Sekar. 2014. Iron-TEMPO catalyzed domino aerobic alcohol oxidation/oxidative cross-dehydrogenative coupling for the synthesis of  $\alpha$ -ketoamides. *European Journal of Organic Chemistry* 7415.
185. D. Ganapathy and G. Sekar. 2014. An efficient synthesis of polysubstituted olefins using stable palladium nanocatalyst: Applications in synthesis of tamoxifen and iso-combretastatin A4. *Organic Letters* 16: 3856.
186. N.C. Mamillapalli and G. Sekar. 2014. Chemoselective reduction of  $\alpha$ -keto amides using nickel catalysts. *Chemical Communications* 50: 7881.
187. I. Karthikeyan, S.K. Alamsetti and G. Sekar. 2014. Isolation and characterization of trinuclear cobalt complex containing trigonal prismatic cobalt in secondary alcohol aerobic oxidation. *Organometallics* 33: 1665.
188. S. Badigenchala, D. Ganapathy, A. Das, R. Singh and G. Sekar. 2014. Iron(II) chloride–1,1'-binaphthyl-2,2'-diamine (FeCl<sub>2</sub>–BINAM) complex catalyzed domino synthesis of bisindolylmethanes from indoles and primary alcohols. *Synthesis* 101.
189. P. Venkatakrishnan, R. Pandey, F. Terenziani, P.K. Das and Blanchard-Desce. 2014. Combined transparency and optical nonlinearity enhancement in flexible covalent multimers by operating through-space interactions between dipolar chromophores. 2014. M. *Physical Chemistry Chemical Physics* 16: 9096.
190. B. Maji, M. Baidya and H. Yamamoto. 2014. Asymmetric construction of quaternary stereocenters by magnesium catalyzed direct amination of  $\beta$ -ketoesters using *in situ* generated nitrosocarbonyl compounds as nitrogen sources. *Chemical Science* 5: 3941.
191. B.P. Woods, Beeraiah Baire and T.R. Hoye. 2014. Rates of hexadecylo-Diels–Alder (HDDA) cyclizations: Impact of the linker structure. *Organic Letters* 16: 4578.
192. Quang Luu Nguyen, Beeraiah Baire and T.R. Hoye. 2015. Competition between classical and hexadecylo-Diels–Alder (HDDA) reactions of HDDA triynes with furan. *Tetrahedron Letters* 56: 3265.

#### Papers published in proceedings of national conferences

1. Madhumita Tarai and A.K. Mishra. 2014 Application of soft independent method of class analogy (SIMCA) with synchronous fluorescence spectroscopy (SFS) to classify jirkadyarista from non-jirkadyarista ayurvedic drugs. *FCS-2014, IISER Pune*.



- Ramesh Nivarthi and Archita Patnaik. 2014. Controlled intramolecular planarization towards unit J-dimers constituting fluorescent organic nanocrystals and conductive gels. *Chemistry In-House Symposium*, IIT Madras, August.
- Nikhil Aggarwal and Archita Patnaik. 2014. Hydrogen bond-directed fluorescent H-type aggregates of nitro-amine functionalised molecular systems: A case study: p-Nitroaniline. *Chemistry In-House Symposium*, IIT Madras, August.
- Sitakant Satpathy and Archita Patnaik. 2014. A C60 based non-covalent dyad: Correlating first principles electronic structure with bonding pattern for chemical reactivity. *Chemistry In-House Symposium*, IIT Madras, August.

#### Papers published in proceedings of international conferences

- Vikram Singh and A.K. Mishra. 2014. Selective detection of picric acid using a carbazoloisobenzotriazolophane, a fluorescent sensor. *25th IUPAC Symposium on Photochemistry*.
- Vikram Singh and A.K. Mishra. 2014. Green and cost-effective turn-off fluorescence detection of ferric ion by water soluble carbon nanoparticle. *IISER and NIIST*, Tiruvananthapuram.
- Jitendriya Swain, Indrapal Singh Aidhen and A.K. Mishra. 2014. Interaction between fingolimod hydrochloride (FTY720) and the serum blood protein HAS. *25th IUPAC Symposium on Photochemistry*.
- Avik Kumar Pati, S.J. Gharpure and A.K. Mishra. 2015. Photophysics of diphenylbutadiynes: Temporally and spatially resolved molecular science. *IISc, Bangalore*, 12–14 January.
- Madhumita Tarai and A.K. Mishra. 2015. Application of principal component analysis (PCA) on total synchronous fluorescence spectroscopy (TSFS) data sets to classify aqueous based ayurvedic preparations. *ICOPIC-2015*, SRM University, Chennai.
- Ramesh Nivarthi and Archita Patnaik. 2014. Controlled intramolecular planarization towards unit J-dimers constituting fluorescent organic nanocrystals and conductive gels. *International Symposium on Macro- and Supramolecular Architectures and Materials: From Innovation to Commercialisation*, Johannesburg, South Africa, 23–27 November.
- Sitakant Satpathy and Archita Patnaik. 2014. Exploring through-bond/through-space charge relay chemistry in an anion bound C60-based supramolecular ensemble. *International Symposium on Macro- and Supramolecular Architectures and Materials: From Innovation to Commercialisation*, Johannesburg, South Africa, 23–27 November.
- Geevarghese Vadakken Jacob, Shibali Debnath and Archita Patnaik. 2015. Electron transport in Fe(II) bisTPY molecular wires: Effect of ligand substitution. *REACH-2015: An International Symposium on Recent Advances in Chemistry*, NEHU, Shillong, India, 3–5 March.
- Sanjeeb Sutradhar and Archita Patnaik. 2015. Chemically tunable nanohybrids of n-methylfulleropyrrolidine (8-nmfp) and gold nanoclusters. *REACH-2015: An International Symposium on Recent Advances in Chemistry*, NEHU, Shillong, India, 3–5 March.

#### Distinguished visitors

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1	Prof. Lanny S. Liebeskind, Ph.D. Department of Chemistry Emory University, Atlanta, USA	10 March 2014	Guest lecture
2	Prof. Dr. Ron M.A. Heeren FOM-AMOLF, Biomolecular Imaging Mass Spectrometry, Science Park, Amsterdam, The Netherlands	13 March 2014	Guest lecture
3	Prof. Dr. Nadia C. Möscher-Zanetti Institute of Chemistry–Inorganic Chemistry Karl-Franzens-University Graz, Austria	18 March 2014	Guest lecture
4	Dr. Arindam Ghosh Associate Professor Department of Physics IISc, Bangalore	4 April 2014	Guest lecture

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
5	Prof. G. Krishnamoorthy Department of Chemical Sciences TIFR, Mumbai	23 April 2014	Guest lecture
6	Dr. Ludovic Biennier Institut de Physique de Rennes, CNRS–Université de Rennes 1, France	23 April 2014	Guest lecture
7	Prof. Debabrata Goswami Department of Chemistry IIT Kanpur	16 May 2014	Guest lecture
8	Dr. Ayan Datta Assistant Professor Department of Spectroscopy Indian Association for the Cultivation of Science Jadavpur, Kolkata, West Bengal	19 May 2014	Guest lecture
9	Dr. Veerabhadrarao Kaliginedi Department of Chemistry and Biochemistry University of Bern Switzerland	23 May 2014	Guest lecture
10	Prof. Graham Nicholson, Associate Dean and Dr. Judy Hudson, Senior Project Officer, International and External Engagement, University of Technology Sydney, Australia	8 August 2014	Guest lecture
11	Dr. Ujjal K. Gautam Faculty (Ramanujan Fellow) Jawaharlal Nehru Centre for Advanced Scientific Research, Jakkur, Bangalore	9 September 2014	Guest lecture
12	Dr. Praveenn Kumar Vemula Laboratory of Self-Assembled Biomaterials, Institute for Stem Cell Biology and Regenerative Medicine, National Centre for Biological Sciences (NCBS), Bangalore	15 September 2014	Guest lecture
13	Nusrat J.M. Sanghamitra, Ph.D WPI Researcher, Institute for Integrated Cell-Material Sciences, Kyoto University, Sakyo-ku, Kyoto, Japan	26 September 2014	Guest lecture
14	Prof. Kankan Bhattacharyya, FTWAS, FASC, FNA Senior Editor, The Journal of Physical Chemistry, Senior Professor, Department of Physical Chemistry, Indian Association for the Cultivation of Science, Jadavpur, Kolkata	7 October 2014	Guest lecture
15	Prof. S. Ramasesha Solid State and Structural Chemistry Unit,	10 October 2014	Guest lecture

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
	IISc, Bangalore		
16	Dr. Ramesh Rasappan Department of Chemistry, University of Bristol, UK	20 October 2014	Guest lecture
17	Prof. Franz J. Giessibl Department of Physics, University of Regensburg, Germany	3 November 2014	Guest lecture
18	Prof. Brindaban C. Ranu Department of Organic Chemistry Indian Association for the Cultivation of Science, Jadavpur, Kolkata	13 November 2014	Guest lecture
19	Prof. Uttam K. Thambar, The University of Texas, Southwestern Medical Center, Dallas, USA	12 December 2014	Guest lecture
20	Prof. Amalendu Pal Head, Department of Chemistry, Kurukshetra University, Kurukshetra	30 December 2014	Guest lecture
21	Prof. E. Arunan Inorganic and Physical Chemistry Department, IISc, Bangalore	6 January 2015	Guest lecture
22	Prof. Upadrasta Ramamurty Department of Materials Engineering, IISc, Bangalore	7 January 2015	Guest lecture
23	Dr. Satyanarayana Chilukuri Senior Principal Scientist and Professor, CSIR—National Chemical Laboratory, Pune	21 January 2015	Guest lecture
24	Dr. Ashok K. Vijn, O.C., O.Q., F.R.S.C. Institut de Recherche, Varenes, Québec, Canada	22 January 2015	Guest lecture
25	Dr. Anurag Sethi Associate Research Scientist, Molecular Biophysics and Biochemistry, Yale University	3 February 2015	Guest lecture
26	Prof. Pankaj Mandal Department of Chemistry, IISER Pune	9 February 2015	Guest lecture
27	Prof. Pierre H. Dixneuf University of Rennes, Bretagne, France	16 February 2015	Guest lecture
28	Prof. Nand Kishore Department of Chemistry, IIT Bombay	16 March 2015	Guest lecture

#### 4.5.6. Other Activities of the Department

Sl. No.	Activity	Date
1	Prof. Indrapal Singh Aidhen, industrial visit under course CHY6018, Medical Chemistry, Aurigene Discovery, Hyderabad	9–10 April 2014
2	Dr. K.M. Muraleedharan, industrial visit under course CHY6018, Medical Chemistry, Aurigene Discovery, Hyderabad	9–10 April 2014
3	M.Sc. students visited SHAR Centre, Andhra Pradesh.	24–25 September 2014
4	Dr. Anadi Singha Mahapatra (former Ph.D. scholar), won the Second Prize of the 2014 Lilly Outstanding Thesis Awards for his thesis titled 'Synthesis and Structural Studies of Glycans and Glycopeptoids'.	—
5	Dr. Periannan Kuppusamy, alumnus of the department, received a Distinguished Alumnus Award.	—
6	Students from Providence College, Calicut visited the department.	3 February 2014
7	Students from Christ University Bangalore visited the department.	6 February 2014
8	Students from WMO English Academy, Wayanad visited the department.	22 May 2014
9	Students from Sanatana Dharma College, Alappuzha visited the department.	14 July 2014
10	Students from TKMM College, Nangiarkulangara visited the department.	14 July 2014
11	Students from Kalaimagal Vidyalaya Matric Higher Secondary School visited the department.	13 August 2014
12	Students from Auxilium College, Vellore visited the department.	16 October 2014
13	Students from Government Brennen College, Thalassery Dharmadam visited the department.	28 November 2014
14	Students from Krishnamenon Memorial Womens College, Kannur visited the department.	16 December 2014
15	Students from Government Arts College, Thiruvananthapuram visited the department.	15 January 2015
16	Students from University College, Thiruvananthapuram visited the department.	19 March 2015
17	Students from Madras Christian College, Tambaram visited the department.	24 March 2015

## 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 development of the nation's infrastructure and to human resource generation. The B.Tech., Dual Degree, M.Tech., M.S. and Ph.D. programmes of the department are among the best in the country and, perhaps, in the world. The faculty members have received advanced degrees and/or training from reputed institutions in India, Germany, the UK, the USA, Japan, Singapore, Canada, the Netherlands, the former USSR, etc. The faculty members, along with the research scholars of the department, carry out innovative and challenging high-end research and execute industrial projects.

Broadly, the departmental activities embrace teaching, research, consultancy and training. Alumni of the department hold prestigious positions in leading academic institutes, industries and government organisations all over the world. The activities of the department are carried out under different disciplines, administratively organised into five divisions: 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 Environmental and Water Resources Engineering and Structural Engineering laboratories received substantial initial funding from the Federal Republic of Germany.

### 4.6.2. Academic Programmes

The department provides training to students in both theoretical and practical aspects of civil engineering. The students are trained in state-of-the-art technologies to enable them to adapt themselves to fast-changing technological developments in the world.

The department has post-graduate 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.

#### New courses introduced

Sl. No.	Course No.	Title
1	CE6011	Smart Buildings and Automation

#### New lab(s) established

##### **New Laboratory for Mechanical Performance of Civil Engineering Materials (MPCEM Lab) at the Department of Civil Engineering, IIT Madras**

A laboratory dedicated to characterising and enhancing the mechanical performance of civil engineering materials, the MPCEM Lab, was set up in January 2015 with sophisticated testing systems with a range of load capacities, from 15 kN to 30 MN. These machines were procured through the Fund for Improvement of S&T Infrastructure in Universities and Higher Educational Institutions (FIST) Programme of the Ministry of Science and Technology, several grants from IIT Madras and industry. Two 1 MN MTS servohydraulic systems capable of performing tests under controlled displacement rates, in static and dynamic regimes, and two controls multi-actuator systems for student-friendly computer-aided testing are among the equipment. The MPCEM Lab has already been used by about 30 research scholars and students.

##### **New Building Automation Laboratory at the Department of Civil Engineering, IIT Madras**

A building automation laboratory for conducting research in automated building systems was established in July 2014. Research in thermal comfort, daylighting and construction robotics will be conducted in this lab. A radiant cooling chamber has been installed in the lab for evaluating alternate cooling systems for buildings. The laboratory is being used for experiments and projects of the course CE6011—Smart Buildings and Automation.

**Students on roll as of September 2014 + M.S. and Ph.D. scholars admitted in January 2015**

Programme	I Year	II Year and Others	III Year	IV Year	V Year and Others	Total
B.Tech.	59	62	60	52	26	259
Dual Degree	54	52	44	20	36	206
M.Tech.	76	88	—	—	—	164
M.S.	24	23	13	6	—	66
Ph.D.	78	47	57	19	40	241
<b>Total</b>	<b>291</b>	<b>272</b>	<b>174</b>	<b>97</b>	<b>102</b>	<b>936</b>

**Names of students/scholars who attended conferences, seminars or symposia abroad/in India**

Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference, Seminar/Symposium/ Workshop and Venue	Date	Financial Assistance from
<b>India</b>					
1	Anupam Dasgupta	CE12M174	International Conference on Construction in a Changing World, Sri Lanka	4-7 May 2014	IIT Madras
2	Anis Mohammed V.	CE13M082	Fifth International Congress on Computational Mechanics and Simulation, CSIR, Chennai	10-13 December 2014	IIT Madras
3	M. Jayaprathiga	CE13M064	International Conference on Modeling Tools for Sustainable Water Resources Management, IIT Hyderabad	28-29 December 2014	IIT Madras
4	Ketan Kulkarni	CE13M088	National Conference on Technological Innovations for Sustainable Infrastructure, NIT Calicut	13-16 March 2015	IIT Madras
5	Vatsalya Reddi Kandi	CE13M066	International Conference on Green Technologies for Energy Management, Md. Sathak Engineering College, Kilakarai	27 March 2015	IIT Madras
<b>Abroad</b>					
1	Shantanu Chakraborty	CE12S018	Fifth International Symposium on Dynamic Traffic Assignment, Italy	17-19 June 2014	IIT Madras
2	Vinay Mathew	CE11S021	ISARC, Australia	9-11 July 2014	IIT Madras
3	M. Prasanna	CE12S013	Eighth International Symposium on Geotechnical Aspects of Underground Construction in Soft Ground, Seoul	25 July 2014	IIT Madras
4	Priya V.S.	CE09D013	ICEAE 2014, Singapore	6-7 August 2014	IIT Madras
5	Pinky Devi L.	CE10D030	13th International Conference on Sustainable Energy Technologies, Switzerland	25-28 August 2014	IIT Madras
6	P. Subramaniam	CE11D034	15th Danube European Conference on Geotechnical Engineering, Austria	9-11 September 2014	IIT Madras
7	Lini Dev K.	CE12D010	15th Danube European Conference on Geotechnical Engineering, Austria	9-11 September 2014	IIT Madras
8	Sunil Ranjan	CE12D022	10th International Conference on Geosynthetics, Berlin, Germany	21-25 September 2014	IIT Madras
9	Nithin	CE13D004	10th International Conference Geosynthetics, Berlin, Germany	21-25 September 2014	IIT Madras
10	Saikat Bagchi	CE12S016	ACEE 2014, Taipei, Taiwan	16-18 October 2014	IIT Madras
11	M. Prabhu	CE10D013	ACEE 2014 at Taipei, Taiwan	16-18 October 2014	IIT Madras
12	S. Sangeetha	CE12D053	Sixth Jordanian International Civil Engineering Conference (JICEC'06), Jordan	10-12 March 2015	IIT Madras
13	Leon Raj J.	CE12D044	Sixth Jordanian International Civil Engineering Conference (JICEC'06), Jordan	10-12 March 2015	IIT Madras



Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference, Seminar/Symposium/ Workshop and Venue	Date	Financial Assistance from
14	Poluraju P.	CE13D005	Sixth Jordanian International Civil Engineering Conference (JICEC'06), Jordan	10–12 March 2015	IIT Madras
15	Ambika S.	CE10D018	AGU Fall Meeting 2014, USA	15–19 December 2014	IIT Madras
16	M. Komathi	CE11D020	Fifth Annual International Conference on Civil Engineering, Structural Engineering and Mechanics, Greece	25–28 May 2015	IIT Madras
17	Balu E. George	CE14D008	Super Pile 2015 Piling Design and Construction Conference, USA	6–8 May 2015	IIT Madras
18	M. Velmurugan	CE11D036	Fifth Annual International Conference on Civil Engineering, Structural Engineering and Mechanics, Greece	25–28 May 2015	—

### Names of students/scholars who won outside prizes

Sl. No.	Name of the Student/Scholar	Roll No.	Name of Prize	Prize Awarded by
1	Omprakash Ranjan	CE12M035	First prize, for poster entitled 'Air Quality Impact Assessment on Human Health and Vegetation at an Industrial Area in India'	CSIR—National Environmental Engineering Research Institute (CSIR-NEERI), Nagpur, 6 August 2014
2	Joythi S. Menon	CE13D041		
3	Chitra V.S.	CE09D023	Second prize, for poster titled 'Children Exposure to Size Segregated Matter in Naturally Ventilated School Building'	CSIR—National Environmental Engineering Research Institute (CSIR-NEERI), Nagpur, 6 August 2014
4	Ajay Krishnan	CE09S004	Ultra Tech Award for the Best Masters' Thesis	ICI Tamil Nadu, Chennai Chapter
5	Praveena Gangadharan	CE12D048	Department of Science and Technology (DST) Fellowship under the Woman Scientists Scheme	DST
6	Praveena Gangadharan	CE12D048	Best poster award, for poster titled 'Hexavalent Chromium Reduction and Energy Recovery by Using Dual Chambered Microbial Fuel Cell'	International Society of Microbial Electrochemistry and Technology, at NUS, Singapore
7	Ajay Krishnan	CE09S004	Ultra Tech Award for the best Master's thesis	ICI Tamil Nadu, Chennai Chapter
8	Anju Elizabeth	CE13D014	First prize, for the poster titled 'Characterization of Ambient particulate matter near an open dumpsite'	International Conference on Green Technologies for Energy Management (ICGTEM'15), Kilakarai, 27–28 March 2015
9	Femeena P.V.	CE11M071	Green Talents International Sustainability Award, for research in water resource engineering	The Federal Ministry of Education and Research (BMBF), Germany
10	S.V. Sivapriya and S.R. Gandhi	CE08D010	IGS-AIMIL Biannual Award, for the paper titled 'Experimental and Numerical Study on Pile Behavior Under Lateral Load in Clayey Slope', in <i>Indian Geotechnical Journal</i>	Indian Geotechnical Science
11	Hema Priyamvada R.	CE12D040, CE13D018	Second prize for oral presentation, for paper titled 'Need and Assessment to Investigate the Properties of Biological Aerosols as Potential Allergens: A Case Study from IIT Madras'	The Indian Aerosol Science and Technology Association Conference (IASTA-2014), Varanasi
12	Tabish Umar Ansari	CE12S023	Third prize, for poster titled 'Role of Topography in Pollutant Concentrations: A Case Study Over Indian Region Using WRF/Chem. Model'	Ansal University Gurgaon in collaboration with IIT Delhi

### Names of students/scholars who won institute convocation/Institute Day prizes

Sl. No.	Name of the Student/Scholar	Roll No.	Name of Prize	Name of Donor
1	V.M. Bindu	CE08D001	Bhagyalakshmi and Krishna Ayengar Award	Convocation Prize— IITM
2	Chithra V.S.	CE09D023	Shree Gaayathree Devi Award	Convocation Prize— IITM
3	Vadali Nandita	CE09B075	Dr N.R. Dave Prize	Convocation Prize— IITM
4	Krishna Kumar Rao	CE10B032	Larsen & Turbo ECC Endowment Prize	Convocation Prize— IITM
5	Mundlamuri Vinod Kumar	CE11B034	Computer Age Management Services Private Limited Prize	Institute Day Prizes— IITM
6	Hareesh Pallikara Bahuleyan	CE10B024	M.S.K. Chaitanya Varma Memorial Prize	Institute Day Prizes— IITM
7	Vinayak Bakshi	CE09B085	Institute Merit Prize	Institute Day Prizes— IITM
8	Parvathy V. Raj	CE12M082	Smt Jayalakshmi Narasimhan Memorial Prize	Institute Day Prizes— IITM
9	Triveni Trinath	CE12M199	Institute Merit Prize	Institute Day Prizes— IITM
10	Vema Vamsi Krishna	CE12M086	Prof Gerhard Rouve Memorial Prize	Institute Day Prizes— IITM
11	U. Veena	CE11M054	Rajnikant Gandhi Memorial Award	Institute Day Prizes— IITM
12	Krishna Kumar Rae	CE10B032	Sri K.M. Ramamurthi Prize	Institute Day Prizes— IITM

### 4.6.3. Faculty and Their Activities

#### Faculty

Name and Qualifications	Major Areas of Specialisation
<b>Professors</b>	
P. Alagusundaramoorthy, Ph.D. (IIT Madras)	Composite technology
K. Ananthanarayanan, Ph.D. (IIT Madras)	Building technology; construction management
A. Boominathan, Ph.D. (Moscow)	Geotechnical engineering
Devdas Menon, Ph.D. (IIT Madras)	Structural engineering
S.R. Gandhi, Ph.D. (IIT Madras)	Geotechnical engineering
Koshy Varghese, Ph.D. (Texas, Austin)	Building technology; construction management
Ligy Philip, Ph.D. (IIT Kanpur)	Environmental engineering
Manu Santhanam, Ph.D. (Purdue University)	Building technology; construction management
A. Meher Prasad, Ph.D. (Rice University)	Structural engineering
S. Mohan, Ph.D. (IISc, Bangalore)	Water resources engineering
B.S. Murty, Ph.D. (Washington State)	Water resources engineering
B. Nageswara Rao, Ph.D (Iowa University)	Structural engineering
C.V.R. Murty, Ph.D. (California Institute of Technology)	Structural engineering
K. Rajagopal, Ph.D. (Florida)	Geotechnical engineering
K. Ramamurthy, Ph.D. (IIT Madras)	Building technology; construction management
Ravindra Gettu, Ph.D. (Northwestern)	Building technology; construction management
R.G. Robinson, Ph.D. (IISc, Bangalore)	Geotechnical engineering
S.R. Satish Kumar, D.Engg. (Nagoya University)	Structural engineering
K.N. Satyanarayana, Ph.D. (Clemson)	Building technology; construction management

Name and Qualifications	Major Areas of Specialisation
R. Sivanandan, Ph.D. (Virginia Tech.)	Transportation engineering
K. Srinivasan, Ph.D. (IIT Madras)	Water resources engineering
K.P. Sudheer, Ph.D. (IIT Delhi)	Water resources engineering
A. Veeraragavan, Ph.D. (Bangalore University)	Transportation engineering
Amlan Kumar Sengupta, Ph.D. (University of Missouri)	Structural engineering
G. Appa Rao, Ph.D. (IISc, Bangalore)	Structural engineering
G.R. Dodagoudar, Ph.D. (IIT Bombay)	Geotechnical engineering
Karthik K. Srinivasan, Ph.D. (Texas, Austin)	Transportation engineering
<b>Associate Professors</b>	
Arul Jayachandran, Ph.D. (IIT Madras)	Structural engineering
J. Murali Krishnan, Ph.D. (IIT Madras)	Transportation engineering
Indumathi M. Nambi, Ph.D. (Clarkson University)	Environmental engineering
Benny Raphael, Ph.D. (University of Strathclyde, UK)	Building technology; construction management
Balaji Narasimhan, Ph.D. (Texas A&M University)	Water resources engineering
Lelitha Devi, Ph.D. (Texas A&M University)	Transportation engineering
S.T.G. Raghukanth, Ph.D. (IISc, Bangalore)	Structural engineering
U. Saravanan, Ph.D. (Texas A&M University)	Structural engineering
S.M. Shiva Nagendra, Ph.D. (IIT Delhi)	Environmental engineering
<b>Assistant Professors</b>	
Arun Menon, Ph.D. (University of Pavia, Italy)	Structural engineering
Ashwin Mahalingam, Ph.D. (Stanford University)	Building technology; construction management
Dali Naidu Arnepalli, Ph.D. (IIT Bombay)	Geotechnical engineering
Gitakrishnan Ramadurai, Ph.D. (University of Rensselaer)	Transportation engineering
Radhakrishna G. Pillai, Ph.D. (Texas A&M University)	Building technology; construction management
Rupen Goswami, Ph.D. (IIT Kanpur)	Structural engineering
Sachin S. Gunthe, Ph.D. (IITM, Pune)	Atmospheric chemistry and physics
Sivakumar Palaniappan, Ph.D. (Arizona State University)	Building technology; construction management
Subhadeep Banerjee, Ph.D. (NUS, Singapore)	Geotechnical engineering
T. Thyagaraj, Ph.D. (IISc, Bangalore)	Geotechnical engineering
Vidya Bhushan Maji, Ph.D. (IISc, Bangalore)	Geotechnical engineering
Venu Chandra, Ph.D. (IIT Kanpur)	Hydraulics; water resources engineering
Soumendra Nath Kuiry, Ph.D. (IIT Kharagpur)	Hydraulics; water resources engineering
Atul Narayanan, Ph.D. (Texas A&M University)	Transportation engineering
Mathava Kumar, Ph.D. (IIT Madras)	Environmental engineering
<b>Adjunct Faculty</b>	
N. Raghavan, Ph.D.	Structural engineering
Mohan M. Kumaraswamy, Ph.D.	Construction Project Management
<b>Visiting Faculty</b>	
Franziska Steinbruch, Ph.D. (Tech. University of Mining and Technology, Freiberg, Germany)	Water resources engineering
Alpa R. Sheth, INAE Distinguished Visiting Professor, IITM, ME (Structural Engineering, University of California, Berkley Structural Engineer and Managing Director, VMS Consultants Pvt. Ltd., Mumbai)	Structural engineering
V.S. Gopalarathnam, Ph.D. (Northwestern)	Building technology and construction management
Hemanta Doloi, Ph.D. (University of Sydney)	Building technology and construction management
Surendra P. Shah, Ph.D. (Cornell University, USA)	Building technology and construction management

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

Sl. No.	Coordinator(s)	Title	Period
<b>Conferences</b>			
1	K. Rajagopal	Advanced Course on Computational Geomechanics	29–31 October 2014
2	Soumendra Nath Kuiry	Learning Day for Water Distribution and Waste Water Networks	11 December 2014
3	K. Rajagopal	Dam Safety	24–25 March 2015
<b>Workshops</b>			
1	Indumathi M. Nambi	Solid Waste Dump Site Fires: Impact, Monitoring and Mitigation	2 May 2014
2	Indumathi M. Nambi	Environmental Management Practices in Sago Industries	12–13 May 2014
3	S.R. Gandhi	Geotechnical Investigation	2 July 2014
4	Arun Menon	Historic Lime Mortars	31 July to 2 August 2014
5	A. Boominathan and R.G. Robinson	Liquid Limit and Beyond	16 August 2014
6	S.M. Shiva Nagendra	Industrial Air Pollution Control	9–10 September 2014
7	Soumendra Nath Kuiry	Water Distribution and Waste Water Networks	11 December 2014
8	S.M. Shiva Nagendra and Sathyanarayana N. Gummadi	Exposure Monitoring Systems for Air Quality Management	12–13 December 2014
9	Arun Menon	NCSHS on NDT for Historical Monuments and Heritage Structures	15 January to 17 December 2014
10	Soumendra Nath Kuiry	Water Distribution and Waste Water Networks (Department of Civil Engineering and Bentley Systems)	11 December 2014
11	Arun Menon	Non-destructive Testing Techniques for Historical Monuments and Heritage Structures	15–17 December 2014
12	Ligy Philip, T.S. Chandra (BT) and R. Ravi Krishna (Ch.E)	Seminar-cum-workshop, Micro Pollutants in Water and Their Hazards	12–13 January 2015
13	Ravindra Gettu	Strain Guage, Strain Guage Transducers, Digital Data Acquisition and Test Control Technologies for Structural Testing	28 February 2015
<b>Short-term courses</b>			
1	Benny Raphael	Programming for Design Automation	4–12 September 2014
2	Arun Menon	Heritage Conservation and Restoration of Monuments, 6-week programme for engineers in Hindu Religious and Charitable Endowments (HR&CE) Department, Structural Conservation Module	5–9 January 2015
<b>Training programmes</b>			
1	S.M. Shiva Nagendra	Air Quality Modelling	10–15 November 2014
<b>Symposia</b>			
1	A. Boominathan, R.G. Robinson and Subhadeep Banerjee	Sixth International Geotechnical Symposium on Disaster Mitigation in Special Geoenvironmental Conditions	21–23 January 2015

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

Sl. No.	Name of Faculty Member	Title	Institution	Period
<b>Workshops</b>				
1	Balaji Narasimhan	Climate Change Impact, Vulnerability and Adaptation	Ministry of Environment and Forest (India), GoI, New Delhi	2 May 2014
2	K. Rajagopal	Soil Liquefaction	RWTH, Aachen, Germany	15 May 2014
3	Indumathi M. Nambi	Ground Water Contamination	Gujarat Pollution Control Board, Gandhinagar	14 September 2014

Sl. No.	Name of Faculty Member	Title	Institution	Period
4	Ligy Philip	Water Quality and Livelihoods	Peri-Urban, Bangalore	15 September 2014
5	K.N. Satyanarayana	Workshop on Infrastructure and Civil Engineering for the Himalayas	IIT Mandi	7–8 October 2014
6	A. Boominathan	National Workshop on Status of Natural Hazards in Himachal Pradesh	Central University Himachal Pradesh, Dharmashala	6–8 November 2014
7	K.P. Sudheer	Workshop and conference, 'Modeling Tools of Water Management'	IIT Hyderabad	27–29 December 2014
8	Balaji Narasimhan	Addressing Knowledge Gaps to Solve India's Water Problems: Challenges for Hydrologic Sciences	ATREE, Bangalore	8 January 2015
9	S. Mathava Kumar	Green Technologies for Environmental Issues	Mahendra Engineering College, Namakkal	7 February 2015
<b>Seminars</b>				
1	Ligy Philip	UK–India Water, Food and Energy Nexus Scientific Seminar	IIT Gandhinagar	3–4 March 2015
<b>Symposia</b>				
1	S.M. Shiva Nagendra	Technical Symposium VINYAS 2014	PES College of Engineering, Mandya	9 May 2014
2	Balaji Narasimhan	5th Indo–American Frontiers of Engineering Symposium	Mysore	10–21 May 2014
3	Amlan K. Sengupta	Fifth Symposium on Earthquake Engineering	IIT Roorkee	11–13 December 2014
4	Balaji Narasimhan	Operational Remote Sensing Applications: Opportunities, Progress and Challenges	IIT Hyderabad	11 December 2014
5	S.R. Gandhi	Sixth International Geotechnical Symposium on Disaster Mitigation in Special Geoenvironmental Conditions	IIT Madras	21 January 2015
<b>Conferences</b>				
1	Rupen Goswami	Eighth National Frontiers of Engineering	Indian National Academy of Engineering	5–6 September 2014
2	Indumathi M. Nambi	Conference on oil spills	Goa	18–20 September 2014
3	Ligy Philip	International conference on sustainable civil infrastructure	IIT Hyderabad	17 October 2014
4	Balaji Narasimhan	Engineers Conclave 2014: Emerging Space Applications and Technologies for the Hill Regions	IISc, Bangalore	30 October–1 November 2014
5	A. Boominathan	Indian Geotechnical Conference (IGC 2014)	JNTU, Kakinada	18–20 December 2014
6	Rupen Goswami	Technological Innovations for Sustainable Infrastructure (TISI–2015)	Calicut	13–14 March 2015

#### Special lectures delivered by faculty members at other institutions

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
1	R.G. Robinson	Improvement of soft clays	Sivaji College of Engineering and Technology, Manivla, Kanyakumari	10 April 2014
2	K. Rajagopal	Application of finite element techniques for geotechnical problems	Anna University, Chennai	21 April 2014
3	Arun Menon	Safety and conservation of heritage structures	IIT Madras	25 April 2014

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
4	K. Rajagopal	Experiences gained from construction of very geosynthetic reinforced soil retaining walls in India	RWTH, Aachen, Germany	14 May 2014
5	Balaji Narasimhan	Emerging water resources modelling technologies to understand climate change impacts on various sectors and to develop adaptation strategies	Fifth Indo–American Frontiers of Engineering Symposium, Mysore	19–21 May 2014
6	K. Rajagopal	The use of geosynthetics for construction in soft clay soils	RWTH, Aachen, Germany	21 May 2014
7	S.R. Gandhi	ReWall myths and facts	L&T ECC, Chennai	23 May 2014
8	K. Rajagopal	Case studies of geosynthetic reinforced soil retaining walls in India	VIT, Vellore	7 July 2014
9	Benny Raphael	Improving daylighting using light shelves	Indian Green Building Council	23 August 2014
10	Venu Chandra	Measurement techniques and model studies	JCT College of Engineering and Technology, Coimbatore	25 August 2014
11	Ligy Philip	Sustainable waste water management	International Humboldt College, IISc, Bangalore	5–6 September 2014
12	K. Ananthanarayanan	Lecture for Engineers Day celebration (special guest)	Arunai Engineering College, Thiruvannamalai	15 September 2014
13	S.R. Gandhi	Settlement problems, retrofitting of foundations for heritage structures and arresting rising dam with case studies	Rippon Building, Chennai	15–17 September 2014
14	S.R. Gandhi	Strengthening of retaining walls of heritage structures with case studies		
15	Arun Menon	Structural problems and diagnosis in heritage structures	Rippon Building, Chennai	15–17 September 2014
16	Arun Menon	Structural assessment and intervention in heritage structures		
17	A. Boominathan	Seismic hazard assessment studies for nuclear power plant sites	Central University of Himachal Pradesh	6 November 2014
18	S.R. Gandhi	Geotechnical investigations: Issues to be addressed—case study on foundation design	IIT Gandhinagar	13 November 2014
19	A. Boominathan	Field tests and their interpretation on laterally loaded piles	College of Engineering, Trivandrum	20 November 2014
20	Arun Menon	Structural conservation	Built Heritage Studies and Conservation, jointly organised by the Museum (Chatrapati Shivaji Maharaj Vastu Sangrahalaya: formerly Prince of Wales, Museum of Western India), Mumbai, MMR HSC, Mumbai and Sir J.J. College of Architecture, Mumbai	1–4 December 2014
21	Soumendra Nath Kuiry	Gradually varied flow in open channel	S.A. Engineering College, Chennai	15 December 2014
22	S.R. Gandhi	Design and construction of shallow foundations	JNTU, Kakinada	20–21 December 2014
23	S. Mathava Kumar	Membrane (bio)-reactors basics, configurations, design approaches and challenges	KSR College of Technology, Tiruchengode	24.12.2014 24 December 2014
24	S.M. Shiva Nagendra	Personal monitoring system for air quality management	IIT Bombay	23 January 2015
25	Balaji Narasimhan	Development of near-real time hydrologic system using Earth observations	National Remote Sensing Centre, Hyderabad	28–29 January 2015



Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
26	K. Rajagopal	Geosynthetic for Sustainable construction of roads and highway structures	Highway Research Station, Chennai	20 February 2015
27	S. Mathava Kumar	Green technologies for environmental issues	Mahendra Engineering College, Namakkal	27 February 2015
28	S. Mathava Kumar	Emerging pollutants and water treatment	Erode Sengunthar Engineering College, Erode	12 March 2015
29	Amlan K. Sengupta	Seismic retrofit of buildings	Seminar on Retrofitting of Structures under Distress, Chief Engineer, Jaipur Zone, Military Engineering Services, Jaipur Military Station under Indian Armed Forces, Jaipur	3 March 2015
30	S.R. Gandhi	Case studies on deep excavations	Young Geotechnical Engineers Symposium, Baroda	14 March 2015
31	S.M. Shiva Nagendra	Air pollution, climate change and health impacts: Indian context	Mohamed Sathak Engineering College, Kilakarai	28 March 2015
32	K.P. Sudheer	Water resources management: Challenges in the Indian context	Saveetha University, Chennai	17 March 2015

### Visits abroad by faculty members

Sl. No.	Name of Faculty Member	Country Visited	Date	Purpose of Visit
1	Balaji Narasimhan	USA	7–10 April 2014	International Symposium on Ninth Weather Radar and Hydrology and International Symposium on Evapotranspiration: Challenges in Measurement and Modeling from Leaf to the Landscape Scale and Beyond
2	K. Rajagopal	Germany	1–14 May 2014	Research visit to RWTH Aachen University
3	R.G. Robinson	Malaysia	15 May–7 June 2014	Visiting Professorial Fellow at the Swinburne University of Technology
4	Indumathi M. Nambi	USA	19–23 May 2014	Discussions at University of Illinois
5	Manu Santhanam	Switzerland Italy	21 May–9 June 2014	Visiting ETH Zurich, Institute of Building Materials & Laboratory of Construction Materials at EPFL Lausanne
6	Ravindra Gettu	Italy	26 May–6 June 2014	Meetings of the collaborative project 'Low Carbon Cement'
7	Subhadeep Banerjee	Germany	1 June–30 July 2014	DAAD—research stay at Technical University of Kaiserslautern, Germany
8	S.R. Gandhi	Russia	16–18 June 2014	International Conference TC207: Soil–Structure Interaction, Underground Structures and Retaining Wall
9	B.S. Murty	Germany	16–28 June 2014	IGCS Summer School on Sustainable Management of Resources: Closing the Loop—Solid Waste and Wastewater Management
10	Gitakrishnan Ramadurai	Italy & France	17–26 June 2014	Fifth International Symposium on Dynamic Traffic Assignment, DTA 2014 Fourth international Conference on Complex Systems and Applications
11	Sachin S. Gunthe	Brazil	17 June–16 July 2014	Participation in an International Field Campaign as part of Max Plank Partner group activity under the project 'Amazonian Tall Tower Observatory'
12	Indumathi M. Nambi	USA	20 June 2014	Elsevier Conference on Urban Environment Pollution
13	Benny Raphael	USA	23–25 June 2014	ICCCBE conference
14	Benny Raphael	Australia	9–11 July 2014	ISARC conference and visit to University of Western Sydney
15	Benny Raphael	Singapore	12–16 July 2014	Meetings with researchers at Future Cities Laboratory, National University of Singapore

Sl. No.	Name of Faculty Member	Country Visited	Date	Purpose of Visit
16	K.N. Satyanarayana	Norway	23–29 June 2014	22nd Conference of the International Group for Lean Construction
17	S.M. Shiva Nagendra	Croatia	5–11 July 2014	22nd International Conference on Modeling, Monitoring and Management of Air Pollution
18	Arun Menon	Portugal	7–9 July 2014	Ninth International Masonry Conference
19	Koshy Varghese	Australia	9–11 July 2014	31st International Symposium on Automation and Robotics in Construction and Mining
20	K.P. Sudheer	Canada	13–16 July 2014	ASABE Annual International Meeting
21	Ravindra Gettu	France	17–18 July 2014	Lafarge Scientific Advisory Council Meeting
22	A. Meher Prasad	Spain	21–25 July 2014	11th World Congress on Computational Mechanics
23	Devdas Menon	Spain	21–25 July 2014	11th World Congress on Computational Mechanics
24	B. Nageswara Rao	Spain	21–25 July 2014	11th World Congress on Computational Mechanics
25	A. Radhakrishna G. Pillai	USA	24–26 July 2014	Fourth International Conference on Durability of Concrete Structures
26	Manu Santhanam	Brazil	1–4 September 2014	68th RILEM Annual Week
27	Ravindra Gettu	Brazil	2–5 September 2014	XIIIDBMC: International Conference on Durability of Building Materials and Components
28	Ravindra Gettu	Spain	27 September–6 October 2014	Visits to the Institute Eduardo Torroja of Construction Science (National Council of Scientific Research) and Luis Agullo Structural Technology Laboratory of the Technical University of Catalonia
29	Koshy Varghese	South Africa & USA	13 September 2014 to 12 March 2015	Sabbatical leave for book writing at University of Witwatersrand, South Africa and Autodesk, USA
30	K. Rajagopal	Germany	24–27 September 2014	10th International Conference on Geosynthetics
31	A. Veeraragavan	Germany	23–28 September 2014	Wirtgen Group Technology Days
32	P. Alagusundaramurthy	Malaysia	7–9 October 2014	Project review meeting
33	K. Anantha Narayanan	USA	16–17 October 2014	Fifth International Conference on the Constructed Environment
34	A. Meher Prasad	Australia	4–6 November 2014	Project discussion and visit to glass fibre reinforced gypsum manufacturing plant and buildings
35	Devdas Menon	Australia	4–6 November 2014	Project discussion and visit to glass fibre reinforced gypsum manufacturing plant and buildings
36	Arun Menon	Philippines	17–21 November 2014	Experts Conference Meeting (reviewer on behalf of UNESCO for restoration of churches and other structures in Bohol and Cebu after Bohol, 2013 earthquake)
37	Balaji Narasimhan	Japan	19–21 November 2014	TUAT-MARCO Joint International Workshop on Rice Paddy Module Development in SWAT 2014: Development of a tool for sustainable rice production in Asia and world, Tokyo University of Agriculture and Technology (TUAT)
38	Ravindra Gettu	France	3–4 December 2014	Second meeting of Lafarge Scientific Advisory Council
39	K. Rajagopal	Malaysia	2–3 December 2014	Meeting at Tencate Geosynthetics Asia SDN BHD, Kuala Lumpur
40	K. Rajagopal	Vietnam	5 December 2014	First national symposium of Vietnam Chapter of International Geosynthetic Society

Sl. No.	Name of Faculty Member	Country Visited	Date	Purpose of Visit
41	Sachin S. Gunthe	Germany	4–12 December 2014	Scientific collaboration with Max Plank Institute for Chemistry
42	S. Mathava Kumar	China	7–9 January 2015	Second International Conference on Sustainable Urbanization (ICSU2015)
43	P. Alagusundaramoorthy	USA	12–16 January 2015	TRB: 94th annual meeting
44	Arun Menon	Bhutan	19–26 January 2015	Invited expert at the workshop for resolving structural issues related to Wangduephodrang Dzong Reconstruction Project
45	S.T.G. Raghukanth	Jordan	10–12 March 2015	Sixth Jordanian International Civil Engineering Conference
46	Manu Santhanam	France	12–17 March 2015	Professional meetings of Lafarge and RILEM Spring Meeting
47	Ravindra Gettu	France	16–18 March 2015	RILEM Spring Meeting and technical meeting of Innovative Strategies for a Low-CO <sub>2</sub> Eco-efficient Cement Based Materials Industry
48	Ashwin Mahalingam	USA	17–21 March 2015	International Conference on Overcoming the Infrastructure Gap

### Honours and awards obtained by faculty members

Sl. No	Name of Faculty Member	Name of Award	Awarded by
<b>Honours</b>			
1	K. Rajagopal	Member	Council of International Geosynthetics Society, USA
2	K.P. Sudheer	Adjunct Professor	Purdue University (in the Department of Agricultural and Biological Engineering)
<b>Awards</b>			
1	Devdas Menon	Srimathi Marti Annapurna Gurunath Award for Excellence in Teaching	Alumnus Prof. Marti Subrahmanyam (Stern School of Business, New York University)
2	Devdas Menon	Ultra Tech Award for the Outstanding Concrete Engineer	ICI Tamil Nadu, Chennai Chapter
3	Amlan Kumar Sengupta	Best paper published in <i>ICI Journal</i>	Indian Concrete Institute
4	K. Rajagopal and S. Karthigeyan (former doctoral scholar)	The IGS—Chennai Chapter Biannual Prize for the best paper on deep foundations/retaining structures for the years 2012–2013	Indian Geotechnical Society
5	K. Rajagopal, R.G. Robinson, S. Ganesh Kumar (former doctoral scholar)	IGS-MD Desai Memorial YGE Award for the Best Paper on Geosynthetics and Natural Fibres for the year 2014, for paper titled 'Improvement of soft clays by combined vacuum consolidation and geosynthetic encased stone column'	Indian Geotechnical Society
6	S.M. Shiva Nagendra, Neha Agarwal (CE13S20)	Best Paper Award for paper titled 'PM10, PM2.5 and PM1 mass concentrations in different work environments'	International Conference on New Frontiers in Chemical, Energy and Environmental Engineering (INCEEE–2015), held at NIT Warangal
7	R. Sivanandan, Srijith Balakrishnan (M.S. scholar)	Best Paper Award, for 'Lane choice behaviour of vehicles on urban roads under free-flow conditions'	International Conference on Recent Trends and Challenges in Civil Engineering (RTCCE-2014), held at Motilal Nehru National Institute of Technology, Allahabad
8	R. Murali (Senior Technician)	Outstanding Service Award	Institute Day, IIT Madras

## Administrative duties

Name of Faculty Member	Institute Assignment
K. Ramamurthy	Dean (Academic Course)
Ligy Philip	Chairperson (Engineering Unit)
S.R. Gandhi	Co-chairman (Engineering Unit)
K.P. Sudheer	Advisor (Sports)
S. Arul Jayachandran	Advisor (MITr (Mentoring for Individual Transformation))
K.N. Satyanarayana	Professor-in-Charge of IIT Tirupati

## Editorial boards of journals

Sl. No.	Name of Faculty Member	Position (Editor/Member)	Journal
1	Ravindra Gettu	Associate Editor	<i>Materials and Structures</i>
2	Benny Raphael	Editorial board member	<i>Advanced Engineering Informatics</i>
3	S.R. Gandhi	Associate Editor	<i>Editorial Board of Sadhana (Academy Proceedings in Engineering Sciences)</i>

### 4.6.4. Design and Development Activities

#### New Laboratory for Mechanical Performance of Civil Engineering Materials (MPCEM Lab) at the Department of Civil Engineering, IIT Madras

A laboratory dedicated to characterising and enhancing the mechanical performance of civil engineering materials, the MPCEM Lab, was set up in January 2015 with sophisticated testing systems having a range of load capacities from 15 kN to 30 MN. The machines were procured through the Fund for Improvement of S&T Infrastructure in Universities and Higher Educational Institutions (FIST) Programme of the Ministry of Science and Technology, several grants from IIT Madras and industry. Two 1 MN MTS servohydraulic systems capable of performing tests under controlled displacement rates, in static and dynamic regimes, and two Controls multi-actuator systems for student-friendly computer-aided testing are among the major equipment. The MPCEM Lab has already been used by about 30 research scholars and students.

#### New experimental faculty for characterisation of stack emissions

A new experimental facility for stack emissions characterisation was set up in August 2014 with sophisticated equipment for monitoring gaseous and particulate matter pollutants.

#### Process/instruments/equipment/software designed and developed

Dr. R.G. Robinson designed and fabricated a constant-rate-of-strain consolidation apparatus as per ASTM standards.

Dr. Dali Naidu developed the Geoenvironmental Research Laboratory, which is equipped with state-of-the-art facilities such as an atomic absorption spectrophotometer, a UV-vis spectrophotometer, a UV weatherometer, a gas chromatograph, a flexible wall permeameter, an ultra sieve shaker, gas permeability and diffusion test setups, a geotechnical centrifuge, a melt-indexer, environmental stress crack resistance apparatus, an ultra gas pycnometer, a time domain reflectometer, an autoclave, a laminar air flow chamber, a BOD incubator and a temperature and humidity control chamber.

Dr. Sivakumar Palaniappan procured a Testo 870-1 (thermal imaging equipment) to support student research projects in buildings science.

#### New facilities added and major equipment procured

Sl. No.	Equipment	Value (₹)
1	Amplifier	50,400
2	Resipod port	3,07,410
3	Pneumatic tank	3,63,943
4	TML clip	95,321
5	Electronic weighing balance	31,860
6	34972-LXI compliant data acquisition/switch unit	1,93,320

Sl. No.	Equipment	Value (₹)
7	Wire mesh	73,069
8	Cole-Parmer combination ion selective chloride electrode	25,710
9	Wire antenna	1,23,333
10	HPCPQ	70,490
11	Sartorius balance	74,989
12	224S CW	1,13,928
13	HPCPQ, LA2405x	70,490
14	GRL	60,000
15	Feflow	3,16,890
16	Apparatus	3,00,375
17	Printer	47,355
18	Steel glass	20,003
19	Humidity chamber	2,75,520
20	Steel book case	89,100
21	Dellu 2913 WM, Dell Precision	1,69,650
22	Delta 1 KW AC servo	1,08,031
23	Samsung M2876 ND	31,800
24	Load cell	1,55,799
25	HP EliteDesk, HP ProDesk	95,400
26	T45N-S	33,750
27	GC-MS	53,57,252
28	Flow Meter MagFlow 6410	85,050
29	HP Prodesk	78,498
30	Computer (Dell Optiplex 3020, Dell 2014 H)	76,000
31	DC power supply	10,500
32	Air compressor rocker	62,265
33	Centrifugal pump	9,21,643
34	Magnetic stirrer	26,420
35	Office table	18,750
36	Ion Pac CS5	2,61,000
37	Wooden table	1,04,900
38	HPLI	23,678
39	HP Elite	76,075
40	A.C. 1.5 TR	33,400
41	Dell Optiplex	43,600
42	Four-channel CF amplifier	3,88,000
43	Concrete mixer	8,80,062
44	Displacement Transducer. Measuring range (50mm, 100 mm)	9,85,000
45	Concrete hammer	90,000
46	DigiSchmidt Hammer sensor cable	22,500
47	HBM make compressive force transducers (Range 50, 100 ton)	13,40,000
48	Eurostar 40 digital package overhead stirrer	1,63,758
49	New Brookfield digital viscometer	2,97,675
50	Sieve	2,00,000

Sl. No.	Equipment	Value (₹)
51	Katherm hot plate	49,950
52	Numeric 2 KVA HP	48,002
53	Peltier-cooled incubator	2,00,000
54	Indirect tensile (IDT) kit	6,14,000
55	Split A/ AC	46,634
56	Hot plate	45,228
57	Fume exhaust hood	94,500
58	Kyocera Mita A3 size 35 cpm mono copier	1,91,300
59	Computer (HP Elite Desk 800, HPCPQ LA 2405X LED)	7,97,240
60	PG-LX 3500 LCD projector	57,250
61	Dell 9030 AIO desktop	63,800
62	OKO Chop saw—GCO 2000	9030
63	BOD incubator	19,350
64	Epson make 18—LCD projector	34,915
65	1 KVA UPS	79,905
66	Epson EB X24 3500 lumens (LCD projector)	1,14,500
67	Scanning electron microscope (SEM)	38,00,000
68	Energy Dispersive X-ray spectrometer	21,00,000
69	Wintel Marketing & Services	34,915
	<b>Total</b>	<b>2,32,44,481</b>

#### Patents filed

Sl. No.	Name of Faculty Member	Topic of Patent
1	Benny Raphael	A light pipe

#### 4.6.5. Research and Consultancy

##### Sponsored research projects

Number of projects: 34

Value of projects: ₹4784.96 lakhs

Sl. No.	Title	Period	Funding Agency	Value (lakhs of ₹)	Principal Investigators
1	National Centre for Safety of Heritage Structures (NCSHS)	4 July 2013 to 31 March 2018	Ministry of Human Resource and Development	1211.50	Murty C.V.R., Arun Menon, Gandhi S.R. Dodagoudar G.R., Maji V.B., Manu Santhanam,
2	Centre of Excellence in the Area of Urban Transport	8 May 2009 to 30 June 2015	Ministry of Urban Development	840.00	Karthik K. Srinivasan Veeraraghavan A., Lelitha Devi V.
3	Integrated closed-loop controlled testing facility for the mechanical characterisation of the nonlinear response of civil engineering materials (FIST)	10 June 2013 to 9 June 2018	Department of Science & Technology (DST)	500.00	Head of the Department



Sl. No.	Title	Period	Funding Agency	Value (lakhs of ₹)	Principal Investigators
4	Centre for Environment Technology Dissemination, Demonstration and R&D for Industrial Pollution Abatement	16 September 2013 to 15 September 2016	Tamil Nadu Pollution Control Board	500.00	Indumath M. Nambi, Balaji Narasimhan, Sachin S. Gunthe, Srinivasan K., Sudheer K.P., Soumendra Nath Kuiry Shiva Nagendra S.M.
5	CoE of MoUD (Phase II): Performance evaluation study of sewerage treatment plants sanctioned under CBULB scheme	1 January 2014 to 31 March 2018	Ministry of Urban Development	272.00	Ligy Philip, Murty B.S., Shiva Nagendra S.M., Venu Chandra, Soumendra Nath Kuiry
6	Development of warrants for the use of modified binders for improved performance of flexible pavements	27 July 2012 to 26 July 2015	DST	177.66	Veeraraghavan A., Muralikrishnan J.
7	New building system for affordable mass housing using glass fibre reinforced gypsum (GFRG) panels	10 January 2012 to 31 December 2015	DST	131.36	Devdas Menon, Meher Prasad A.
8	Measurements and modeling of cloud condensation nuclei (CCN) in Indian continental and marine air	6 June 2014 to 5 June 2017	Ministry of Earth Sciences, New Delhi	99.60	Sachin S. Gunthe, Shiva Nagendra S.M., Ravikrishna R.
9	Laboratory for the study of the long-term performance of concrete	4 February 2011 to 3 February 2016	Lafarge Centre de Recherche	93.76	Ravindra Gettu, Manu Santhanam, Radhakrishna G. Pillai
10	Characterising properties of atmospheric aerosols to understand climatic and health impact	25 September 2013 to 24 September 2016	DST	91.71	Sachin S. Gunthe, Shiva Nagendra S.M.
11	Ganga River Basin Management Plan (GRBMP): A pan-IIT project	6 July 2010 to 31 March 2015	Ministry of Environment, Forest and Climate Change	70.41	Ligy Philip, Murty B.S., Balaji Narasimhan, Shiva Nagendra S.M., Mukesh Doble, Ravikrishna R.
12	Conservation and retrofitting of Sri Kedarnath Temple, Uttarakhand	29 March 2014 to 28 September 2015	Archeological Survey of India	66.84	Arun Menon, Gandhi S.R., Kamakoti V.
13	Supporting consolidation, replication and up-scaling of sustainable waste water treatment and reuse technologies for India (SARASWATHI)	16 January 2013 to 15 January 2016	DST	66.32	Ligy Philip
14	Enhancement and field trials of free and open-source GIS software	9 March 2012 to 28 February 2016	Ministry of Rural Development	56.47	Koshy Varghese, Lakshmana Rao C., Sudheer K.P., Balaji Narasimhan, Palaniappan Ramu

Sl. No.	Title	Period	Funding Agency	Value (lakhs of ₹)	Principal Investigators
15	Development of performance specifications for concrete construction of India	14 May 2012 to 13 May 2016	DST	50.00	Manu Santhanam, Radhakrishna G. Pillai
16	Sustainable decentralised waste management in urban residential areas	25 July 2013 to 24 July 2016	DST	44.39	Ligy Philip, Chandra T.S., Prema Rajagopalan
17	Comparative study of structural performance of multistorey buildings with open ground-storey parking: GFRG building system versus conventional RC framed structures	10 February 2015 to 9 February 2018	Indo–French Centre for the Promotion of Advance Research	42.75	Devdas Menon, Meher Prasad A.
18	Characterising the properties of biological aerosol particles under different environmental and seasonal conditions over the Indian tropical region: Assessment for possible climatic and health impacts	28 February 2013 to 27 February 2016	DST	42.00	Sachin S Gunthe
19	Indo–German partner group on atmospheric sciences	31 March 2013 to 30 March 2016	Indo–German Science & Technology Centre	40.50	Sachin S. Gunthe
20	Experimental and analytical studies on two-way hollow-core slabs	20 March 2013 to 19 March 2016	DST	38.50	Nageswara Rao B., Amlan Sengupta
21	Study on economisation of prefab structures	18 January 2013 to 17 January 2016	National Buildings Construction Corporation Limited	36.00	Appa Rao G.
22	Multi-objective optimisation of daylighting systems	20 January 2015 to 19 January 2018	Indo–French Centre for the Promotion of Advance Research	35.66	Benny Raphael
23	Spatial disaggregation and inverse modelling to quantify field-level irrigation water distribution and efficiency across a command area using an integrated thermal remote sensing and crop growth modelling approach	23 February 2015 to 22 February 2018	Indian Space Research Organisation	33.33	Balaji Narasimhan
24	Deep stabilisation of expansive soil using fly ash	19 April 2013 to 18 April 2016	DST	33.18	Thyagaraj T., Robinson R.G.
25	Dynamic behaviour of anchor plates in soft clay with geosynthetic reinforcement	2015–2018	DST	33.91	Subhadeep Banerjee, Sibapriya Mukherjee (Jadavpur University)
26	Enhanced, user-friendly ATIS: Auto-diagnosis, user agency training and handing over	18 March 2015 to 17 March 2016	Department of Electronics & Information Technology	31.90	Gitakrishnan Ramadurai, Karthik K. Srinivasan, Lelitha Devi V.
27	Development and verification of a surface energy balance model using thermal remote sensing data assessment of crop water use and irrigation efficiency	17 August 2011 to 16 August 2015	DST	22.35	Balaji Narasimhan

Sl. No.	Title	Period	Funding Agency	Value (lakhs of ₹)	Principal Investigators
28	Development of robust data assimilation techniques for nonlinear dynamical systems	17 March 2015 to 31 March 2016	Board of Research in Nuclear Sciences	21.77	Nageswara Rao B., Meher Prasad A.
29	Study of polymer modified cement (PMC)-based materials for repair and waterproofing of concrete structures	24 August 2012 to 23 August 2015	DST	19.35	Ravindra Gettu
30	Waste water treatment coupled with resource recovery and energy production using microbial fuel cell	1 September 2014 to 30 August 2017	DST	19.35	Indumathi M. Nambi
31	Probabilistic service life prediction of prestressed concrete structures	6 June 2012 to 5 June 2015	DST	18.42	Radhakrishna G. Pillai
32	Cyclic properties and constitutive model of Chennai marine clay	25 May 2012 to 24 May 2015	DST	17.88	Subhadeep Banerjee
33	Development of earthquake displacement and velocity hazard maps of India	20 July 2012 to 19 July 2015	DST	17.50	Raghu Kanth S.T.G., Murty C.V.R.
34	Study of self-healing ability of advanced fibre-reinforced cement-based materials	11 September 2012 to 10 September 2015	DST	4.50	Ravindra Gettu, Manu Santhanam
35	Retrofitting and rehabilitation of reinforced concrete beams using ultra-high-performance concrete and basalt reinforced concrete overlay	23 March 2015 to 22 March 2017	University Grants Commission	4.00	Manu Santhanam

### RBIC projects

Number of projects: 25

Value of projects: ₹619.43 lakhs

Sl. No.	Principal Investigator	Title	Agency	Value (lakhs of ₹)
1	Manu Santhanam	Low-carbon cement	Ecole Polytechnique	207.20
2	Ravindra Gettu		Federale de Lausanne	
3	Alagusundaramoorthy P.	Soil investigation analysis and design of foundation and superstructures for various structures in sports fishing cum eco park	Fishing Harbour Project Division	61.91
4	Boominathan A.			
5	Nageswara Rao B.	Assessment of quality control on the construction of APMSIDC works	Andhra Pradesh Medical Services Infrastructure Development Corporation	40.00
6	Dodagoudar G.R.			
7	Ligy Philip	Sustainable waste management and resource recovery for clean and healthy villages	India Additives Limited	40.00
8	Murty B.S.			
9	Meher Prasad A	Centre for Finite Element Analysis and Design (CFEAD)	Tata Consultancy Services	30.00
10	Nageswara Rao B.			
11	Rupen Goswami	Industrial storage racks	Mangal Precision Products Limited	25.37
12	Satish Kumar S.R.			
13	Arul Jayachandran S.	Structural glass research and testing facility	Glazing Society of India	22.47
14	Manu Santhanam	Studies on permissible temperature for high density concrete in FBR vault	Indira Gandhi Centre for Atomic Research	21.64

Sl. No.	Principal Investigator	Title	Agency	Value (lakhs of ₹)
15	Muralikrishnan J.	Evaluation of the laboratory rutting and fatigue performance of ReIBitS modified bituminous mixtures	Reliance Industries Limited	21.60
16	Muralikrishnan J.	Measurement of rutting and fatigue cracking property of modified binders	Honeywell	18.00
17	Muralikrishnan J.	Production of viscosity and performance-grade bitumen using component blending	Hindustan Petroleum Corporation Limited	17.85
18	Atul Narayan S.P.	Investigation on the laboratory performance of bitumen modified with Styrelf, SBS, Elvaloy and Lotader	Total Oil India Private Limited	16.88
19	Dodagoudar G.R.	Probabilistic quality assurance and acceptance sampling strategies for construction applications residential complex building at Anna Nagar and hostel building at Anna Salai	S P Infocity	15.00
20	Manu Santhanam	Development of cement for plaster and mortar applications	Ultra Tech Cement Limited	14.99
21	Manu Santhanam	Cement-bonded high-performance systems	Saint-Gobain Research India Limited	12.98
22	Koshy Varghese	Development and evaluation of virtual models for planning and execution of ESP projects	Bharat Heavy Electricals Limited	11.80
23	Ashwin Mahaligam			
24	Ravindra Gettu	Study of cracking and creep response fibre-reinforced concrete under uniaxial and biaxial bending	Bekaert Industries Private Limited	10.15
25	Ravindra Gettu	Characterisation of glass fibre-reinforced concretes	OCV Reinforcements Alcala	7.00
26	Appa Rao G.	Investigation of performance of Forta Ferro fibre in concrete applications	JBA Concrete Solutions Private Limited	6.50
27	Gitakrishnan Ramadurai	Simulation study on traffic congestion in Chennai Port	Chennai Port Trust	5.05
28	Appa Rao G.	Investigations on influence of grid spacing and wire diameter on performance of 3D panels under general loading	Consortium Transmission Systems Private Limited	4.21
29	Radhakrishna G. Pillai	Evaluation of corrosion inhibitors for steel-cementitious systems	Chembond Chemical Private Limited	3.00
30	Murty C.V.R.	Development of design methodologies for blast-resistant design of structures	EON Designers	2.69
31	Rupen Goswami			
32	Nageswara Rao B.	Building vibration analysis of mall	Lulu International Shopping Mall Private Limited	2.00
33	Nageswara Rao B.	Finite element analysis and design verification of steel aeration tank	DFE Pharma India LLP	1.12

### Industrial consultancy projects (ongoing and new)

Number of projects: 11

Value of projects: ₹857.16 lakhs

Sl. No	Principal Investigator	Title	Agency	Value (lakhs of ₹)
1	Sudheer K.P.	Concurrent evaluation study of mitigation of floods in Kuttanad region	Irrigation Department	75.00
2	Balaji Narasimhan			
3	Alagusundaramoorthy P.	Stability check and design review of Indiabulls Greens multistoreyed residential buildings under Phase 1 and Phase 2 at Chennai	Selene Estate Limited	56.18

Sl. No	Principal Investigator	Title	Agency	Value (lakhs of ₹)
4	Meher Prasad A.	Proof checking for vetting of structural design documents and drawings: Infrastructure development of Government Medical College Odisha	Larsen and Toubro Limited	42.32
5	Meher Prasad A.	Proof checking of vetting of structural design documents and drawings: Super Speciality Block cum Paid Ward at Safdarjung Hospital, New Delhi	Larsen and Toubro Limited	39.73
6	Meher Prasad A.	Consultancy services for peer review of elevated road in Mumbai International Airport Private Limited (MIAL)	MIAL	39.33
7	Devdas Menon	Proof checking of structural design of Indian Institute of Management (IIM) Trichy campus buildings	IIM Trichy	22.62
8	Devdas Menon	Sanga Reddy Road Project and Sambalpur Road Project: ROB structures for proof checking	Larsen and Toubro Limited	22.47
9	Alagusundaramoorthy P.	Structural rehabilitation of Tarangini Apartments (Navy) at Kochi	Naval project	21.35
10	Nageswara Rao B.	Proof checking of civil design for 2 × 660 MW	Bharat Heavy	19.80
11	Dodagoudar G.R.	Suratgrah STPS Stage-V	Electricals Limited	
12	Gandhi S.R.	Consultancy for review of structures, foundations and drainage of NIT Nagaland	NIT Nagaland	19.66
13	Meher Prasad A.			
14	Meher Prasad A.	Proof checking of structural design document and drawings: Hospitals for West Bengal Medical Services Corporation Limited (WBMSCL) in Kolkata (nine locations)	Larsen and Toubro Limited	19.18
15	Rajagopal K.	Design of canal lining system for Sirhind and Rajasthan feeder canals	Punjab Irrigation Department	16.85
16	Srinivasan K.			
17	Appa Rao G.	NDT, analysis of bridge elements and bridge load of Vivekananda Bridge at Thanelanka	Oil India Limited	14.05
18	Devdas Menon	Proof checking of post-tensioned slabs and beams for Cochin International Airport Limited	Utracon Structural System Private Limited	13.48
19	Boominathan A.	Vibration monitoring during pile driving at onshore terminal of Reliance Industries Limited Kakinada Project	L&T Geo Structure	13.48
20	Indumathi M. Nambi	Site characterisation studies at Nagarjuna Agrichem, Srikakulam	Nagarjuna Agrichem Limited	13.48
21	Nageswara Rao B.	Proof checking of design and drawings of bridges related to Kharasia–Dharamjaygarh Railway Project of IRCON in Chattisgarh	IRCON International Limited	12.36
22	Indumathi M. Nambi	Characterisation of oil spill site at Tondiarpet	Bharat Petroleum Corporation Limited	11.80
23	Ravikrishna R.			
24	Devdas Menon	Proof checking—Corporation of Chennai: Consulting services for preparation of DPR for planning and construction of grade separator	Corporation of Chennai	11.52
25	Devdas Menon	Proof checking of structural drawings of faculty block, transit hostel/guest house, shops and recreation block/sports complex for IITDM at Melakottaiyur	Central Public Works Department	11.24
26	Satish Kumar S.R.	Proof checking of G+19 building, OsianOne, at Chennai	SPR Construction Private Limited	11.24
27	Veeraraghavan A.	Development of charts for design of pavements with RBI–81 in India	Alchemist Technology	10.67

Sl. No	Principal Investigator	Title	Agency	Value (lakhs of ₹)
28	Gandhi S.R.	Review of ground improvement at Vale, Malaysia	Essar Projects (India) Limited	10.34
29	Boominathan A.			
30	Devdas Menon	Proof checking of post-tensioned slabs and beams for Kannur International Airport Limited	Utracon Structural System Private Limited	8.99
31	Satish Kumar S.R.	Peer review of structural design of Bizlife building at Noida	Proplarity Infratech Private Limited	8.99
32	Nageswara Rao B.	Proof checking and vetting of civil structural design of natural draught cooling tower	BGR Energy Systems Limited	8.43
33	Appa Rao G.	Proof checking of structural design and drawings of residential group development at Tondiarpet, Chennai	Emaar MGF Land Private Limited	8.36
34	Nageswara Rao B.	Proof checking of design for the multi-level car parking at Infosys Campus in MIPL	Consolidated Construction Consortium Limited	8.00
35	Boominathan A.	Geotechnical investigation for reconstruction of 140 tenements at B.S. Moorthy Nagar Scheme of Tamilnadu Slum Clearance Board (TNSCB)	TNSCB	7.87
36	Rajagopal K.	Finite element analysis and design approval	Maccaferri Environmental Solutions Private Limited	7.87
37	Gandhi S.R.	Advisory services for monitoring heritage structures	Afcons Infrastructure Limited	7.75
38	Arun Menon			
39	Nageswara Rao B.	Vetting of structural designs and drawings and providing structural stability certificate for three residential buildings	Alliance Mall Developers Company Private Limited	7.50
40	Manu Santhanam	Evaluation of fly ashes from Ash Improvement Technology (AIT)	AIT	7.08
41	Devdas Menon	Proof checking of proposed new line between Obulavaripalli–Venkatachalam flyover across NH5 and existing Chennai–Nellore railway line	Rail Vikas Nigam Limited	6.97
42	Meher Prasad A., Arul Jayachandran S.	Structural design including foundation for 150 m high self-supported steel tower and details of joint fixtures and fixing arrangement for cables, aviation lights, antennas, ladders, etc.	All India Radio	6.74
43	Arul Jayachandran S.			
44	Muralikrishnan J.	Fatigue resistance of warm mix asphalt	MWV Asphalt Innovations	6.74
45	Arul Jayachandran S.	Proof checking the design of space theatre building for Science City, Kottayam, Kerala	Kerala State Science and Technology Museum & Priyadarsini Planetarium	6.74
46	Meher Prasad A.			
47	Mohan S.	Study for suggestion of new system for effluent treatment	Manali Petrochemicals Limited	6.74
48	Mathava Kumar S.			
49	Devdas Menon	Proof checking/peer review of performance-based design of Tower-A of group housing project at Gwalpahari Gurgaon, Haryana, named Gurgaon Hills, and Tower B-8 of Cluster B of group housing project at Sector 67-A	Ireo Private Limited	6.74
50	Meher Prasad A.			
51	Devdas Menon	Testing dynamic load resistance, Young's modulus and coefficient of thermal expansion of Conbextra GP2 N and effective bearing area of Conbextra GP3	FOSROC Chemicals (India) Limited	6.74
52	Satish Kumar S.R.	Proof checking of PEB for TCC plant expansion at Perambalur	PEBS Pennar	6.40



Sl. No	Principal Investigator	Title	Agency	Value (lakhs of ₹)
53	Devdas Menon	Proof checking: Four laning of Hyderabad–Karminagar–Ramagundem road (SH-1) from km 28.20 to km 235.058 in Andhra Pradesh under PPP on BOT basis and bridge across Krishna River at Mattapally, in Nalgonda District	Pragati Consultants	6.12
54	Nageswara Rao B.	Testing structural stability of fire-affected cold storage unit located at Mundrigi, KIADB Industrial Area, Bangalore Road, Bellary	Rank Surveyors Private Limited	6.00
55	Devdas Menon	Proof checking: Structural design for Institute of Life Sciences, Bhubaneswar	Archivista Engineering Projects Private Limited	5.62
56	Alagusundaramoorthy P.	Assessment of condition of neoprene bearings pads for Chennai Metro Rail Project	Chennai Metro Rail Limited	5.62
57	Devdas Menon	Investigation of cracks in PSC sleepers in Sri Lanka Railways and structural testing of nine PSC sleepers	IRCON International Limited	5.34
58	Devdas Menon	Proof checking of ECR widening project for one major bridge at km 32 + 823 at Muttukadu and minor bridge at km 54 + 945	GKC–VAIBHAV JV	5.28
59	Alagusundaramoorthy P.	Review of design and certification of APSL building for Global Automotive Research Centre at Chennai	CITEC Engineering India Private Limited	5.06
60	Meher Prasad A.	Proof checking of Buddh Circuit Studios-II Project at Jaypee Sports City East, SDZ Sector 25, YEIDA Area towers B1 and B2	Larsen and Toubro Limited	4.93
61	Nageswara Rao B.	Hydraulic jack calibration	Common Code	4.72
62	Devdas Menon	Mechanical and relaxation test	Common Code	4.67
63	Devdas Menon	Proof Checking of Structural Design of terminal Buildings and other structures of proposed Hubli Airport	Institute for Social Advancement	4.49
64	Devdas Menon	Testing of HT strands and elastomeric bearings	Common Code	4.26
65	Devdas Menon	Testing of flat anchorage efficiency and load transfer test	Utracon Structural System Private Limited	4.22
66	Devdas Menon	Testing of HTS strands and relaxation test for 1000 hours	Common Code	4.03
67	Rupen Goswami	Analysis and design strategies for blast-resistant design of structures	EON Designers	4.00
68	Shiva Nagendra S.M.	Characterisation of smoke emitted from cooking	Elgi Ultra Industries Limited	3.93
69	Prakash Maiya M.			
70	Robinson R.G.	Checking the design and monitoring Phase II, Cell 1 of landfill of TNWML at Gummidiipoondi	TNWML	3.86
71	Gandhi S.R.			
72	Satish Kumar S.R.	Proof checking of PEB for warehouse for CCE R&D at Ambajhari, MH0739	S.S. Infrastructure Development Consultants Private Limited	3.82
73	Devdas Menon	Construction of high-level bridge across River Nagavali connecting Narayanapuram with P.J. Peta, in Srikakulam District	Roads and Building Division	3.60
74	Robinson R.G.	Evaluation of radial coefficient of consolidation of marine clay	Fugro Geotech Private Limited	3.60
75	Devdas Menon	Proof checking of ROB design (revised) at km 3.450 and proof checking of ROB design (revised) at km 8.970	Simhapuri Expressway Limited	3.60
76	Ligy Philip	TSS and turbidity monitoring at Kattupalli shipyard-cum-port for the period from July 2014 to June 2015	Larsen & Toubro Shipbuilding Limited	3.40

Sl. No	Principal Investigator	Title	Agency	Value (lakhs of ₹)
77	Rajagopal K.	Consultancy services for construction of approach roads in Chennai Outer Ring Road	Strata Geosystems (India) Private Limited	3.37
78	Satish Kumar S.R.	Vetting of ESP design calculation for Mahagenco—Bhusawal and KPCL—Raichur	Bharat Heavy Electricals Limited	3.37
79	Nageswara Rao B.	Design and vetting of road-crossing culvert	MRF Limited	3.37
80	Nageswara Rao B.	Approval and Vetting of Design and drawing of 80 T ELL crane at Naval Shipyard, Vizag	McNally Bharat Engineering Company Limited	3.20
81	Dali Naidu Arnepalli	Stability analysis of ash pond-A ash dykes from RL 205 m to 208 m	Orissa Power Generation Corporation Limited	3.03
82	Gandhi S.R.			
83	Meher Prasad A.	Testing of D2 towers (three nos.) and props (three nos.)	Doka India Pvt. Ltd.	3.03
84	Dodagoudar G.R.	Verification of BBS for RBI residential complex building at Anna Nagar and hostel building at Anna Salai, Chennai	SP Infocity	3.00
85	Raghu Kanth S.T.G.			
86	Muralikrishnan J.	Measurement of resilient modulus of bituminous mixtures	Honeywell	3.00
87	Devdas Menon	Testing of bearing, mechanical test and relaxation test	Common Code	2.87
88	Arul Jayachandran S.	Design and drafting of low-base 45 m SS towers at Coonoor and Chickmagalore sites	All India Radio	2.81
89	Alagusundaramoorthy P.	Stability certificate of central tower area of Ramco Institute of Technology, Rajapalayam	Raja Charity Trust	2.53
90	Ravindra Gettu	Testing of SFRC panels for construction of single BG railway line between Bidar and Gulbarga for South Central Railway at Marguthi village	SMS Infrastructure Limited	2.53
91	Meher Prasad A.	Monotonic testing of gypsum wall panel (two nos.)	Saint-Gobain Glass India Limited	2.25
92	Devdas Menon	Fatigue test on stay cable	S.P. Singla Constructions Private Limited	2.25
93	Devdas Menon	Proof checking of KMRCL project design of track on column stabling yard building with retaining wall	Consolidated Construction Consortium Limited	2.25
94	Dali Naidu Arnepalli	Review of design calculations and drawings for construction of secured landfill facility at Carin Energy India Limited, Barmer, Rajasthan, India	Gareware-Wall Ropes Limited	2.25
95	Veeraraghavan A.	Design of concrete pavement for Vishakapatnam Steel Plant Yard at Manali, Chennai	Rashtriya Ispat Nigam Limited	2.25
96	Satish Kumar S.R.	Proof checking of PEB for hangar at Mandapam for CE Navy	CE-Navy	2.25
97	Meher Prasad A.	Testing of axial compression and water absorption and flexure tests on Rapidwall panels	FACT-RCF Building Products Limited	2.02
98	Nageswara Rao B.	Strength and condition assessment of 300 m high RCC TV tower at HPT TV, Rameswaram	All India Radio	2.00
99	Devdas Menon	Proof checking of Sri Bhavani Amman Temple, Periyapalayam, proposed Annadhananam & Tirumana Mandapam Complex and Shopping & Queue Complex	Arulmigu Bhavani Amma Temple	1.74
100	Robinson R.G.	Doubling of railway track, Kerala	Bharat Geosystems Private Limited	1.69
101	Rajagopal K.			
102	Nageswara Rao B.	HTS strands: Mechanical and relaxation testing	Common Code	1.69
103	Nageswara Rao B.	Structural vetting of baffle range	Kochi Naval Base	1.69

Sl. No	Principal Investigator	Title	Agency	Value (lakhs of ₹)
104	Nageswara Rao B.	Inspection and structural testing of Kendriya Vidyalaya Coimbatore school building	Kendriya Vidyalaya	1.69
105	Devdas Menon	Testing of compression test (wear and tear test)	Afcons Infrastructure Limited	1.69
106	Rajagopal K.	Recommendations for ground improvement by PVDs for a new railway line in Orissa	IVRCL Infrastructures and Projects Limited	1.69
107	Nageswara Rao B.	Vetting design and drawings of ROB structural design at km 55/228 of NH226	National Highways Authority of India	1.69
108	Nageswara Rao B.	Design validation of existing structure for fixing solar panel	Asahi India Glass Ltd.	1.69
109	Dali Naidu Arnepalli	Review of design Calculations and drawings for capping of secured landfill facility at Tuticorin	Gareware-Wall Ropes Limited	1.69
110	Arul Jayachandran S.	Proof checking the design of foundation and superstructure of four leading light towers for Kamarajar Port	Kamarajar Port Limited	1.62
111	Raghu Kanth S.T.G.	Seismic hazard analysis for Extra dosed Narmada bridge at Bharauch, Gujarat	L&T Ramboll Consulting Engineers Limited	1.50
112	Nageswara Rao B.	Testing of geogrids	Z-TECH (India) Private Limited	1.50
113	Dodagoudar G.R.			
114	Alagusundaramoorthy P.	Review of the analysis and design of a pre-fabricated steel structure	Logix Design Solutions	1.40
115	Devdas Menon	Testing of multi anchorage efficiency test and load transfer test	Utracon Structural System Private Limited	1.40
116	Robinson R.G.	Proof checking of PVD design	Southern Railway	1.35
117	Gandhi S.R.			
118	Ravindra Gettu	Assessment of precision wire Tuskrete fibres as reinforcement for concrete	Sanghi Consulting Engineers India Private Limited	1.35
119	Satish Kumar S.R.	Proof checking of PEB for Aruma Engineering at Bangalore	Tata Blue Scope Steel	1.20
120	Veeraraghavan A.	Investigation on distresses on bridge deck and suggest remedial measures	National Highways Authority of India	1.12
121	Nageswara Rao B.	Validation of the Mill Bay structure design	Tractebel Consulting Engineers Private Limited	1.12
122	Nageswara Rao B.	Vetting design of substructures and foundation of major bridge—new BG line from	GVR Infra Projects Limited	1.12
123	Dodagoudar G.R.	Nagapattinam to Tiruthuraipundi, Tamil Nadu		
124	Mohan S.	Technical evaluation and advise on installation of AFRF at Tamil Nadu Waste Management Limited (TNWML)	TNWML	1.12
125	Satish Kumar S.R.	Proof checking of hangar and substation building for station at Bidar	D-TECH Consultants	1.12
126	Nageswara Rao B.	Structural stability assessment of fire-affected building (godown) at Bangalore, Karnataka	Rank Surveyors Private Limited	1.12
127	Satish Kumar S.R.	Proof checking of Quadricon bridge for army	Quadricon Bridges Private Limited	1.12
128	Veeraraghavan A.	Assessment of riding quality of Pimpalgon–Nashik–Gonde section of national highway	Professional Civil Infra Private Limited	1.12
129	Satish Kumar S.R.	Proof checking of design of RC building at Ghaziabad	Hi-Tech Engineering Solutions	1.12

## Retainer consultancy (ongoing and new)

Number of projects: 2

Value of projects: ₹9.39 lakhs

Sl. No.	Principal Investigator	Title	Agency	Value (lakhs of ₹)
1	Ravindra Gettu	Lafarge Scientific Advisory Council membership	Lafarge Centre de Recherche	5.39
2	Benny Raphael	Static light shelf: Design principles	Saint-Gobain Research India Limited	4.00

## Research publications of faculty members and research scholars

Papers published in refereed national journals: 25

Papers published in refereed international journals: 99

Papers presented at national conferences: 33

Papers presented at international conferences: 42

### Papers published in refereed national journals

1. K. Konanki, N.K. Reddy, B.T. Dogga and A.K. Sengupta. October–December 2014. Effect of height of columns in a multistoreyed building on their seismic forces. *ICI Journal, Indian Concrete Institute* 15(3): 7–13.
2. I. Geevar and A.K. Sengupta. May 2014. Modelling of framed shear walls for pushover analysis of reinforced concrete buildings. *The Indian Concrete Journal: The Associated Cement Companies Limited* 88(5): 58–68.
3. A.K. Sengupta and V. Arun Shankar. January March 2014. Analysis of chord stresses and forces in curved floors in reinforced concrete buildings. *ICI Journal: Indian Concrete Institute* 14(4): 21–28.
4. S. Farheen, B.S. Munda and A.K. Sengupta. March 2014. Seismic forces in members supporting floating columns in a typical reinforced concrete multi-storeyed buildings. *The Indian Concrete Journal: The Associated Cement Companies Limited* 88(3): 39–48.
5. V.M. Bindhu and B. Narasimhan. 2015. Development of a spatio-temporal disaggregation method (DisNDVI) for generating a time series of fine resolution NDVI images. *ISPRS Journal of Photogrammetry and Remote Sensing* 101: 57–68.
6. F.M. Ziadat, Y. Dhanesh, D. Shoemate, R. Srinivasan, B. Narasimhan and J. Tech. 2015. Soil–landscape estimation and evaluation program (SLEEP) to predict spatial distribution of soil attributes for environmental modeling. *International Journal of Agricultural and Biological Engineering* 8(3).
7. A. Boominathan, S. Krishnakumar and R.M. Subramanian. February 2014. Lateral dynamic response and effect of weakzone on the stiffness of full scale single piles. *India Geotechnical Journal* 45(1): 43–50.
8. K. Girija and Devdas Menon. November 2014. Load–deflection behaviour of slender rectangular reinforced concrete beams. *Indian Concrete Journal* 88(11): 51–61.
9. J.A. Varughese, Devdas Menon and A.M. Prasad. October–December 2014. Load distribution patterns for displacement-based seismic design of RC framed structures. *Journal of Institution of Engineers (India): Series A* 95(4): 211–219.
10. G. Hari Prasath and L. Vanajakshi. 2014. Analysis of bus bunching in Chennai. *Journal of Road Transport* 13: 1–7.
11. K. Rajagopal. November 2014. Construction of high geosynthetic reinforced soil retaining walls in India. *The Master Builder* 134–136 (article in magazine).
12. K. Rajagopal. August 2014. Geosynthetics lower carbon footprint. *Infrastructure Today* 12(1): 54–56 (article in magazine)
13. R.J. Pillai, K.M. Nazeeh and R.G. Robinson. 2014. Post-cyclic behaviour of clayey soil. *Indian Geotechnical Journal* 44(1): 39–48.
14. S.G. Kumar, R.G. Robinson and K. Rajagopal. 2014. Improvement of soft clays by combined vacuum consolidation and geosynthetic encased stone columns. *Indian Geotechnical Journal* 44(1): 59–67.
15. S. Bhuvaneshwari, R.G. Robinson and S.R. Gandhi. 2014. Behaviour of lime treated cured expansive soil composites. *Indian Geotechnical Journal* 44(3): 278–293.
16. S.G. Kumar, G. Sridhar, R. Radhakrishnan, R.G. Robinson and K. Rajagopal. A case study of vacuum consolidation of soft clay deposit. *Indian Geotechnical Journal* 45(1): 51–61.
17. A. Eshack, D.G.L. Samuel, S.M.S. Nagendra and M.P. Maiya. February 2015. Monitoring and simulation of carbon monoxide concentrations in mechanically ventilated car parks. *Journal of Thermal Engineering* 1(5): 295–302.
18. A.G. Nellickal and S. Palaniappan. January–March 2015. Built environment sustainability: Review of key concepts. *NICMAR Journal of Construction Management*, special issue on advances in sustainable construction technology and project management 30(1): 5–18.

19. D. Avinash, R. Sivanandan and A. Gowri. July–September 2014. Evaluation of exclusive left turn lane at signalised intersection through simulation. *Journal of Institute of Road Transport* 15: 13–25.
20. D. Baskandi, A. Veeraragavan and R.B. Mallick. 2014. Development of pay factors for dense graded bituminous mixes by relating construction quality to performance. *Indian Highways: Indian Road Congress* 42(9): 52–67.
21. S.G. Cheriyan, B.S. Dhanya, M. Santhanam. 2014. Durability indices for concretes with different dosages of mineral admixtures. *Indian Concrete Journal* 88(3): 60–68.
22. K.B. Sanish and M. Santhanam. 2014. Ultrasonic monitoring of strength development of concrete. *Indian Concrete Journal* 88 (11): 66–74.
23. S.K. Nayar, R. Gettu and S. Krishnan. 2014. Characterisation of the toughness of fibre reinforced concrete revisited in the Indian context. *Indian Concrete Journal* 88(2): 8–23.
24. V. Ponmalar, K. Ganesh Babu and R. Gettu. 2014. Theoretical modelling of the confinement effect on concrete with fiber reinforced polymer (FRP). *Journal of Structural Engineering (India)* 40(6): 605–613.
25. A. Biswal, A. Meher Prasad and A.K. Sengupta. 2015. Investigation of shear behaviour of vertical joints between precast concrete wall panels. *Indian Concrete Journal* 89(1): 41–47.

### Papers published in refereed international journals

1. G. Kaliyaperumal and A.K. Sengupta. September 2014. Seismic behaviour of concrete jacketed columns in buildings. *Structures and Buildings* (Institution of Civil Engineers, UK) 167(SB9): 534–543.
2. Y. Junjing, C. Sekhar, D. Cheong and B. Raphael. 2014. Performance evaluation of an integrated personalized ventilation–personalized exhaust system in conjunction with two background ventilation systems. *Building and Environment* 78: 102–110.
3. Y. Junjing, S. Sekhar, D. Cheong and B. Raphael. April 2015. Performance evaluation of a novel personalised ventilation–personalised exhaust system for airborne infection control. *Indoor Air* 25 (2): 176–187.
4. D.G. Vernay, B. Raphael and I.F.C. Smith. October 2014. Augmenting simulations of airflow around buildings using field measurements. *Advanced Engineering Informatics* 28(4): 412–424.
5. M. Papadopoulou, B. Raphael, I.F.C. Smith and C. Sekhar. 2014. Hierarchical sensor placement using joint entropy and the effect of modeling error. *Entropy* 16: 5078–5101.
6. C. Cherian and D.N. Arnepalli. 2015. A critical appraisal of the role of clay mineralogy in lime stabilization. *International Journal of Geosynthetics and Ground Engineering* 1(8).
7. M.R. Ewais, R. Kerry Rowe, R.W.I. Brachman and D.N. Arnepalli. 2014. Service life of a high-density polyethylene geomembrane under simulated landfill conditions at 85°C. *Journal of Geotechnical and Geoenvironmental Engineering* 140(11): 04014060.
8. V. Raju and D. Menon. June 2014. Longitudinal analysis of concrete U-girder bridge decks. *Proceedings of the ICE: Bridge Engineering* 167(2): 99–110.
9. M. Janardhana, R. Davis, S.S. Ravichandran, A.M. Prasad and D. Menon. June 2014. Calibration of hysteretic model for glass fiber reinforced gypsum wall panels. *Earthquake Engineering and Engineering Vibration* 13(2): 347–355.
10. J.A. Varughese, D. Menon and A.M. Prasad. January 2015. Displacement-based seismic design of open ground storey buildings. *Structural Engineering and Mechanics* 54(1): 19–33.
11. A. Anand, G. Ramadurai and L. Vanajakshi. 2014. Data fusion based traffic density estimation and prediction. *Journal of Intelligent Transportation Systems* 18(4): 367–378.
12. A. Thankappan, L. Vanajakshi and S.C. Subramanian. 2014. Significance of incorporating heterogeneity in a non-continuum macroscopic model for density estimation. *Transport (Taylor & Francis)* 29(2): 125–136.
13. S.S.M. Ali, G. Bobby and L. Vanajakshi. 2014. Mutually coupled multiple inductive loop system suitable for heterogeneous traffic. *IET Intelligent Transport Systems* 8(5): 470–478.
14. V. Kumar and L. Vanajakshi. 2014. Urban arterial travel time estimation using buses as probes. *The Arabian Journal for Science and Engineering* 39(11): 7555–7567.
15. A. Thankappan, L. Vanajakshi and S.C. Subramanian. March 2015. Real time traffic density estimation without reliable side road data. *ASCE Journal of Computing in Civil Engineering* 29(2).
16. S.V. Kumar and L. Vanajakshi. 2015. Integration of exponential smoothing with state space formulation for bus travel time and arrival time prediction. *Transport (Taylor and Francis)* (accepted).
17. A. Kumar, S. Mothukuri, L. Vanajakshi and S.C. Subramanian. 2015. An analytical approach to identify the optimum inputs for a bus travel time prediction method. *Transportation Research Record: Journal of the Transportation Research Board*.
18. A. Thankappan, A. Sunny, L. Vanajakshi and S.C. Subramanian. 2015. A non-continuum lumped parameter dynamic model applied to Indian traffic. *Systems Science and Control Engineering* (accepted).



19. R. Saravanan, S. Mohan and A.N. Gopalakrishnan. April 2015. Scale effect on dispersion coefficient of conservative solute through break through curve (BTC): Experimental study. *International Journal of Earth Science and Engineering* 8 (2): 793–801.
20. K.S.A. Dineshkumar, S. Mohan and S.S. Ramakrishnan. 2014. Assessment of impacts on groundwater due to open-cast mining. *International Journal of Applied Environmental Sciences* 9(6): 2827–2856.
21. S. Mohan and N. Ramasundaram. 2014. Climate change and its impact on irrigation water requirements on temporal scale. *Irrigation & Drainage Systems Engineering* 3(118): 2–10.
22. A. Bhasi and K. Rajagopal. 2014. Geosynthetic-reinforced piled embankments: Comparison of numerical and analytical methods. *ASCE International Journal of Geomechanics* doi:10.1061/(ASCE)GM.1943-5622.0000414
23. K. Rajagopal, S. Chandramouli, A. Parayil and K. Iniyan. 2014. Studies on geosynthetic reinforced road pavement structures. *International Journal of Geotechnical Engineering* (W.S. Maney & Sons, UK) 8(3): 287–298.
24. G. Sridhar, R.G. Robinson, K. Rajagopal and R. Radhakrishnan. 2014. Comparative study on horizontal coefficient of consolidation determined using Rowe and conventional consolidation cell. *International Journal of Geotechnical Engineering* (W.S. Maney & Sons, UK) doi:10.1179/1939787914Y.0000000083
25. R.J. Pillai, R.G. Robinson and A. Boominathan. 2014. Undrained and drained shearing behaviour of kaolinite with different microfabrics. *International Journal of Geotechnical Engineering* 8(1): 10–20.
26. U. Saravanan. 2014. Mechanical experiments to identify homogeneous bodies. *International Journal of Solids and Structures* 51(11–12): 2204–2212.
27. S.A. Kumar, U. Saravanan, J.M. Krishnan and A. Veeraragavan. 2014. Rheological characterization of modified binders at mixing and compaction temperature. *International Journal of Pavement Engineering* 15(9): 767–785.
28. G. Asaithambi and R. Sivanandan. 2015. Evaluation of right turn lane at signalized intersection in non-lane based heterogeneous traffic using microscopic simulation model. *Transportation Letters: The International Journal of Transportation Research* 7(2): 61–72.
29. V. Kanagaraj, K.K. Srinivasan, R. Sivanandan and G. Asaithambi. 2015. Study of unique merging behavior under mixed traffic conditions. *Transportation Research—Part F: Traffic Psychology and Behavior* (Elsevier) 29: 98–112.
30. P. Subramaniam and S. Banerjee. 2014. Factors affecting shear modulus degradation of cement treated clay. *Soil Dynamics and Earthquake Engineering* (Elsevier) 65: 181–188.
31. S. Banerjee, S.H. Goh and F.H. Lee. 2014. Earthquake-induced bending moment in fixed head piles in soft clay. *Géotechnique* (ICE) 64(6): 431–446.
32. S.R. Balasubramanian, K.B. Rao, A.M. Prasad, R. Goswami and M.B. Anoop. 2014. A methodology for development of seismic fragility curves for URBM buildings. *Earthquakes & Structures* 6(6): 611–625.
33. L.P. Devi and S. Palaniappan. September 2014. A case study on life cycle energy use of residential building in southern India. *Energy and Buildings* 80: 247–259.
34. S. Gulia, S.S.M. Nagendra and M. Khare. 2014. Performance evaluation of ISCST3, ADMS-Urban and AERMOD for urban air quality management in a mega city of India. *International Journal of Sustainable Development and Planning* 9(6): 778–793.
35. V.S. Chithra and S.S.M. Nagendra. 2014. Impact of outdoor meteorology on indoor PM<sub>10</sub>, PM<sub>2.5</sub> and PM<sub>1</sub> concentrations in a naturally ventilated classroom. *Urban Climate* 10: 77–91.
36. B. Srimuruganandam and S.M.S. Nagendra. ANN based PM prediction model for assessing the temporal variability of PM<sub>10</sub>, PM<sub>2.5</sub> and PM<sub>1</sub> concentrations at an urban roadway. *International Journal of Environmental Engineering* (Inderscience).
37. V.S. Chithra and S.S.M. Nagendra. 2014. Characterizing and predicting coarse and fine particulates in classrooms located close to an urban roadway. *Journal of the Air & Waste Management Association* 64(8): 945–956.
38. V.S. Chithra and S.S.M. Nagendra. 2014. Particulate matter mass and number concentrations inside a naturally ventilated school building located adjacent to an urban roadway. *Journal of the Institution of Engineers (India): Series A* 95(3): 143–149.
39. S.N. Kuiry, Y. Ding and S.S.Y. Wang. 2014. Numerical simulations of morphological changes in barrier islands induced by storm surges and waves using a supercritical flow model. *Frontiers of Structural and Civil Engineering* (Springer) 8(1): 57–68.
40. D. Minota, A. Veeraragavan and R.B. Mallick. October 2014. Laboratory and field investigation of mechanical properties of foamed asphalt recycled base course materials for high volume pavements in India. *ASCE Journal of Performance of Constructed Facilities*.
41. S.A. Kumar, U. Saravanan, J.M. Krishnan and A. Veeraragavan. 2014 Rheological characterization of modified binders at mixing and compaction temperatures. *International Journal of Pavement Engineering* 15(9): 767–785.



42. N. Roy, A. Veeraragavan and J.M. Krishnan. 2014. Influence of confinement pressure and air voids on the repeated creep and recovery of asphalt concrete mixtures. *International Journal of Pavement Engineering* doi:10.1080/10298436.2014.925622
43. P.S. Reashma, M.R. Nivitha, A. Veeraragavan and J.M. Krishnan. 2014. Development of unmodified binder specifications for India. *Association of Asphalt Paving Technologists Journal* 83: 653–670.
44. R.B. Mallick, B. Chen, A. Veeraragavan, G.L.S. Babu and S. Bhowmick. 2014. Reduction of pavement high temperature with the use of thermal insulation layer and high reflectivity surface. *International Journal of Pavement Research and Technology* 7(2): 135–144.
45. P. John, A. Mahalingam, A. Deep and A. Thillairajan. 2015. Impact of private sector participation on access and quality of services: Systematic review of evidence from the electricity, telecommunications and water supply sectors. *Journal of Development Effectiveness* 7(1): 64–89.
46. J. Matos-Castaño, A. Mahalingam and G. Dewulf. 2014. Unpacking the path-dependent process of institutional change for PPPs. *Australian Journal of Public Administration* 73(1): 47–66.
47. S.P.A. Narayan, D.N. Little and K.R. Rajagopal. 2014. Modelling the nonlinear viscoelastic response of asphalt binders. *International Journal of Pavement Engineering*.
48. V.M. Bindhu and B. Narasimhan. 2015. Development of a spatio-temporal disaggregation method (DisNDVI) for generating a time series of fine resolution NDVI images. *ISPRS Journal of Photogrammetry and Remote Sensing* 101: 57–68.
49. F.M. Ziadat, Y. Dhanesh, D. Shoemate, R. Srinivasan, B. Narasimhan and J. Tech. 2015. Soil-landscape estimation and evaluation program (SLEEP) to predict spatial distribution of soil attributes for environmental modeling. *International Journal of Agricultural and Biological Engineering* 8(3): 1–15.
50. W.A. Take, R.K. Rowe, R.W.I. Brachman and D.N. Arnepalli. 2015. Thermal exposure conditions for a composite liner with a black geomembrane exposed to solar radiation. *Geosynthetics International* 22(1): 93–109.
51. A.M.R. Ewais, R.K. Rowe, R.W.I. Brachman and D.N. Arnepalli. 2014. Service life of a high-density polyethylene geomembrane under simulated landfill conditions at 85°C. *Journal of Geotechnical and Geoenvironmental Engineering* 140(11): 04014060.
52. M. Janardhana, P.R. Davis, S.S. Ravichandran, A.M. Prasad and D. Menon. 2014. Calibration of a hysteretic model for glass fiber reinforced gypsum wall panels. *Earthquake Engineering and Engineering Vibration* 13(2): 347–355.
53. C.K. Ramanna and G.R. Dodagoudar. 2014. Impact analysis of seismic source area extent on hazard estimate for Chennai city. *International Journal of Geotechnical Earthquake Engineering* 5(1): 75–100.
54. C.K. Ramanna and G.R. Dodagoudar. 2014. Effect of epicenter data inconsistency in determining bandwidth and its subsequent use in hazard analysis for Chennai using kernel smoothing approach. *International Journal of Geotechnical Earthquake Engineering* 5(1): 21–38.
55. R. Mohan and G. Ramadurai. 2014. Submission to the DTA2012 special issue: A case for higher-order traffic flow models in DTA. *Networks and Spatial Economics* 1–26.
56. K.K. Srinivasan, A.A. Prakash and R. Seshadri. 2014. Finding most reliable paths on networks with correlated and shifted log-normal travel times. *Transportation Research Part B: Methodological* 66: 110–128.
57. L. Joshua and K. Varghese. 2014. Automated recognition of construction labour activity using accelerometers in field situations. *International Journal of Productivity and Performance Management* 63(7): 841–862.
58. N. Ummer, U. Maheswari, V.A. Matsagar and K. Varghese. 2014. Factors influencing design iteration with a focus on project duration. *Journal of Management in Engineering* 30(1): 127–130.
59. V.S. Priya and L. Philip. 2015. Treatment of volatile organic compounds in pharmaceutical wastewater using submerged aerated biological filter. *Chemical Engineering Journal* 266: 309–319.
60. N.K. Sharma and L. Philip. 2014. Effect of cyanide on phenolics and aromatic hydrocarbons biodegradation under anaerobic and anoxic conditions. *Chemical Engineering Journal* 256: 255–267.
61. A. Datta and L. Philip. 2014. Performance of a rotating biological contactor treating VOC emissions from paint industry. *Chemical Engineering Journal* 251: 269–284.
62. K. Aravamudan, V. Harikumar, B. Kumar, L. Philip, S.M. Bhallamudi and K.S. Reddy. 2014. Simulation of a cross flow wind aided evaporator. *Desalination* 340(1): 18–29.
63. A. Datta, L. Philip and S.M. Bhallamudi. 2014. Modeling the biodegradation kinetics of aromatic and aliphatic volatile pollutant mixture in liquid phase. *Chemical Engineering Journal* 241: 288–300.
64. V. Arya and L. Philip. 2014. Visible and solar light photocatalytic disinfection of bacteria by N-doped TiO<sub>2</sub>. *Water Science and Technology: Water Supply* 14(5): 924–930.
65. A. Bahurudeen, D. Kanraj, V.G. Dev and M. Santhanam. 2015. Performance evaluation of sugarcane bagasse ash blended cement in concrete. *Cement and Concrete Composites* 59: 77–88.

66. A. Bahurudeen and M. Santhanam. 2015. Influence of different processing methods on the pozzolanic performance of sugarcane bagasse ash. *Cement and Concrete Composites* 56: 32–45.
67. K.M. Haneefa, M. Santhanam and F.C. Parida. 2014. Deterioration of limestone aggregate mortars by liquid sodium in fast breeder reactor environment. *Nuclear Engineering and Design* 275: 287–299.
68. M.R. Nivitha, E. Prasad and J.M. Krishnan. 2015. Ageing in modified bitumen using FTIR spectroscopy. *International Journal of Pavement Engineering* 13.
69. S.A. Kumar, U. Sarvanan, J.M. Krishnan and A. Veeraragavan. 2014. Rheological characterisation of modified binders at mixing and compaction temperature. *International Journal of Pavement Engineering* 15(9): 767–785.
70. S. Muthulingam and B.N. Rao. 2015. Non-uniform corrosion states of rebar in concrete under chloride environment. *Corrosion Science* 93: 267–282.
71. S. Muthulingam and B.N. Rao. 2014. Non-uniform time-to-corrosion initiation in steel reinforced concrete under chloride environment. *Corrosion Science* 82: 304–315.
72. V. Narayanamurthy, C.L. Rao and B.N. Rao. 2014. Numerical simulation of ballistic impact on armour plate with a simple plasticity model. *Defence Science Journal* 64(1): 55–61.
73. A.S. Balu and B.N. Rao. 2014. Efficient assessment of structural reliability in presence of random and fuzzy uncertainties. *Journal of Mechanical Design: Transactions of the ASME* 136(5): 051008.
74. R.G. Pillai, D. Trejo, P.D. Gardoni, M.B. Hueste and K. Reinschmidt. 2014. Time-variant flexural reliability of post-tensioned, segmental concrete bridges exposed to corrosive environments. *Journal of Structural Engineering (United States)* 140(8): A4014018.
75. R.G. Pillai, K.F. Reinschmidt, D. Trejo, P. Gardoni and M.B.D. Hueste. 2014. Predicting residual tensile strength of seven-wire strands using that of single wires exposed to chloride environments. *Journal of Materials in Civil Engineering* 26(8): 04014044.
76. S.T.G. Raghukanth and S. Sangeetha. 2014. A stochastic model for earthquake slip distribution of large events. *Geomatics, Natural Hazards and Risk*.
77. S.T.G. Raghukanth and B. Kavitha. 2014. Ground motion relations for active regions in India. *Pure and Applied Geophysics* 171(9): 2241–2275.
78. V. Jaya, S.T.G. Raghukanth and S.S. Mohan. 2014. Estimating fractal dimension of lineaments using box counting method for the Indian landmass. *Geocarto International* 29(3): 314–331.
79. M. Siva, K. Ramamurthy and R. Dhamodharan. 2015. Sodium salt admixtures for enhancing the foaming characteristics of sodium lauryl sulphate. *Cement and Concrete Composites* 57: 133–141.
80. M.G. Nair, K. Ramamurthy and A.R. Ganesan. 2014. Classification of indoor daylight enhancement systems. *Lighting Research and Technology* 46(3): 245–267.
81. V. Vasugi and K. Ramamurthy. 2014. Identification of design parameters influencing manufacture and properties of cold-bonded pond ash aggregate. *Materials and Design* 54: 264–278.
82. V. Vasugi and K. Ramamurthy. 2014. Identification of admixture for pelletization and strength enhancement of sintered coal pond ash aggregate through statistically designed experiments. *Materials and Design* 60: 563–575.
83. B. Sangoju, B.H. Bharatkumar, R. Gettu, P. Srinivasan, K. Ramanjaneyulu and N.R. Iyer. 2015. Influence of PCE-SP and calcium nitrite inhibitor on mechanical and durability parameters of concrete. *Journal of Scientific and Industrial Research* 74(2): 82–87.
84. E. John and R. Gettu. 2014. Effect of temperature on flow properties of superplasticized cement paste. *ACI Materials Journal* 111(1): 67–76.
85. K. Narasimhulu, R. Gettu and K.G. Babu. 2014. Beneficiation of natural zeolite through flash calcination for its use as a mineral admixture in concrete. *Journal of Materials in Civil Engineering* 26(1): 24.
86. R.C. Asha, M.A. Vishnuganth, N. Remya, N. Selvaraju and M. Kumar. 2015. Livestock wastewater treatment in batch and continuous photocatalytic systems: Performance and economic analyses. *Water, Air, and Soil Pollution* 226(5): 132.
87. M.A. Vishnuganth, S. Rangabhashiyam, N. Remya, M. Kumar and N. Selvaraju. 2015. Optimization of GAC supported TiO<sub>2</sub> photocatalytic process for competent carbofuran removal from an aqueous system. *Journal of Scientific and Industrial Research* 74(4): 225–231.
88. R.C. Asha and M. Kumar. 2014. Photocatalytic degradation of poultry wastewater using activated carbon-supported titanium dioxide. *Desalination and Water Treatment*.
89. V.P. Kanawade, S. Shika, C. Pöhlker, D. Rose, M.N.S. Suman, H. Gadhavi, A. Kumar, S.M.S. Nagendra, R. Ravikrishna, H. Yu, L.K. Sahu, A. Jayaraman, M.O. Andreae, U. Pöschl and S.S. Gunthe. 2014. Infrequent occurrence of new particle formation at a semi-rural location, Gadanki, in tropical southern India. *Atmospheric Environment* 94: 264–273.
90. K. Paranjothi and U. Saravanan. 2015. Identifying hyperelastic and isotropic materials by examining the variation of principal direction of left Cauchy-Green deformation tensor in uniaxial loading. *International Journal of Solids and Structures* 63: 289–297.

91. O. Prakash, K.P. Sudheer and K. Srinivasan. 2014. Improved higher lead time river flow forecasts using sequential neural network with error updating. *Journal of Hydrology and Hydromechanics* 62(1): 60–74.
92. R. Cibin, P. Athira, K.P. Sudheer and I. Chaubey. 2014. Application of distributed hydrological models for predictions in ungauged basins: A method to quantify predictive uncertainty. *Hydrological Processes* 28(4): 2033–2045.
93. P.C. Nayak, K.P. Sudheer and S.K. Jain. 2014. River flow forecasting through nonlinear local approximation in a fuzzy model. *Neural Computing and Applications* 25(7–8): 1951–1965.
94. P. Athira and K.P. Sudheer. 2014. A method to reduce the computational requirement while assessing uncertainty of complex hydrological models. *Stochastic Environmental Research and Risk Assessment* 29(3): 847–859.
95. K.S. Kasiviswanathan and K.P. Sudheer. 2014. Discussion of comparison of three global optimization algorithms for calibration of the Xinanjiang model parameters by Dong-mei Xu, Wen-chuan Wang, Kwok-wing Chau, Chun-tian Cheng and Shou-yu Chen, 2013. *Journal of Hydroinformatics* 15(1): 174–193.
96. R.B. Mallick, M. Tao, J.S. Daniel, J. Jacobs and A. Veeraragavan. 2015. Development of a methodology and a tool for the assessment of vulnerability of roadways to flood-induced damage. *Journal of Flood Risk Management*.
97. T. Thyagaraj and S.M. Rao. 2015. Osmotic flow in compacted expansive clay. *Environmental Geotechnics: Institution of Civil Engineers, London* 2(2): 87–94 doi:10.1680/envgeo.13.00061
98. T. Thyagaraj and S. Zodinanga. 2014. Swell–shrink behaviour of lime precipitation treated soil. *Ground Improvement: Institution of Civil Engineers, London* 167(4): 260–273.
99. T. Thyagaraj and S. Zodinanga. 2014. Laboratory investigations on in-situ stabilization of an expansive soil by lime precipitation technique. *ASCE Journal of Materials in Civil Engineering* doi:10.1061/(ASCE)MT.1943-5533.0001184 (accepted).

#### **Papers published in proceedings of national conferences**

1. A. Biswal, A.M. Prasad and A.K. Sengupta. 2014. Investigation of shear behaviour of vertical joints between precast concrete wall panels. *Proceedings of the Ninth Structural Engineering Convention, IIT Delhi, 22–24 December* (in USB drive).
2. M. Komathi and A.K. Sengupta. 2014. Evaluation of shear strength of RC columns strengthened by concrete jacketing. *Proceedings of the Ninth Structural Engineering Convention, IIT Delhi, 22–24 December* (in USB drive).
3. P. Bindurani, A.K. Sengupta and A.M. Prasad. 2014. Effect of jointed beam–column connections on the seismic behaviour of precast concrete buildings. *Proceedings of the 15th Symposium on Earthquake Engineering, IIT Roorkee, 11–13 December*, pp. 816–826 (in CD ROM).
4. J.A. Kollerathu and Arun Menon. 2014. Review of non-linear analysis in the seismic study of masonry structures. *Proceedings of the Ninth Structural Engineering Convention, New Delhi, 22–24 December*, paper no. SEC14AOQ.
5. R. Prasanna and A. Boominathan. 2015. Finite element analysis of reinforced concrete tunnels subjected to internal explosion. *Proceedings of the Sixth International Geotechnical Symposium on Disaster Mitigation in Special Geoenvironmental Conditions, Chennai, India, January*, pp. 165–168.
6. K. Rajagopal and D.N. Arnepalli. 2015. State-of-the-art on the applications of geosynthetics for dam repair and rehabilitation. *First National Dam Safety Conference, IC&SR Auditorium, IIT Madras, Chennai, India, 24–25 March*.
7. P.N. Mishra, V.K. Gadi, S.S. Surya and D.N. Arnepalli. 2014. Appraisal of safe placement distance between canisters in a typical deep geological repository. *GEN-2014, Allahabad, India, 11–12 October*.
8. C. Cherian, D.N. Arnepalli, T.S.S. Dogga, N.B. Raviteja, S.V. Gorle and N.M. Balraj. 2014. Assessment of grain-size and pore-size distribution using digital image analysis. *IGC-2014, Kakinada, India, 18–20 December*.
9. S. Bandipally, C. Cherian, D.N. Arnepalli and C.P. Pooja. 2014. Influence of pH on long term performance of lime stabilized fine-grained soils. *IGC-2014, Kakinada, India, 18–20 December*.
10. J. Chelliah and D.N. Arnepalli. 2014. A critical appraisal on electrokinetic remediation of contaminated soils. *IGC-2014, Kakinada, India, 18–20 December*.
11. S.S. Surya, R.A. Joseph and D.N. Arnepalli. 2014. Modeling and analysis of heat migration through buffer material. *IGC-2014, Kakinada, India, 18–20 December*.
12. L. Vanajakshi. 2014. Studies on data collection and modelling for intelligent transportation systems (ITS) under Indian conditions, Xerox Research Centre, Bangalore, February.
13. L. Vanajakshi. 2014. ITS activities from the Center of Excellence in Urban Transport (CoE UT) at IIT Madras. *Purdue–IIT Madras Workshop on Sustainable Urban Transportation, IIT Madras, February*.



14. A. Kumar, L. Vanajakshi and S.C. Subramanian. 2014. Pattern based spatial formulation for bus travel time prediction under mixed traffic conditions. *Colloquium on Transportation Systems Engineering & Management*, NIT Calicut, May.
15. V. Raj, S. Fulari, R. Amrut and L. Vanajakshi. 2014. Delay estimation on urban arterials using vehicle based sensor data. *Colloquium on Transportation Systems Engineering & Management*, NIT Calicut, May.
16. S. Balakrishnan, S. Radhakrishnan, J.K. Mathew and V.L. Devi. 2014. Travel time reliability of an urban arterial using Bluetooth data. *Colloquium on Transportation Systems Engineering & Management*, NIT Calicut, May.
17. L. Vanajakshi. 2014. Advanced traffic management systems in developed and developing countries. *Recent Advances in Studies of Traffic Engineering (RASTE)*, SVNIT, Surat, 30 June to 11 July.
18. L. Vanajakshi. 2014. Status and implementation of ITS in India, issues, challenges and future prospects. *Recent Advances in Studies of Traffic Engineering (RASTE)*, SVNIT, Surat, 30 June to 11 July.
19. L. Vanajakshi. 2015. Intelligent transportation systems. *2015 IEEE Intelligent Vehicles Symposium*, Seoul, South Korea, February.
20. L. Vanajakshi. 2015. Recent activities in intelligent transportation systems at IIT Madras. *2015 IEEE Intelligent Vehicles Symposium*, Seoul, South Korea, February.
21. L. Vanajakshi. 2015. An introduction to ITS and its applications. *International Civil Engineering Symposium (ICES)*, VIT Vellore, March.
22. Meher Prasad. 2015. A structural analysis of multi-storied RCC frame buildings with soft ground storey incorporating masonry infill at upper floor. *Workshop on Earthquake-Resistant Design and Retrofitting of Multi-storied RCC Frame Buildings*, Bihar, 15 January.
23. K. Rajagopal. 2014. Case study of the construction of very high reinforced soil retaining walls in India. *National Seminar on Geotechnical Engineering*, NIT Trichy, 15 February.
24. K. Rajagopal. 2014. Construction using geosynthetics: Some Indian case studies. *Indian Geotechnical Conference*, Kakinada, 18–20 December (theme lecture).
25. R.G. Robinson. 2014. Preloading by vacuum application. *Golden Jubilee Conference of the IGS Bangalore Chapter, Geo-Innovations*, 30–31 October.
26. R.G. Robinson. 2014. Land reclamation using clay lumps. *Proceedings of Indian Geotechnical Conference IGC-2014*, Kakinada, India, 18–20 December.
27. V.R. Parvathy and R.G. Robinson. 2014. Cyclic and postcyclic behavior of clays. *Proceedings of Indian Geotechnical Conference IGC-2014*, Kakinada, India, 18–20 December.
28. K. Kulkarni and R. Goswami. Comparative study on modelling of RC structural walls for nonlinear static analysis. *National Conference on Technological Innovations for Sustainable Infrastructure (TISI-2015)*.
29. A.A. Kasar, R. Goswami, S.D. Bharti and M.K. Shrimali. 2014. Influence of joint panel zone on seismic behaviour of steel moment frames. *Proceedings of the Ninth Structural Engineering Convention (9SEC)*, New Delhi, India, 22–24 December, paper ID SEC14AYE, pp. 933–943.
30. A.A. Kasar, R. Goswami, S.D. Bharti, and M.K. Shrimali. 2014. Parametric analysis of moment connection based on beam-to-column strength ratio. *Proceedings of the 15th Symposium on Earthquake Engineering (15SEE)*, paper ID 156, pp. 621–632, Roorkee, India, 11–13 December.
31. A. Gowri and R. Sivanandan. 2014. Impact of lane segregation on delays at signalized intersections under mixed traffic conditions. *1st Annual Conference on Innovations and Developments in Civil Engineering 2014 (ACIDIC 2014)*, Mangalore, India, May (CD-ROM).
32. S.N. Kuiry. 2015. A two-dimensional dam-break flow simulation model for preparing emergency action plans. *First National Dam Safety Conference*, IC&SR Auditorium, IIT Madras, Chennai, India, 24–25 March.
33. M.K. Nivedya, A. Veeraragavan and J. Murali Krishnan. 2014. Viscoelastic characterization of bituminous stabilized materials. *Colloquium on Transportation Systems Engineering and Management*, NIT Calicut, India, 12–13 May.

#### **Papers published in proceedings of international conferences**

1. A. Mahalingam. 2015. Post award governance of PPP projects. *International Conference on Overcoming the Infrastructure Gap*, Edinburgh, Scotland, 25 June.
2. B. Narasimhan and R. Srinivasan. 2014. A study on the effect of improved spatial and temporal distribution of rainfall estimates on hydrologic model parameter uncertainty. *2014 International Weather Radar and Hydrology Symposium (WRaH2014)*, Reston, Virginia, USA, 7–10 April.
3. V.M. Bindhu and B. Narasimhan. 2014. An integrated remote sensing based energy balance and crop growth modeling approach to estimate irrigation water distribution and field application efficiency across a command area. *International Symposium on Evapotranspiration: Challenges in Measurement and Modeling from Leaf to the Landscape Scale and Beyond*, Raleigh, North Carolina, 7–10 April.

4. B. Raphael. 2014. Control of an adaptive light shelf using multi-objective optimization. *Proceedings of ISARC 2014, 31st International Symposium on Automation and Robotics in Construction and Mining* (eds. Quang Ha, Xuesong Shen, Ali Akbarnezhad), pp. 81–87, Sydney, Australia, 9–11 July.
5. B. Raphael. 2014. Multi-criteria decision making for the design of building façade. *Proceedings of International Conference on Computing in Civil and Building Engineering*, pp. 1650–1657, Orlando, Florida, USA, 23–25 June.
6. S.R. Gandhi. 2014. Evaluation of pile behaviour on sloping clayey soil in supporting a diaphragm wall for building excavation. *International Conference TC207*, Saint Petersburg, Russia, 17 June (S.V. Sivapriya, Ph.D. scholar, is the co-author of the paper).
7. V. Kumar, A. Kumar, L. Vanajakshi and S.C. Subramanian. 2014. Comparison of model based and machine learning approaches for bus arrival time prediction. *Transportation Research Board Annual Conference*, National Research Council, Washington, D.C.
8. J. Raj, V. Ramesh, S.R. Varma and L. Vanajakshi. 2014. Evaluation and application of automated traffic sensor data under Indian conditions. *Transportation Research Board Annual Conference*, National Research Council, Washington, D.C.
9. M. Badhrudeen, J. Raj and L. Vanajakshi. 2014. Short term prediction of traffic parameters: Performance comparison of data driven and less data required approaches. *Transportation Research Board Annual Conference*, National Research Council, Washington, D.C.
10. A. Kumar, L. Vanajakshi and S.C. Subramanian. 2014. Pattern-based bus arrival time prediction under heterogeneous traffic conditions. *Transportation Research Board Annual Conference*, National Research Council, Washington, D.C.
11. A. Kumar, S. Mothukuri, L. Vanajakshi and S.C. Subramanian. 2014. A spatio-temporal discretization approach for real time bus travel time prediction using a linear traffic model. *International Conference on Transportation Planning and Implementation Methodologies for Developing Countries*, IIT Mumbai, 20 December.
12. J. Raj, H. Bahuleyan and L. Vanajakshi. 2014. Application of data mining techniques for traffic density estimation and prediction. *International Conference on Transportation Planning and Implementation Methodologies for Developing Countries*, IIT Mumbai, 20 December.
13. M. Badhrudeen, V. Ramesh and L.D. Vanajakshi. 2014. Headway analysis using automated sensor data under Indian traffic conditions. *International Conference on Transportation Planning and Implementation Methodologies for Developing Countries*, IIT Mumbai, 20 December.
14. J.K. Mathew, L.D. Vanajakshi, D.M. Bullock and A. Sharma. 2014. Investigation of the use of bluetooth sensors for travel time studies under Indian conditions. *International Conference on Transportation Planning and Implementation Methodologies for Developing Countries*, IIT Mumbai, 20 December.
15. A. Kumar, S. Mothukuri, L. Vanajakshi and S.C. Subramanian. 2015. An analytical approach to identify the optimum inputs for a bus travel time prediction method. *Transportation Research Board Annual Conference*, National Research Council, Washington, D.C.
16. R.C. Asha and M. Kumar. 2015. Antibiotic removal in membrane-photocatalytic slurry reactor: Optimisation of hydraulic retention time. *Second International Conference on Sustainable Urbanization (ICSU2015)*, Hong Kong, China, 7–9 January.
17. A.C. Raju and M. Kumar. 2014. Sulfamethoxazole removal in a granular activated carbon immobilized TiO<sub>2</sub> (GAC-TiO<sub>2</sub>) photocatalytic system. *The 11th International Symposium on Southeast Asian Water Environment (SEAWE11)*, AIT Bangkok, Thailand, 26–28 November.
18. S. Nithin, K. Rajagopal and A. Veeraragavan. 2014. Reflection cracking: A review on the potential of inter-layer system with reference to natural fibres. *Proceedings of International Conference on Geosynthetics*, Berlin, Germany, 21–26 September.
19. S.R. Mohapatra, K. Rajagopal and J.S. Sharma. 2014. Analysis of geotextile-reinforced stone columns subjected to lateral loading. *Proceedings of International Conference on Geosynthetics*, Berlin, Germany, 21–26 September.
20. K. Rajagopal. 2014. Construction of very high geosynthetic reinforced soil retaining walls. *National Workshop on Geosynthetics*, Ho Chi Minh City, Vietnam, 3 December.
21. K. Rajagopal. 2014. Construction of very high geosynthetic reinforced soil retaining walls. *First National Symposium of Vietnam Geosynthetics Society*, Hanoi, Vietnam, 5 December.
22. K.L. Dev and R.G. Robinson. 2014. Pond ash as a low strength flowable fill. *XV Danube European Conference on Geotechnical Engineering*, Vienna, Austria, 9–12 September.
23. L.S. Shankar, S. Rajthilak and U. Saravanan. 2014. Numerical technique for solving truss and plane problems for a new class of elastic bodies. *14th Pan-American Congress of Applied Mechanics*, Santiago, Chile, 24–28 March.
24. C. Gouder and U. Saravanan. 2014. Modeling diffusion of sulfate through concrete using mixture theory. *14th Pan-American Congress of Applied Mechanics*, Santiago, Chile 24–28 March.

25. T.M. Deepthi, U. Saravanan and A.M. Prasad. 2014. Algorithms to determine the velocity and axle loads of a train passing over a steel bridge. *ISSS International Conference on Smart Materials, Structures and Systems*, Bangalore, 8–11 July.
26. T.M. Deepthi, M.S. Sariga, K.S. Venkataraghavan, U. Saravanan and V. Kamakoti. 2014. Development and benchmarking of new wireless strain sensors for structural health monitoring, *ISSS International Conference on Smart Materials, Structures and Systems*, Bangalore, 8–11 July.
27. C. Gouder and U. Saravanan. 2014. Modeling sulfate attack in concrete using mixture theory. *RILEM—4th International Symposium on Concrete Modeling*, Beijing, China, 12–14 October, pp. 417–424.
28. B. Raphael and U. Saravanan. 2014. Smart buildings and structures. *Third Smart City Workshop*, Chennai, 11–12 September.
29. V.S. Chithra and S.M.S. Nagendra. 2014. Seasonal trends of indoor particulate matter concentrations in a naturally ventilated school building. *22nd International Conference on Modelling, Monitoring and Management of Air Pollution*, Opatija, Croatia, 7–9 July.
30. N. Agarwal and S.M.S. Nagendra. 2015. PM<sub>10</sub>, PM<sub>2.5</sub> and PM<sub>1</sub> mass concentrations in different work environment. *International Conference on New Frontiers in Chemical, Energy and Environmental Engineering (INCEEE-2015)*, NIT Warangal, 20–21 March.
31. A. Elizabeth and S.M.S. Nagendra and I. Nambi. 2015. Characterization of ambient particulate matter near an open dumpsite. *International Conference on Green Technologies for Energy Management (ICGTEM'15)*, Kilakarai, 27–28 March.
32. K. Vatsalya Reddi and S.M.S. Nagendra. 2015. Performance evaluation of control equipment with different fuels. *International Conference on Green Technologies for Energy Management (ICGTEM'15)*, Kilakarai, 27–28 March.
33. L.P. Devi, S. Aysha and S. Palaniappan. 2014. Comparison of life cycle energy use of high-rise residential buildings. *13th International Conference on Sustainable Energy Technologies (SET2014)*, Geneva, 25–28 August, pp. 1–11.
34. S.R. Balakrishnan and R. Sivanandan. 2014. Lane choice behaviour of vehicles on urban roads under free-flow conditions. *Proceedings of the International Conference on Recent Trends and Challenges in Civil Engineering (RTCCE-2014)*, Allahabad, India, 12–14 December (CD-ROM).
35. P. Subramaniam and S. Banerjee. 2014. Microstructure and physicochemical study on cement treated Chennai marine clay. *15th Danube-European Conference on Geotechnical Engineering*, Vienna, Austria.
36. P. Sunitha, C.C.R. Murty and R. Goswami. 2014. Quantifying parameters that ensure large deformability of earthquake resistant RC buildings in high seismic regions. *Proceedings of the 10th U.S. National Conference on Earthquake Engineering (10NCEE)*, Anchorage, Alaska, 21–25 July, paper ID 0222.
37. R.B. Mallick, B.R. Worsman, A. Veeraragavan and D.R. Dissanayake. 2014. Use of an innovative concept to reduce temperature and extend life of asphalt pavements. *Fifth International Conference on Sustainable Built Environment ICSBE 2014-15*.
38. P. Vayalamkuzhi and A. Veeraragavan. 2014. Development of comprehensive crash models for four-lane divided highways in heterogeneous traffic condition. *11th Transportation Planning and Implementation Methodologies for Developing Countries (TPMDC)*, Mumbai.
39. N. Sudersanan, K. Rajagopal and A. Veeraragavan. 2014. Reflection cracking: A review on the potential of interlayer system with reference to natural fibres. *10th International Conference on Geosynthetics*, Berlin, Germany, 21–25 September.
40. R. Prasanna and A. Boominathan. 2014. Numerical simulation on behaviour of concrete tunnels in soil under internal blast loading. *Proceedings of the 14th International Conference of the International Association for Computer Methods and Advances in Geomechanics*, Kyoto, Japan, September, pp. 1907–1911.
41. R. Prasanna and A. Boominathan. 2014. Response of tunnels due to blast loading. *Proceedings of Eighth International Symposium on Geotechnical Aspects of Underground Construction in Soft Ground*, Seoul, South Korea, August, pp. 235–238.
42. A.P. Das and T. Thyagaraj. 2015. Effect of osmotic flow on collapse behaviour of red soil. *The Sixth International Geotechnical Symposium on Disaster Mitigation in Special Geoenvironmental Conditions, IGS 2015*, IIT Madras, Chennai, India, 21–23 January, pp. 269–272.

### Distinguished visitors to the department

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1	Prof. Roger West, Trinity College Dublin, Ireland	11 September 2014	Interaction with the faculty and students of the department
2	Dr. Pawan Goenka, Chairman, Board of Governors	26 September 2014	Visiting the department



Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
3	Prof. Yichang (James) Tsai, Georgia Institute of Technology, USA	29 September to 1 October 2014	Interaction with the faculty and delivering a talk addressed to the students
4	Dr. Neaz Sheikh, University of Wollongong	12–18 October 2014	Interaction with the students/faculty of the department and exploring possibilities of collaborative research
5	Prof. Mohan Kumaraswamy, University of Hong Kong	24 October to 2 November 2014	Interaction with the faculty
6	Prof. Igors Tipans, Deputy Rector, Riga University, Latvia	2 December 2014	Exploration and identification of areas of cooperation
7	Prof. Talis Juhna, Vice Rector for Science, Riga University, Latvia, one of the leading European experts in water purification and distribution		
8	Prof. Janis Locs, Distinguished Scientist in Material Science Applications in Medicine, Riga Technical University, Latvia		
9	Prof. Paulo B. Lourenco, Head, Structures Group, Department of Civil Engineering, University of Minho, Portugal	10 December 2014	Attending National Advisory Board Meeting, National Centre for Safety of Heritage Structures (NCSHS) and visiting the department
10	Prof. Prasad Rangaraju, Clemson University, USA	18 December 2014	Delivering a talk about the deterioration of concrete airfield pavements due to the exposure conditions and visiting the department
11	Prof. Rohit Goyal, Dean, P&D, Malaviya National Institute of Technology, Jaipur	8–9 January 2015	Meeting the faculty and research scholars and visiting labs to explore possibilities of collaborative research, delivering lectures about NKN facilities, student exchange, learning from the experiences of IIT Madras, etc.
12	Prof. Awadesh Bhardwaj, Dean R&C, MNIT Jaipur		
13	Mr. Jelle Nijdam, Counsellor for Science and Technology, University of Twente, The Netherlands	20 January 2015	Research collaboration and visiting the department
14	Armel de la Bourdonnaye, Director, and Thibaut Skrzypek, Director des Relations Internationales, École des Ponts Paris Tech, France	23 January 2015	Interacting with the faculty and visiting the department
15	Prof. Ian Smith, EPFL, Switzerland	23 January 2015	Delivering CSK Memorial Lecture
16	Dr. Yokokura Junji and Dr. K.K.U. Ananda Kumara, Tokyo Institute of Technology (Tokyo-Tech), Japan	9 March 2015	Interacting with faculty members of the department and visiting the department
17	Dr. E. Sreedharan, popularly known as the Metro Man of India	20 March 2015	Delivering the Civil Engineering Endowment Lecture at IC & SR Auditorium and visiting the department

#### 4.6.6. Other Activities of the Department

Civil Engineering Research Expo was organised on 12 and 13 March 2015. The programme was inaugurated by Prof. Sarit Kumar Das, Dean (AR). Twenty-four students from 13 engineering colleges participated in the research expo.

#### Interdisciplinary group achievements

Sl. No.	Coordinator(s)	Title	Period
<b>Workshops</b>			
1	S.M. Shiva Nagendra	Exposure Monitoring Systems for Air Quality Management	12–13 December 2014

#### International collaboration

Prof. Ligy Philip and Prof. B.S. Murthy have been coordinating the activities of the Indo–German Centre for Sustainability (IGCS) in the areas of water and waste management. The centre has facilitated the exchange of faculty members and students and promoted collaborative research between IIT Madras and Germany.

## 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. It currently offers B.Tech., Dual Degree, M.Tech., M.S. and Ph.D. programmes. The department has the highest numbers of M.S./Ph.D. scholars among all computer science departments of similar institutions in the country.

### 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.

#### New courses introduced

Sl. No.	Course No.	Title
1	CS6105	Linear Algebra and Random Processes
2	CS6740	Searching and indexing in large datasets
3	CS7030	Recent Topics in Compilers
4	CS6045	Software Defined Networking

#### Students on roll as of September 2014 + M.S. and Ph.D. scholars admitted in January 2015

Programme	I Year	II Year	III Year	IV Year	V Year and Others	Total
B.Tech.	33	33	31	33	8	138
Dual Degree	29	28	29	28	29+7	150
M.Tech.	50	58	4	—	—	112
M.S.	27	33	30	15	2	107
Ph.D.	16	21	16	10	14	77
<b>Total</b>	<b>155</b>	<b>173</b>	<b>110</b>	<b>86</b>	<b>60</b>	<b>584</b>

#### Names of student/scholars who attended conferences/workshops/seminar/symposia abroad/in India

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposium/ Workshop	Date and Venue	Financial Assistance from
<b>Abroad</b>					
1	C. Vanniarajan	CS07D003	20th IEEE International Workshop on Local and Metropolitan Area Networks (LANMAN), to present his paper titled 'An Entropy Maximization Problem in Shortest Path Routing Networks'	16 May to 1 June 2014, Reno, Nevada, USA	IIT Madras/HCL
2	Saurabh Kalikar (M.S.)	CS14S021	International Conference on Software Engineering (ICSE)	4-6 June, 2014, Hyderabad	IIT Madras
3	C.S. Rahul (Ph.D.)	CS11D005	Ninth International Colloquium on Graph Theory and Combinatorics (ICGT 2014)	30 June to 4 July 2014, Grenoble, France	DST-IMPECS
4	K. Vignesh	CS10B054	International RoboSub Competition	28 July to 3 August 2014, San Diego	IIT Madras
5	J. Sudharsan	CS13S012	International Conference on Parallel Architectures and Compilation Techniques	24-27 August 2014, Edmonton, Canada	IIT Madras

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposium/ Workshop	Date and Venue	Financial Assistance from
6	Suranjana Samanta (Ph.D.)	CS10D018	25th British Machine Vision Conference (BMVC 2014)	1–5 September 2014, Nottingham, UK	IIT Madras
7	R. Krithika (Ph.D.)	CS12D005	22nd European Symposium on Algorithms (ESA 2014)	8–10 September 2014, Worclaw, Poland	IIT Madras–Microsoft Research
8	C.S. Ganesh (Ph.D.)	CS12D008	Third IEEE International Conference on Cloud Networking (CloudNet 2014)	7–11 October 2014, Luxembourg	IIT Madras–HCL
9	Pritam Majumder (M.S.)	CS12S009	IEEE International Conference on Computer Design	18–22 October 2014, Seoul, South Korea	IIT Madras
10	Nitin Gupta (M.S.)	CS12S037	21st IEEE International Conference on Image Processing (ICIP–2014)	27–30 October 2014, Paris, France	IIT Madras
11	Suranjana Samanta (Ph.D.)	CS10D018	21st IEEE International Conference on Image Processing (ICIP–2014)	27–30 October 2014, Paris, France	IIT Madras
<b>India</b>					
1	Suyash Gupta	CS12S011	Principles of Programming Languages	12–18 January 2015, Mumbai	IIT Madras
2	Jyothi Vedurada	CS13D201	Principles of Programming Languages	12–18 January 2015, Mumbai	IIT Madras
3	Manas Thakur	CS13D023	Principles of Programming Languages	12–18 January 2015, Mumbai	IIT Madras
4	Rahul Srivastava	CS14S018	Principles of Programming Languages	12–18 January 2015, Mumbai	IIT Madras
5	Indu K.	CS14S010	Principles of Programming Languages	12–18 January 2015, Mumbai	IIT Madras
6	Anant Dhayal	CS12S018	Foundations of Software Technology and Theoretical Computer Science (FSTTCS–2014)	15–17 December 2014, New Delhi	IIT Madras
7	Saurabh Sawlani	CS13S037	Foundations of Software Technology and Theoretical Computer Science (FSTTCS–2014)	15–17 December 2014, New Delhi	IIT Madras
8	Krishnamoorthy Dinesh	CS13D015	Foundations of Software Technology and Theoretical Computer Science (FSTTCS–2014)	15–17 December 2014, New Delhi	IIT Madras
9	Purnata Ghosal	CS14S033	Foundations of Software Technology and Theoretical Computer Science (FSTTCS–2014)	15–17 December 2014, New Delhi	IIT Madras
10	Ankit Chauhan	CS13S002	Foundations of Software Technology and Theoretical Computer Science (FSTTCS–2014)	15–17 December 2014, New Delhi	IIT Madras
11	Balagopal Komarath	CS11D003	FSTTCS–2014	15–17 December 2014, New Delhi	IIT Madras

#### Names of students/scholars who won outside prizes and awards

Sl. No.	Name of the Student/Scholar	Roll No.	Name of Prize	Prize Awarded by
1	Ms Babbula, Spandana Raj (D.D final year)	CS10B032	Google Anita Borg Memorial Scholarship	Awarded in memory of Dr Anita Borg; Given to a group of female undergraduate and graduate students across Asia Pacific based on academic merit and demonstrated leadership qualities.
			Facebook's 2014 Grace Hopper Scholarship	Given to 25 students from all over the world based on their academic excellence and passion for technology

## Names of students/scholars who won institute convocation/Institute Day prizes

Sl. No.	Name of the Student/Scholar	Roll No.	Name of Prize
<b>Convocation prizes</b>			
1	Akshay Dhananjai Degwekar	CS10B056	B. Ravichandran Memorial Prize
2	Guru Prakash A.	CS09B033	Alumni Association Prize
3	Vishal Pandya	CS12M058	CMC Prize
4	Milan Patnaik	CS12M029	CMC Prize
5	Sai Nageswar Sathchidanand	CS12M042	Prof H.N. Mahabala Endowment Prize
<b>Institute Day prizes</b>			
1	Sanjay Ganapathy	CS12B027	Sri Ramachandran Prize
2	Vaishnavh N.	CS11B026	Computer Age Management Service Private Limited Prize
3	Akshayaram S.	CS11B057	Computer Age Management Service Private Limited Prize
4	Babbula Spandana Raj	CS10B008	Computer Age Management Service Private Limited Prize
5	Harini A.	CS13M021	Praksah Arora Prize (Joint Prize)
6	Shinde Niranjana Hundurao	CS13M032	Praksah Arora Prize (Joint Prize)
7	Raguru Bhaarath	CS13M041	Praksah Arora Prize (Joint Prize)
8	G.K. Sudharshan	CS13M050	Praksah Arora Prize (Joint Prize)
9	Vaishnavh N.	CS11B026	Rajalakshmi Krishnamurthy English Prize
10	Srinivasan R.	CS11B059	Dr. Dilip Veeraraghavan Memorial Prize
11	Srinivasan R.	CS11B059	K. Srinivasan and Indira Srinivasan Prize
12	Aishwarya P.	CS11B004	Swati–Jayalakshmi Memorial Award
13	Babbula Spandana Raj	CS10B032	Swati–Jayalakshmi Memorial Award
14	Suvadip Paul	CS13B057	Mr. S. Subramanian Prize—I Prize
15	Susanna Maria Baby	CS13B058	Mr. K. Krishnamurthi Prize—II Prize
16	Sanchit Agrawal	CS13B061	Mr. K. Krishnamurthi Prize—II Prize

### 4.7.3. Faculty and Their Activities

#### Faculty

Name and Qualifications	Major Areas of Specialisation
<b>Professors</b>	
Chandra Sekhar C., Ph.D. (IIT Madras)	Speech recognition; artificial neural networks; kernel methods
Deepak Khemani, Ph.D. (IIT Bombay)	Artificial intelligence; knowledge based systems; natural language processing and neural networks
Gonsalves T.A., Ph.D. (Stanford)	Computer networks; distributed systems; NMS; operating systems; performance evaluation; telecom software
Hema A. Murthy, Ph.D. (IIT Madras)	Speech processing; computer graphics; pattern recognition
Janakiram D., Ph.D. (IIT Delhi)	Object oriented systems; software engineering; parallel and distributed systems; database systems; mobile computing; computing education; computing for developing regions; mobile telemedicine
Kamakoti V., Ph.D. (IIT Madras)	Software for VLSI design; computational geometry; high performance computing
Krishna Moorthy Sivalingam, Ph.D. (SUNY Buffalo)	Wireless networks; optical networks; computer networks
Pandu Rangan C., Ph.D. (IISc, Bangalore)	Algorithms; parallel and VLSI algorithms; graph theory; computational geometry; randomized algorithms; computational learning theory; crypto-analysis
Raghavan S.V., Ph.D. (IIT, Madras)	Real-time systems; optical and wireless networks; e-banking; e-learning; intelligent search engines; multicasting; multimedia presentation systems; mobile agents; mobile wireless networks; next generation web browsers; secure WAN design in heterogeneous systems

Name and Qualifications	Major Areas of Specialisation
Siva Ram Murthy C., Ph.D. (IISc, Bangalore)	Parallel and distributed computing; real-time systems; lightwave networks and wireless networks
Sreenivasa Kumar P., Ph.D. (IISc) [Head of the Department]	Graph theory; algorithms; parallel computations; data mining and databases
Sukhendu Das, Ph.D. (IIT Kharagpur)	Visual perception; image intelligence; graphics and visualisation
<b>Associate Professors</b>	
Anurag Mittal, Ph.D. (University of Maryland)	Computer vision
Madhu Mutyam, Ph.D. (IIT Madras)	Computer architecture
Narayanaswamy N.S., Ph.D. (IISc, Bangalore)	Algorithms and complexity theory
Ravindran B., Ph.D. (University of Massachusetts, Amherst)	Machine learning; reinforcement learning; data/text mining
Sutanu Chakraborti, Ph.D. (The Robert Gordon University, UK)	Information retrieval; memory-based reasoning and machine learning
Shankar Balachandran, Ph.D. (UT, Dallas)	CAD for VLSI; reconfigurable computing; computer architecture
<b>Assistant Professors</b>	
Jayalal Sarma, M.N., Ph.D. (Institute of Mathematical Sciences, Chennai)	Computational complexity theory; structural and circuit complexity; lower bounds and derandomization
John Augustine, Ph.D. (University of California, Irvine)	Optimization of algorithms; computational geometry; distributed algorithms and algorithmic game theory
V. Krishna Nandivada, Ph.D. (University of California, Los Angeles)	Compilers; program analysis; programming languages; fault localization and multicore systems
Raghavendra Rao B.V., Ph.D. (Mathematical Sciences, Chennai)	Computational complexity theory; Boolean and arithmetic circuits; algebraic complexity; smoothed analysis of algorithms
Rupesh Nasre, Ph.D., (IISc, Bangalore)	Compiler; parallelization; program analysis
Meghana Nasre, Ph.D. (IISc, Bangalore)	Algorithms; graph theory; matching algorithms
Sayan Ranu, Ph.D., (University of California, Santa Barbara)	Graph indexing; graph mining; trajectory analytics; bioinformatics
Rajsekar Manokaran, Ph.D., (Princeton University, USA)	Complexity theory; algorithms; cryptography
Chester Rebeiro, Ph.D., (IIT Kharagpur)	Hardware and system security; side channel analysis; cryptography; computer architecture; operating systems; VLSI

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

Sl. No.	Coordinator(s)	Title	Period and Location
<b>Conferences</b>			
1	B. Ravindran (Finance Chair)	Second IKDD Conference on Data Sciences	18–21 March, Bangalore
<b>Workshops</b>			
1	B. Ravindran	Recent Advances in Reinforcement Learning	23–28 March 2014, NMI Sponsored International Workshop, IIT Madras
2	B. Ravindran	IIT Madras–PSU workshop on Health Care Analytics	27–29 January 2015, IIT Madras
<b>Short-term courses</b>			
1	V. Krishna Nandivada and Krishna M. Sivalingam	Verizon Architect Readiness Program	1 August to 26 September 2014 (every second weekend)
2	Program Chairs: Madhu Mutyam, (CSE) and Sungjoo Yoo (POSTECH, Korea)	Memory Organization and Architecture Workshop	16 October 2014, New Delhi (along with ESWEEK)
3	Hema A. Murthy	Co-organizer: Winter School on Speech and Audio Processing	4–7 January 2015, Gandhi Nagar, Gujarat

Sl. No.	Coordinator(s)	Title	Period and Location
4	Hema A. Murthy	Workshop on TTS	14–18 January 2015, Gandhi Nagar, Gujarat
5	Hema A. Murthy	Bizzard Challenge	2014 (Singapore)
6	C. Chandra Sekhar	Winter School on Speech and Audio Processing (co-organiser)	4–7 January 2015, Gandhi Nagar, Gujarat

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

Sl. No.	Name of Faculty Member	Title	Institution	Period
<b>Workshops</b>				
1	Jayalal Sarma	Workshop on Theory of NP-completeness (to give a talk)	LBS Institute of Technology for Women, Thiruvananthapuram, Kerala	7 July 2014
2	Jayalal Sarma	Workshop on Theory of NP-completeness (to give a talk)	LBS Institute of Technology for Women, Trivandrum, Kerala	30 December 2014
3	Jayalal Sarma	Instructional School on Computational Complexity (to give talks)	Government Engineering College Sreekrishnapuram, Palakkad, Kerala	14–17 January 2015
4	Raghavendra Rao	Instructional School on Computational Complexity (to give talks)	Government Engineering College Sreekrishnapuram, Palakkad, Kerala	14–17 January 2015
5	B. Ravindran	Short-term course on data analytics for HAL (to give talk on big data)	DoMS, IIT Madras	27 October 2014
6	N.S. Narayanaswamy	Research promotion workshop, funded by NBHM, to give talk on perfect graphs	NIT, Nagpur	15–20 January 2015
7	B. Ravindran	Workshop on Modern Machine Learning Applications, organised by SJCE, Mysore	Mysore	24 January 2015
8	B. Ravindran	Seminar on Advanced Data Mining, organised by Meenakshi College, Madurai	Madurai	20 January 2015
9	B. Ravindran	IIT Madras–PSU Workshop on Health Care Analytics	IIT Madras	27–29 January 2015
10	B. Ravindran	NMI–IIT Madras Workshop on Recent Advances in Reinforcement Learning	IIT Madras	23–28 March 2015
11	B. Ravindran	Workshop on Scale-free Networks	CUSAT, Cochin	12–15 February 2015
12	Sayan Ranu	TEQIP-funded faculty development programme on social networking and cloud computing at MCKV Institute of Engineering	Liluah, Howrah,	October 2014
13	Sayan Ranu	National Workshop on Big Data Analytics	Sri Ramakrishna Engineering College, Coimbatore	27–28 February 2015
14	Sayan Ranu	Workshop on Machine Learning in Complex Networks	IIT Kharagpur	March 2015
15	Sayan Ranu	Seminar on mining communication motifs in dynamic networks	IIT Kanpur	March 2015
16	N.S. Narayanaswamy	Workshop on data structures and algorithms, funded by IARCS (to give four lectures on topics in algorithms)	IIITMK, Thiruvananthapuram, Kerala	23–28 April 2015
<b>Conferences</b>				
1	Kamala Krithivasan	National Conference on DNA Computing (to give talk)	St. Joseph College, Tiruchirapalli	4 March 2014



Sl. No.	Name of Faculty Member	Title	Institution	Period
2	Krishna Moorthy Sivalingam	Workshop/lecture series on software-defined networks and content-centric networks (to give talk)	ISI, Kolkata	14 March 2014
3	Krishna Moorthy Sivalingam	IEEE International Conference on Communication and Signal Processing (to give talk)	Adiparasakthi Engineering College, Melmaruvathur, Chennai	3 April 2014
4	Krishna Moorthy Sivalingam	National Seminar on Wireless Sensor Networks for Water Management (to give talk)	VIT University, Chennai Campus	4 April 2014
5	B. Ravindran	International Conference on Robotics and Automation (ICRA)	Hong Kong	1–7 June 2014
6	B. Ravindran	IKDD Conference on Data Sciences	Bangalore	18–21 March 2015
7	B. Ravindran	International Workshop on Autonomous Vehicles and Mobile Robots	IIT Delhi	6–8 July 2014
8	B. Ravindran	Workshop on Technology for Autonomous Soldier Assist Systems	Jadavpur University	7–9 August 2014
9	B. Ravindran	Workshop on Soft Computing and Applications (SCA)	Noida (organised by ISI, Kolkata)	1–2 September 2014
10	B. Ravindran	IIT Madras–Nissan Workshop on Smart Cities	IIT Madras	12 September 2014
11	B. Ravindran	SIAM Conference on Data Mining (SDM)	Philadelphia, USA	24–27 April 2014
12	B. Ravindran	Neural Information Processing Systems (NIPS)	Montreal, Canada	8–14 December 2014
13	Sayan Ranu	ACM SIGMOD 2014	Snowbird, Utah, USA	22–27 June 2014
14	Sayan Ranu	ICDM 2014 Conference	Shenzhen, China	14–17 December 2014
15	Hema Murthy	IUATC Workshop	Ipswich, UK	4–5 July 2014
16	Hema Murthy	Interspeech 2014	Singapore	12–18 September 2014
17	Hema Murthy	Blizzard Challenge	—	19 September 2014
18	Hema Murthy	Rhythm Workshop	Abu Dhabi	October 2014
19	N.S. Narayanaswamy	First Conference on Algorithms and Discrete Applied Mathematics	IIT Kanpur	February 2015
20	N.S. Narayanaswamy	Ninth Workshop on Algorithms and Computation	Dhaka	February 2015

#### Special lectures delivered by faculty members at other institutions

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
1	B. Ravindran	Some applications of collective learning	Workshop on Soft Computing and Applications, organised by ISI, Kolkata at Noida	2 September 2014
2	B. Ravindran	Learning with networks	IBM I-CARE, Winter School on Big Data Analytics	9 October 2014
3	Sayan Ranu	Trajectory analytics	IBM, I-CARE Winter School on Big Data Analytics	10 October 2014
4	Krishna Sivalingam	Cloud and data centre networking (invited talk)	IBM, I-CARE, Bangalore	10 October 2014
5	Sukhendu Das	Applications of video analytics	Workshop on Video-Analytics, at Madras Institute of Technology, Chennai	10–11 October 2014

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
6	Sayan Ranu	Trajectory analytics	MCKV Institute of Engineering, Liluah, Howrah (faculty development programme)	17 October 2014.
7	Jayalal Sarma	Introduction to complexity theory	Government Engineering College, Sreekrishnapuram, Kerala (faculty development programme)	15–16 January 2015
8	Raghavendra Rao	Introduction to complexity theory	Government Engineering College, Sreekrishnapuram, Kerala (faculty development programme)	15–16 January 2015
9	Rupesh Nasre	Automatic GPU code generation for graph algorithms	Workshop on Emerging Trends in Programming Languages, Mumbai	18 January 2015
10	V. Krishna Nandivada	Efficient programming for multicore systems	Workshop on Emerging Trends in Programming Languages, held along with POPL 2015, Mumbai	18 January 2015
11	Chester Rebeiro	Topics in discrete mathematics and cryptography	DRDO Workshop, IIT Madras Research Park	2–5 February 2015
12	Meghana Nasre	Decremental all pairs ALL shortest paths	CALDAM Pre-conference School on Discrete Mathematics, IIT Kanpur	5 February 2015
13	P. Sreenivasa Kumar	Semantic web technology	Invited talk at IEEE SPICES conference, NIT Calicut	19 February 2015
14	Chester Rebeiro	Security engineering	Loyola ICAM College of Engineering and Technology (LICET), Chennai	27 February 2015
15	Sayan Ranu	Trajectory analytics	Sri Ramakrishna College of Engineering, Coimbatore	28 February 2015

### Visits abroad by faculty members

Sl. No.	Name of Faculty Member	Place Visited	Date	Purpose of Visit	Funding from
1	Sukhendu Das	Germany	20–23 March 2013	DAAD student exchange fellowship programme	VIS and VISUS Institute, Stuttgart University, Germany
2	C. Pandu Rangan	South Korea	29 March to 5 April 2014	Visiting Scientist	Samsung
3	Sutanu Chakraborti	Kathmandu	6–12 April 2014	15th International Conference on Intelligent Text Processing and Computational Linguistics	—
4	B. Ravindran	Philadelphia, USA	23–28 April 2014	Poster presentation at the SIAM Conference on Data Mining	—
5	Krishna Moorthy Sivalingam	Toronto, Canada	28 April to 2 May 2014	IEEE INFOCOM'14 Conference	—
6	B. Ravindran	Sydney	1–5 May 2014	Visit to University of Technology under their Key Technology Partner Programme	—
7	Madhu Mutyam	Cagliari, Italy	9–23 May 2014	ACM International Conference on Computing Frontiers	—
8	Rupesh Nasre	Edinburgh, UK	11–13 June 2014	International Symposium on Memory Management (ISMM)	—
9	N.S. Narayanaswamy	Germany	20 June to 21 July 2014	Collaborative research at Max Planck Institute for Computer Science	DST-IMPECS
10	Sayan Ranu	Snowbird, USA	22–27 June 2014	ACM SIGMOD Conference and Semantic Information Management Workshop	—

Sl. No.	Name of Faculty Member	Place Visited	Date	Purpose of Visit	Funding from
11	John Ebenezer Augustine	Singapore	26 June to 18 July 2014	Collaborative research at Nanyang Technological University	—
12	B. Ravindran	Hong Kong	1–6 June 2014	Presenting a paper titled 'RRT-PI: Policy iteration on continuous domains using rapidly exploring random trees' at International Conference on Robotics and Automation	—
13	B. Ravindran	Philadelphia, USA	24–26 April 2014	Presenting a paper on mining networks and graphs at SIAM Conference on Data Mining	—
14	Hema A. Murthy	BT Adastral Park, UK	1–4 July 2014	Joint technical meeting in connection with India–UK Project	—
15	N.S. Narayanaswamy	Copenhagen, Denmark	2–4 July 2014	14th Scandinavian Symposium and Workshop on Algorithm Theory (SWAT 2014)	CPDA
16	Krishna Moorthy Sivalingam	BT Adastral Park, UK	3–7 July 2014	Joint technical meeting in connection with India–UK Project	—
17	B.V. Raghavendra Rao	Atlanta, USA	3–7 August 2014	20th International Computing and Combinatorics Conference (COCOON'14)	—
18	John Ebenezer Augustine	Philadelphia, USA	11–14 August 2014	ACM International Workshop on Foundation of Mobile Computing (FOMC)	—
19	D. Janakiram	Minneapolis, USA	9–12 September 2014	43rd International Conference on Parallel Processing (ICCP 2014)	—
20	Hema A. Murthy	Singapore	15–19 September 2014	The Ninth International Symposium on Chinese Spoken Language Processing (ISCSLP 2014)	—
21	Hema A. Murthy	Abu Dhabi, U.A.E.	12–15 October 2014	Second International Workshop on Cross-disciplinary and Multi-cultural Perspective Musical Rhythm and Improvisation	—
22	Madhu Mutyam	Seoul, South Korea	18–23 October 2014	32nd IEEE International Conference on Computer Design (session chair)	—
23	Sukhendu Das	Paris, France	27–30 October 2014	IEEE International Conference on Image Processing (ICIP 2014)	—
24	Sukhendu Das	Nottingham, UK	1–5 September 2014	25th British Machine Vision Conference (BMVC 2014)	—
25	Rupesh Nasre	IBM Research New York	6 November 2014	Program Committee Meeting of Principles and Practice of Parallel Programming (PPoPP) 2015DR	—
26	Krishna Moorthy Sivalingam	Rio de Janeiro, Brazil	12–14 November 2014	Wireless Days 2014, conference, to present a paper	—
27	N.S. Narayanaswamy	Dhaka	February 2015	WALCOM 2015, to present a paper	CPDA

#### Honours and awards obtained by faculty members

Sl. No.	Name of Faculty Members	Name of Award	Awarded by	Awarded for	Date of Award
<b>Honours</b>					
1	V. Kamakoti	DRDO Academy Excellence Award 2013	DRDO	Outstanding contributions over several decades in the field of scientific research and technology development—Prof. V. Kamakoti received the award from Mr. Narendra Modi, the Prime Minister of India.	July 2014

Sl. No.	Name of Faculty Members	Name of Award	Awarded by	Awarded for	Date of Award
2	Madhu Mutyam	IIT Madras Young Faculty Recognition Award (YFRA) 2014	IIT Madras	—	5 September 2014
3	B. Ravindran	Yahoo Faculty Award	Yahoo!	—	—
4	Sudharsan J., Venkata Kalyan T. and Madhu Mutyam	PACT 2014 bronze medal	Edmonton, Canada	Poster, 'Data Remapping for an Energy Efficient Burst Chop in DRAM Memory Systems', at ACM Student Research Competition (SRC), held along with the International Conference on Parallel Architectures and Compilation Techniques	—
5	Krishna M. Sivalingam	ACM Distinguished Member (Scientist)	ACM (The Association for Computing Machinery)	ACM has designated 49 scientists, engineers and educators as Distinguished Members for their individual contributions and their singular impacts on the vital field of computing. Their achievements have had a significant influence on the social, economic and cultural areas of daily lives all over the world.	5 December 2014
6	Shankar Balachandran	YFRA 2014	IIT Madras	—	5 September 2014
7	Jayalal Sarma	YFRA 2014	IIT Madras	—	5 September 2014
8	B. Ravindran	Best Student Paper Award	IKDD CoDS 2015 Conference	Joint paper with students	March 2015

#### Editorial boards of journals

Sl. No.	Name of Faculty Member	Position (Editor/Member)	Journal
1	B. Ravindran	Associate Editor	<i>Engineering Proceedings of Indian Academy of Sciences, Sadhana</i>
2	Krishna Nandivada	Associate Editor	<i>Sadhana</i>
3	Krishna Moorthy Sivalingam	Editor-in-Chief	<i>Springer Photonic Network Communications Journal</i>
4	Krishna Moorthy Sivalingam	Editor-in-Chief	<i>EAI Endorsed Transactions on Ubiquitous Environments</i>
5	Anurag Mittal	Associate Editor	<i>Computer Vision and Image Understanding</i> (Elsevier)
6	C. Siva Ram Murthy	Associate Editor	<i>IEEE Transactions on Mobile Computing</i>
7	C. Siva Ram Murthy	Editor	<i>Computer Networks Journal</i> (Elsevier)

#### 4.7.4. Design and Development Activities

##### Processes/instruments/equipment/software designed and developed

Sl. No.	Name of Faculty Member	Title	Details
1	Krishna Nandivada	LSA: Lexical State Analyser	<a href="http://www.cse.iitm.ac.in/~krishna/lisa">http://www.cse.iitm.ac.in/~krishna/lisa</a>
2	Krishna Nandivada	IMSuite: A benchmark tool for analysing distributed algorithms	<a href="http://www.cse.iitm.ac.in/~krishna/imsuite">http://www.cse.iitm.ac.in/~krishna/imsuite</a>
3	Hema Murthy	TTS-based Android systems	—
4	Krishna Moorthy Sivalingam	Smart Grid Co-Simualtor Software based on Open DSS and OMNET++	<a href="http://sourceforge.net/projects/smartgridcosimu/">http://sourceforge.net/projects/smartgridcosimu/</a>

## New facilities added and major equipment procured

Sl. No.	Equipment	Value (lakhs of ₹)
1	Two servers, each with eight cores, 400 GB RAM, 16 TB hard disk	31
2	128-core machine for PACE Lab, for research in the area of HPC	13
3	Cloud computing facility based on 7 Dell R620/R720 servers (2 CPU, 32 GB RAM) (Don Lab: Krishna Sivalingam)	30
4	A server with 512GB RAM, 24TB disk space, and 2 quad core Xeon processors installed to support the research activities	12

## Patents

### Patents filed

Sl. No.	Name of Faculty Member	Topic of Patent
1	B. Ravindran	IDF 1250; Application No. 14/143283 (US), 13 January 2014. Method and Apparatus for Finding Communities in a Network
2	Krishna Nandivada	Indian patent application (with Thangaraj Raja Subramaniam), no. 3161/CHE/2014. System and Method for Determining the Behavioural Integrity of an Application.
3	Krishna Moorthy Sivalingam	A Method for Optimising a Network Topology of a Communication Network, filed jointly with C. Vanniarajan and Krishna M. Sivalingam, in November 2014 by IIT Madras and HCL Technologies
4	Krishna Moorthy Sivalingam	Systems and Methods for Reducing Power Consumption in Passive Optical Networks, filed jointly with C.S. Ganesh, in August 2014 by IIT Madras and HCL Technologies
5	Anurag Mittal	Indian patent application no. 5640/CHE/2013, Sketch-Based Image Retrieval Invariant to Similarities, with Sarthak Parui

### Patents awarded

Sl. No.	Name of Faculty Member	Topic of Patent	Patent No.
1	V. Krishna Nandivada	Systems and Methods for Automatically Optimising High-Performance Computing Programming Languages	US patent no. 8924946 (with Ganesh Bikshandi, Igor Peshanski and Vijay Saraswat)
2	V. Krishna Nandivada	Fault Localization for Data-centric Programs	US patent no. 8892951 (with Satish Chandra, Pankaj Dhoolia, Mangala Gowri Nanda, Diptikalyan Saha, Vibha Singhal Sinha)
3	V. Krishna Nandivada	Transformation of Computer Programs and Eliminating Errors	US patent no. 8806452 (with Pankaj Dhoolia, Anup Kumar Ghosh, Sugata Ghosal, Asidhara Lahiri, Mangala Gowri Nanda, Anjan Nandy and Diptikalyan Saha)
4	V. Krishna Nandivada	Intermediate Form for Bitwidth Sensitive Applications and Uses Thereof	US patent no. 8732680 (with Rajkishore Barik)

## 4.7.5. Research and Consultancy

### Sponsored research projects (ongoing and new)

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹)
1	Kamakoti V.	Indigenous 64-bit Processor Design	Defence Research and Development Organisation	353.00
2	Janaki Ram D.	Self-aware Service-Oriented Component-Based Operating System	Department of Electronics & Information Technology	232.00
3	Hema A. Murthy	Development of Text-to-Speech system in Indian Languages: Phase II	Department of Information Technology	209.16

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹)
4	Anurag Mittal	Development of an Intelligent Adaptive Video Monitoring and Recording System	Department of Information Technology	149.04
5	Hema A. Murthy	Development of Text/Language-Independent Speaker Recognition, Language Identification and Keyword Spotting System for Passive Interception Systems in Adverse Environments	Defence Research and Development Organisation	104.85
6	Hema A. Murthy	Provision of Services in the Performance of the Tasks Described Within the Framework of the CompMusic European Project for the Analysis of the Traditional Carnatic Style of Music from India	University of Pompeu Fabra, Spain	83.00
7	Janaki Ram D.	Design and Development of Mobile Device Security Solution	Department of Electronics & Information Technology	79.20
8	Madhu Mutyam	Exploring Techniques to Optimise Main Memory of Multi-core Systems	Department of Science & Technology (DST)	34.61
9	Siva Ram Murthy C.	Investigating Capacity, Coverage and Energy Efficiency in Heterogeneous Wireless Networks	DST	27.14
10	Nandivada Venkata Krishna	Optimising Parallel Programs for Multi-core Systems	Board of Research in Nuclear Sciences	23.28
11	Anurag Mittal	Robust Feature Detection and Matching for Computer Vision	DST	18.00
12	Nandivada Venkata Krishna	Analyzing Parallel Programs for Performance	DST	13.46
13	Narayanaswamy N.S.	Algebraic and Parameterised Complexities	DST	7.00
14	Nandivada Venkata Krishna	Irregular Parallel Programs and Performance Determinacy: An Oxymoron?	IBM Corporation, USA	6.92
15	Shankar Balachandran	Scalable Algorithms and Tools for Data Analytics	IBM Corporation, USA	6.21
16	Krishnamoorthy Sivalingam	Core Network Systems	DST (Indo-UK)	128
17	Balaraman Ravindran	Interdisciplinary Laboratory for Data Sciences	Team Research Project	198.00
18	Rupesh Nasre	Automatic Acceleration of Irregular Algorithms	New Faculty Scheme	25.00
19	Sayan Ranu	Indexing, Mining and Modeling of Dynamic Graphs	New Faculty Scheme	22.00
20	Rupesh Nasre	Performance Analysis of Multi-core Programs	New Faculty Scheme	16.00
21	Jayalal Sarma	Resource Bounds for Boolean/Arithmetic Circuits under Combinatorial and Algebraic Constraints	New Faculty Scheme	14.25
22	John Augustine	Algorithms for Large, Dynamic Distributed Environments	New Faculty Scheme	8.35
23	John Augustine	Exploring the Foundations of Inexact Computing	Exploratory Research Project	7.50
24	Raghavendra Rao B.V.	Smoothed Analysis of Discrete Approximation Algorithms	New Faculty Scheme	6.78
25	Narayanaswamy, Jayalal Sarma, John Augustine, Raghavendra Rao	Algebraic and Parameterized Complexities	IMPECS Group Research Grant	10

### RBIC projects (ongoing and new)

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Principal Investigators
1	Consumer Behaviour Analysis	1 June 2012 to 31 December 2015	Ericsson India Private Limited	30.00	Ravindran B.



Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Principal Investigators
2	Extensible Automotive Ontology Re-engineering	19 October 2012 to 17 September 2015	Ford Motor Company	28.00	Sreenivasa Kumar P.
3	Query-able Knowledge Base for Medical Coding Taxonomy	15 March 2014 to 31 March 2016	Claritrics Technologies Private Limited	10.00	Ravindran B.
4	Semi-supervised Active Learning for Examining Wafers	23 June 2014 to 31 December 2016	KLA Tencor Software India Private Limited	7.76	Ravindran B.
5	Service Discovery Establishment and Service Assurance	2 April 2014 to 30 September 2015	NMS Works Software Private Limited	5.66	Krishnamoorthy Sivalingam
6	Development of Techniques for Cluster Canonical Correlation Analysis and Recommender Systems	15 September 2014 to 31 March 2016	Yahoo Software Development India Private Limited	3.02	Ravindran B.
7	Information Technology (IT)-Related Activities in the Bank	19 March 2010 to 31 October 2015	Indian Overseas Bank	0.44	Kamakoti V.
8	Computer Network and Systems	1 March 2013 to 28 February 2016	Common Code	0.00	Krishnamoorthy Sivalingam
9	Semi-supervised Active Learning for Examining Wafers	—	KLA Tencor Software India Private Limited	7.76	B. Ravindran

#### Retainer consultancy (ongoing and new)

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹)
1	Kamakoti V.	AFDX Switch Architecture	Defence Research & Development Organisation	9.95
2	Kamakoti V.	Hardware Related Security and Performance Review	Tata Consultancy Services	2.00
3	Janaki Ram D.	Data Research and Development	eBay Inc.	1.80

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹)
1	Balaraman Ravindran	Interdisciplinary Laboratory for Data Sciences	Team Research Project	198.00
2	Rupesh Nasre	Automatic Acceleration of Irregular Algorithms	New Faculty Scheme	25.00
3	Sayan Ranu	Indexing, Mining and Modeling of Dynamic Graphs	New Faculty Scheme	22.00
4	Rupesh Nasre	Performance Analysis of Multi-Core Programs	New Faculty Scheme	16.00
5	Jayalal Sarma	Resource Bounds for Boolean/Arithmetic Circuits Under Combinatorial and Algebraic Constraints	New Faculty Scheme	14.25
6	John Augustine	Algorithms for Large Dynamic Distributed Environments	New Faculty Scheme	8.35
7	John Augustine	Exploring the Foundations of Inexact Computing	Exploratory Research Project	7.50
8	Raghavendra Rao B.V.	Smoothed Analysis of Discrete Approximation Algorithms	New Faculty Scheme	6.78

#### Research publications of faculty members and research scholars

Papers published in refereed international journals:	20
Papers presented at national conferences:	5
Papers presented at international conferences:	73

### Papers published in refereed international journals

1. C. Chattopadhyay and S. Das. August 2014. Prominent moving object segmentation from moving camera video shots using iterative energy minimization. *Signal Image and Video Processing (SIViP, Springer)* 1–8. (online version)
2. A.D. Dileep and C.C. Sekhar. August 2014. GMM-based intermediate matching kernel for classification of varying length patterns of long duration speech using support vector machines. *IEEE Transactions on Neural Networks and Learning Systems* 25(8): 1421–1432.
3. R. Rao and J. Sarma. 2014. Complexity of matroid reachability. *Chicago Journal of Theoretical Computer Science* Art no. 5: 1–18.
4. S. Madikeri, A. Talambedu and H.A. Murthy. 2015. Modified group delay feature based total variability space modelling for speaker recognition. *International Journal of Speech Technology (Springer)* 18: 17–23 doi:10.1007/s10772-014-9243-7
5. S. Gulati, A. Bellur, J. Salamon, V. Ishwar, H.A. Murthy and X. Serra. 2014. Automatic tonic identification in Indian art music: Approaches and evaluation. *Journal of New Music Research (Taylor and Francis)* 43(1): 53–71.
6. P. Rao, J.C. Ross, K.K. Ganguli, V. Pandit, V. Ishwar, A. Bellur and H. Murthy. 2014. Melodic motivic analysis of Indian music. *Journal of New Music Research (Taylor and Francis)* 43(1): 115–131.
7. C.S. Ganesh and K.M. Sivalingam. December 2014. Load dependent power-efficient passive optical network architectures. *OSA/IEEE Journal of Optical Communications and Networking* 6(12): 1104–1114.
8. L.-P. Tung, Y.-D. Lin, Y.-H. Kuo, Y.-C. Lai and K.M. Sivalingam. Reducing power consumption in LTE data scheduling with the constraints of channel condition and QoS. *Computer Networks Part A (Elsevier)* 75: 149–159.
9. S. Joshi and K.M. Sivalingam. 2014. Fault tolerance mechanisms for virtual data center architectures. *Photonic Network Communications Journal (Springer)* 28(2): 154–164.
10. D. Lokshantov, N.S. Narayanaswamy, V. Raman, M.S. Ramanujan and S. Saurabh. 2014. Faster parameterized algorithms using linear programming. *ACM Transactions on Algorithms* 11(2): 15: 15–31.
11. N.S. Narayanaswamy and R. Subashini. 2015. Obtaining matrices with the consecutive one's property by row deletions. *Algorithmica* 71(3): 758–773.
12. N.S. Narayanaswamy and G. Ramakrishna. 2015. On minimum average stretch spanning trees in polygonal 2-trees. *Theoretical Computer Science* 575: 56–70.
13. V. Mahendran, G. Rajkishan and C.S.R. Murthy. 2014. Performance modeling of delay-tolerant network routing via queueing Petri nets. *IEEE Transactions on Mobile Computing* 13(8): 1816–1828.
14. S. Mishra, S. Rangineni and C.S.R. Murthy. 2014. Exploiting an optimal user association strategy for interference management in HetNets. *IEEE Communications Letters* 18 (10): 1799–1802.
15. S. Gupta and V.K. Nandivada. 2015. IMSuite: A benchmark suite for simulating distributed algorithms. *Journal of Parallel and Distributed Computing (JPDC, Elsevier)*.
16. K. Gupta and V.K. Nandivada. 2015. Lexical state analyzer for JavaCC grammars. *Software: Practice and Experience (SPE)*.
17. B.P. Priyadharsini, V.S. Chakravarthy, B. Ravindran and A.A. Moustafa. 16 April 2014. An extended reinforcement learning model of basal ganglia to understand the contributions of serotonin and dopamine in risk-based decision making, reward prediction, and punishment learning. *Frontiers of Computational Neuroscience* 8(47).
18. A. Patra, A. Choudhury and C.P. Rangan. 2015. Efficient asynchronous verifiable secret sharing and multiparty computation. *Journal of Cryptology* 28(1): 49–109.
19. A. Patra, A. Choudhury and C.P. Rangan. 2014. Asynchronous Byzantine agreement with optimal resilience. *Distributed Computing* 27(2): 111–146.
20. S. Kailasam, P. Dhawalia, S.J. Balaji, G. Iyer and J. Dharanipragada. 2014. Extending MapReduce across clouds with BStream. *IEEE Transactions on Cloud Computing* 2(3): 362–376.

### Papers presented at national conferences

1. J. Kuriacose, P. Sarala, H.A. Murthy and U.K. Sivaraman. 2015. Akshara transcription of mrudungam strokes in Carnatic music. *Proceedings of NCC 2015*, February.
2. J. Sebastian, P.A.M. Kumar and H.A. Murthy. 2015. Pitch estimation from speech using grating compression transform on modified group-delay-gram. *Proceedings of NCC 2015*, Mumbai, February.
3. P.A.M. Kumar, J. Sebastian and H.A. Murthy. 2015. Musical onset detection on Carnatic percussion instruments. *Proceedings of NCC 2015*, Mumbai, February.
4. S. Varma, K.M. Sivalingam, L.-P. Tung and Y.-D. Lin. 2015. Analytical model for power savings in LTE networks using DRX mechanism. *Proceedings of NCC 2015*, Mumbai, February.

5. N. Gupta, S. Das and S. Chakraborti. 2014. Revealing what to extract from where, for object-centric content-based image retrieval (CBIR). *Proceedings of the 2014 Indian Conference on Computer Vision, Graphics and Image Processing, (ICVGIP'14)*, Bangalore, India, 14–18 December.

#### Papers presented at international conferences

1. S. Ranu, M. Hoang and A.K. Singh. 2014. Answering top-k representative queries on graph databases. *ACM SIGMOD*, June.
2. S. Ranu, M. Hoang and A.K. Singh. 2014. Applications of top-k representative queries. *Semantic Web Information Management*, June.
3. V. Chellappan, K.M. Sivalingam and K. Krithivasan. 2014. An entropy maximization problem in shortest path routing networks. *20th IEEE International Workshop on Local and Metropolitan Area Networks (LANMAN)*, Reno, Nevada, USA, May.
4. Raghavendra, T. Warriar and M. Mutyam. 2014. SAMO: Store aware memory optimizations. *ACM International Conference on Computing Frontiers (CF)*, Cagliari, Italy, 20–22 May.
5. R. Nasre. 2014. Auto-parallelization of data structure operations for GPUs. *International Conference on Compilers, Architecture and Synthesis of Embedded Systems (CASES)*, New Delhi, 12–17 October.
6. A. Kajwe and M. Mutyam. 2014. Improving fairness in memory scheduling using a team of learning automata. *The Memory Forum*, co-located with ISCA Minneapolis, Minnesota, 14 June.
7. B. Ratnakar and R. Nasre. 2014. Push-pull constraint graph for efficient points-to analysis. *International Symposium on Memory Management (ISMM)*, Edinburgh, UK. June.
8. C.S. Ganesh and K.M. Sivalingam. 2014. Scheduling in data center networks with optical traffic grooming. *Third IEEE International Conference on Cloud Networking (CLOUDNET)*, Luxembourg, October.
9. M. Mahajan, B.V.R. Rao and K. Sreenivasaiah. 2014. Building above read-once polynomials: Identity testing and hardness of representation. *20th International Computing and Combinatorics Conference (COCOON'14)*, Atlanta, Georgia, USA, 4–6 August.
10. M. Mahajan, B.V.R. Rao and K. Sreenivasaiah. 2014. Building above read-once polynomials: Identity testing and hardness of representation. *20th International Computing and Combinatorics Conference (COCOON'14)*, Atlanta, Georgia, USA, 4–6 August.
11. S. Koroth and J. Sarma. 2014. Depth lower bounds against circuits with sparse orientation. *20th International Conference on Computing and Combinatorics (COCOON'14)*, Atlanta, Georgia, USA, 4–6 August.
12. B. Komarath, J. Sarma and K.S. Sunil. 2014. On the complexity of L-reachability. *International Conference on Descriptive Complexity and Formal Systems (DCFS 2014)*, Turku, Finland, 5–9 August.
13. S. Samanta, T. Selvan and S. Das. 2014. Modeling sequential domain shift through estimation of optimal sub-spaces for categorization. *25th British Machine Vision Conference (BMVC 2014)*, Nottingham, UK 1–5 September. Work partly supported by TCS Innovation Lab (India).
14. R. Sharma, S. Das and P. Joshi. 2014. Dictionary based framework for face recognition, designed mutually for single training sample (STS) and degraded set (DS). *International Joint Conference on Biometrics (IJCB-2014)*, Clearwater, Florida, USA, September–October.
15. S. Parui and A. Mittal. 2014. Similarity-invariant sketch-based image retrieval in large databases. *13th European Conference on Computer Vision (ECCV)*, Zurich, Switzerland, September.
16. R. Nasre. 2014. Auto-parallelization of data structure operations for GPUs. *International Conference on Compilers, Architecture and Synthesis of Embedded Systems*, New Delhi, 13–15 October.
17. P. Majumder, T.V. Kalyan and M. Mutyam. 2014. SFFMap: Set-first\_fill mapping for an energy efficient pipelined data cache. *IEEE International Conference on Computer Design*, Seoul, South Korea, 19–22 October.
18. N. Gupta, S. Das and S. Chakraborti. 2014. Hierarchy of visual features for object recognition. *21st IEEE International Conference on Image Processing (ICIP-2014)*, Paris, France, 27–30 October.
19. S. Samanta and S. Das. 2014. Unsupervised domain adaptation using manifold alignment for object and event categorization. *21st IEEE International Conference on Image Processing (ICIP-2014)*, Paris, France, 27–30 October (oral presentation). Work partly supported by TCS Innovation Lab (India). Short-listed among top 1% of accepted papers, as finalist for best paper award.
20. P. Shrivastava and S. Das. 2014. Physics based virtual cutting using J-integral method for gaming applications. *7th International ACM SIGGRAPH Conference on Motion in Games (MIG-2014)*, Los Angeles, California, USA, 6–8 November.
21. S. Varma, K.M. Sivalingam, L.-P. Tung and Y.-D. Lin. 2014. Dynamic DRX algorithms for reduced energy consumption and delay in LTE networks. *Wireless Days Conference*, (Rio de Janeiro, Brazil), 12–14 November.
22. A.D. Dileep and C.C. Sekhar. 2014. HMM based intermediate matching kernel for classification of sequential patterns of speech using support vector machines (invited presentation). *Second IEEE International Global Conference on Signal and Information Processing (GlobalSIP)*, Atlanta, Georgia, USA, 3–5 December.

23. P. Shrivastava and S. Das. 2014. GPU-based particle coding scheme for virtual cutting of mesh-free particle system. *Proceedings of the 10th International Symposium on Visual Computing (ISVC-2014)*, Las Vegas, Nevada, USA, 8–10 December.
24. P. Banerjee, S. Ranu and S. Raghavan. 2014. Inferring uncertain trajectories from partial observations. *IEEE ICDM*, 14–17 December.
25. S. Banerjee, S. Samanta and S. Das. 2014. Face recognition in surveillance conditions with bag-of-words using unsupervised domain adaptation. *ACM Proceedings of the Ninth Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP-2014)*, IISc, Bangalore, 14–18 December.
26. S.G. Nayak and C.C. Sekhar. 2014. Techniques for improving the performance of image retrieval using relevance feedback. *ACM Proceedings of the Ninth Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP-2014)*, IISc, Bangalore, 14–18 December.
27. P. Shrivastava and S. Das. 2014. Method of particle coding for mesh-free cutting of soft objects. *ACM Proceedings of the Ninth Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP-2014)*, IISc, Bangalore, 14–18 December.
28. R.K. Raman and C.C. Sekhar. 2014. Concept-level discriminant analysis techniques for dimension reduction in image classification tasks. *ACM Proceedings of the Ninth Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP-2014)*, IISc, Bangalore, 14–18 December.
29. N. Gupta, S. Das and S. Chakraborti. 2014. Revealing what to extract from where for object-centric content based image retrieval (CBIR). *ACM Proceedings of the Ninth Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP-2014)*, IISc Bangalore, Karnataka, India, 14–18 December.
30. S. Roy and S. Das. 2014. Multi-criteria energy minimization with boundedness edge-density and rarity for object saliency in natural images. *ACM Proceedings of the 9th Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP-2014)*, IISc, Bangalore, Karnataka, India, 14–18 December.
31. M. Nasre, M. Pontecorvi and V. Ramachandran. 2014. Incremental all pairs all shortest paths and betweenness centrality. *25th International Symposium on Algorithms and Computation (ISAAC 2014)*, Jeonju, South Korea, 15–17 December.
32. A. Dhayal, J. Sarma and S. Sawlani. 2014. Polynomial min/max-weighted reachability is in unambiguous logspace. *34th International Conference on Foundations of Software Technology and Theoretical Computer Science, (FSTTCS 2014)*, 16 December.
33. A. Ravi, P. Ramanathan and K.M. Sivalingam. 2014. Integrated network coding and caching in information-centric networks. *IEEE International Conference on Advanced Networks and Telecommunication Systems (ANTS)*, Delhi, India, 17 December.
34. V. Dalmau, A. Krokhnin and R. Manokaran. 2015. Towards a characterization of constant-factor approximable min CSPs. *ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 4–6 January.
35. N. Sarangi and C.C. Sekhar. 2015. Automatic image annotation using convex deep learning models. *International Conference on Pattern Recognition Applications and Methods*, Lisbon, Portugal, January.
36. A. Setia and A. Mittal. 2015. Co-operative pedestrians group tracking in crowded scenes using an MST approach. *IEEE Winter Conference on Applications of Computer Vision (WACV)* (WACV), Hawaii, January.
37. A.D. Dileep and C.C. Sekhar. 2014. HMM based intermediate matching kernel for classification of sequential patterns of speech using support vector machines. *IEEE Global Conference on Signal and Information Processing*, Atlanta, USA, 3–5 December. Invited paper.
38. S. Fiorini, R. Krithika, N.S. Narayanaswamy and V. Raman. 2014. LP approaches to improved approximation for clique transversal in perfect graphs. *22nd European Symposium on Algorithms 2014*, Worclaw, Poland, September.
39. G. Singh, N.S. Narayanaswamy and G. Ramakrishna. 2015. Approximate distance oracle in  $O(n^2)$  time and  $O(n)$  space for chordal graphs. *Ninth Workshop on Algorithms and Computation 2015*, Dhaka, February.
40. N.S. Narayanaswamy and A. Srinivasan. 2015. Tree path labeling of hypergraphs: A generalization of the consecutive ones property. *First Conference on Algorithms and Discrete Mathematics 2015*, IIT Kanpur, February.
41. S. Mishra, R. Thakur and C.S.R. Murthy. 2014. An efficient physical resource block assignment for dense femtocell networks. *Proceedings of 79th IEEE Vehicular Technology Conference (VTC)*, Seoul, South Korea, 18–21 May.
42. M. Patra, S. Mishra and C.S.R. Murthy. 2014. An analytic hierarchy process-based approach for optimal road side unit placement in vehicular *ad hoc* networks. *Proceedings of 79th IEEE Vehicular Technology Conference (VTC)*, Seoul, South Korea, 18–21 May.
43. D.C. Vageesh, M. Patra and C.S.R. Murthy. 2014. Joint placement and sleep scheduling of grid-connected solar powered road side units in vehicular networks. *Proceedings of 12th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt)*, Hammamet, Tunisia, 12–16 May.



44. R. Singh, S. Mishra and C.S.R. Murthy. 2014. A multi-tier cooperative resource partitioning technique for interference mitigation in heterogeneous cellular networks. *Proceedings of 12th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt)*, Hammamet, Tunisia, 12–16 May.
45. G. Venkatadri, V. Mahendran and C.S.R. Murthy. 2014. Joint message scheduling and drop policies for many-to-many communication in delay-tolerant networks. *Proceedings of 22nd IEEE International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems, (MASCOTS)*, Paris, France, 9–11 September.
46. R. Singh, S. Manikantan and C.S.R. Murthy. 2015. A learning-based mobile user traffic characterization for efficient resource management in cellular networks. *Proceedings of 12th Annual IEEE Consumer Communications & Networking Conference (CCNC)*, Las Vegas, USA, 9–12 January.
47. H. Kapil and C.S.R. Murthy. 2015. Rainbow product ranking based relay placement and adaptive retransmission scheme for a reliable 802.15.4e LLDN. *Proceedings of 16th IEEE International Conference on Industrial Technology (ICIT)*, Seville, Spain, 17–19 March.
48. S. Patil and B. Ravindran. 2015. Active learning based weak supervision for textual survey response classification. *Proceedings of the 16th International Conference on Intelligent Text Processing and Computational Linguistics (CICLing 2015)*, March.
49. R.K. Pasumarthi, R. Narayanam and B. Ravindran. 2015. Near-optimal strategies for targeted marketing on social networks. *Proceedings of the Fourteenth International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2015)*, March. ACM Press. Short paper.
50. S. Gurukar, S. Ranu and B. Ravindran. 2015. COMMIT: A scalable approach to mining communication motifs from dynamic networks. *Proceedings of ACM SIGMOD Conference on Management of Data*, February. ACM Press.
51. S. Roy and B. Ravindran. 2015. Measuring network centrality using hypergraphs. *Proceedings of the Second ACM-ICDD Conference on Data Sciences (IKDD CoDS)*, January.
52. S. Rongali, A.P.S. Chandar and B. Ravindran. 2015. From multiple views to single view: A neural network approach. *Proceedings of the Second ACM-ICDD Conference on Data Sciences (IKDD CoDS)*, January.
53. A.P.S. Chandar, S. Lauly, H. Larochelle, M. Khapra, B. Ravindran, V. Raykar and A. Saha. 2014. An autoencoder approach to learning bilingual word representations. *Proceedings of the Neural Information Processing Systems conference (NIPS 2014)*, December.
54. A. Chrungoo, S.S. Manimaran and B. Ravindran. 2014. Activity recognition for natural human robot interaction. *Proceedings of the Fifth International Conference on Social Robotics (ICSR 2014)*, October, pp. 84–94.
55. P. Vijayan, S. Shivashankar and B. Ravindran. 2014. Multi-label collective classification in multi-attribute multi-relational network data. *Proceedings of the IEEE/ACM International Conference on Social Networks Analysis and Mining (ASONAM 2014)*, September, pp. 509–514.
56. S.S. Manimaran and B. Ravindran. 2014. RRTP: Policy iteration on continuous domains using rapidly-exploring random trees. *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA 2014)*, May.
57. S. Badrinarayanan and C. Pandu Rangan. 2014. Pairing-free single round certificateless and identity based authenticated key exchange protocols. *SECURITY 2014: Proceedings of the 11th International Conference on Security and Cryptography*, Vienna, Austria, 28–30 August.
58. K. Singh, C. Pandu Rangan and A.K. Banerjee. 2014. Efficient lattice HIBE in the standard model with shorter public parameters. *Information and Communication Technology—Second IFIP TC5/8 International Conference, ICT-EurAsia 2014*, Bali, Indonesia, 14–17 April, *Proceedings Lecture Notes in Computer Science 8407*, Springer, ISBN 978-3-642-55031-7.
59. K. Singh, C. Pandu Rangan and A.K. Banerjee. 2014. Lattice-based identity-based unidirectional proxy re-encryption scheme. *Security, Privacy, and Applied Cryptography Engineering—4th International Conference, SPACE 2014*, Pune, India, 18–22 October.
60. V.P. Metta, S. Raghuraman and K. Krithivasan. 2014. Small universal spiking neural P systems with cooperating rules as function computing devices. *International Conference on Membrane Computing 2014*, August, pp. 300–313.
61. V.P. Metta, S. Raghuraman and K. Krithivasan. 2014. Spiking neural P systems with cooperating rules. *International Conference on Membrane Computing 2014*: August, pp. 300–313.
62. A. Raj, A. Bulakh, S. Kumar and J. Dharanipragada. 2014. Incentive-driven QoS for ephemeral virtual clouds. *IEEE Sixth International Conference on Cloud Computing Technology and Science, CloudCom 2014*, Singapore, 15–18 December.
63. P. Dhawalia, S. Kailasam and D. Janakiram. 2014. Chisel++: Handling partitioning skew in MapReduce framework using efficient range partitioning technique. *DIDC'14, Proceedings of the 2014 ACM International Workshop on Data Intensive Distributed Computing*, Vancouver, BC, Canada, 23–27 June.

64. H. Haridas, S. Kailasam and J. Dharanipragada. 2014. Cloudy knapsack problems: An optimization model for distributed cloud-assisted systems. *14th IEEE International Conference on Peer-to-Peer Computing, P2P 2014*, London, UK, 9–11 September.
65. S. Hingmire and S. Chakraborti. 2014. Sprinkling topics for weakly supervised text classification. *Proceedings of the 52nd Annual Meeting of the Association for Computational Linguistics, ACL 2014*, Baltimore, 22–27 June.
66. S.V.P. Kumar, S. Chakraborti and S. Sripada. 2014. Learning to summarize time series data. *Computational Linguistics and Intelligent Text Processing: 15th International Conference, CICLing 2014*, Kathmandu, Nepal, 6–12 April.
67. K.V.S. Dileep and S. Chakraborti. 2014. Estimating case base complexity using fractal dimension. *Case-Based Reasoning Research and Development: 22nd International Conference, ICCBR 2014*, Cork, Ireland, 29 September to 1 October.
68. S. Shekhar, S. Chakraborti and D. Khemani. 2014. Linking cases up: An extension to the case retrieval network. *Case-Based Reasoning Research and Development: 22nd International Conference, ICCBR 2014*, Cork, Ireland 29 September to 1 October.
69. S.R. Vasudevan and S. Chakraborti. 2014. Enriching case descriptions using trails in conversational recommenders. *Case-Based Reasoning Research and Development: 22nd International Conference, ICCBR 2014*, Cork, Ireland, 29 September to 1 October.
70. N. Gupta, S. Das and S. Chakraborti. 2014. Hierarchy of visual features for object recognition. *IEEE International Conference on Image Processing, ICIP 2014*, Paris, France, 27–30 October.
71. S. Hingmire and S. Chakraborti. 2014. Topic labeled text classification: A weakly supervised approach. *The 37th International ACM SIGIR Conference on Research and Development in Information Retrieval, SIGIR'14*, Gold Coast, QLD, Australia 6–11 July.
72. S.R. Vasudevan and S. Chakraborti. 2014. Mining user trails in critiquing based recommenders. *23rd International World Wide Web Conference, WWW'14*, Seoul, South Korea, 7–11 April 2014. Companion volume.
73. P. Sarala and H.A. Murthy. 2014. Cent filter-banks and its relevance to identifying the main song in carnatic music. *Sound, Music, and Motion—10th International Symposium, CMMR 2013*, Marseille, France, 15–18 October 2013. Revised Selected Papers, Springer Verlag (2014) (Book Chapter)

### Distinguished visitors to the department

Sl. No.	Name of the Visitor and Designation	Purpose of Visit	Date
1	Dr. Partha Narasimhan (and team), CTO/ Enterprise, Aruba Networks, San Jose, CA, USA	Lab visit	7 March 2014
2	Prof. Suraj Kothari, Iowa State University, USA	Department Visit	27 June 2014
3	Prof. Devika Subramanian, Rice University, Houston, TX, USA	Research interactions with the faculty	4 July 2014
4	Dr. Pradeep Ravikumar, University of Texas, Austin, USA	Department seminar	7 July 2014
5	Dr. Venkatesan Guruswami, Professor, CMU, USA	Research interactions with the faculty and students	31 July to 1 August 2014
6	Manish Gupta, ACM Fellow, VP. Xerox Inc.	Technology talk and meeting the faculty and students	24 October 2014
7	Dr. Jai Menon, VP, Dell Research	Seminar talk, 'Disruptive trends: Evolution of enterprise storage and servers through 2020'	1 December 2014
8	Dr. Theja Tulabandhula, Xerox Research Center India	Seminar talk, 'Robust optimisation using machine learning for uncertainty sets'	1 December 2014
9	Prof. P. Sadayappan, Ohio State University, USA	Seminar talk and research meetings with the faculty and students	12 December 2014
10	Dr. Ranjit Kumaresan, Post-doctoral Researcher at MIT	Seminar talk, 'How to use Bitcoin to design fair protocols'	12 December 2014
11	Prof. Magesh Chandramouli, Purdue University	Seminar talk, 'Genetic algorithms and multi- objective optimisation in computer graphics and 3D'	12 December 2014
12	Shivani G. Rao, an alumna of our department, with a Ph.D. from Purdue University	Seminar talk, 'Mining software repositories for IR-based bug localisation'	19 December 2014



Sl. No.	Name of the Visitor and Designation	Purpose of Visit	Date
13	Dr. Mohan Sridharan, University of Auckland	Seminar talk, 'Towards an architecture for human-robot collaboration'	22 December 2014
14	Dr. Srikanth Ramaswamy, EPFL	Seminar talk, 'Reconstructing the neocortical microcircuit in silico'	23 December 2014
15	Dr. Siddharth Barman, Post-Doctoral Fellow, CALTECH	Seminar talk, 'Approximating and testing equilibria'	17 February 2015
16	Dr. Gautam Dasarathy, CMU	Seminar talk, 'On the data requirement for learning the tree of life from multiple genes'	26 February 2015

#### 4.7.6. Other Activities of the Department

- Saurabh Kalikar (CS14S021) had a poster, 'Locking for Hierarchical Data Structures', accepted at the Student Poster Session in the Principles of Programming Languages Conference.
- Sudhir Samrit (CS13M051) had a poster, 'Application Tailored Graph Compression', accepted at the Student Research Symposium in High Performance Computing.
- Shashidhar G. (CS14S022), Saurabh Kalikar (CS14S021) and Shrinivas Devshatwar (CS13M059) received SIGPLAN scholarship grants to attend the mentoring workshop at the Principles of Programming Languages Conference.
- Suranjana Samanta, Ph.D. research scholar, gave a talk, 'Domain adaptation for computer vision tasks', at TCS Innovation Lab, New Delhi, on 8 August 2014.
- S. Mohana Prasad, Sanjay Ganapathy and R. Krishnan's team was selected for the ACM ICPC 2014 Onsite Regional Contest.
- Sundar Annamalai, Karthik Vishwanathan and Ajay Krishna's team was selected for the ACM ICPC 2014 Onsite Regional Contest.
- Bollu Ratnakar (CS13M013)'s poster, 'Constraint Graph Reachability' was accepted at the IMPECS-PoPL Workshop on Emerging Research and Development Trends in Programming Languages (WEPL) 2015.
- Mohammed Shamil (CS11B042) was selected for a semester exchange at Technische Universität München, Germany.
- Raghavendra K. (CS10D003) and Jyothis V. (CS10D001) win the third prize in the NVIDIA CUDA coding challenge.
- Three Ph.D. scholars (Neel T. Gala, Geethu Miriam Jacob and Ditty Mathew) were selected for the TCS Research Fellowship Award.
- Ajay Krishna, Sundar Annamalai and Karthik Vishwanathan's team (B.Tech. students) won the ACM ICPC Multi-Provincial Programming Contest and advanced to the ACM ICPC World Final—2015, Morocco, 6–21 May 2015 at the ACM Inter-collegiate Programming Contest (ICPC).
- Raghavendra and Jyothis (Ph.D. scholars) won the third prize at the NVIDIA Parallel Programming Contest—2014. A total of 1500 students from 350 universities from across India participated.

#### Interdisciplinary group achievements of the department

Dr. B. Ravindran headed an interdisciplinary team that was awarded team research grants of ₹2 crores by IIT Madras. Now he is working on setting up an interdisciplinary laboratory for data sciences.

#### Socially relevant activities carried out by the department

Sl. No.	Name of Faculty Member	Title
1	Hema Murthy	Integration of TTS with Android platform
2	Hema Murthy	SMS reader for the smart phone

#### International collaboration achievements of the department

##### Faculty visits

Sl. No.	Name of the Faculty Member	Place of Visit	Date
1	Hema Murthy	IUATC Workshop, Ipswich, UK	4–5 July 2014
		Interspeech, Singapore	12–18 September 2014
		Blizzard Challenge, Singapore	19 September 2014
		Rhythm Workshop, Abu Dhabi	October 2014

Sl. No.	Name of the Faculty Member	Place of Visit	Date
2	B. Ravindran	University of Technology, Sydney, under their Key Technology Partner Programme	20 April to 15 May 2014
		Workshop on health care analytics organised jointly with Penn State University (PSU), IIT Madras	27–29 January 2015
		Funding obtained for second joint workshop with PSU from Indo–US Science and Technology Forum (IUSSTF)	—
		Participated in the Yale GALE meetings	January 2015

### Student visits

Sl. No.	Name of the Student	Purpose of Visit	Date and Venue
1	Aditi Raghunathan (III year B.Tech)	Selected for the prestigious S.N. Bose Scholars Programme 2015, with support of DST, University of Wisconsin Madison and Indo–US Science and Technology Forum	Stanford University, summer 2015
2	Dhanvin Mehta	Dhanvin Mehta (DD) had meetings with a team at Duke University and has been jointly working with them for over a year	January–February 2015 and May–July 2015, Duke University
3	Sarath Chandar	Sarath Chandar (MS) is collaborating with a team from Sherbrooke University, Canada	August–September 2014, Sherbrooke University, Canada

### Activities initiated

#### Major infrastructure development in the department

- During the year, the department procured the following major equipment for the Departmental Computing Facilities (DCF) and various research labs:
- Three 20 KVA Emerson Libert UPS at a cost of ₹11.5 lakhs with parallel logic systems and redundancy to replace a 10-year-old 20 KVA UPS. These support the faculty offices, core switches, DCF Server facilities and four research labs.
- Two HP Proliant DL380P servers for the department's email facilities at a cost of ₹8.0 lakhs to replace 8-year-old servers.
- Thirty client systems (HP EliteDesk–Intel Core i7) to replace 10-year-old Celeron systems at a cost of ₹15.0 lakhs in the DCF.

## 4.8. DEPARTMENT OF ELECTRICAL ENGINEERING

### 4.8.1. Introduction

The department comprises several laboratories, grouped into five major areas:

- EE1—Communications, Signal Processing and Communication Networks
- EE2—Power Systems, Power Electronics and High Voltage
- EE3—Microelectronics, MEMS and Analog and Digital VLSI
- EE4—Control Systems, Measurements and Instrumentation
- EE5—Photonics, Optical Communications and RF

All faculty members in the department have Ph.D. degrees, received from reputed universities.

#### **EE1—Communications, Signal Processing and Communication Networks**

##### **Facilities**

- Vector network analyser
- Circuit simulation and layout tools
- True RMS voltmeter
- RF frequency generator and spectrum analysers
- Wide-band noise generator
- Logic analysers
- DSP emulators
- FPGA facilities
- Digital communication trainer
- HP ADS system

#### **EE2—Power Systems, Power Electronics and High Voltage**

##### **Facilities**

##### **Machines and Drives Laboratory**

- Motor generator sets
- Cradle-type DC dynamometer
- Regulating transformer
- Torque transducer
- Data acquisition systems
- Vector visualiser
- Special-purpose AC supply generators
- Measurement storage oscilloscopes
- Microprocessor-based drive systems
- Simulation software for power electronic systems, PSIU
- Magnet—2D, 3D FEM software
- Motor control DSP kits
- FPGA kits—Altera, Xilinx
- Multilevel inverters

##### **High-Voltage and Power System Laboratory**

- HV testing transformer (800 KV, 400 KVA)
- Lightning impulse generator (1.5 MV, 37.5 KJ)
- High-frequency voltage generator
- Digital bandwidth storage oscilloscopes
- Capacitance measurement unit
- PD detector unit
- Power system simulator
- Power system analysis and application software

- Power quality monitoring and analysis unit
- Facts and custom power devices experimental units
- DSP-based power controllers

### **EE3—Microelectronics, MEMS and Analogue and Digital VLSI**

#### **Facilities**

##### **Microelectronics and MEMS Lab**

- Class 100/Class 1000 clean rooms
- Laser writer for making masks
- E-beam writer
- E-beam metallization unit
- Sputtering units
- Furnaces for oxidation and diffusion
- Rapid thermal processing
- Double-sided mask aligner and exposure systems
- PECVD systems
- LPCVD system
- Reactive ion etching systems
- DRIE
- Substrate bonder
- Wire bonder
- Dicing machine
- Glove box for organic electronics

##### **Characterisation Lab**

- Spectroscopic ellipsometer
- Interferometric 3D surface profiler
- Four-point probe
- Confocal microscope
- Tabletop SEM
- Wafer probe stations
- Semiconductor parametric analyser
- Multifrequency LCR meters
- Cantisens
- Doppler vibrometer
- Solar simulator
- Device and MEMS simulation tools

##### **Analogue and Digital Circuits and VLSI Design Lab**

- Workstations and EDA tools for complete IC design flow
- EPLD/FPGA design software and workstations
- DSP kits and workstations
- IC test facilities

### **EE4—Control Systems, Measurements and Instrumentation**

#### **Facilities**

##### **Control Laboratory**

- Micro selection C development systems for VLSI-based control
- Simulation packages—MATLAB, PSPICE, MAXPLUS II
- Motor control systems
- Speed control systems (analogue and digital)
- Benchmark vision system
- High-precision measuring instruments
- Cobra RS-232 five-axis robot
- Eshed ERIII, Eshed E&V 5-axis robots
- Position control systems (AC and DC)

## Measurements and Instrumentation Laboratory

- Precision indicating instruments
- Standard R, L and C components
- Virtual instrumentation laboratory with ELVIS
- Meter calibrator
- Pressure calibrator
- Energy meter testing desk
- Instrument transformer calibrator
- High-current AC and DC supply units
- Biomedical instrumentation (ultrasonic and optical)

## EE5—Photonics, Optical Communications and RF

### Facilities

- Fibre optic educational kit/laboratory
- Experimental optics laboratory with lightwave measurement unit, BER tester and optical spectrum analyser
- Fibre grating fabrication facility
- Fibre laser laboratory
- Integrated optoelectronics laboratory
- Class 100,000 clean room for development of space applications
- Ground station for nano-satellite communication and control

## 4.8.2. Academic Programmes

### New courses introduced

Faculty Member	Course No.	Course Title
S. Aniruddhan	EE5142	Introduction to Information Theory and Coding (3 1 0 4)
	EE6143	Advanced Topics in Communications (3 0 0 3)
	EE6152	Advanced Topics in Networks (3 0 0 3)
	EE6999	Special Topics in EE (3 0 0 3)
	EE7999	Special Topics in EE (3 0 0 3)
	EE5176	Computational Photography (3 1 0 4)
	EE5212	Digital Controller for Power Applications (2 0 3 4)

### Students on roll as of September 2013 + M.S. and Ph.D. scholars admitted in January 2014

Programme	I Year	II Year	III Year	IV Year	V Year	V Year and Others	Total
B.Tech.	73	71	74	50	—	12	280
Dual Degree	55	59	59	77	71	8	329
M.Tech.	49	58	—	—	—	—	107
M.S.	55	49	45	25	7	10	191
Ph.D.	49	42	39	24	21	23	198
<b>Total</b>	<b>281</b>	<b>279</b>	<b>217</b>	<b>176</b>	<b>99</b>	<b>53</b>	<b>1105</b>

### Names of students/scholars who attended conferences/seminars/symposia/workshops abroad/in India

Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference/Seminar/ Symposium/Workshop	Date and Venue	Financial Assistance from
<b>Conferences</b>					
1	Vijayakumar	—	SPIE Photonics Europe Conference	16 April 2014, Brussels	—
2	Ulrike Igenthaler				
3	Kahraman Keskinbora				
4	Gayathri M.				

Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference/Seminar/ Symposium/Workshop	Date and Venue	Financial Assistance from
5	Sridharan B.				
6	V. Pramitha				
7	Michaelirscher				
8	Joachim P. Patz				
9	Shanti Bhattacharya				
10	Gayathri M. Sridharan	—	Spie Micro-Optics 2014		—
11	Shanti Bhattacharya				
12	Ponnalagu R.N.	—	8th International Conference on Sensing Technology (ICST)	2–4 September 2014, Liverpool, UK	—
13	Prashanth V.				
<b>Symposia</b>					
1	Rahul Kumar	—	Progress in Electromagnetics Research Symposium: The 35th PIERS	25–28 August 2014, Guangzhou, China	—

#### Names of students/scholars who won outside prizes and awards

Sl. No	Name of the Student/Scholar	Roll No.	Name of Prize	Awarded by	Date
1	Gaurav Agarwal	EE12S056	IEEE MTT-S Undergraduate/ Pregraduate Scholarship for Fall 2014	IEEE Microwave Theory and Techniques Society	May 2014
2	Rakshitdatta K.S.	EE11S047	2014 Technovation Award for Masters Students	India Electronics and Semiconductor Association (IESA)	2014
3	Radha S.	EE08D023	2014 Technovation Award for Ph.D. Students	India Electronics and Semiconductor Association (IESA)	2014
4	Raghuvaran Narasimhan	EE10S073	Best Paper Award for former M.S., Scholar	EDCAV 2015 (international conference) ,held at Shillong	2015

#### 4.8.3. Faculty and Their Activities

Faculty Member	Activities
R. David Koilpillai	Member of the Executive Board of the DRDO project 'Integrated Coastal Surveillance System (ICSS)', participated in the fourth Executive Board meeting of the project ,held in Delhi on 25 June
Bhaskar Ramamurthi	Elected a Fellow of the IEEE for development of wireless technology in India
Ananth Krishnan	Dr. Ananth Krishnan and Pankaj Arora, Ph.D. scholar (EE11D036), Department of Electrical Engineering, received the Best Paper Award for their paper titled 'Dark Field Imaging in a Bright Field Microscope using Tailored Polarization of Spoof Surface Plasmons' at the Photonics 2014 Conference, held at IIT Kharagpur from 13 to 16 December 2014.
Nagendra Krishnapura	Won the 2014 Technomentor Award for Faculty from the India Electronics and Semiconductor Association (IESA) at their 2015 Vision Summit, held on 2 and 3 February 2015

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

Sl. No.	Coordinator(s)	Title	Place/Period
<b>Conferences</b>			
1	Srikrishna Bhashyam, Andrew Thangaraj, Radha Krishna Ganti, Krishna Jagannathan	JTG/IEEE Information Theory Society Summer School on Signal Processing, Communications, and Networking	16–19 June 2014
2	Enakshi Bhattacharya	The Centre for NEMS and Nanophotonics (CNNP) organised a three-day international conference on MEMS and sensors, ICMEMSS 2014	18–20 December 2014, IIT Madras



Sl. No.	Coordinator(s)	Title	Place/Period
3		The CNNP organised a one-day tutorial on MEMS and sensors, with 44 participants	17 December 2014
4	Radha Krishna Ganti, Srikrishna Bhashyam, Arun Pachai Kannu	Lectures on digital communication, estimation and detection theory and sparse signal recovery	12–13 February 2015, Qualcomm India Private Limited, Hyderabad
<b>Workshops</b>			
1	Krishna Jagannathan, Gaurav Raina	Workshop on Intelligent Transportation Systems	6 January 2015, Bangalore
2	Kaushik Mitra	Getting in Focus with Computational Imaging	17 March 2015, Images Sensors 2015, London, UK

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

Sl. No.	Faculty Name	Workshop Name	Place	Date
<b>Workshops</b>				
1	S. Karmalkar	5 hour session on Introduction to Research in a one week short term training program on Effective research methodology for Ph.D. aspirants on Engineering and Technology. conducted jointly by VIT Mumbai and University of Mumbai	Mumbai	7–11 July 2014
2	Pradeep Sarvepalli	International Workshop on Quantum LDPC Codes	Perimeter Institute for Theoretical Physics, Waterloo, Canada	14–16 July 2014
3	Power Engg Group	Challenging opportunities for R&D in the Indian Power Sector	IC&SR	27 July 2014
4	Faculty of EE Dept	Targetted Training on Control Technologies and Implementation Techniques	EE Dept	18 June to 11 July 2014
5	Nagendra Krishnapura	IEEE CAS SBC Workshop on Advanced Topics in VLSI Circuit Design	IIT Roorkee	18–19 October 2014
6	Ashok Jhunjunwala	10th FICCI Higher Education Summit	FICCI, New Delhi	14 November 2014
7	Ashok Jhunjunwala	ASSOCHAM 2nd International conference on Health and Safety Aspects of Mobile Telecommunications	New Delhi	17 November 2014
8	Ashok Jhunjunwala	Indian Digital Heritage (IDH): Workshop & Exhibition	Aegis of FITT, IIT Delhi, New Delhi	18 November 2014
9	Andrew Thangaraj	Attending IEEE Information Theory Workshop 2014	Australia	2–5 November 2014
10	Ashok Jhunjunwala	EEL-2025 Workshop Strategies for Engineering Education in India Toward 2025	Infosys, Bangalore	9 January 2015
<b>Meetings</b>				
1	Ashok Jhunjunwala	Viva Voce at Examination Of MS JNTUH	Jawaharlal Nehru Technological University Hyderabad / Hyderabad	5 April 2014
2	Ashok Jhunjunwala	Board of Governors meeting of IIIT Sri City	Indian Institute of Information Technology, Sri City / IIIT Sri City	
3	Ashok Jhunjunwala	Tata InnoVista 2014	Tata Sons Ltd./Mumbai	23 April 2014

Sl. No.	Faculty Name	Workshop Name	Place	Date
4	Ashok Jhunjunwala	National Apex Committee Meeting	Technology Information Forecasting and Assessment Council (TIFAC) / New Delhi	1 April 2014
5	Ashok Jhunjunwala	Meeting of the Committee on Quality Enhancement in Engineering Education (QEEE)	All India Council for Technical Education (AICTE) / New Delhi	2 May 2014
6	Ashok Jhunjunwala	Meeting of the Committee Constituted to review the National Institutes of Technology (NITs) System	Ministry of Human Resource Development (MHRD) / New Delhi	7 May 2014
7	Ashok Jhunjunwala	National Apex Committee Meeting TIFAC	Technology Information Forecasting and Assessment Council (TIFAC) / New Delhi	23 May 2014
8	Ashok Jhunjunwala	1st Audit Committee Meeting of BIRAC	(Biotechnology Industry Research Assistance Council) BIRAC, New Delhi	2 June 2014
9	Ashok Jhunjunwala	Governor Council Meeting-LNMIIT	LNMIIT, Jaipur	20 June 2014
10	Ashok Jhunjunwala	28th Meeting of the Project Approval Board of NMEICT-MHRD	NMEICT, Ministry of Human Resource Development (MHRD), New Delhi	26 June 2014
11	Ashok Jhunjunwala	SEBI Technical Advisory Board Meeting	Securities and Exchange Board of India (SEBI), Mumbai	27 June 2-14
12	Arun D. Mahindrakar	25 Years of passivity based control: New vistas	VJTI, Mumbai	19-23 May 2014
13	David Koilpillai R.	Board of Governors Meeting	IIIT DM, Kancheepuram	19 June 2014
14	Ashok Jhunjunwala	QEEE Review Meeting	Ministry of Human Resource Development (MHRD) / New Delhi	17 July 2014
15	Ashok Jhunjunwala	Management Advisory Committee meeting	ISI Kolkata	8 August 2014
16	Ashok Jhunjunwala	Meeting of the Technology Advisory Group on Electric Mobility (TAG-EM)-DST	Department of Science and Technology / New Delhi	12 August 2014
17	Ashok Jhunjunwala	Board Meeting Meeting BIRAC	New Delhi / (Biotechnology Industry Research Assistance Council) BIRAC	13 August 2014
18	Ashok Jhunjunwala	SERIIUS Meeting PV Project Investigators	Mumbai/IIT Bombay	18 August 2014
19	Ashok Jhunjunwala	Meeting with Shri.Piyush Goyal, Minister of Power	New Delhi / Ministry of Power	8 September 2014
20	Ashok Jhunjunwala	BIRAC Innovators Meet	New Delhi / BIRAC	
21	Ashok Jhunjunwala	CSIR Diamond Jubilee Technology Award (CDJTA)	New Delhi / CSIR Science Centre	23 September 2014
22	Ashok Jhunjunwala	LVDC Panel Meeting-BIS	New Delhi / Bureau of Indian Standards(BIS)	
23	Ashok Jhunjunwala	Solar Energy Research Institute for India and the United States(SERIIUS): Second Project Monitoring Committee Meeting-IIT Bombay	IIT Bombay/Mumbai	8 October 2014
24	Ashok Jhunjunwala	2nd Technology Advisory Group (TAG)-Electric Mobility (EM) Meeting-DST	Department of Science & Technology / New Delhi	9 October 2014
25	Ashok Jhunjunwala	Meeting with Minister of Power Mr Piyush Goyal	Minister of Power/ New Delhi	

Sl. No.	Faculty Name	Workshop Name	Place	Date
26	Ashok Jhunjhunwala	Final PRC meeting of the TDDP project-Smart Closed Loop Energy Management Solution	Department of Scientific and Industrial Research/ New Delhi	10 October 2014
27	Ashok Jhunjhunwala	Meeting with Minister of Power Mr Piyush Goyal	Minister of Power/ New Delhi	16 October 2014
28	Ashok Jhunjhunwala	Technical Advisory Committee Meeting–SEBI	Securities and Exchange Board of India (SEBI)/ Mumbai	30 October 2014
29	Ashok Jhunjhunwala	Search-cum-Selection Committee for the post of Director–CSIR-NISCAIR	Council of Scientific & Industrial Research (CSIR) / New Delhi	5 November 2014
30		Meeting at Bureau of Energy Efficiency (BEE)	Bureau of Energy Efficiency (BEE) / New Delhi	14.11.2014 14 November 2014
31		Members of the Expert Advisory Committee on Solar Power and Energy Sector by DST, New Delhi	Department of Science and Technology (DST) / New Delhi	17 November 2014
32		Meeting with Minister of MHRD Presentation on Kakodkar Committee recommendations	Ministry of Human Resource Development (MHRD) / New Delhi	
33		(Technology Advisory Group)TAG on EM meeting on Electric Vehicles	NFTDC–Hyderabad	21 November 2014
34		Meeting Notice for review committee on AICTE	AICTE–New Delhi	29 November 2014
35		Invitation to be an Expert in a Faculty Selection Committee–IIT Kharagpur	Kharagpur/ IIT Kharagpur	1 December 2014
36		Meeting of LVDC Panel 1 of Sectional Committee, ET 20–Bureau of Indian Standards (BIS)	New Delhi/ Bureau of Indian Standards (BIS)	2 December 2014
37		2nd Meeting of AICTE Review Committee	New Delhi / All India Council for Technical Education (AICTE)	6 December 2014
38		3rd Audit committee Meeting of BIRAC	New Delhi / Biotechnology Industry Research Assistance Council	12 December 2014
39		13th Board Meeting BIRAC		
40		Technical Advisory Committee Meeting of SEBI	Mumbai / Securities & Exchange Board of India (SEBI)	23 December 2014
41		Re-constituted Task Force on Basic Scientific Research Meeting–MHRD	Ministry of Human Resource Development (MHRD) / New Delhi	
42		Meeting of AICTE Review Committee	New Delhi / All India Council for Technical Education (AICTE)	27 December 2014
43	V. Jagadeesh Kumar	Served as subject expert	UPSC, New Delhi	2–6 February 2015
<b>Symposia</b>				
1	Nandita DasGupta	3rd International Symposium on Semiconductor Materials and Devices	Crystal Growth Centre, Anna University	2–5 February 2015
<b>Conferences</b>				
1	Ashok Jhunjhunwala	Project UDC: Getting Indian homes to be free of black-outs	Technology Day Function / Technology Development Board (TDB) / New Delhi	9 May 2014
2	Ashok Jhunjhunwala	Quality Enhancement in Engineering Education (QEEE)	Government of Gujarat / Ahmadabad	22 May 2014
3	Shanthi Pavan	International Symposium on Circuits and Systems (ISCAS)	Australia	1–5 June 2014
4	Anirudhan	IEEE International Symposium on Circuits and Systems 2014	Melbourane, Victoria, Australia	—
5	Gaurav Raina	International Conference, ACM SIGMETRICS 2014	University of Texas, USA	16–20 June 2014

Sl. No.	Faculty Name	Workshop Name	Place	Date
6	Ramkrishna Passumarthy	21st International Symposium on Mathematical Theory of Networks and systems (MTNS 2014)	University of Groningen, Netherlands	7–11 July 2014
7	Shanthi Pavan	Asian Solid State Circuits Conference TPC Meeting	Taiwan	24–25 July 2014
8	A.N. Rajagopalan	22nd International Conference on pattern Recognition	Sweden	24–28 August 2014
9	Bharath Bhikkaji	19th World Congress of the International Federation of Automatic Control	South Africa	24–29 August 2014
10	Srikrishna B.	International Conference on Signal Processing and Communications (SPCOM 2014)	IISc Bangalore	23–25 July 2014
11	Ramkrishna Passumarthy	21st International Symposium on Mathematical Theory of Networks and Systems (MTNS 2014)	University of Groningen, Netherlands	7–11 July 2014
12	Anil Prabhakar	Assistive and Rehabilitation Technologies Theme: Inclusive Technologies for an Improved Quality of Life	Confederation of Indian Industry	22 August 2014
14	R. Sarathi	5th Euro–Asian Pulsed Power Conference (EAPPC 2014)	Kumamoto, Japan	8–12 September 2014
15	Ashok Jhunjunwala	CPR South 2014 Conference	South Africa	10–12 September 2014
16	Ashok Jhunjunwala	Presentation: 24x7 Electricity for every Indian Home	Nehru Memorial Museum and Library (NMML) / New Delhi	16 October 2014
17	R. David Koilpillai	48th Annual Asilomar Conference on Signals, Systems and Computers	California, USA	2–5 November 2014
18	K. Sridharan	2014 International Symposium on Integrated Circuits	Singapore	10–12 December 2014
19	Shanti Bhattacharya	Poster Presentation at OSA's Winter Leadership Conference	Washington DC, USA	2–5 February 2015
20	Shanti Bhattacharya	SPIE photonics West meeting	San Francisco, USA	7–14 February 2015
21	Balaji Srinivasan	IITUK's 6th Annual Conference	United Kingdom	9–16 February 2015
22	Nagendra Krishnapura	2015 International Solid-State Circuits Conference (ISSCC)	USA	22–26 February 2015
23	Shanthi Pavan			
24	Deepa Venkitesh	Oral Presentation: Fiber Laser activities at IIT Madras	New Delhi	12 February 2015
25	Harishankar Ramachandran	Talk on EM education at workshop	IIT Bombay	23 January 2015
26	Krishna Jagannathan	WiOpt 2014: 12th International Symposium on Modeling and Optimization in Mobile, Ad Hoc and Wireless Networks	Hammamet, Tunisia	12–16 May 2014

#### Special lectures delivered by faculty members at other institutions

Sl. No.	Faculty Member	Topic of Lecture	Event/Place	Date
1	Arun D. Mahindrakar	Analysis and Control of Spherical Robot	VJTI, Mumbai	21 May 2014

Sl. No.	Faculty Member	Topic of Lecture	Event/Place	Date
2	Deleep Nair	Modern day MOS Transistor	VIT Chennai Campus	9 May 2014
3	Ramakrishna Pasumarthy	Energy based modeling and control of infinite-dimensional systems, in International Workshop on 25 years of passivity based control: New Vistas	VJTI, Mumbai	23 May 2014
4	S. Karmalkar	Five hour training session titled Effective and Efficient Teaching in one week National FDP on Pedagogy: A Framework for Effective Teaching and Learning Strategies	NIT Silchar	7–11 May 2014
5	Srikrishna B.	Cross-layer Scheduling and Resource Allocation in Wireless Communication Systems	C-DAC, Thiruvananthapuram (Co-organized by IEEE Communications Society, Kerala Chapter)	2 July 2014
6	Enakshi Bhattacharya	Size and charge Based transport of molecules through silicon nonporous membranes	7th ISSS International Conference on Smart Materials Structures & Systems (ISSS 2014), Bangalore	7–11 July 2014
7	Mahesh Kumar	Control Strategies for Load Compensation Using Instantaneous Symmetrical Component Theory	Electrical Engineering Department, Ananda Institute of Technology, Chennai	5 December 2014
8	Mahesh Kumar	Renewable Integration and AC-DC Microgrid System	Mechanical Engineering Department, Indian Institute of Technology Madras, Chennai	8 December 2014
9	Mahesh Kumar	Integration and Coordination of Renewable Energy Sources in AC-DC Microgrid Systems	Electrical Engineering Department, Indian Institute of Technology Guwahati	18 December 2014

#### Visits abroad by faculty members

Sl. No.	Name of Faculty Member	Place Visited	Date	Purpose of Visit	Funding from
1	R. Sarathi	United Kingdom	22–25 April 2014	Innovation in High Voltage Insulation for Electrical Energy Networks	—
2	T.G. Venkatesh	Pattaya, Thailand	13–16 May 2014	Present paper at the 11th International Joint Conference on Computer Science and Software	—
3	Ashok Jhunjhunwala	Kandalama, Sri Lanka	16–18 May 2014	CPR South workshop–Building capacity for policy reform: Role of regional networks	—
4		USA	4–18 June 2014	Indo–US Project Meeting, Argonne National Labs, Analog Devices Meeting–MIT	—
5	Sarathi	Cardiff University, United Kingdom	14–16 May 2014	UKIERI Project Meeting	—
6	Gaurav Raina	Changsha, China	31 May–2 June 2014	Oral presentation in the 26th Chinese Control and Decision Conference (CCDC)	—
7	Srirama Srinivas	Istanbul, Turkey	1 June 2014	International Symposium on Industrial Electronics (ISIE) 2014	—
8	Sarathi	Niigata TokiMesse, Niigata, Japan	1–5 June 2014	Present paper at the 2014 International Symposium on Electrical Insulation Materials (ISEIM 2014)	—
9	Shanthi Pavan Y.	Australia	1–5 June 2014	International Symposium on Circuits and Systems	—
10	David Koilpillai	Toronto, Canada	6–8 June 2014	PAN IIT 2014 International Conference	—

Sl. No.	Name of Faculty Member	Place Visited	Date	Purpose of Visit	Funding from
11	Sarathi	KTH Royal Institute of Technology, Sweden	10–11 June 2014	SweGRIDS Meeting	—
12	B. Srikrishna	Sydney, Australia	10–14 June 2014	Oral Presentation in the IEEE International Conference on Communication	—
13	Jagadeesh Kumar	University of Lisbon, Lisbon, Portugal	11–12 June 2014	IEEE International Symposium on Medical Measurements and Applications	—
14	A.N. Rajagopalan	Columbus Ohio	23–28 June 2014	IEEE Conference on Computer Vision and Pattern Recognition 2014 (CVPR 2014)	—
15	Balaji Srinivasan	Dublin City University, Ireland	28 June–12 July 2014	Research visit	—
16	David Koilpillai R.	USA	2–4 June 2014	Visits to Texas A&M University, U Houston, and Rice U	—
17	David Koilpillai R.	Canada	5–8 June 2014	Visit to U Waterloo and Pan IIT Meeting,	—
18	Shanthi Pavan	EPFL, Lausanne, Switzerland	30 June–3 July 2014	Present paper at MEAD Education S.A	—
19	Pradeep Sarvepalli	USA	29 June–4 July 2014	Paper presentation at 2014 IEEE International Symposium on Information Theory, USA	—
20	Balaji Srinivasan	Dublin City University, Ireland	28 June–12 July 2014	Research Visit	—
21	Shanthi Pavan	Switzerland	30 June–3 July 2014	Present paper at MEAD Education S.A	—
22	K.S. Swarup	United Kingdom	1–4 July 2014	Research Collaboration	—
23	Ashok Jhunjunwala	Ipswich, United Kingdom	2 July 2014	University of Southampton	—
24	Ashok Jhunjunwala		3–4 July 2014	Indo–UK Technical Workshop and IUATC Executive Board Meeting	—
25	Devendra Jalihal / David Koilpillai / K. Gridhar	BT Adastral Park, Martlesham Heath, Ipswich, U.K.	3–4 July 2014	To attend Joint Technical Meeting for the India–UK Project	—
26	Anil Prabhakar	University of Cambridge, U.K.	6–19 July 2014	To attend the BIRAC Fellowship 2014 for the IGNITE Programme	—
27	Balaji Srinivasan	Guangzhou, China	25–28 August 2014	Oral presentation at the Progress in Electromagnetics Research Symposium (PIERS)	—
28	Shanti Bhattachaarya	USA	17–21 August 2014	Oral presentation in the SPIE Conference	—
29	Shanthi Pavan	Sweeden	17–19 September 2014	To act as an external examiner for Ph.D. defense	—
30	Nagendra Krishnapura	Italy	22–26 September 2014	To attend and present a paper at the 40th European Solid-State Circuits Conference	CPDA



Sl. No.	Name of Faculty Member	Place Visited	Date	Purpose of Visit	Funding from
31	Anjan Chakravorty	California, USA	28 September–1 October 2014	To Attend and to give oral presentation at the IEEE Bipolar / BiCMOS Circuits and Technology Meeting	CPDA
32	Gaurav Raina	USA	1–3 October 2014	To attend and to give oral presentation at the 52nd Annual Allerton Conference on Control, Communication and Computing	—
33	Shanti Bhattacharaya	China	13–15 October 2014	To attend and to give oral presentation at the 1st International Conference on Photonics and Optical Engineering	—
34	RadhaKrishna Ganti	Austin, USA	—	To attend International conference and present paper at Globecom 2014	CPDA(Part)
35	Ashok Jhunjunwala	Dubai	—	To attend the Tata Communication Review Meeting	—
36	R. Sarathi	Bangkok, Thailand	—	17th Asian Conference on Electrical Discharge (ACED 2014)	PCF
37	Arun Pachai Kannu	London, UK, Paris and France	4 December 2014 to 4 January 2015	Personal visit	—
38	Ashok Jhunjunwala	New York & New Jersey, USA	12–13 January 2015	Tata Communications Limited–Tata Communications Capex Review Meeting–Market and Technology Trends	—
39	Ashok Jhunjunwala	Germany	14 January 2015	ThyssenKrupp System Engineering India Pvt. Ltd.–Dresden	—
40	V. Pramitha	San Francisco, USA	7–12 February 2015	SPIE OPTO Symposium	—

### Honours and awards obtained by faculty members

Sl. No.	Name of Faculty Member	Name of Award	Awarded by	Awarded for	Date of Award
<b>Honours</b>					
1	Nagendra Krishnapura	2014 Technomentor Award for faculty	India Electronics and Semiconductor Association (IESA)	Mentoring of students in the VLSI area	2–3 February 2015
2	Ashok Jhunjunwala	Getting Honorary Doctorate	Rajasthan Technical University / Kota	—	23 February 2015
<b>Awards</b>					
1	Krishna Jagannathan	Young Faculty Recognition Award	IIT Madras	—	2014
2	Ananth Krishnan & Paknaj Arora	Best Paper Award	IIT Kharagpur	Dark field imaging in a bright field microscope using tailored polarization of spoof Surface Plasmons' at Photonics 2014	13–16 December 2014

### Books, monographs authored/co-authored

Sl. No.	Name of Faculty Member	Title	Publisher	Author/Co-author
<b>Books</b>				
1	S. Krishna	<i>An Introduction to Modelling of Power System Components</i>	Springer	—

### Editorial boards of journals

Sl. No.	Name of Faculty Member	Position (Editor/Member)	Period	Journal
1	Srikrishna Bhashyam	Editor	From July 2009 till December 2014	<i>IEEE Transactions on Wireless Communications,</i>

## Paper presentation/keynote talks by faculty members

Sl. No.	Name of Faculty Member	Title	Place	Date
1	Ashok Jhunjunwala	Presentation: Telecom in India: Growth-drivers, Constraints and Innovations in the context of Wireless and Smart phones enabled dramatic growth of Internet–Can Telecom Industry sustain this	Gurgoan	8 April 2014
2	Ashok Jhunjunwala	Presentation: Project UDC: Getting Indian homes to be free of black-outs	Indo–US Project Meeting, National Renewable Energy Laboratory (NREL) / Colorado, Denver	14 June 2014
3	S. Karmalkar	Gave a talk on The role of introduction, learning outcomes and analogies in teaching–learning process in the Symposium on Teaching–learning in higher technical education	Teaching–Learning Center, IIT Madras	28–29 May 2014
4	Ashok Jhunjunwala	Presentation: The Power of Small–The link between decentralizing power generation/usage and poverty reduction	Godrej / Good & Green Conclave, Mumbai	10 July 2014
5	B. Srinivasu and K. Sridharan	Reliability Analysis of Full Adder in Schottky Barrier Carbon Nanotube FET Technology	14th IEEE (IEEE NANO 2014), Toronto	August 2014
6	Ashok Jhunjunwala	Technology & Innovation: Helping in making it possible	SRII India Summit 2014, Bangalore	6 November 2014
7	Ashok Jhunjunwala	Electrical Batteries in the Indian Context	India Battery Conclave, New Delhi	14 November 2014
8	Ashok Jhunjunwala	Technology, Innovation and Entrepreneurship	India Ideas Conclave 2014 / Goa	19–21 December 2014
9	Venkatesh Ramaiyan	Fixed Point Analysis of Single Cell IEEE 802.11(e) WLANs	IISc/MSR India Summer School on Wireless Networking	23 June–2 July 2014

## 4.8.4. Research and Consultancy

### Sponsored research projects (ongoing and new)

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Co-ordinators
1	Study and analysis of electrical, thermal and mechanical properties of irradiated epoxy nanocomposites	2 Years	BRNS	2400.60	R. Sarathi & N.J. Vasa
2	Centre for Nano-electromechanical Systems (NEMS) and Nanophotonics	27 April 2011 to 26 April 2016	Department of Information Technology	4946.50	Enakshi Bhattacharya & Nandita GasGupta
3	Centre of Excellence for Decentralized Power Systems	8 July 2013 to 31 March 2018	Ministry of Human Resource and Development	2000.00	Ashok Jhunjunwala, Lakshminarasamma N., Kamalesh Hatua, Krishna Vasudevan, Bhaskar Ramamurthi
4	IUATC Co-Ordination	1 November 2012 to 30 September 2015	Department of Science & Technology (Indo–UK)	813.70	Ashok Jhunjunwala
5	Sustainable Communication Infrastructure (Information Network for Natural Disaster Mitigation and Recovery (DISANET))	1 July 2011 to 30 June 2016	Japan International Co-operation Agency	486.00	David Koilpillai, Devendra Jalihal, Baskar Ramamurthi

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Co-ordinators
6	Strengthening of Research Facilities in the Department (FIST)–ELE	28 April 2010 to 27 April 2015	Department of Science & Technology	478.00	Head of the Department
7	Development of Novel Organic Semiconductor based Solar Harvesting Devices to Probe Plasmonic Effects	17 September 2013 to 16 September 2016	Department of Science & Technology	456.10	Soumya Dutta
8	Proof of concept for project UDC	20 September 2013 to 19 September 2015	Ministry of Human Resource and Development	400.00	Ashok Jhunjunwala
9	Silicon nanophotonics: Technology Development, Novel Device Design, Fabrication and Characterization	27 July 2012 to 26 July 2015	Defence Research and Development Organisation	299.00	Bijoy Krishna Das
10	Ultrawide Band Circuits and Systems in Silicon (Swarnajayanti Fellowship)	26 March 2010 to 25 March 2015	Department of Science & Technology	192.10	Shanthi Pavan
11	Decentralized solar PV Generation and DC usage (Under CSTRI core grant–sub project–I)	1 October 2012 to 31 March 2015	Department of Science & Technology	142.41	Ashok Jhunjunwala
12	Decentralized solar PV power for commercial buildings	23 January 2013 to 22 January 2018	Indo-US Science & Technology Forum	135.00	Ashok Jhunjunwala
13	Investigations into underwater imaging	30 November 2012 to 31 October 2017	Board of Research in Nuclear Sciences	99.25	Rajagopalan A.N.
14	Fabrication of spiral-phase diffractive optical elements by focused ion beam milling–INSPIRE Faculty Award	25 April 2013 to 24 April 2018	Department of Science & Technology	86.27	V. Pramitha
15	Council of Science and Technology for Rural India Centre at Indian Institute of Technology (CSTRI)–Core Grant	1 October 2012 to 30 September 2015	Department of Science & Technology	83.40	Ashok Jhunjunwala
16	A 1MW Re-synchronizable Autonomous Grid: Active Power Filters	31 January 2012 to 31 March 2015	Department of Science & Technology	77.27	Mahesh Kumar
17	JC Bose Fellowship	15 October 2010 to 14 October 2015	Department of Science & Technology	68.00	Ashok Jhunjunwala
18	Solar powered air conditioners and desert air-coolers	27 March 2013 to 26 March 2015	Department of Science & Technology	63.39	Ashok Jhunjunwala
19	Miniature thermal imaging payload for micro aerial vehicles	10 June 2013 to 9 June 2015	Defence Research and Development Organisation	53.89	Anil Prabhakar
20	Simulation of semiconductor devices	7 November 2013 to 6 November 2016	Defence Research and Development Organisation	49.30	Karmalkar S.
21	De-congesting India's transport networks using mobile devices	13 December 2013 to 12 December 2016	Information Technology Research Academy	48.76	Krishna Jagannathan

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Co-ordinators
22	Leveraging Rural Engineering College Students for Assessment of Technological Gaps in Villages (Under CSTR I core grant-sub project-II)	1 October 2012 to 31 March 2015	Department of Science & Technology	41.02	Ashok Jhunjunwala
23	Modelling and analysis of subsea drive systems	7 May 2010 to 30 April 2015	National Institute of Ocean Technology	39.60	Krishna Vasudevan
24	Design and Fabrication of AlGaN/GaN misemtd and Field Plated HEMT for RF power amplifier applications	20 October 2011 to 19 April 2015	Department of Science & Technology	38.88	Nandita Das Gupta
25	Computer vision techniques for resurrection of heritage sites in India	1 July 2010 to 31 March 2015	Department of Science & Technology	34.00	Rajagopalan A.N.
26	Obstacle avoidance and formation control of mobile inverted pendulum robots	28 January 2014 to 27 January 2017	Department of Science & Technology	32.67	Arun D. Mahindrakar
27	Development of Automated SPICE Parameter Extraction Tool for SiGe HBTs using Scalable Approach	14 May 2012 to 13 May 2016	Department of Science & Technology	31.82	Anjan Chakravorty
28	Feasibility study of pulse power technique: Alternative technology for water treatment	23 January 2013 to 22 July 2015	Department of Science & Technology	30.00	Sarathi R.
29	Compressive sensing framework for signal processing in heterogeneous cellular networks	10 October 2012 to 9 October 2015	Department of Science & Technology	21.33	Arun Pachai Kannu
30	Standardization of virtual keyboards in Indic Languages	7 November 2013 to 31 March 2015	Department of Information Technology	20.13	Devendra Jalihal
31	The high energy particle detector project	29 October 2013 to 31 March 2015	Indian Space Research Organisation	17.36	Harishankar-ramachandran
32	Flow Analyzer	10 January 2012 to 19 September 2015	Department of Biotechnology	13.50	Anil Prabhakar
33	Development of solution based organic solar cells	7 August 2013 to 6 August 2015	Nissan Research Support Program	11.55	Soumya Dutta
34	Epitaxial rare-earth substituted garnet films for quantum key distribution devices	27 November 2012 to 26 November 2015	Department of Science & Technology	10.51	Anil Prabhakar
35	Development of Aakash Platform	16 May 2012 to 31 March 2015	Telecom Centre of Excellence	10.00	Ashok Jhunjunwala
36	ADI-IITM DSP Learning Centre-Phase II	22 June 2010 to 21 June 2016	Analog Devices India Private Ltd.	8.95	Ashok Jhunjunwala
37	Modernization Grant for VLSI Activity-Phase II	1 April 2010 to 31 March 2015	Silicon Laboratories Inc.	8.61	Shanthi Pavan
38	IBM-Faculty Award 2013	22 November 2013 to 21 May 2015	IBM Corporation, USA	8.40	Nitin Chandrachoodan
39	Application & Services	1 November 2012 to 30 April 2015	Department of Science & Technology (Indo-UK)	0.00	Ashok Jhunjunwala

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Co-ordinators
40	Wireless Access Technologies	1 November 2012 to 30 September 2015	Department of Science & Technology (Indo-UK)	0.00	Giridhar K.
41	IIT Madras Student Satellite (IITMSAT)–Phase II	24 September 2014 to 31 December 2015	Alumni Association	40.00	David Koilpillai
42	CMOS analog and wireless RF front end for biological signal acquisition	12 May 2014 to 11 May 2017	New Faculty Scheme	20.06	Aniruddhan
43	MyDrive: A wheelchair accessible electric vehicle	11 February 2015 to 10 February 2016	Exploratory Research Project	10.00	Anil Prabhakar
44	Synchronized Pump-Probe Generation from Wavelength Stabilized Mode Locked Fibre Lasers	28 October 2014 to 27 August 2015	Research Scholars Innovative Project	8.50	Anil Prabhakar
45	A Tactograph for the visually challenged	21 April 2014 to 20 April 2015	Socially Relevant Projects	4.65	Anil Prabhakar
46	Excimer laser	21 July 2014 to 20 July 2015	Maintenance of Capital Equipment	2.00	Balaji Srinivasan
47	National Mission for Virtual Laboratories–ELE 2	17 June 2010 to 2 August 2017	Indian Institute of Technology Madras	53.00	Krishna Vasudevan
48	IIT Madras Student Satellite (IITMSAT)–Phase II	1 April 2013 to 31 March 2015	Indian Institute of Technology Madras	30.00	David Koilpillai
49	National Mission for Virtual Laboratories–(ELE)	8 May 2010 to 2 August 2017	Indian Institute of Technology Madras	26.00	Nagendra Krishnapura
50	High Efficient Silicon Carbide Mosfet based Induction Motor Drive with Sinusoidal Motor Voltage and Grid Friendly Input Current	22 October 2013 to 21 October 2016	New Faculty Scheme	25.00	Kamalesh Hatua
51	Characterization and Simulation of Gate Induced Drain Leakage (GIDL) current in high k metal gate PMOSFETs	20 November 2013 to 19 November 2016	New Faculty Scheme	15.00	Deleep R. Nair
52	Full-Duplex Wireless System	25 June 2012 to 24 June 2015	New Faculty Scheme	13.00	Radhakrishna Ganti
53	Systems and Control Engineering	11 September 2012 to 10 September 2015	New Faculty Scheme	5.20	Ramkrishna Pasumarthy
54	Compressive sensing framework for heterogeneous cellular networks	15 November 2011 to 14 May 2015	New Faculty Scheme	5.00	Arun Pachai Kannu
55	Distributed optimization and control of complex networks	12 June 2012 to 11 June 2015	New Faculty Scheme	5.00	Krishna Jagannathan
56	Queue management for the internet	5 November 2012 to 4 November 2015	New Faculty Scheme	5.00	Gaurav Raina
57	Topological quantum codes: constructions and architectures for fault tolerance	17 January 2013 to 16 January 2016	New Faculty Scheme	5.00	Pradeep Kiran Sarvepalli
58	Receivers for non-Gaussian interference and noise	22 October 2013 to 21 October 2016	New Faculty Scheme	5.00	Sheetal Kalyani

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Co-ordinators
59	Organic Semiconductor Devices	10 December 2013 to 9 December 2015	New Faculty Initiation Grant	5.00	Debdutta Ray
60	Bluetooth transceiver RFIC	22 July 2014 to 21 July 2017	Department of Information Technology	315.55	Aniruddhan
61	Visvesvaraya Ph.D. Scheme for Electronics and IT—a scheme from DEITY	21 January 2015 to 20 January 2020	Media Lab Asia	248.76	Bijoy Krishna Das
62	Speech-based access of agricultural commodity prices and weather information in 12 Indian languages/Dialects (Automatic Speech Recognition (ASR) Consortium–Phase II	3 September 2014 to 2 September 2016	Department of Electronics & Information Technology	147.91	Umesh S.
63	QEEE–Phase II	21 August 2014 to 20 August 2015	Ministry of Human Resource and Development	100.00	Ashok Jhunjunwala
64	Transforming healthcare delivery-Innovative mHealth technologies for health promotion and better health outcomes	24 March 2014 to 23 March 2017	Department of Biotechnology	56.00	Ashok Jhunjunwala
65	Understanding accelerated ageing performance of polymeric nanocomposite insulators	12 December 2014 to 11 December 2016	Department of Science & Technology	54.60	Sarathi R.
66	Design and development of thulium-doped fiber lasers for the mid-IR	8 July 2014 to 7 July 2016	Defence Research and Development Organisation	50.56	Deepa Venkitesh
67	Integrated Fibre Based Fourier Domain OCT with Spectrometer	NULL	Biotechnology Industry Research Assistance Council	47.20	Shanti Bhattacharya
68	Design, Fabrication and testing of programmable high voltage power supply for space applications	23 February 2015 to 22 February 2018	Indian Space Research Organisation	40.38	Lakshminarasamma N.
69	Identification of Incipient Discharges in Transformer Insulation by Elastic Wave Sensing Based on Fiber Bragg Gratings	—	Central Power Remdh Industry	35.20	Balaji Srinivasan
70	Development of numerical simulation tool for three dimensional silicon nanowire–MOSFETs	13 October 2014 to 12 October 2017	Department of Science & Technology	30.58	Anjan Chakravorty
71	Study and analysis of the electrical,thermal and mechanical properties of irradiated epoxy nanocomposites	18 June 2014 to 17 June 2016	Board of Research in Nuclear Sciences	24.01	Sarathi R.
72	Electro-optic and magneto-optic interaction based high-speed quantum key distribution	26 August 2014 to 25 August 2017	Department of Science & Technology	23.94	Anil Prabhakar
73	Development of Multi-Channel Dynamic Interrogator Based on Fabryperot Fiber Bragg Gratings for Elastic Wave Sensing	8 January 2015 to 7 January 2018	Board of Research in Nuclear Sciences	22.79	Balaji Srinivasan



Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Co-ordinators
74	The interaction of ICT networks structure and downstream trade flows: Two case studies from India (Iruralnet)	1 March 2014 to 28 February 2016	University Grants Commission	9.28	Ashok Jhunjunwala
75	Miniaturized Radiation Sensors with Wireless Communication for Indian Environmental Radiation Monitoring Network (DAE-Graduate Fellowship Scheme (DGFS))	25 September 2014 to 24 September 2015	Board of Research in Nuclear Sciences	3.94	Boby George
76	A Simulation Framework for Modeling Real Wi-Fi Deployments	March 2015 to March 2018	DST, Collaborators: Mythili Vutukuru (IITB), Srikanth Subramanian (Nanocell Networks)	41.00	Venkatesh Ramaiyan

#### Industrial consultancy projects (ongoing and new)

Sl. No.	Name of Faculty Member	Period	Title	Industry	Amount (lakhs of ₹)
1	Sarathi R.	2–15 March 2015	Lighting Impulse Voltage Withstand Study Testing of 16 M V A, 110/33-11 Power Transformer	Ascott Electricals Pvt. Ltd.	2.47
2	Sarathi R.	25 February–10 March 2015	Lighting Impluse Voltage Withstand Study Testing of 16 MVA, 110/33-11 Power Transformer	S.A.P. Industries	2.25
3	Boby George	21 August 2014 to 18 August 2017	Loss Measurement of Power Transformers	Common Code	0.79
4	Boby George	21 May 2013 to 21 May 2016	Power transformer load loss and no load loss testing	Common Code	1.52
5	Boby George	3 February 2014 to 3 February 2017	Loss Measurement in Power Transformers	Common Code	1.01
6	Sarathi R.	12 April 2012 to 11 April 2015	Impulse voltage with stand study & testing of transformers	Common Code	0.00
7	Mahesh Kumar	1 July 2012 to 30 June 2015	A Study on tuned variable harmonic filter for harmonics in power system	Common Code	0.00
8	Krishna Vasudevan	26 December 2013 to 25 December 2016	Proof checking of transformer sizing	Common Code	0.00
9	Anil Prabhakar	15 January 2014 to 14 June 2017	Common Code	Common Code	0.00
10	Sarathi R.	11 February 2014 to 10 February 2017	Impulse voltage test on OLTC	Common Code	0.00

#### RBIC projects (ongoing and new)

Sl. No.	Name of Faculty Member	Period	Title	Industry	Amount (lakhs of ₹)
1	Rajagopalan A.N.	1 November 2014 to 31 October 2015	Registration of Large Motion Blurred Images	Asian Office of Aerospace R & D	30.86
2	Rajagopalan A.N.	1 October 2014 to 30 September 2015	Framework for Processing Videos in the Presence of Spatially Varying Motion Blur-Phase III	Asian Office of Aerospace R & D	30.39
3	Deepa Venkitesh	30 April 2014 to 30 July 2016	Development of high capacity transmission over SMF in optical networks	Sterlite Technologies Limited	21.80

Sl. No.	Name of Faculty Member	Period	Title	Industry	Amount (lakhs of ₹)
4	Devendra Jalihal	1 August 2014 to 30 September 2015	Design of Rotating Polarization Wave Based Wireless Modem	Hitachi India Pvt. Ltd.	20.00
5	Aniruddhan	15 January 2015 to 14 January 2016	Full Duplex RFIC Front End	Qualcomm India Pvt. Ltd.	17.26
6	Shanthi Swarup K.	22 October 2014 to 30 April 2015	Modeling, Annalysis and Control of DFIG Based Wind Generation System	Hitachi India Pvt. Ltd.	13.70
7	Balaji Srinivasan	1 September 2014 to 29 May 2015	Developement of a Fiber-Based Dynamic Interrogator for Vibration Sensing	Gas Turbine Research Establishment	11.12
8	Giridhar K.	1 January–30 June 2015	OFDM based PHY layer Design	Centre for Development of Advanced Group	5.62
9	Srikrishna B.	1 January–30 June 2015	Medium Access Control and Network layer protocol design	Centre for Development of Advanced Group	5.62
10	Giridhar K.	1 September 2014 to 31 August 2015	DRM Plus	NXP Semiconductors India Pvt. Ltd.	5.62
11	Andrew Thangaraj	1 May–30 November 2014	Optimization of OFDM Troposcatter modem	Defence Research & Development Organisation	5.00
12	Anil Prabhakar	1 March–30 September 2014	Q-Switch infrared fibre laser	Unilumen Photoncis	3.37
13	Andrew Thangaraj	27 June–26 December 2014	Development of DVB-S2 LDPC Codes	ORB Analytics	3.00
14	Krishna Vasudevan	1 August 2012 to 31 June 2015	Open loop low speed control for PMSM in high dynamic applications	Danfoss Industries Pvt. Ltd.	22.06
15	Gaurav Raina	30 December 2013 to 31 March 2015	Network optimization and analytics	Saggezza India Private Limited	19.96
16	Arun D. Mahindrakar	11 November 2013 to 11 May 2015	Desgin of Stabilized Gimbal Assembly for Long Range Electro-Optic (LREO) System	Aeronautical Development Establishment	13.19
17	Sarathi R.	31 March 2012 to 30 March 2016	Study ion Leo Design of Indian High Voltage Network	Alstom Limited, France	11.05
18	Shanthi Pavan	1 February 2014 to 31 December 2015	IEEE Transaction on Circuits and Systems: Editor-in-chief	The Institute of Electrical and Electronics Engineers Incorporated	9.66
19	Rajagopalan A.N.	25 March 2014 to 24 March 2015	Support for Research Activites	KLA Tencor Software India Pvt. Ltd.	7.76
20	Jagadeesh Kumar V.	1 July 2011 to 31 December 2015	Advanced Receivers for edge evolution	Renesas Mobile Europe	6.03
21	Kamalesh Hatua	1 July 2013 to 31 December 2015	Study of dynamic and static behaviour of SiC devices and development of converter topology	Centre for Development of Advanced Group	5.00

#### Retainer consultancy (ongoing and new)

Sl. No.	Name of Faculty Member	Period	Title	Industry	Amount (lakhs of ₹)
1	Shanthi Pavan	5 September 2014 to 4 September 2015	Analog IC Design	Analog Semiconductors Pvt. Ltd.	13.48

Sl. No.	Name of Faculty Member	Period	Title	Industry	Amount (lakhs of ₹)
2	Shanti Bhattacharya	1 January 2015 to 31 December 2016	Design of optics for a Point-of-Sample Collection Device	Aindra Systems Pvt. Ltd.	2.25
3	Balaji Srinivasan	22 September–22 December 2014	Fiber Optics Gyro	VEM Technologies Pvt. Ltd.	0.90
4	Deleep R. Nair, (ET1314ELE001AAAADELE, IT1314ELE001AAAADELE)	13 May 2013 to 12 May 2016	Electrical and optical characterization of thin films and devices	Danfoss Industries Pvt. Ltd.	15.00
5			Electrical and optical characterization of thin films and devices	Common Code	15.00

### Research publications of the faculty members and research scholars

Papers presented at conferences: 56  
Papers published in refereed journals: 48

#### Papers published in proceedings of conferences

1. R. Prasad, S. Bhashyam and A. Chockalingam. 2014. Optimum transmission strategies for the gaussian one-to-many interference network. *Proceedings of IEEE WCNC 2014*, Istanbul, Turkey, 7 April.
2. S. Abhijith and K.M.M. Prabhu. 2014. A new approach to near-theoretical sampling rate for modulated wideband converter. Accepted for presentation at the *Signal Processing & Communications Conference (SPCOM-2014)*, IISc, Bangalore, India, July.
3. R. Ganti, H.S. Dhillon, F. Baccelli and J.G. Andrews. 2012. Leonard G. Abraham Prize in the field of Communications Systems for his paper entitled Modeling and Analysis of K-Tier Downlink Heterogeneous Cellular Networks published in *IEEE Journal on Selected Areas in Communications*, vol. 30 (3), pp. 550–560, April.
4. R. Ganti, J.G. Andrews and F. Baccelli. 2011. Stephen O. Rice Prize in the field of Communications Theory for his paper entitled A Tractable Approach to Coverage and Rate in Cellular Networks published in *IEEE Transactions on Communications*, vol. 59 (11), pp. 3122–3134, November.
5. S. Pavan. 2014. Efficient estimation of signal and noise transfer functions in a continuous-time delta sigma modulator. *International Symposium on Circuits and Systems (ISCAS)*, Melbourne, 5 June.
6. S. Manjunath and G. Raina. 2014. Local Hopf bifurcation analysis of logistic population dynamics models with two delays. *International Conference on 26th Chinese Control and Decision Conference*, Changsha, China, 31 May to 2 June.
7. S. Manjunath and G. Raina. 2014. Stability and bifurcation analysis of a Lotka-Volterra time delayed system. *International Conference on 26th Chinese Control and Decision Conference*, Changsha, China, 31 May to 2 June.
8. S. Manjunath and G. Raina. 2014. Stability and Hopf bifurcation analysis of the Mackey-Glass and Lasota equations. *International Conference on 26th Chinese Control and Decision Conference*, Changsha, China, 31 May to 2 June.
9. S. Prasad and G. Raina. 2014. Local Hopf bifurcation analysis of compound TCP with an exponential—RED queue management policy. *International Conference on 26th Chinese Control and Decision Conference*, Changsha, China, 31 May to 2 June.
10. S. Prasad and G. Raina. 2014. Stability and Hopf bifurcation analysis of TCP with a RED-like queue management policy. *International Conference on 26th Chinese Control and Decision Conference*, Changsha, China, 31 May to 2 June.
11. B. Srinivasu and K. Sridharan. 2014. Reliability analysis of full adder in schottky barrier carbon nanotube FET technology. *To appear in 14th IEEE International Conference on Nanotechnology*.
12. P. Sarvepalli. 2014. Quantum codes and symplectic matroids. *Proceedings of 2014 IEEE International Symposium on Information Theory*, pp 1076–1080, 1 July.
13. R. Kumar, A. Arora, S. Ray, B. Pesala, E. Bhattacharya and A. Krishnan. 2014. Analysis of electrical excitation of planar split ring resonator based THz metamaterials. *7th ISSS International Conference on Smart Materials Structures & Systems (ISSS 2014)*, IISc Bangalore, 8 July.
14. R. Meenakshi, C. Malar, S. Bhattacharya and E. Bhattacharya. 2014. Design and process optimization for a vertical comb driven micromirror. *7th ISSS International Conference on Smart Materials Structures & Systems (ISSS 2014)*, IISc Bangalore, 10 July.

15. B. Srinivasu and K. Sridharan. 2014. Reliability analysis of full adder in Schottky barrier carbon nano-tube FET technology. *Presented at 14th IEEE International Conference on Nanotechnology (IEEE NANO 2014)*, Toronto, August.
16. P.S. Saikrishna, R. Pasumarthy and H.A. Kruthika. 2014. Stability analysis of cloud computing systems under time delay. *The 21st International Symposium on Mathematical Theory of Networks and Systems (MTNS 2014)*, Groningen, The Netherlands, 27 August.
17. R. Pasumarthy, K.C. Kosaraju and A. Chandrasekhar. 2014. On power balancing and stabilization for a class of infinite-dimensional systems. *The 21st International Symposium on Mathematical Theory of Networks and Systems (MTNS 2014)*, Groningen, The Netherlands, 27 August.
18. V. Pudi and K. Sridharan. 2014. A bit-serial pipelined architecture for high-performance DHT computation in quantum dot cellular automata. *Accepted for publication in IEEE Transactions on Very Large Scale Integration (VLSI) Systems*, October DOI: 10.1109/TVLSI.2014.2363519
19. A. Vijayakumar and S. Bhattacharya. 2014. Design, fabrication and evaluation of diffractive optical elements for generation of focused ring patterns. *International Conference on Photonics and Optical Engineering*, 13 October.
20. D. Ghosh, K. Jagannathan, G. Raina. 2014. Right buffer sizing matters: Stability, queuing delay and traffic burstiness in compound TCP, 2. Downlink resource allocation under time-varying interference: Fairness and throughput optimality, Ravi Kiran Raman, K.J. *Fifty Second Allerton Conference on Communication, Control, and Computing*, Monticello, IL. PDF, 2 October.
21. D. Ghosh, K. Jagannathan, G. Raina. 2014. Right buffer sizing matters: Stability, queuing delay and traffic burstiness in compound TCP. *52nd Allerton Conference on Communication, Control, and Computing*, Monticello, IL., 2 October.
22. R.K. Raman, K. Jagannathan. 2014. Downlink resource allocation under time-varying interference: Fairness and throughput optimality. *52nd Allerton Conference on Communication, Control, and Computing*, Monticello, IL. PDF, 2 October.
23. A.D. Mahindraka, J.A. Acosta and R. Ortega. 2014. Constrained stabilization of a cart on an asymmetric-beam system through IDA-PBC. *In the proceedings of the IEEE Multi-conference on Systems and Control*, Antibes, France, 8–10 October.
24. A. Anthur and D. Venkitesh. The spectral dependence of SBS-induced noise in all-optical wavelength conversion. *Accepted—Optics Communication*.
25. A.P. Anthur, R.T. Watts, R. Zhou, P. Anandarajah, D. Venkitesh and L.P. Barry. 2014. Penalty-free wavelength conversion with variable channel separation using gain-switched comb source. *Optics Communication*, Vol 324: 69–72.
26. C. Baby and B. George. 2014. A capacitive sensing system for non-contact detection of ice. *IET 8th International Conference on Sensing Technology*, pp. 315–320, 30 October.
27. V. Prashanth and B. George. 2014. A capacitance-to-digital converter with sinusoidal excitation suitable for series RC sensors. *IET 8th International Conference on Sensing Technology*, pp. 367–371, 30 October.
28. V. Prashanth and B. George. 2014. A method for improving conversion rate and accuracy of a capacitance-to-digital converter. *IET 8th International Conference on Sensing Technology*, pp. 327–333, 30 October.
29. R.N. Ponnalagu, B. George and V.J. Kumar. 2014. Dual slope direct digital converter for bridge connected resistive sensors. *IET 8th International Conference on Sensing Technology*, pp. 362–366, 30 October.
30. R.N. Ponnalagu, B. George and V.J. Kumar. 2014. A microcontroller sensor interface suitable for resistive sensors with large lead resistance. *IET 8th International Conference on Sensing Technology*, pp. 327–333, 30 October.
31. A. Thangaraj. 2014. Coding for wiretap channels: Channel resolvability and semantic security. *IEEE Information Theory Workshop (ITW) 2014*, pp. 232–236, 2 November.
32. P. Bhadra, M.S. Shajahan, E. Bhattacharya and A. Chadha. 2014. Surface engineering in BioMEMS: Effect of self assembled monolayer (SAM) chain length for antigen detection. *International Conference on MEMS and Sensors ICMEMSS 2014*, IIT Madras, 18 December.
33. P. Bhadra, N.P. Ratchagar, A. Chadha and E. Bhattacharya. 2014. Size and charge selective transport of ZnO nanoparticles through silicon nanoporous membrane. *International Conference on MEMS and Sensors ICMEMSS 2014*, IIT Madras, 18 December.
34. S.M. Satheesh, A. Banerjee and E. Bhattacharya. 2014. Estimating failure probability of polysilicon cantilevers. *International Conference on MEMS and Sensors ICMEMSS 2014*, IIT Madras, 1 December.
35. S. Gangopadhyay, P. Sahu, E. Bhattacharya and A. Chadha. 2014. Effect of Pluronic additive on lipase for integrated EISCAP-DMF. *International Conference on MEMS and Sensors ICMEMSS 2014*, IIT Madras, 18–20 December.



36. R. Meenakshi, C. Malar, S. Bhattacharya and E. Bhattacharya. 2014. Electrostatically actuated micromirrors for Fourier Transform Spectroscopy. *International Conference on MEMS and Sensors ICMEMSS 2014*, IIT Madras, 19 December.
37. G. Kathel, P. Bhadra, A. Prabhakar and E. Bhattacharya. 2014. Improved mass estimation from multiple resonant peaks of microcantilever. *International Conference on MEMS and Sensors ICMEMSS 2014*, IIT Madras, 18–20 December.
38. S. Mukherjee and H. Ramachandran. 2014. Simulation of a dielectric bend with boundaryless beam propagation method. *Photonics 2014*, IIT Karagpur, 13–16 December.
39. V. Sudheesh, K. Jagannathan and S. Bhashyam. 2015. Distributed resource allocation for single-hop networks under the SINR model. *Proceedings of COMSNETS 2015*, Bangalore, India, 7 January.
40. N. DasGupta. 2015. III Nitride MIS-HEMTs—Two approaches to reduce leakage. *3rd International Symposium on Semiconductor Materials and Devices (ISSMD)*, Crystal Growth Centre, Anna University, p.40, 4 February.
41. R. Narasimman, A. Prabhakar and N. Chandrachoodan. 2015. Implementation of a 30ps resolution time to digital converter in FPGA. *Proceedings of International Conference on Electronic Design, Computer Networks & Automated Verification, EDCAV 2015*, 29 January.
42. K.C. Kosaraju, A.D. Mahindrakar, V.Muralidharan, A.K. Ekbote and R. Pasumarthy. 2015. Position and line-of-sight stabilization of spherical robot using feed forward proportional-derivative geometric controller. *Indian Control Conference*, 5 January.
43. V. Muralidharan, A.P. Vinod and A.D. Mahindrakar. 2015. Stability analysis of higher-degree first-order dynamical system. *Indian Control Conference*, 6 January.
44. I. Mondal and N. Krishnapura. 2015. Accurate constant transconductance generation without off-chip components. *28th International Conference on VLSI Design*, 3 January.
45. K.S. Rakshitdatta and N. Krishnapura. 2015. On slew rate enhancement in class-A opamps using local common-mode feedback. *28th International Conference on VLSI Design*, 3 January.
46. A. Vijayakumar and S. Bhattacharya. 2015. Multifunctional diffractive optical elements for the generation of higher order Bessel-like-beams. *SPIE Photonics West*, San Francisco, February.
47. V. Pramitha, M.S. Gayathri and S. Bhattacharya. 2015. Electron beam written subwavelength gratings for polarization separation in the infrared. *SPIE Photonics West*, San Francisco, February.
48. N. DasGupta. III Nitride MIS-HEMTs—Two approaches to reduce leakage. *3rd International Symposium on Semiconductor Materials and Devices (ISSMD)*, Crystal Growth Centre, Anna University, p.40, 4 February.
49. R. Mishra and K.S. Swarup. 2014. Power system restoration in smart grid environment. *18th National Power Systems Conference (NPSC)*, IIT Guwahati, Vol. 1 (1), pp 1–6, 18–20 December.
50. S. Karthick and K.S. Swarup. 2014. Power a novel islanding detection based on coupling in control action between real and reactive current components. *18th National Power Systems Conference (NPSC)*, IIT Guwahati, Vol. 1 (1), pp 1–6, 18–20 December.
51. P. Balakrishna, K.S. Swarup and K. Rajagopal. 2014. AMI/GIS based distribution system load flow for extended situational awareness. *18th National Power Systems Conference*, IIT Guwahati, Vol. 1 (1), pp 1–6, 18–20 December. (Paper No: 1569971955)
52. V. Panaganti and R. Aravind. 2015. Poster presentation: Robust non-rigid point set registration using graph-laplacian regularization. *IEEE Winter Conference on Applications of Computer Vision (WACV) 2015*. Waikoloa Beach, Hawaii, US, 6–9 January.
53. A.V. Nampootheri and S. Bhashyam. 2015. Co-ordinate interleaved amplify-and-forward relaying with a multi-antenna relay. *Proceedings of NCC 2015*, IIT Bombay, Mumbai, February–March.
54. R. Prasad, S. Bhashyam and A. Chockalingam. 2014. Optimum transmission strategies for the gaussian many-to-one interference network. *Proceedings of IEEE ICC 2014*, Sydney, Australia, pp. 1953–1958, June.
55. D. Behera and N. Krishnapura. 2014. A 2-Channel 1MHz BW, 80.5dB DR ADC using  $\Delta\Sigma$  modulator and zero-ISI filter. *Proceedings of the 40th European Solid-State Circuits Conference*, Venice, Italy, September.
56. K. Jagannathan and R. Ganti. Spatial CSMA: A distributed scheduling algorithm for the SIR model with time-varying channels. *Peruru Subrahmanya Swamy, National Conference on Communications*, February.

#### Papers published in refereed journals/international journals

1. N.S. Pushpak, A.K. Ekbote and A.D. Mahindrakar. 2014. Semistability analysis of the chaplygin sleigh and nonsmooth mechanical oscillator. *ASME Journal on Dynamic Systems, Measurement and Control* 136 (3).
2. S. Karthick and K.S. Swarup. 2014. Theoretical analysis of islanding phenomenon in distributed generation. *The Journal of CPRI* 9 (4): 503–508.
3. V. Jayadev and K.S. Swarup. December 2013. Optimization of micro grid with demand side management. *The Journal of CPRI* 9 (4): 515–520.

4. S. Parvathi and K.S. Swarup. December 2013. Transients instability detection and prevention control schemes. *The Journal of CPRI* 9 (4): 469–476.
5. R. Sarathi V.S. Harsha, H. Griffiths and A. Haddad. 2014. Understanding water droplet initiated discharges on Epoxy Nanocomposites under harmonic AC voltages adopting UHF technique. *IEEE Transactions on Dielectrics and Electrical Insulation* 21 (2): 918–925.
6. R. Sarathi, S. Aravinth and K. Sethupathi. 2014. Analysis of surface discharge activity in epoxy nanocomposites in liquid nitrogen under AC voltages. *IEEE Transactions on Dielectrics and Electrical Insulation* 21 (2): 462–459.
7. R. Sarathi, M. Sheema and J.S. Rajan. 2014. Understanding surface discharge activity in copper sulphide diffused oil impregnated pressboard under AC voltages. *IEEE Transactions on Dielectrics and Electrical Insulation*. 21 (2): 674–682.
8. V.A. Tiwari, D. Jaeger, A. Scholze and D.R. Nair. 2014. Analysis of gate-induced drain leakage mechanisms in silicon-germanium channel pFET. *IEEE Transactions on Electron Devices* 61 (5): 1270–1277.
9. S. Pavan. 2014. Continuous time delta sigma modulator design using the method of moments. *IEEE Transactions on Circuits and Systems: Regular Papers* 61 (6).
10. A. Jain and S. Pavan. 2014. Characterization techniques for high speed oversampled data converters. *IEEE Transactions on Circuits and Systems: Regular Papers* 61 (5).
11. P. Sarvepalli. Relation between surface codes and hypermap-homology quantum codes. *Physical Review A* 89 (052316).
12. N. Philip and B. George. May 2014. Design and analysis of a dual-slope inductance-to-digital converter for differential reluctance sensors. *IEEE Transactions on Instrumentation and Measurement* 63 (5): 1364–1371.
13. C.S. Anoop and B. George. May 2014. A linearizing digitizer for sensors with polynomial characteristics. *IEEE Transactions on Instrumentation and Measurement* 63 (5): 1022–1031.
14. V.K. Gurugubelli and S. Karmalkar. May 2014. A unified analytical model of the junction electrostatics in nanowire and nanotube arrays. *Applied Physics Letters* 104 (203502).
15. R. Vaidyanathaswami and A. Thangaraj. March 2014. Robustness of physical layer security primitives against attacks on pseudorandom generators. *IEEE Transactions on Communications* 62 (3): 1070–1079.
16. A. Thangaraj and R. Vaze. May 2014. Online algorithms for basestation allocation. *IEEE Transactions on Wireless Communications* 13 (5): 2966–2975.
17. S.K. Kollimalla and M.K. Mishra. 2014. Variable perturbation size adaptive P&O MPPT algorithm for sudden changes in irradiance. *IEEE Transactions on Sustainable Energy* 5 (3): 718–728.
18. C. Kumar and M.K. Mishra. A multifunctional DSTATCOM operating under stiff source. *IEEE Transactions on Industrial Electronics* 61 (7): 3131–3136.
19. C.S. Anoop, B. George and V.J. Kumar. 2014. Analysis of a tunnelling magneto-resistance-based angle transducer. *IET Circuits Devices and Systems* 8 (4): 301–310.
20. V.P. Kumar and S. Bhashyam. August 2014. MIMO gaussian X channel: Noisy interference regime. *IEEE Communications Letters* 18 (8): 1295–1298.
21. N. Rajesh and S. Pavan. August 2014. Design of lumped component programmable delay elements for ultra-wideband beamforming. *IEEE Journal of Solid State Circuits* 56 (8).
22. S.S.M. Ali, B. George and L. Vanajakshi. August 2014. Mutually coupled multiple inductive loop system suitable for heterogeneous traffic. *IET Intelligent Transport Systems* 8 (5): 470–478.
23. S. Pavan and R. Rajan. September 2014. Interreciprocity in linear periodically time varying networks with sampled outputs. *IEEE Transactions on Circuits and Systems: Express Briefs* 61 (9).
24. S. Pavan and R. Rajan. September 2014. Simplified analysis and simulation of the STF, NTF and noise in CTDSMS. *IEEE Transactions on Circuits and Systems: Express Briefs* 61 (9).
25. S. Pavan and R. Rajan. September 2014. Interreciprocity in linear periodically time varying networks with sampled outputs. *IEEE Transactions on Circuits and Systems: Express Briefs* 61 (9).
26. S. Pavan and R. Rajan. 2014. Simplified analysis and simulation of the STF, NTF and noise in CTDSMS. *IEEE Transactions on Circuits and Systems: Express Briefs* 61 (9).
27. R. Rajan and S. Pavan. 2014. Design techniques for continuous-time delta sigma ADCS with embedded active filtering. *IEEE Journal of Solid State Circuits* 59 (10).
28. A. Sukumaran and S. Pavan. 2014. Low power design techniques for single-bit audio continuous-time delta sigma ADCS using fir feedback. *IEEE Journal of Solid State Circuits* 59 (11).
29. V.S. Kumar, N.J. Vasa, R. Sarathi, D. Nakamura and T. Okada. 2014. Understanding the discharge activity across GFRP material due to salt deposit under transient voltages by adopting OES and LIBS technique. *IEEE Transactions on Dielectrics and Electrical Insulation* 21 (5): 2283–2292.
30. R. Sarathi, I.P.M. Sheema and V. Subramanian. 2014. Influence of harmonic AC voltage on surface discharge formation in transformer insulation. *IEEE Transactions on Dielectrics and Electrical Insulation* 21 (5): 2383–2393.



31. M.G. Danikas and R. Sarathi. 2014. Electrical machine insulation: Traditional insulating materials, nano-composite polymers and the question of electrical trees. *Electrical Engineering Funktechnikplus* 7 (1): 1–16.
32. B. Srinivasan, A.V. Harish, K. Srijith and K. Balasubramaniam. 2014. Elastic wave sensing using fiber bragg grating-based sensors and dynamic interrogators. *Journal of the Indian Institute of Science* 94 (3): 329–339.
33. A. Sukumaran and S. Pavan. 2014. Low power design techniques for single-bit audio continuous-time delta sigma ADCS using fir feedback. *IEEE Journal of Solid State Circuits* 59 (11).
34. S. Mithun, B. George and M. Sivaprakasam. 2014. A new inductive proximity sensor based guiding tool to locate metal shrapnel during surgery. *IEEE Transactions on Instrumentation and Measurement* 63 (12): 2940–2949.
35. N. Sudha, K. Sridharan and Dan Wilkinson. December 2014. A pipelined architecture for motion tracking on a multicore environment. *Proceedings of 14th IEEE International Symposium on Integrated Circuits (ISIC)*, Singapore, pp. 384–387.
36. R. Kakarla and D. Venkitesh. 2014. Experimental demonstration of all-optical header recognition system using logic gates. *International Conference on Fiber Optics and Photonics, PHOTONICS 2014*, Kharagpur, India, 14–17 December.
37. S.K. Reddy and D. Venkitesh. 2014. Duobinary modulation format for increased split ratio in long-reach passive optical networks. *International Conference on Fiber Optics and Photonics, PHOTONICS 2014*, Kharagpur, India, 14–17 December.
38. S.M. Haneef, D. Venkitesh and B. Srinivasan. 2014. Modeling stimulated brillouin scattering in leaf using finite difference method. *International Conference on Fiber Optics and Photonics, PHOTONICS 2014*, Kharagpur, India, 14–17 December.
39. T. Nou-Shene, V. Pudi, K. Sridharan, V. Thomas and J. Arthi. February 2015. A VLSI architecture for video stabilization and implementation on an FPGA-based autonomous vehicle. *Accepted for publication in IET-Computer Vision*.
40. G. Saha, R. Pasumarthy and P. Khatavkar. 2015. Towards analog memristive controllers. *IEEE Transactions on Circuits and Systems-I* 62 (1): 205–214.
41. V. Muralidharan and A.D. Mahindrakar. 2015. Position stabilization and waypoint tracking control of mobile inverted pendulum robot. *IEEE Transactions on Control System Technology* 22 (6): 2360–2367.
42. V. Chakrapani and K.S. Swarup. January 2015. Estimation of electronic suppression circuit resistance for protective relaying applications. *Electric Power Components and Systems* 43 (3): 282–297.
43. V.S. Sista and E. Bhattacharya. 2014. Knudsen force based MEMS structures. *Journal of Micromechanics and Micro engineering*.
44. K. Sridharan and V. Pudi. 2015. Design of arithmetic circuits in quantum dot cellular automata nanotechnology. *Springer Verlag Studies in Computational Intelligence Book Series* 599, ISBN 978-3-319-16687-2, DOI 10.1007/978-3-319-16688-9\\_1.
45. R. Prasad, S. Bhashyam and A. Chockalingam. February 2015. On the sum-rate of the gaussian MIMO Z channel and the gaussian MIMO X channel. *IEEE Transactions on Communications* 63 (2): 487–497.
46. N. Krishnapura and K.S. Rakshitdatta. August 2014. A model-agnostic technique for simulating per-element distortion contributions. *IEEE Transactions on Circuits and Systems I-Regular Papers* 61 (8): 2219–2228.
47. K. Jannathan, M. Markakis, E. Modiano and J.N. Tsitsiklis. May 2014. Throughput optimal scheduling over time-varying channels in the presence of heavy-tailed traffic. *IEEE Transactions on Information Theory* 60 (5): 2896–2909.
48. E. Vivek and V. Ramaiyan. April 2014. A framework for quality of service with a multiple access strategy. *Wireless Communication Letters* 3 (2).

## 6. Staff

Designation	Staff Member
<b>Administrative</b>	
Junior Superintendent	Rajendiran M. Robin Kennady
Senior Assistant	Jayasankaran V. Vidya N.
Junior Assistant	Sethuraman A.
Attendant	Elangovan K.V.

Designation	Staff Member
	Mallika M. Sivakumar W. Sridhar T.
<b>Technical</b>	
Senior Technical Superintendent	Malarvizhi M. Sathyabama M. Usha Rani N.
Technical Superintendent	Anand P. Devaki N. Janaki M. Jayachandran R. Latha S. Murugan P. Selvam K.C. Sobana S. Umaithanupillai B.
Junior Technical Superintendent	Kothandaraman K. Padmavathi T. Rajendran C. Udaya Kumar
Senior Technician	Athinarayanan B. Chandrasekaran D.S. Chandrasekaran R. Vedhachalam S.
Junior Technician	Jayavel D. Prakash J. Saranath P.

### Distinguished visitors to the department

Sl. No.	Visitor's Name and Designation	Purpose	Place to Visit	Month and Date
1	Charless Sidney Burrus	Department Visit	Department	15 April 2014
2	Ranga Prasad N., Ph.D. student, ECE Department, IISc Bangalore	Research collaboration (with Srikrishna Bhashyam), 1 March –9 April 2014	Department	21 April 2014
3	Rajesh Sundaresan, Associate Professor, Department of ECE, IISc Bangalore	Research collaboration with Srikrishna Bhashyam (19–20 May 2014)	Department	19 May 2014
4	Thomas Thundat, University of Alberta	Talk in Department	IIT & EE Department	15 May 2014
5	Prof Subhashish Bhattacharya, North Carolina State University	Talk in Department	EE Department	16 June 2014
6	Rajesh Sundaresan, ECE Department, IISc Bangalore	Research collaborarion with Srikrishna Bhashyam	Department	20 June 2014
7	Dr Takahiro Imai	To discuss about collaborative work between Thoshiba Japan and HV lab IIT Madras	Department	17 July 2014
8	Prof Okazaki	To initiate collaborative Research between Nagaoka University of Technology and IIT Madras	Department	24 July 2014

Sl. No.	Visitor's Name and Designation	Purpose	Place to Visit	Month and Date
9	Dr Maurizio Albano	As a part of UKIERI project	Department	20 August 2014
10	Dr Ahmed Noemaun, IBM SRDC, US	Talk on A glimpse at Semiconductor Development in IBM's SRDC	Department	7 August 2014
11	Rajesh Sundaresan, ECE, IISc Bangalore	Research collaboration with Srikrishna Bhashyam (13–17 October 2014)	Department	13 October 2014
12	Prof Gilberto Brambilla, Optoelectronics Research Centre University of Southampton	Research Collaborations	Department	13 October 2014
13	Prof Ravi Banavar Systems and Control Engineering, IIT Bombay	Talk on Attitude Synchronization of Satellites Actuated by Internal Mechanisms	Department	14 October 2014
14	Dr Sreeram Kannan, University of Washington	Talk on Information Theory for Computational Biology	Department	11 December 2014
15	Karthikeyan Shanmugam, UT Austin, Old Student	Talk on Sparse Polynomial Learning and Graph Sketching	Department	19 December 2014
16	Prof Jung Han, Yale University	The history, challenges, and prospect of solid state LED lighting	Department	6 January 2015
17	Prof Jeff Froyd, Texas A&M	Discussion with faculty and students on how to develop research thinking	Department	8 January 2015
18	Dr Sriram Sundarajan	WiFi–5G and beyond	Department	11 January 2015
19	Prof Selvakumar, University of Waterloo	Beyond CMOS–towards new frontiers	Department	14 January 2015
20	Prof Rahul Vaze, TIFR	Being Greedy is Good: Approximating the FDMA Capacity	Department	19 January 2015
21	Prof Vladimir Blazek, from The University of Aachen, Germany	Non invasive medical diagnostics using optics–recent research at MedIT, RWTH Aachen	Department	20 January 2015
22	Dr Subramanain Iyer, IBM Microelectronics	3D Integration for the Memory Subsystem	Department	23 January 2015
23	Dr Aditya Gopalan, IISc Bangalore	2 Tutorials on the modern study of sequential learning and decision making under uncertainty	Department	3–5 February 2015
24	Anant Agarwal	To receive Distinguished Alumnus Award	Department	10 February 2015
25	Prof Chang, NCTU	Prof Edward works in the area of microelectronic devices, to meet faculty to push for better interaction between their department and ours	Department	5 February 2015
26	Prof Vidyasagar, University Of Dallas	Discussions with faculty	Department	23–24 February 2015
27	Prof Carlos Silvestre, University of Macau, China	New results on GAS Sensor-based SLAM	Department	27 February 2015

#### 4.8.6. Other Activities of the Department

##### International collaboration

##### Student visits

Sl. No.	Name of the Student	Purpose of Visit	Date and Place
1	6 students from NIT Mizoram along with their teacher visited the EE Department for 3 days (they visited the CS department as well)	They are potential candidates for the final year B.Tech.–Ph.D. option; of course we do not have an MOU with NIT Mizoram. The students were very happy with their visit	IIT Madras, EE Department, 30 December 2014

## 4.9. DEPARTMENT OF ENGINEERING DESIGN

### 4.9.1. Introduction

Established in 2006, the Department of Engineering Design at IIT Madras is the first of its kind in India and the 16th department to be set up at the institute. The department provides much-needed leadership in engineering design and offers two novel dual-degree programmes in engineering design. While both programmes offer a B.Tech. in Engineering Design, the first, which began in 2006, offers an M.Tech. in Automotive Engineering and the second, which commenced in 2008, offers an M.Tech. in Biomedical Design. The department launched the novel dual degree programme in engineering design with a view to providing much-needed leadership in this area. The first of its kind in the country, the programme constitutes a B.Tech. specialisation in engineering design and M.Tech. specialisation in automotive engineering, with a strong thrust on the modern practices of design. M.S. and Ph.D. programmes are being offered since 2007. Recently, an M.Tech.-and-Ph.D. dual degree programme has been introduced.

'From concept to a component that meets a desired function' aptly describes engineering design. 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 introduced in the first year 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, robotics and biomedical device engineering are also offered.

### 4.9.2. Academic Programmes

#### New courses introduced

Sl. No.	Course No.	Title
1	ED3040	Aesthetics in Design
2	ED5053	Mechanics of Materials with Microstructure

#### Students on roll as of September 2014 + M.S. and Ph.D. scholars admitted in January 2015

Programme	I year	II Year	III Year	IV Year	V Year and Others	Total
Dual Degree	55	55	57	53	53 + 25	298
M.S.	8	16	7	12	—	43
Ph.D.	15	13	14	13	1	56
<b>Total</b>	<b>78</b>	<b>84</b>	<b>78</b>	<b>78</b>	<b>79</b>	<b>397</b>

#### Names of students/scholars who attended conferences/workshops/seminars/symposia abroad/in India

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposium/Workshop	Date and Venue	Financial Assistance from
<b>Abroad</b>					
1	Vignesh Rajaram	ED12D023	American Control Conference	June 2014, Portland, Oregon, USA	IIT Madras
2	Nagesh Kolagani	ED11D011	Seventh International Congress on Environmental Modelling and Software	15-19 June 2014, San Diego, California, USA	IIT Madras

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposium/Workshop	Date and Venue	Financial Assistance from
3	Jatheendranath Moothayil	ED12D012	Third Joint International Conference on Multi body System Dynamics and the Seventh Asian Conference on Multibody Dynamics	July 2014, Busan, Korea	IIT Madras
4	Suresh M.	ED09D003	36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC-14)	26–30 August 2014, Chicago, IL, USA	FCRI
5	Vani Damodaran	ED11D013		26–30 August 2014, Chicago, IL, USA	IIT Madras
6	Rachana S. Akki	ED12D015	Breast Tissue Phantoms to Assist Compression Study for Cancer Detection Using Microwave Radiometry	26–30 August 2014, Chicago, IL, USA	IIT Madras
7	Geetha Chakaravarthi	ED11D007	A Compact Microwave Patch Applicator for Hyperthermia Treatment of Cancer	26–30 August 2014, Chicago, IL, USA	IIT Madras
8	Poojali Jayaprakash	ED12D013	Semi Analytical Model for Non-resonant Layered Frequency Selective Surfaces	24–26 August 2014, Guangzhou, China	IIT Madras
9	Edward Jero S.	ED12D003	International Conference on Mechanics in Medicine and Biology (ICMMB-19)	September 2014, Bologna, Italy	IIT Madras
10	Jiju P.	ED11D003	Symposium on Solid and Physical Modelling 2014 (SPM 2014) and Shape Modeling International 2014 (SMI 2014)	26–30 October 2014, Hongkong	IIT Madras
11	Shubhashisa Sahoo	ED08D007	Proceedings of the ASME 2014 International Mechanical Engineering Congress & Exposition	November 2014, Montreal, Canada	DRDO
12	Balasakthivel K.	ED11S005	Proceedings of the ASME 2014 International Mechanical Engineering Congress & Exposition	November 2014, Montreal, Canada	Bosch
13	Vidyalakshmi M.R.	ED12D022	IEEE Asia-Pacific Microwave Conference (APMC 2014)	4–7 November 2014, Sendai, Japan	IIT Madras
14	Jiyo S. Athertya	ED12D014	Automatic Initialization for Segmentation of Medical Images Based on Active Contour	8–10 December 2014, Miri, Malaysia	IIT Madras
15	Aparna N.	ED11D020	Workshop on Ultrafast Photonic Processes and Interactions	28–29 January 2015, Dublin City University, Ireland	Dublin City University, Ireland
16	Srinagalakshmi Nammi	ED11D014	SPIE Photonics West 2015, LASE, Laser-based Micro- and Nanoprocessing IX, San Francisco, USA	13–18 February 2015, Moscone Convention Centre	IIT Madras
17	Y. Esther Blesso Vidhya	ED12D004			IIT Madras
18	V. Amol	ED12D001	17th US National Congress on Theoretical and Applied Mechanics	June 2014, East Lansing, Michigan USA	IIT Madras
<b>India</b>					
19	Rahul Bhardwaj	ED12D016	International Ergonomic Conference (HWWE 2014) on Palm Pressure Based Sensing of Automobile Driver Alertness	3–5 December 2014, IIT Guwahati	IIT Madras

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposium/Workshop	Date and Venue	Financial Assistance from
20	Rahul Bhardwaj	ED12D016	International Ergonomic Conference (HWWE 2014) on Optimization of Muscle Forces of Lower Arm in Car Driving	3–5 December 2014, IIT Guwahati	IIT Madras
21	Rahul Bhardwaj	ED12D016	International Ergonomic Conference (HWWE 2014) on Survey of Human Cognitive Response to Vehicles during Night Conditions	3–5 December 2014, IIT Guwahati	IIT Madras
22	Rahul Bhardwaj	ED12D016	International Ergonomic Conference (HWWE 2014) on Evaluation of Yoga Postures with sEMG	3–5 December 2014, IIT Guwahati	IIT Madras
23	Sathish Kumar S.	ED14D009	International Ergonomic Conference (HWWE 2014) on Ergonomic Risk Assessment of Operators in CNC Machining Environments	3–5 December 2014, IIT Guwahati	IIT Madras
24	S.M. Vadivel	ED12S022	International Ergonomic Conference (HWWE 2014) on Lean Ergonomics in Indian Postal Service—A Case Study	3–5 December 2014, IIT Guwahati	IIT Madras
25	P. Swathy	ED14D023	International Ergonomic Conference (HWWE 2014) on EMG Based Human Computer Interface for Below Knee Amputee	3–5 December 2014, IIT Guwahati	IIT Madras
26	Minerva Rajendran	ED14D019	International Ergonomic Conference (HWWE 2014) on Survey Comparing Lower Extremity Muscle Pain in Women Wearing High Heels and Flat Foot Wear	3–5 December 2014, IIT Guwahati	IIT Madras
27	Sivasankari	ED12S021	International Ergonomic Conference (HWWE 2014) on Validation Methodology for High Fidelity Numerical Spine and its Ergonomics Aspects	3–5 December 2014, IIT Guwahati	IIT Madras
28	Srinagalakshmi Nammi	ED11D014	National Laser Symposium, NLS-23	3–6 December 2014, S.V. University, Tirupati	IIT Madras
29	V. Sathiesh Kumar	ED10D006			
30	K. Sulochana	ED09D007			
31	Vani Damodaran	ED11D013	International Conference on Optics and Photonics (ICOP-15)	20–22 February 2015, University of Calcutta, Salt Lake Campus, Kolkata	IIT Madras
32	Pauline John	ED13D005	International Conference on Optics and Photonics (ICOP-15)	20–22 February 2015, University of Calcutta, Salt Lake Campus, Kolkata	IIT Madras

#### Names of students/scholars who won outside prizes and awards

Sl. No.	Name of the Student/Scholar	Roll No.	Name of Prize	Prize Awarded by
1	Jatheendranath Moothayil	ED12D012	Student Paper Award	Seventh Asian Conference on Multibody Dynamics held in Busan, Korea

#### Names of students/scholars who won convocation/Institute Day prizes

Sl. No.	Name of the Student/Scholar	Roll No.	Name of Prize
1	George F.	ED12B021	Ms Latha & Sampath Srinath Prize
2	K. Dilip	ED10B008	Sarada Bhaskar Reddy Award



### 4.9.3. Faculty and Their Activities

Name and Qualifications	Major Areas of Specialization
<b>Professors</b>	
T. Asokan	Robotics; mechatronics; control; electrohydraulic servo systems
R. Krishna Kumar	Nonlinear finite elements; vehicle dynamics; tyre mechanics
Nilesh J. Vasa [Head]	Optomechatronics; laser-based sensing; micromanufacturing
Srikanth Vedantam	Design with novel materials; mechanical behaviour of materials; wetting; microstructure evolution
Venkatesh Balasubramanian	Human factors and ergonomics; biomedical devices and implants; innovation in manufacturing
<b>Associate Professors</b>	
M. Ramanathan	Geometric and solid modelling; CAD; computer vision; computational geometry; computer graphics; computational biology; shape search
Sankara J. Subramanian	Digital image correlation; nano-indentation; mechanics of materials; finite element analysis
G. Saravana Kumar	CAD; computational geometry; reverse engineering; shape optimisation; biomechanical modelling; biomedical imaging and reconstruction; biomimetic prosthetic and scaffold design; layered manufacturing; soft computing
C.S. Shankar Ram	Model-based control and diagnostics; automotive systems; vehicle dynamics; analysis of transportation systems
<b>Assistant Professors</b>	
Balkrishna C. Rao	Sustainable manufacturing; sustainable design; nano-manufacturing; manufacturing for biomedical applications; simulation of manufacturing processes
Ganapathy Krishnamurthi	X-ray computed tomography physics; ultrasound image processing; biological imaging using optical microscopy
Kavitha Arunachalam	Biomedical instrumentation; radio frequency and microwave antenna design; hyperthermia physics; non-destructive material evaluation
Palaniappan Ramu	Optimisation; application of statistical and probabilistic techniques for engineering design under uncertainties; risk/reliability-based engineering design; surrogate-based modelling and analysis
Sandipan Bandyopadhyay	Robotics; dynamics of multibody systems; design
<b>Visiting Professors</b>	
Soma Guhathakurta (up to December 2014)	Biomedical instrumentation; tissue engineering; innovative scaffold creation; stem cell technology

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

Sl. No.	Coordinator(s)	Title	Dates
<b>Conferences</b>			
1	Venkatesh Balasubramanian	Recent Advances in Transportation Human Factors (RATH): Driver Performance Monitoring	29 January 2015
<b>Workshops</b>			
1	Palaniappan Ramu	Structural Optimization: Theory and Hands-on Practice	14–19 July 2014
2	ED Department	Open House	25 October 2014
<b>Short-term courses</b>			
1	C.S. Shankar Ram	CEP Programme on Modelling and Control of Dynamic Systems, Tractors and Farm Equipment Limited	26–27 June 2014
2		CEP Programme on Fundamentals of Automotive Systems, Mahindra & Mahindra, Mahindra Research Valley, Chengalpattu	10–11 July 2014
3	Venkatesh Balasubramanian	CEP on Process Innovation for Manufacturing Excellence, Anand Automotive Limited—Module 1	2–28 June 2014

Sl. No.	Coordinator(s)	Title	Dates
4	Venkatesh Balasubramanian	CEP on Process Innovation for Manufacturing Excellence, Anand Automotive Limited—Module 2	8–11 August 2014
5	Venkatesh Balasubramanian	CEP on Process Innovation for Manufacturing Excellence, Anand Automotive Limited—Module 3	17 November to 12 December 2014
6	Venkatesh Balasubramanian	CEP on Transportation Human Factors, Harita Seating Systems Private Limited	22–24 January 2015
7	Venkatesh Balasubramanian	CEP on Process Innovation for Manufacturing Excellence, Anand Automotive Limited—Module 4	18–22 February 2015
8	Palaniappan Ramu and Saravana Kumar	CEP on Stochastic Optimisation, Mahindra & Mahindra, Mahindra Research Valley	17–20 November 2014
9	C.S. Shankar Ram	CEP Programme on Fundamentals of Automotive Systems, Mahindra & Mahindra, Mahindra Research Valley	13–14 August 2014 and 18–19 September 2014
10		CEP Programme on Automotive Control Systems, Apollo Tyres Limited, Gurgaon	28 August 2014
11		Lectures of Stability Analysis of Dynamic Systems, BEML Limited	August 2014
12	Palaniappan Ramu	First Course on Statistics and Reliability, Daimler R&D, Oragadam	18–20 September 2014
13	Balaji Srinivasan (EE) and N.J. Vasa (ED)	Short-term training courses on optical sensors and instruments	6–10 October 2014
14	T. Asokan and N.J. Vasa	STC on Industrial Automation and Mechatronics	13–18 October 2014
15	C.S. Shankar Ram	CEP Programme on Fundamentals of Automotive Systems, Mahindra & Mahindra, Mahindra Research Valley	6–7 November 2014
16	Palaniappan Ramu	CEP on DoE and Reliability in Engineering Optimisation	19–24 December 2014
17	Palaniappan Ramu and Saravana Kumar	CEP on Introduction to Optimisation, Mahindra and Mahindra, Mahindra Research Valley	8–9 January 2015
18	C.S. Shankar Ram	CEP on Fundamentals of Automotive Systems, Mahindra & Mahindra, Nashik	22–23 January and 19–20 March 2015
19	C.S. Shankar Ram	AICTE Short-Term Course on Recent Advances in Automotive Systems	2–6 February 2015

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

Sl. No.	Name of Faculty Member	Title	Institution	Dates
<b>Workshops</b>				
1	M. Ramanathan	11th Annual International CAD Conference	Hongkong, China	23–26 June 2014
2	T. Asokan	17th Annual Robosub Competition	Unmanned Vehicle Systems International and US Office of Naval Research, San Diego, USA	25 July to 6 August 2014
3	G. Saravana Kumar	Additive Manufacturing and 3D Printing	Nottingham, UK	6–9 July 2014
4	Sandipan Bandyopadhyay	Fifth International Summer School on Screw Theory-Based Methods in Robotics	Bologna, Italy	3–12 September 2014
5	M. Ramanathan	Symposium on Solid and Physical Modelling 2014 (SPM 2014) and Shape Modeling International 2014 (SMI 2014)	Hongkong	26–28 and 28–30 October 2014

Sl. No.	Name of Faculty Member	Title	Institution	Dates
<b>Seminars</b>				
6	N.J. Vasa	International Forum for Green Asia 2014 Program	Kyushu University, Fukuoka, Japan	26–30 November 2014
<b>Conferences</b>				
7	Kavitha Arunachalam	Role of 3D Electromagnetic Simulation in Medical Technology and Process Monitoring	Keynote lecture, Electronics Track, 2014 ANSYS Convergence Conference, Bangalore	9 May 2015
8	Shankar Ram C.S.	2014 IEEE International Conference on Vehicular Electronics and Safety	Hyderabad, India	December 2014
9	Sandipan Bandyopadhyay	Fifth International Summer School on Screw Theory–Based Methods in Robotics	University of Bologna, Bologna, Italy	3–11 September 2014
10	T. Asokan	Industrial Automation and Mechatronics	IIT Madras	24–29 November 2014
11	Kavitha Arunachalam	Applications of Microwaves in Medical Imaging and Therapy, AICTE-QIP Training Programme on Biomedical Systems, Signals and Images	Applied Mechanics Department, IIT Madras	17–21 November 2014

#### Special lectures delivered by faculty members at other institutions

Sl. No.	Name of Faculty Member	Topic	Institution	Date
1	Palaniappan Ramu	Reliability-based design experiences and developing products with social relevance	PSG College of Technology (TeQIP programme)	8 May 2014
2	Venkatesh Balasubramanian	Essence of operational risk management and safety audit	Regional Labour Institute, Chennai	25 August 2014
3		Human system interfaces: rehabilitation and augmentation	CII	22 August 2014
4	Sandipan Bandyopadhyay	The mathematics and engineering of parallel manipulators	Robotics Laboratory at the University of Duisburg Essen, Duisburg, Germany	2 September 2014

#### Visits abroad by faculty members

Sl. No.	Name of Faculty Member	Place Visited	Dates	Purpose of Visit	Funding from
1	G. Saravana Kumar	Nottingham, UK	7–10 July 2014	Inward delegation to the UK on Additive Manufacturing and 3D Printing	Partially funded by UK Science and Innovation Network; the remaining funding from CPDA
2	Sandipan Bandyopadhyay	Duisburg, Germany	1–2 September 2014	Visiting University of Duisburg's Robotics Lab	No financial commitment
3	Nilesh J. Vasa	Japan	26–27 October 2014	Attending Meeting on Green Asia Program at Interdisciplinary Graduate School of Engineering Sciences, Kyushu University, Fukuoka, Japan	Green Asia Programme, Kyushu University, Fukuoka, Japan
4		Japan	16 March to 31 July 2015	Visiting Professor, teaching a course on optoelectronics and carrying out related research activities	Kyushu University, Fukuoka, Japan
5	R. Krishna Kumar	Norway	7–21 February 2015	Personal	No financial assistance

## Honours and awards obtained by faculty members

Sl. No.	Name of Faculty Member	Name of Award	Awarded by	Awarded for	Date of Award
1	T. Asokan	Indian representative (with voting rights) in the Joint Working Group (JWG 9) of International Standards Organisation (ISO) and IEC (ISO/TC 184/SC 2/JWG9)	Bureau of Indian Standards (BIS)	—	31 January 2015

## Fellowships of academies and professional societies

Sl. No.	Name of Faculty Member	Year of Admission
1	Kavitha Arunachlam, Member, Technical Committee on Therapeutic Systems and Technologies, IEEE Engineering in Medicine and Biology Society, 2015	2015

## Editorial boards of journals

Sl. No.	Name of Faculty Member	Position (Editor/Member)	Journal
1	C.S. Shankar Ram	Associate Editor	<i>ASME Journal of Dynamic Systems, Measurement and Control</i>
2	C.S. Shankar Ram	Member, Editorial Board	<i>International Journal of Vehicular Technology</i>

## 4.9.4. Design and Development Activities

### Process/instruments/equipment/software designed and developed

A device and method for determining the elemental identity and analysis on moving target from a variable stand-off distance: The invention relates to the use of the laser-induced breakdown spectroscopy technique for detecting a contaminant layer on moving targets such as wind turbine blades (patent application no. 4578/CHE/2013).

### New facilities added or major equipment procured

Sl. No.	Equipment	Value (lakhs of ₹)
1	Electromechanical test system (Dak System Inc.)	21.87 (department grant)
2	Mobile robot (YOUBOT) (Kuka Robotics)	17.35 (Ministry of Labour and Employment (MoLE)–Incubation Centre)
3	Multipurpose laboratory station (Elmack Engineerin+g Service)	13.12 (MoLE–Incubation Centre)
4	Electrical probe station (Precise Measurement Technology)	18.67 (MoLE–Incubation Centre)
5	Rotary arm robot system (SCARA) (MTAB Engineers)	37.08 (MoLE–Incubation Centre)
6	Modular mechatronics system (Festo Controls)	36.43 (MoLE–Incubation Centre)
7	Rapid control prototyping system (Automotive Test Systems)	52.66 (MoLE–Incubation Centre)
8	Stirling engine test bench (Gap Technologies)	24.32 (MoLE–Incubation Centre)
9	Digital manufacturing simulation software (Delfoi Tanoti Technologies)	21.49 (MoLE–Incubation Centre)
10	Infrared camera (800–1700 nm) (Allied Scientific Pro)	8.33 (DST Research Grant)

## Patents filed

Sl. No.	Names of Faculty Members	Title
1	Matha Sai Akhil, Sandeep Rajkumar, Sai Sri Harsha Gangasani, Vamshi Pavan, Saketh Chennamasetty, Palaniappan Ramu, G. Saravana Kumar	A push-button mechanism for time change in analogue wrist watch
2	M. Prathyusha, V. Naga Sowjanya, Rajeevi Rathod, Nivea Valsaraj, Aditi Malpani, Palaniappan Ramu, G. Saravana Kumar	Joint mechanism for modular jewellery
3	Derek D. Kuttikkat, Aswin R., Muhammed Shahidh, Mohammed Safwan K.P., P. Bharath Kumar, Palaniappan Ramu, G. Saravana Kumar	Integrated watch crown battery: Battery placed inside crown of the watch
4	Aayush Maloo, Anant Gupta, Anupam Chandra, Sujata, Dheepika, Palaniappan Ramu, G. Saravana Kumar	Loop-based adjustable metal strap using key-presser

Sl. No.	Names of Faculty Members	Title
5	Sagar Sathrasala, Vamsi Krishna Gujjala, Ningthoujam Nelson Singh, Mohit Kumar Meena, Palaniappan Ramu, G. Saravana Kumar	A screw-type adjustable linkage interface for strap assembly
6	Sagar Joshi, Neeraj Gadkari, Rakesh N. Rao, Piyush Kumar Maske, Sai Teja Dommeti, Palaniappan Ramu, G. Saravana Kumar	Variable speed mechanism to eliminate chain shifting in bicycles
7	Abishek Karunakaran, Arun Raghupathy, Athul Vijayan, Maharishi R.B., Palaniappan Ramu, G. Saravana Kumar	Use of super-absorbent polymers for drying in washing machines
8	Siddharth Dash, Sachin K. Sunny, Ghanshyam Karol, Rohit Janagal, Palaniappan Ramu, G. Saravana Kumar	Piston mechanism in vacuum drying washing machine
9	Saurav Agarwal, Sivasankar Arul, Edward Jero, Murali K. Karnam, Sandipan Bandyopadhyay, G. Saravana Kumar, Palaniappan Ramu	Measurement of pressure on the wall of a rotating drum
10	Rohan Chavan, Aneesh Bhir, Dhruvesh Patel, Ruturaj Bargal, Harshad Dahake, Palaniappan Ramu, G. Saravana Kumar	An inflated hot air bag design for washing machine and uses thereof
11	Kiran Vaidhya, Rakesh K.S., Kotha Bharath Kumar Reddy, G. Balaji Krishna Prasad, Palaniappan Ramu, G. Saravana Kumar	Method for increasing RPM and drying rates in a washing machine with an epicyclic gear assembly
12	Soma Guhathakurta, Venkatesh Balasubramanian	Engineered pericardium and derivatives for uses in medicine, pharmaceuticals, food and cosmetics
13	Venkatesh Balasubramanian, Soma Guhathakurta, S. Robert Rajkumar	Electrophysiological monitoring of the heart using dry electrodes on non-traditional, non-boney regions of the chest
14	Srikanth Vedantam, Pratyush Garg, T.N.C. Anand	Method of retrofitting and actuating variable profile cam for controlling lift and timing of engine valves
15	Pratyush Garg, Srikanth Vedantam, T.N.C. Anand	Mechanisms and methods of controlling lift and timing of engine valves using an inclined profile on the rocker arm

#### 4.9.5. Research and Consultancy

##### Sponsored research projects (ongoing and new)

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Coordinators
1	Design of a Popup Antenna for Intermittent Communication of an Observed Underwater Noise Which Remains Submerged Otherwise	2013–2015	NRB	14.16	Asokan T.
2	Modelling and Simulation of Drive-by-Wire System for Tracked Vehicles	2013–2015	DRDO	28.71	Asokan T.
3	Design and Development of a Tele-surgical Robot Trainer	2012–2014	DST	50.54	Asokan T.
4	An Electric Field Measurement System to Characterise Antenna Power Deposition in Tissue Phantoms	2013–2016	DST SERC Fast Track Scheme for Young Scientists	21.8	Kavitha Arunachalam
5	Wide-Band Frequency Selective Surfaces (FSS) for Quasi-optical Network	2014–2016	ISRO	25.88	Kavitha Arunachalam, C.V. Krishnamurthy
6	Effectiveness of the (S)ELANA (Sutureless Excimer Laser-Assisted Non-occlusive Anastomosis) Anastomosis in Small Vessels	2013–2016	DST	26.04	R. Krishna Kumar

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Coordinators
7	Setting Up of Industrial Automation, Instrumentation and Automobile Engineering Centre	2014–2015	MoLE	2.5	Nilesh J. Vasa, T. Asokan, C.S. Shankar Ram
8	Development of an Electro-optically Tunable Optical Coherence Tomography Technique for Detection of Tooth Decay	2014–2016	DST	54.86	Nilesh J. Vasa, R. Sarathi (EE)
9	A Decision Support System for Pilot Landing in Adverse Conditions Taking Advantage Understanding Uncertainties in Image Registration System Reliability and Consequence-Based Decision in Pilot Manned Aircraft and UAVs	2014–2017	ARDB	47.05	Palaniappan Ramu, Ganapahy Krishnamurthi, R.K. Amit (DoMS)
10	Bioreactor Development for Ex Vivo Large-Scale Expansion of Human RBCs from Adult Haematopoietic Progenitor Cells	2013–2016	Department of Biotechnology	45.3	Soma Guhathakurta, Venkatesh Balasubramanian
11	Studies on SMA-Embedded FRP Composites for Energy Absorption and Damage Mitigation Under Impact Conditions	2014–2017	DRDO	58.39	Srikanth Vedantam, M.S. Sivakumar, A.M.R. Velmurugan, A.M. Arockiarajan
12	Visionary Leaders for Manufacturing	2007–2016	Joint Programme with IIT Kanpur and IIMC	540	T.T. Narendran, Venkatesh Balasubramanian
13	Identifying Real-Time Physiological Parameters to Test Physical and Cognitive Fatigue While Driving in a Simulated Environment	2012–2015	Nissan Research Support Programme	9.16	Venkatesh Balasubramanian

#### Industrial consultancy projects (on going and new)

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹)
1	C.S. Shankar Ram	Analysis of a Multipurpose Road Vehicle	MKEN	11.68

#### RBIC projects (ongoing and new)

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹)
1	Nilesh J. Vasa, R. Sarathi, C.S. Shankar Ram	Assessment of Suitable Techniques in Measuring Concentration of Particles in Controlled Flow	BHEL	14.4
2	M. Ramanathan	Optimisation of the Location of the Cab Lamps for Illumination	Caterpillar India Private Limited	14.00
3	M. Ramanathan, G. Saravanakumar	Measure Controller Area Network Bus Length		15.90
4	Venkatesh Balasubramanian	Innovative New Products Development and Process Improvement	Sundaram Brake Linings Limited	33.09
5	Venkatesh Balasubramanian	Innovative and Disruptive Products for Medical Applications	Sundaram Medical Devices Limited	40.2
7	Srikanth Vedantam	Phase Field Modeling of Grain Growth in the Presence of Bimodal Distribution of Particles	GE	4.96
8		Exploring Novel Active Shape Memory Alloy (SMA) Element Configurations for Actuators		12



Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹)
9	Palaniappan Ramu, Sandipan Bandyopadhyay, G. Saravana Kumar	Development of a Suitable System to Reduce Noise Generated During SSTP Tube Manufacturing Stages	BHEL	17.95
10	G Saravana Kumar, Sandipan Bandyopadhyay, Palaniappan Ramu	HuMotor: A Humane Way to Utilise Human Efforts	Building Materials & Technology Promotion	12
11	Sandipan Bandyopadhyay, Palaniappan Ramu, G. Saravana Kumar	Redesign of the Pedal-Driven Agarbatti-Making Machine	Navachaitanya Urban & Rural Development Society	13.36

### Exchange programmes with other universities under MOUs

Undergraduate Student and Research Scholar Exchange Programme, with Nagaoka University of Technology (NUT), Nagaoka, Japan: Shota Tashiro, B.Tech. student (biomedical engineering) from NUT visited the department from 10 to 17 March 2015.

### Participation of faculty members with other institutions under MoUs

Sl. No.	Name of Faculty Member	Details of Participation	Name of University/Institution
1	Nilesh J. Vasa	Member of Green Asia Programme	Interdisciplinary Graduate School of Engineering Sciences, Kyushu University, Fukuoka, Japan

### Research publications of faculty members and research scholars

Papers published in refereed international journals: 20  
Papers presented at national conferences: 3  
Papers presented at international conferences: 30

#### Papers published in refereed international journals

1. K. Mythreyi, C.S.S. Ram and R.K. Kumar. 2014. Nonlinear glucose–insulin control considering delays. Part II: Control algorithm. *Control Engineering Practice* 28: 26–33 (IF: 1.912).
2. T. Ajitha, L. Vanajakshi and C.S. Shankar Ram. 2014. Significance of incorporating heterogeneity in a non-continuum macroscopic model for density estimation. *Transport* 29(2): 125–136 (IF: 0.529).
3. K. Kumar and G.S. Kumar. 2015. An experimental and theoretical investigation of surface roughness of poly-jet printed parts. *Virtual and Physical Prototyping* 10(1): 23–34.
4. S.E. Jero, P. Ramu and S. Ramakrishnan. 2014. Discrete wavelet transform and singular value decomposition based ECG stenography for secured patient information transmission. *Journal of Medical Systems* 38(10) doi:10.1007/s10916-014-0132-z (IF: 1.372)
5. N. Aparna, N.J. Vasa, R. Sarathi and J.S. Rajan. 2014. Feasibility study for detecting copper contaminants in transformer insulation using laser-induced breakdown spectroscopy. *Applied Physics A, Materials Science and Processing* (Springer) 117: 281–288 (IF: 1.694).
6. V.S. Kumar, N.J. Vasa, R. Sarathi and D.N.T. Okada. 2014. Understanding the discharge activity across GFRP material due to salt deposit under transient voltages by adopting OES and LIBS technique. *IEEE Transactions on Dielectrics and Electrical Insulation* 21(5): 2283–2292 (IF: 1.228).
7. T. Ajitha, and L. Vanajakshi and C.S.S. Ram. 2015. Real-time traffic density estimation without reliable side road data. *ASCE Journal of Computing in Civil Engineering* 29(2): 04014033 (IF: 1.385).
8. V. Rajaram and C.S.S. Ram. 2015. A model-based rear-end collision avoidance algorithm for heavy commercial road vehicles. *Proceedings of the Institution of Mechanical Engineers, Part D: Journal of Automobile Engineering* 229(5): 550–562 (IF: 0.645).
9. K. Sulochana, M. Kumaravel and N.J. Vasa. 2014. Development of superluminescent diode based sensing for multiple-gas monitoring. *International Journal of Advances in Engineering Sciences and Applied Mathematics* (Springer) 6: 117–124.
10. S. Sahoo, C.S.S. Ram, N. Mahale and S. Srivastava. 2015. Design and development of a heading angle controller for an unmanned ground vehicle. *International Journal of Automotive Technology* 16(1): 27–37 (IF: 0.821).
11. V. Bhimasingu, E. Pannirselvam, N.J. Vasa and I.A. Palani. 2014. Influence of target grit count and sintering temperature on pulsed laser deposition of SiC thin films. *International Journal of Advanced Manufacturing Technology* doi:10.1007/s00170-014-5622-0 (IF: 1.779)

12. H. Ganapathy, S.P. Ramu and R. Muthuganapathy. January 2015. Alpha shape based design space decomposition for island failure regions in reliability based design. *Structural and Multidisciplinary Optimization* 51 (1): 121–136.
13. J. Peethambaran, A. Dev and R. Muthuganapathy. March 2015. A randomised approach to volume-constrained polyhedronisation problem. *ASME Journal of Computing and Information Science in Engineering (JCISE)* 15(1).
14. J. Peethambaran and R. Muthuganapathy. January 2015. Reconstruction of water-tight surfaces through Delaunay sculpting. *Computer-Aided Design* 58: 62–72.
15. B.R. Sundar and R. Muthuganapathy. July 2014. Clarification on the short communication on computing the shortest path in a multiply-connected domain having curved boundaries. *Computer-Aided Design* 52: 64–65, <http://dx.doi.org/10.1016/j.cad.2014.01.010>. (Letter to Editor)
16. P. Jayaprakash and K. Arunachalam. Semi-analytical model for non-resonant layered frequency selective surfaces (FSS). *PIERS Proceedings 2014*, 1767–1771, 24–26 August.
17. T.R. Prabhu, V.K. Varma and S. Vedantam. High-speed tribological and mechanical properties of layered Fe/SiC composites. *Journal of Materials Engineering and Performance* 23(10): 3666–3679.
18. T.R. Prabhu, V.K. Varma and S. Vedantam. 2014. Tribological and mechanical behaviour of multilayer Cu/SiC + Gr hybrid composites for brake friction material applications. *Wear* 317(1): 201–212.
19. S.K. Ranjith, B.S.V. Patnaik and S. Vedantam. 2014. Transport of DNA in hydrophobic microchannels: A dissipative particle dynamics simulation. *Soft Matter* 10(23): 4184–4191.
20. M. Jagannath and V. Balasubramanian. July 2014. Assessment of early onset of driver fatigue using multi-modal fatigue measures in a static simulator. *Applied Ergonomics* 45(4): 1140–1147.

#### Papers published in proceedings of national conferences

1. V. Ezhilmaran, L. Vijayaraghavan, N.J. Vasa, S. Ganesan and N.K. Cherian. 2014. Pulsed Nd<sup>3+</sup>:YAG laser-assisted surface texturing of piston rings. *International Colloquium on Materials, Manufacturing and Metrology (ICMMM 2014)*, IIT Madras, 8–9 August.
2. V.S. Kumar, N.J. Vasa and R. Sarathi. 2014. Measurement of salt deposit on wind turbine blade material by adopting optical emission and laser-induced breakdown spectroscopy techniques. *National Laser Symposium, NLS-23*, S.V. University, Tirupati, 3–6 December.
3. K. Sulochana, M. Kumaravel and N.J. Vasa. 2014. Development of mixed gas sensing techniques using single light source for combustion applications. *National Laser Symposium, NLS-23*, S.V. University, Tirupati, 3–6 December.

#### Papers published in proceedings of international conferences

1. Y.R. Yadam and K. Arunachalam. February 2014. Micro strip balun for TEM horn antenna used in level measurement. *Proceedings of NDT (APCNDT 2014)*, *NDT.net* 19(2).
2. V. Rajaram and C.S.S. Ram. 2014. A model-based collision avoidance algorithm for heavy commercial vehicles. *Proceedings of the 2014 American Control Conference*, Portland, Oregon, USA, pp. 3213–3218, June.
3. N. Kolagani, P. Ramu, A. Voinov, R. Gali and C. Rao. 2014. Educating stakeholders about the need for water balance using a participatory modeling framework. *Proceedings of the Seventh International Congress on Environmental Modelling and Software*, San Diego, California, USA, 15–19 June.
4. K. Vijayakumar, G.S. Kumar and S. Bandyopadhyay. 2014. Investigations on different geometric elements for quadtree-based scanning of 2D spaces. *Proceedings of CAD 2014*, Hong Kong University of Science and Technology, 23–26 June.
5. J. Moothayil, K. Srinidhi and C.S.S. Ram. 2014. Hysteresis modeling of a pneumatic brake chamber in a heavy commercial vehicle. *Proceedings of the Third Joint International Conference on Multi-body System Dynamics and the Seventh Asian Conference on Multi-body Dynamics*, Busan, Korea, July.
6. M. Suresh, N.J. Vasa, V. Agarwal and J. Chandapillai. 2014. Development of UV ionization-based trace differential mobility sensor for acetone and hexane. *36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC '14)*, Sheraton Hotel & Towers, Chicago, IL, USA, 26–30 August.
7. V. Damodaran and N.J. Vasa. 2014. Development of an electro-optically tuned optical coherence tomography system for imaging dental lesions. *36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC '14)*, Sheraton Hotel & Towers, Chicago, IL, USA, 26–30 August.
8. R.S. Akki and K. Arunachalam. 2014. Breast tissue phantoms to assist compression study for cancer detection using microwave radiometry. *Proceedings of IEEE: Engineering in Medicine and Biology Society (EMBC)*, pp. 1119–1122, 26–30 August. doi:10.1109/EMBC.2014.6943791
9. G. Chakaravarthi and K. Arunachalam. 2014. A compact microwave patch applicator for hyperthermia treatment of cancer. *Proceedings of IEEE: Engineering in Medicine and Biology Society (EMBC)*, pp. 5320–5322, 26–30 August.

10. S.E. Jero, P. Ramu and S. Ramakrishnan. 2014. Slantlet transform-based stenography in ECG signal using least significant bit watermarking algorithm. *International Conference on Mechanics in Medicine and Biology (ICMMB-19)*, Bologna, Italy, September.
11. S. Sahoo, C.S.S. Ram and S. Srivastava. 2014. Sensitivity analysis of vehicle parameters for heading angle control of an unmanned ground vehicle. *Proceedings of the ASME 2014 International Mechanical Engineering Congress & Exposition*, Montreal, Canada, November.
12. B. Kamaraj, C.S.S. Ram and B. Rakkiappan. 2014. Numerical analysis of fluid–fluid interaction and flow through micro clearance to estimate leakages in a fuel injection pump. *Proceedings of the ASME 2014 International Mechanical Engineering Congress & Exposition*, Montreal, Canada, November.
13. V. Rajaram and C.S.S. Ram. 2014. Comparison of linear and non-linear control schemes for collision avoidance in heavy road vehicles. *Proceedings of the 2014 IEEE International Conference on Vehicular Electronics and Safety*, Hyderabad, India, December.
14. B.A. Kumar, M. Snighda, L. Vanjakshi and C.S.S. Ram. 2014. A spatio-temporal discretization approach for real-time bus travel time prediction using a linear traffic model. *Proceedings of the 11th Transportation Planning and Implementation Methodologies for Developing Countries*, Mumbai, India, December.
15. V. Varghese, K. Venkatesh and G.S. Kumar. 2014. Pull-out strength of pedicle screw in normal and osteoporotic bone model. *IEEE Conference on Biomedical Engineering and Sciences*, Miri, Malaysia, 8–10 Decemeber.
16. J.S. Athertya and G.S. Kumar. 2014. Automatic initialisation for segmentation of medical images based on active contour. *IEEE Conference on Biomedical Engineering and Sciences*, Miri, Malaysia, 8–10 December.
17. R. Bhardwaj and V. Balasubramanian. 2014. Palm pressure-based sensing of automobile driver alertness. *International Ergonomic Conference, HWWE 2014*, 3 December.
18. R. Bhardwaj and V. Balasubramanian. 2014. Optimisation of muscle forces of lower arm in car driving. *International Ergonomic Conference, HWWE 2014*, 3 December.
19. N. Kailash, V. Vijay, R. Bhardwaj and V. Balasubramanian. 2014. Survey of human cognitive response to vehicles during night conditions. *International Ergonomic Conference, HWWE 2014*, 3 December.
20. S.K. Sivasankaran and V. Balasubramanian. 2014. Ergonomic risk assessment of operators in CNC machining environments. *International Ergonomic Conference, HWWE 2014*, 3 December.
21. S.S. Gnanavel, V. Balasubramanian and T.T. Narendran. 2014. Modified shift system to improve productivity and worker well-being. *International Ergonomic Conference, HWWE 2014*, 3 December.
22. S.S. Gnanavel, V. Balasubramanian and T.T. Narendran. 2014. Rotational work schedule to improve productivity: A case study in a production line. *International Ergonomic Conference, HWWE 2014*, 3 December.
23. S.M. Vadivel, V. Balasubramanian and M. Alexander. 2014. Lean ergonomics in Indian postal service: A case study. *International Ergonomic Conference, HWWE 2014*, 3 December.
24. V. Vijay, R. Bhardwaj and V. Balasubramanian. 2014. Evaluation of yoga postures with sEMG. *International Ergonomic Conference, HWWE 2014*, 3 December.
25. P. Swathy and V. Balasubramanian. 2014. EMG-based human computer interface for below-knee amputee. *International Ergonomic Conference, HWWE 2014*, 3 December.
26. N. Kailash, M. Rajendran, P. Swathy and V. Balasubramanian. 2014. Survey comparing lower extremity muscle pain in women wearing high heels and flat footwear. *International Ergonomic Conference, HWWE 2014*, 3 December.
27. S. Sivasankari and V. Balasubramanian. 2014. Validation methodology for high-fidelity numerical spine and its ergonomics aspects. *International Ergonomic Conference, HWWE 2014*, 3 December.
28. S. Nammi, N.J. Vasa, S. Gupta and A.C. Mathur. 2015. Influence of pulsed Nd3+: YAG laser beam profile and wavelength on micro-scribing of copper and aluminium thin films. *Proceedings of SPIE Photonics West 2015, LASE, Laser-Based Micro- and Nanoprocessing IX*, San Francisco, USA, February (paper: 9351-20).
29. E. Blesso, V. Yesudasan, N.J. Vasa and R. Sriram. 2015. Investigation on the effect of ambient and beam profile in annealing and texturing of amorphous silicon thin films by pulsed Nd3+:YAG laser. *Proceedings of SPIE Photonics West 2015, LASE, Laser-based Micro- and Nanoprocessing IX*, San Francisco, USA, February (paper: 9351-54).
30. P. Jayaprakash and K. Arunachalam. Semi-analytical model for non-resonant layered frequency selective surfaces (FSS). *PIERS Proceedings 2014*, 1767–1771, 24–26 August.

### Distinguished visitors to the department

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1	Richard Voyles, Professor of Robotics and Associate Dean for Research, Purdue University	7 January 2015	Delivering a talk, 'From side-slipping locomotion to shape-shifting polymers: Looking beyond treads and wheels for robot movement'

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
2	Vindo A. Prasad, Associate Professor, Nanyang Technological University, Singapore	20–21 November 2014	Delivering a talk, 'Brain-machine interface systems: Signal decoding, design challenges and applications'
3	D.K. Aravind, Professor, School of Informatics, University of Edinburg, UK	22 December 2015	Delivered a talk on ubiquitous sensors
4	Fabrice Pierron, Professor, University of Southampton, UK	23–24 January 2015	Conducting workshop, 'The Virtual Fields Method'
5	Alan Lakshminarayanan, Sr. Director, Research & Development (Silicon Nitride Implants), Amedica Corp, Salt Lake City, Utah, USA	19 February 2015	Department visit (area of interest: biomedical design)
6	Pankaj Pankaj, Professor, School of Engineering The University of Edinburgh, UK	23 February 2015	Visiting laboratories involved in the Biomedical Design Programme
7	Kiyoshi Onuma, Nagaoka University of Technology, Japan	9–10 March 2015	Department visit (areas of interest: biotechnology, stem cells, biomedical engineering)

#### 4.9.6. Other Activities of the Department

##### Results obtained in research work (from M.S. and Ph.D. theses) of scholars

###### *M.S. theses*

1. Vikas Gautam. Mathematics Modeling and Control of an Electro-pneumatic Braking System for Heavy Commercial Road Vehicles  
An electro-pneumatic brake with a new configuration was developed for heavy commercial vehicles. A mathematical model and vehicle deceleration controllers were developed and experimentally corroborated and implemented.
2. Divya Priya C.H.M.: Study of Volunteer MRI Data to Assess Thermo-brachytherapy Surface Applicator (TBSA) Displacement from Chest Wall Caused by Patient Movement  
A preclinical evaluation of applicator displacement from chest walls of patients fitted with conformal thermobrachytherapy surface applicator (TBSA) is studied in this thesis.
3. Bala Sakthivel. Numerical and Experimental Analysis of Fuel-Lubrication Oil Mixing and Flow Through Micro Clearances to Estimate Leakages in a Fuel Injection Pump  
The leakage and mixing of lubricant and fuel in a diesel fuel injection pump were studied through numerical simulations and experimental observations. A sensitivity analysis with respect to design parameters was performed.

###### *Ph.D. theses*

1. Thareswari N. Task Planning for Complex Tasks in Scalable and Constrained Multiple Robot Systems  
This work presents a domain-independent generalised task planning strategy for complex missions by decomposing them into simple tasks that are allocated to a set of heterogeneous robots through a strategy developed herein.
2. V. Sathiesh Kumar. Measurement of Salt Deposit Density on Wind Turbine Blade Material by Adopting OES and LIBS Techniques  
A new approach involving the use of an optical emission technique in electric discharge measurements and the remote-laser induced breakdown spectroscopy technique is proposed and its use in detecting and ranking the severity of salt deposits on GFRP materials is demonstrated.
3. K. Sulochana. Development of Concentration Measurement Techniques Using Single Light Source for Mixed Gas Sensing  
The use of superluminescent diode-based absorption spectroscopy and a single laser source combined with a Raman shifter-based coherent anti-Stokes Raman spectroscopy techniques for sensing mixed gases simultaneously without an additional tunable laser system was demonstrated.
4. V. Susila Anand. Development of Novel Dental Composites by Matrix and Filler Modifications  
A new type of dental composite has been developed by exploiting the concept of high molar volume vs reactive species in polymer networks and un-coupling the fillers. The resultant composite has high biocompatibility and conversion and low shrinkage and enthalpy.



### Socially relevant activities carried out by the department

Palaniappan Ramu had interactions with 50 farmers of Thiruvallur regarding technology-assisted interventions in rural India and about our work on GIS-based watershed management. These were organised by RuTAG, IIT Madras at the Thiruvallur collectorate on 6 March 2015.

### International collaboration

#### Faculty visits

Sl. No.	Name of the Faculty Member	Purpose of Visit	Dates and Venue
1	Nilesh J. Vasa	Board Meeting of the Green Asia Programme	26–30 November 2014, Interdisciplinary Graduate School of Engineering Sciences, Kyushu University, Fukuoka, Japan
2	Nilesh J. Vasa	Academic and research activities	15 March to 31 July 2015, Graduate School of Information Science and Electrical Engineering, Kyushu University, Fukuoka, Japan

#### Student visits

Sl. No.	Name of the Student	Purpose of Visit	Dates and Venue
1	Aparna N.	Rresearch in laser-induced breakdown spectroscopy (Exchange Programme on Ultrafast Photonics—IIT Madras Coordinator: P. Bisht)	18 September 2014 to 31 January 2015, Dublin City University, Ireland
2	Pauline John (Ph.D. research scholar)	Research in biomedical engineering (exchange programme with Nagaoka University of Technology (NUT)—IIT Madras Coordinator: R. Sarathi)	16–23 March 2015 NUT, Nagaoka, Japan

### Major infrastructure development in the department

The Incubation Centre for Industrial Automation & Instrumentation and Automobile Engineering has been set up with support from the Ministry of Labour and Employment (MoLE). It is well equipped for work on automotive systems, mechatronics systems, robotics and instrumentation. The incubation centre will support MoLE in providing training and developing projects development for selected ITI students. MoLE has also provided an endowment fund of ₹1 crore for the MoLE Chair Position in the Department of Engineering Design.

### Department Open House

Open House 2014 was held on 25 October 2014 between 9.00 A.M. and 5.00 P.M. in the Department of Engineering Design.

Open House was organised to increase awareness regarding research strengths, student profiles, start-up activities of engineering-design students and connections of industry with the department. Faculty stalls, poster presentations, laboratory visits, poster presentations, project demonstrations and curriculum exposure were among the highlights.

Success stories : ED Startups; Students Placement; Patents/Products

Industry connection : Information on internships; consultancy; sponsored projects; corporate laboratories in the department

### Statistics regarding registered visitors

Representatives from industry	70
IIT Madras faculty members	56
IIT Madras students	120
Visitors from the public and others	190

## 4.10. DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES

### 4.10.1. Introduction

The Department of Humanities and Social Sciences (HSS) is one of the earliest departments established at IIT Madras. The department is multi-disciplinary in nature and has reputed faculty members from diverse disciplines such as development studies, economics, English language and literature, environmental studies, history, international relations, gender studies, German studies, philosophy and urban studies.

### 4.10.2. Academic Programmes

The five-year integrated M.A. programme was introduced in July 2006. The programme has been modified, with the new curriculum having two streams (i.e., Development Studies, English Studies) from July 2011.

#### New elective courses introduced

Sl. No.	Course No.	Title of Course
1	HS3060	Social History of Medicine in Colonial India
2	HS5130	Fashion in Literature and Cinema
3	HS6140	Production Economics: Efficiency and Productivity Analysis

#### Students on roll

Programme	Year I	Year II	Year III	Year IV	Year V	Total
M.A.	42	42	42	40	44	210
Ph.D.	21	13	7	4	5	49
<b>Total</b>	<b>63</b>	<b>55</b>	<b>49</b>	<b>44</b>	<b>49</b>	<b>259</b>

#### Names of faculty members/students/scholars who attended conferences/workshops/seminars/symposia abroad/in India

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposium/Workshop	Dates and Venue	Financial Assistance from
<b>Abroad</b>					
1	Vimal Mohan John	HS11D004	New Directions in Humanities, Madrid, Spain	12–15 June 2014, San Pablo University, Madrid	IIT Madras
<b>India</b>					
2	Supriya Subramani	HS13D023	Fifth National Bioethics Conference (presented paper titled 'Truth telling and therapeutic privilege: Exploring the conflicts')	11–13 December 2014, St. John's Medical College campus, Koramangala, Bangalore	—
3	Supriya Subramani	HS13D023	Tea for David (seminar)	8 December 2014, IIT Madras	—
4	Devleena Chakravarty	HS14D001	51st Annual Conference of the Indian Econometric Society (presented paper titled 'Revisiting growth: Environment relationship—An econometric analysis of the existing studies')	11–15 December 2014, Patiala, Punjab	—
5	Veena Mani	HS13D008	International Conference on Everyday Life in Contemporary India, organised by University of Otago and University of Madras (presented a paper titled 'Everyday practices of football and the month of Ramadan')	17–18 December 2014, University of Madras	—



Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposium/Workshop	Dates and Venue	Financial Assistance from
6	Visakh M.S.	HS14D005	17th International Conference of the Forum on Contemporary Theory (presented paper titled 'Capturing Dalit camera: Beyond theory, beyond method')	20–25 December 2014, International Centre, Goa	—
7	Samik Malla	HS13D020	17th International Conference of the Forum on Contemporary Theory (presented a paper titled 'On epistemic violence: Purity and danger')	20–25 December 2014, International Centre, Goa	—
8	Anu Abraham	HS11D001	Census Data Dissemination Workshop (presented a paper titled 'Tracing the changing pattern in female migration in India using Census 2001 data: From dependent migration to independent migration')	23 January 2015, Jawaharlal Nehru University, Delhi	—
9	Supriya Subramani	HS13D023	National Symposium on Health: The Next Right?	23 January 2014, Loyola College, Chennai	—
10	Supriya Subramani	HS13D023	International Conference on Historical Trends and Challenges in the Practice of Medicine in India, organized by Wellcome Trust–IIT Madras Project on Medical Ideas, Tools, Ethics and Pluralism in South India	29–30 January 2015, ICSR, IIT Madras	—
11	Supriya Subramani	HS13D023	Activities during internship: Visit to National Law School Library to gain access to materials relating to her research work Visits to district and state consumer courts and high courts (to observe court proceedings)	5 February to 5 March 2015, Legal Excel, Law Firm, Bangalore	—
12	Samik Malla	HS13D020	14th International Melow Conference (presented a paper titled 'Does epistemic purity exist?')	20–22 February 2015, University of Punjab, Chandigarh	—
13	Samk Malla	HS13D020	Annual Academic Conference of the Department of HSS, IIT Madras, on 'Migration' (Organising Committee member for the English Studies section; chaired a session and moderated its discussions)	6–7 February 2015, IIT Madras	—
14	Sheeja Rajagopal	HS13D007	Toxic Bodies and Corporate Poisons, symposium organised by Central University, Kasargode (presented paper titled 'Archiving the endosulphan tragedy: Role of oral histories')	19–20 February 2015, Central University, Kasargode	—
15	Sivaja K. Nair	HS12D006	14th World Congress on Public Health (presented a poster titled 'Emerging and reemerging communicable diseases in the state of Kerala: An analysis of intersectoral collaborations at the grass root level in its management')	10–15 February 2015, Kolkata	—
16	Sreejith Varma	HS13D021	National Seminar on Tribal Narratives (presented a paper titled 'Ekalavya's disciple: The life of a tribal archer')	27–28 March 2015, Department of English, Central University of Karnataka, Gulbarga	—

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposium/Workshop	Dates and Venue	Financial Assistance from
17	Anchitha Krishna	HS14D010	National Seminar on Tribal Narratives (presented a paper)	27–28 March 2015, Department of English, Central University of Karnataka, Gulbarga	—
18	Manoranjan Sahoo	HS13D004	Papers in Public Economics and Policy (presented a paper)	22–13 March 2015, NIPFP, New Delhi	—

#### Names of faculty members/students/scholars who won outside prizes and awards

Sl. No.	Name of the Student/Scholar	Roll No.	Name of Prize	Prize Awarded by
1	S. Kalyani	HS13H015	Second prize (cash award of ₹40,000) for her paper titled 'Literacy and access to household amenities in India: A district-level analysis of survey results of Census of India 2011', presented at the one-day Census Data Dissemination Workshop 2014, held on 15 December 2014	Directorate of Census Operations, Tamil Nadu and MIDS, Chennai

#### Names of faculty members/students/scholars who won convocation/Institute Day prizes

Sl. No.	Name of the Student/Scholar	Roll No.	Name of Prize
1	Liza Tom	HS12H026	Institute Merit Prize
2	Apoorva Gupta	HS11H009	Institute Merit Prize
3	Vaishali V. [Economics]	HS10H039	Institute Merit Prize
4	Pranathi Diwakar [Development Studies]	HS10H024	Institute Merit Prize
5	Dhivya Jothi G. [English Studies]	HS10H009	Institute Merit Prize
6	Siddharth S. [English Studies]	HS09H033	Institute Merit Prize (joint winners)
7	T.P. Kurian [English Studies]	HS09H041	
8	Sneha A. [Development Studies]	HS09H034	Institute Merit Prize
9	Raisa Sherif [Economics]	HS09H028	Institute Merit Prize
10	Raisa Sherif	HS09H028	Swati/Jayalakshmi Memorial Award (joint winners)
11	Sneha A.	HS09H034	
12	Raisa Sherif [Economics]	HS09H028	Prof. A. Ravindran Prize
13	Annavarapu Sneha [Development Studies]	HS09H034	Dr. Dilip Veeraraghavan Memorial Award

### 4.10.3. Faculty and Their Activities

#### Faculty

Sl. No.	Name and Qualifications	Major Areas of Specialisation
1	Malathy Duraisamy, Ph.D. (Madras University) [Head]	Applied economics; labour economics; economics of social sector; science and technology
2	Shreesh Chaudhary, Ph.D. (CIEFL, Hyderabad)	Theoretical linguistics; ELT and need-based courses in English
3	Evangeline Manickam, Ph.D. (Madras University)	American literature; English/French
4	V.R. Muraleedharan, Ph.D. (IIT Madras)	Health care economics; public policy; history of health care in south India
5	Sudhir Chella Rajan, Ph.D. (University of California)	Environment, energy and climate policy; political theory; development
6	Devaki Reddy, Ph.D. (JNU, New Delhi)	English; sociolinguistics; ELT
7	Srilata K, Ph.D. (University of Hyderabad)	African literature; cultural studies; creative writing
8	Umakant Dash, Ph.D. (IIT Kanpur)	Energy economics; health care economics

Sl. No.	Name and Qualifications	Major Areas of Specialisation
9	Aysha Iqbal Viswamohan, Ph.D. (Vikram University)	Drama; film studies; contemporary literature
10	Sreekumar N., Ph.D. (University of Hyderabad)	Philosophy of language; hermeneutics; Indian philosophy
11	Dhanavel S.P., Ph.D. (Tripura University)	American literature; British literature; Indian literature; English language teaching; communication and soft skills
12	John Bosco Lourdusamy, D.Phil. (Oxford University)	History of science; science, technology and society
13	Jyotirmaya Tripathy, Ph.D. (IIT Kharagpur)	Literary theory; American studies; cultural studies
14	Milind Brahme, Ph.D. (JNU, New Delhi)	German studies; comparative literature and modern Marathi literature
15	Prema Rajagopalan, Ph.D. (IIT Kanpur)	Sociology of science and technology; development; women in science and technology
16	Solomon J. Benjamin, Ph.D. (Massachusetts Institute of Technology)	Antipodes; urban studies; world development
17	Sudarsan Padmanabhan, Ph.D. (University of South Florida and Pondicherry University)	Social and political philosophy; Indian philosophy and culture
18	Suresh Babu M., Ph.D. (JNU, New Delhi)	Industrial economics; applied macro economics
19	Swarnalatha R., Ph.D. (Madras University)	Eco philosophy; American literature
20	Anup Kumar Bhandari, Ph.D. (Indian Statistical Institute)	Microeconomics; statistics; econometrics
21	Binitha V.Thampi, Ph.D. (ISEC, Bangalore)	Gender and development; decentralised planning and governance; ICTs for development
22	Joe Thomas Karackattu, Ph.D. (JNU, New Delhi)	Chinese studies; international political economy
23	Kalpana K., Ph.D. (MIDS)	History; economics
24	Mathangi Krishnamurthy, Ph.D. (University of Texas at Austin)	Anthropology of work; globalization; virtuality; affective labour; gender and work; media studies; South Asia
25	Merin Simi Raj, Ph.D. (IIT Bombay)	Indian fiction in English; literary historiography studies; institutionalisation of literature; postcolonial studies; Dalit writing in translation; caste in popular culture
26	Mohan S., M.A. (Madras University)	English; science fiction; technical report writing; Indian writing in English
27	Rajesh Kumar, Ph.D. (University of Illinois)	Language in education; sociolinguistics; linguistic theory; language and cognition
28	Sabuj Kumar Mandal, Ph.D. (ISEC, University of Mysore)	Economics
29	Santhosh Abraham, Ph.D. (University of Hyderabad)	Legal history; courts, trials and punishment in history; police and prisons in India; colonial subjects and indigenous resistances to colonialism; social and cultural history; history of education; automobile in Indian history and culture
30	Santhosh R. (ISEC, University of Mysore)	Sociology
31	Satya Sundar Sethy, Ph.D. [Central University of Hyderabad]	Philosophy
32	Sonika Gupta, Ph.D. (JNU, New Delhi)	Chinese foreign policy and politics; international relations theory; human security; nuclearisation of South Asia
33	Subash S., Ph.D. (IIT Bombay)	Economics
34	Tabraz S.S., Ph.D. (JNU, New Delhi)	International relations theory; Israel–Palestinian conflict

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

Faculty Member	Programme	Dates and Venue
Aysha Iqbal	IIT Madras/Behindwoods Tamil Film Festival	22 June to 6 July 2014
Aysha Iqbal	Screenwriting Workshop	7–14 June 2014

Faculty Member	Programme	Dates and Venue
Muraleedharan V.R.	International Seminar on Building Capacities for Public Health Information Systems, organised by the Centre for Technology and Policy (CTaP) in association with the Society for Health Information Systems Programmes (New Delhi)	1–3 October 2014, IIT Madras campus
Aysha Iqbal	Introduction to Film Studies (Web)	November 2014, NPTEL, IIT Madras
Aysha Iqbal	Literary Theory & Literary Criticism	January–February 2015, NPTEL/ MOOC, IIT Madras

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

Sl. No.	Name of Faculty Member/Scholar	Title	Institution	Period
1	Chaudhary S.C.	Plenary talk, 'Speaking to the Global Village', at the Third International Conference on Media, Aesthetics, Genres and Communication	University of Petroleum and Energy Studies, Dehradun	4 April 2014
2	Subash S.	Summer School on Development Economics, held at Indian Statistical Institute: Financial Constraint and R&D	India Growth Centre (IGC)– London School of Economics	12–17 July 2014
3	Kalpna K.	International Conference on Labouring Women: Some Major Concerns at Current Junction, in collaboration with UN Women	Centre for Informal Sector and Labour Studies Jawaharlal Nehru University	30 July to 1 August 2014
4	Sonika Gupta	Recent Public Perception of Chinese Foreign Policy: A Study of Chinese Social Media, Indian Council of World Affairs Core Group on China	Sapru House, New Delhi	4 August 2014
5	Sreekumar N.	Sanskrit Day Celebrations (presented a paper titled 'Sanskrit and the tradition of critical discourse in ancient India)	Sree Sankaracharya University of Sanskrit, Kalady	13 August, 2014
6	Sonika Gupta and G. Mahalakshmi	Juxtapose, conference organised by the Oxford Research Centre for the Humanities (TORCH), India–China Programme (presented a paper titled 'Comparison of NCM and IAC: Middle class mobilisation in China and India')	JNU, New Delhi	24–25 September 2014
7	Swarnalatha R.	Theory, After Theory: Uses, Crises and New Directions (session titled 'Ecocritical Insurgency: Theoretical Frameworks and the Real Thing)	The Department of Humanities and Social Sciences (HSS), IIT Madras, in collaboration with the Forum on Contemporary Theory	26–28 September 2014
8	Subash S.	Forum for Global Knowledge Sharing X Annual Conference: Financing Constraints and Investments in R & D: Evidence from Indian Manufacturing Firms	National Institute of Advanced Studies (NIAS), Bangalore	27–29 October 2014
9	Santhosh R.	Religion, Secularity and Law (present paper titled 'Religious activism and secular ethos: A study on the role of Islamic activism in the palliative care movement in Kerala)	HSS Department, IIT Kanpur	15–16 October 2014
10	Shreesh Chaudhary	Measuring Success in Language Learning, short-term course funded by ISTE/TLC	IIT Madras	10 October 2014
11	Shreesh Chaudhary	Towards a Review of Teacher Education in India, international conference on teacher cognition and teacher education	SRM University, Chennai	15 November 2014
12	Shreesh Chaudhary	Centenary celebrations of teaching of German in India (presented paper titled 'Changing Tapestry of Indian Multilingualism' at the inauguration)	Max Mueller Bhawan, Chennai	23 November 2014

Sl. No.	Name of Faculty Member/Scholar	Title	Institution	Period
13	Malathy D.	Seminar on Challenges of Massification of Higher Education in Large Academic Systems	National University of Educational Planning and Administration, New Delhi	10–11 November 2014
14	Aysha Iqbal	British Popular Culture: Food, Fashion & Films, organised by Association of British Scholars	British Council, Chennai	17 November 2014
15	Aysha Iqbal	Children’s Film Festival (presented paper titled ‘Introduction to films’)	British Council, Chennai	22 November 2014
16	Solomon J. Benjamin	International Conference Governing Urban Futures, organised by LSE–Alfred Herrhausen Society (delivered invited presentation titled ‘Governing urban expansion in India and China’ in the panel session ‘Governing Land: Managing Urban Expansion’ and was workshop panelist)	International Forum of Deutsche Bank, New Delhi	14–15 November 2014
17	Milind Brahme and Ms Luisa Rath (DAAD Language Teacher for German)	International conference to mark 100 years of German teaching in India (delivered presentation titled ‘Learning foreign languages: Looking out/looking within’)	The Goethe Insitut and INDaF (Indian Association of Teachers of German), Chennai	24 November 2014
18	Srilata K.	Prakriti poetry festival, which was held as a precursor to the Hindu Lit for Life festival (presented her poems)	Chennai	9 December 2014
19	Devaki Reddy S.	International conference on quality in higher education (ICQH 2014)	Sakarya University	3–5 December 2014
20	Joe Thomas Karackattu	Fourth Interdisciplinary Symposium for Emerging Scholars on India–China Studies	Punjab University, Chandigarh	18–19 December 2014
21	Subash S.	International Conference on Achieving Accelerated Manufacturing Growth: The Promise and Challenges (invited discussant for two papers)	MIDS and British Northern Universities India Forum, Taj Connemara Hotel, Chennai	2–3 January 2015
22	Santhosh Abraham	International Conference on Historical Trends and Contemporary Challenges in the Practice of Medicine in India (presented paper titled ‘Institutionalisation of the mentally ill: Colonial lunatic asylum at Calicut’)	Department of HSS, IIT Madras and Wellcome Trust, UK	29–30 January 2015
23	Satya Sundar Sethy	UGC Global Seminar on Understanding the Contemporaneity of Acharya Nagarjuna’s Philosophy in the Global Context (presented paper)	The Centre for Mahayana Buddhist Studies of Acharya Nagarjuna University, Guntur	28–30 January 2015
24	Sreekumar N.	Meeting on Funding Horizons in the Humanities, Social Science and Public Engagement, organised by Wellcome Trust (made a presentation)	Wellcome Trust, Taj Connemara Hotel	27–28 January 2015
25	Sreekumar N.	International Conference on Historical Trends and Contemporary Challenges in the Practice of Medicine in India (presented a paper)	IIT Madras	29–30 January 2015
26	Malathy D.	International Seminar on Innovative Methods of Financing of Higher Education (presented the co-authored paper titled ‘Privatisation, economic burden of expenditure on households and role of student loan in financing higher education in India’)	National University of Educational Planning and Administration, New Delhi	23–25 February 2015

Sl. No.	Name of Faculty Member/Scholar	Title	Institution	Period
27	Subash S.	Eighth Micro Evidence on Innovation and Development (MEIDE) Conference	World Bank, OECD, UNU-MERIT, CII	10–12 February 2015
28	Subash S.	Seventh Indo–German Frontiers of Engineering (presented paper titled ‘MNEs, export spillover and firm heterogeneity: Evidence from Indian manufacturing’)	DST and Alexander Humboldt Foundation	19–22 February 2015
29	Joe Thomas Karackattu	International Conference on the US Rebalance and Asia Pacific Region (presented paper titled ‘Rebalancing of economic trends: Situating US and China within an interdependence framework in the region’)	Centre for Public Policy Research, Cochin, Kerala	6 March 2015
30	Malathy D.	National Symposium on Financing of Universities: State Vs Private, 38th Indian Social Science Congress (co-authored paper titled ‘Institutional and household costs of engineering education in Kerala, India’)	Andhra University, Visakhapatnam	30 March 2015
31	Subash S.	India’s Foreign Direct Investment Impact Research in International Perspective, workshop on enhancing the scope and quality of Indian FDI statistics (panelist)	National Council for Applied Economic Research (NCAER), New Delhi	10–11 March 2015

#### Special lectures delivered by faculty members at other institutions

Sl. No.	Name of Faculty Member	Purpose	Institution	Date
1	Evangeline Manickam	Doctoral committee meeting for Ph.D. candidate (English)	VIT, Vellore	4 April 2014
2	Evangeline Manickam	Ph.D. viva voce Exam	Madras Christian College	16 April 2014
3	Chaudhary S.C.	Board of Studies meeting	NIT-Py, Karaikal	12 April 2014
4	Chaudhary S.C.	Member of the Joint Review Mission on Teacher Education in Kerala, constituted by the Ministry of Human Resource Development, Government of India	Educational institutions in Kerala	22–26 April 2014
5	Chaudhary S.C.	Syllabus Committee Meeting of the university, a deemed university under the MHRD	Rashtriya Sanskrit Vidyapith, Tirupati	27 April 2014
6	Sreekumar N.	Meeting of the Syndicate	Sree Sankaracharya University of Sanskrit, Kalady, Kerala	18 August 2014
7	Sudarsan P.	Immersion programme in EU Studies (gave a series of lectures on EU–India—politics, diversity, cosmopolitanism and democracy)	Manipal University, Manipal	22–23 August 2014
8	Shreesh Chaudhary	Faculty Selection Committee meeting	NIT-Py, Karaikal	31 August 2014
9	Aysha Iqbal	Indo-British transactions: Food, fashion, films	British Council, Chennai	20 August 2014
10	Shreesh Chaudhary	Faculty Selection Committee meeting	Anna University, Chennai	9 September 2014
11	Shreesh Chaudhary	Workshop on the Use of Multi-media Material for English Language Teaching for School Teachers (conducted the workshop)	Pole Star School, Madhubani, Bihar	22 September 2014



Sl. No.	Name of Faculty Member	Purpose	Institution	Date
12	Shreesh Chaudhary	Workshop on the Use of Multi-media Material for English Language Teaching for English Teachers (conducted the workshop)	MRM College for Girls, Darbhanga, Bihar	23 September 2014
13	Mathangi Krishnamurthy	Workshop on Media, Virtuality, and Identity	IIT Gandhinagar	19–20 September 2014
14	Swarnalatha R.	Lecture on eco-feminism (presented to the students pursuing an M.Phil. degree in philosophy)	Sacred Heart's College (Loyola), Satya Nilayam, Chennai	1 October 2014
15	Aysha Iqbal	Global reception of Indian novels in English	Department of English and UGC–Academic Staff College, University of Madras	17 November 2014
16	Devaki Reddy S.	Paper setting for UGC Exam 2014	New Delhi	3–7 November 2014
17	Malathy D.	Selection Committee	IIT Hyderabad	17–18 November 2014
18	Devaki Reddy S.	Panel for paper setting in linguistics for UGC NET exam (served as expert)	New Delhi	2–7 November 2014
19	Muraleedharan V.R.	Brainstorming session	KUHS, Trichur, Kerala	4 December 2014
20	Dhanavel S.P.	A practical approach to technical English	Idhaya Engineering College for Women, Chinnasalem, Tamil Nadu	10 December 2014
21	Devaki Reddy S.	Faculty recruitment	JNU, New Delhi	21 January 2015
22	Dhanavel S.P.	The structure of a thesis	Rajiv Gandhi Institute of Youth Development, Sriperumbudur, Tamil Nadu	29 January 2015
23	Dhanavel S.P.	The pedagogy of communication	AVC College of Engineering and Technology, Mayiladuthurai, Tamil Nadu	31 January 2015
24	Dhanavel S.P.	Personality development	AVC College of Engineering and Technology, Mayiladuthurai, Tamil Nadu	31 January 2015
25	Milind Brahme	Ph.D. open defence viva of Mr. S. Parameswaran (conducted the defence)	Department of German, University of Kerala, Thiruvananthapuram	14 January 2015
26	Milind Brahme	M.Phil. viva of Ms Dipti Tambe at the Centre of German Studies (conducted the viva)	JNU, New Delhi	21 January 2015
27	Anup Kumar Bhandari	First Board of Studies meeting (nominated as subject expert)	St. Teresa's College, Ernakulam, Kerala	17 January 2015
28	Shreesh Chaudhary	How do we understand different accents?	Academic Staff College, University of Hyderabad	27 January 2015
29	Shreesh Chaudhary	English for all: Implications for methods and materials	Academic Staff College, University of Hyderabad	28 January 2015
30	Shreesh Chaudhary	Sources and Resources for the story of English in India (keynote address at the One-Day Symposium on the Historiography of the English Language in India)	Centre for English Language Studies, University of Hyderabad	29 January 2015
31	K. Srilata	Sahitya Akademi Women Writers Meet (invited speaker)	Bhopal	29–30 January 2015

Sl. No.	Name of Faculty Member	Purpose	Institution	Date
32	Umakant Dash	Task force constituted for costing of health services for National Health Assurance Mission (NHAM) (invited by the Ministry of Health and Family Welfare, Government of India, to serve as a member)	New Delhi	13 January 2015
33	Umakant Dash	Annual National-Level Symposium, 'Health: the Next Right?' (invited to moderate a session, 'Health Policies: A Comparative Analysis')	Department of Economics, Loyola College, Chennai	23 January 2015
34	Solomon Benjamin	Opaque life world in urban spaces: Framing perspectives, elements and ideas of politics in urban present and urban future—Building accountable governance for inclusive spaces and shared well-being in India	Ford Foundation, Delhi	9–10 January 2015
35	R. Swarnalatha	The eco-ontological literary impulse (Seetha Udupa Endowment Lecture)	Department of English, Ethiraj College, Chennai	8 February 2015
36	Srilata K.	Kala Ghoda Arts/Literature Festival (invited speaker)	Mumbai	9–10 February 2015
37	Srilata K.	An Indo-Korean event held at the World Book Fair (presented her poems)	New Delhi	15 February 2015
38	Devaki Reddy S.	Ph.D. viva (conducted the viva)	—	11 March 2015
39	Dhanavel S.P.	Soft skills and higher goals in education	Latha Madhavan Engineering College, Madurai, Tamil Nadu	7 March 2015
40	Dhanavel S.P.	How to shape our personal and professional life	Dr. MGR University, Chennai	11 March 2015
41	Dhanavel S.P.	Writing research articles for conferences and impact factor journals	DG Vaishnav College, Chennai	14 March 2015
42	Dhanavel S.P.	Innovations and creativity in education in the future	Ethiraj College for Women, Chennai	24 March 2015
43	Dhanavel S.P.	Beyond methods	SRM University, Chennai	31 March 2015

#### Visits abroad by faculty members

Sl. No.	Name of Faculty Member	Place Visited	Date	Purpose of Visit	Funding from
1	Aysha Iqbal	Pakistan	6–7 May 2014	Plenary speaker at New Directions in Research Think Piece, Cultural Capital as Knowledge Transfer, British Council India and Pakistan	British Council, India
2	Evangeline Manickam	Canada	19–23 May 2014	Attending American Canadian Conference at Ryerson University International Learning Center	—
3	Srilata K.	Athens, Greece	9–13 June 2014	Seventh International Conference on Literature	—
4	Swarnalatha R.	Athens, Greece	9–13 June 2014	Seventh International Conference on Literature	—
5	John Bosco Lourdosamy	London	1 June to 6 July 2014	Research visit organised by Wellcome Trust, UK	—
6	Santhosh Abharam	London	13 June to 19 July 2014	Receiving Medical Humanities Research Expenses Award from Wellcome Trust, London, UK	—

Sl. No.	Name of Faculty Member	Place Visited	Date	Purpose of Visit	Funding from
7	Joe Thomas Karackattu	China	8 July 2014	Delivering a talk on India–China relations at the Sichuan Academy of Social Sciences, China	Host
8	Umakant Dash	Thailand	14–16 July 2014	Resilient and Responsive Health Systems (RESYST) Consortium and Purchasing Study Analysis Workshop	—
9	Solomon Benjamin	Osaka, Japan	23–28 July 2014	Presentations (oral and paper) at Seventh East Asian Regional Conference in Alternative Geography (EARCAG) titled ‘Right to inhabit: The Asian challenges’	—
10	Solomon Benjamin	TU Berlin	9–12 September 2014	Cities beyond the logic of the plan: Some reflections problematizing informality, at an international workshop (delivering invited presentation and being on panel)	—
11	Malathy Duraisamy	UK	11–12 September 2014	Research Design and Methodology Workshop, University of Cambridge, as part of a collaborative project	—
12	John Bosco Lourdasamy	USA and Canada	28–31 October 2014	Oral presentation at Duke University, Canada, and Yale University, USA	—
13	Sudarsan P.	University of Melbourne, Australia	25–28 November 2014	AOTULE Conference	—
14	Devaki Reddy S.	Turkey	3–5 December 2014	International Conference Centre, Esentepe Campus, Sakarya, Turkey (presented paper)	—
15	Millind Brahme	Germany	1–12 December 2014	Attending workshop and lecture sessions on rhetoric in the Master Programme on European and World Politics, Hochschule Bremen, University of Applied Sciences	—
16	Malathy D.	Boston, MA, USA	2–4 January 2015	Allied Social Science Association Annual Conference (presented the paper titled ‘Occupational segregation: Wage and job discrimination against women in the Indian labour market 1983–2012’)	—
17	Santhosh Abraham	Singapore	4–15 January 2015	International conference organised by Asia Research Institute, National University of Singapore (presented paper titled ‘Keyi Mappila Muslims of colonial Malabar: Making of coastal and vernacular cosmopolitan order’)	—
18	S. Devaki Reddy	Thailand	13 February 2015	Delivering talk at VRU, Thailand	—
19	Joe Thomas Karackattu	UK	18 March 2015	Delivered a talk, ‘Situating the Taishang in cross-strait ties’, SOAS, University of London	Host
20	Mathangi Krishnamurthy	Kassel, Germany	30 March to 2 April 2015	International Conference on Reproductive Loss and Bereavement (presented paper)	—
21	Solomon J. Benjamin	CNRS, Paris, France	18–19 March 2015	International Seminar on Comparing Urban Dynamics in China and India (gave presentation)	—

#### Honours and awards obtained by faculty members

Sl. No.	Name of Faculty Member	Name of Award	Awarded by	Awarded for	Date of Award
<b>Awards</b>					
1	Srilata K.	Pushcart Poetry Prize	—	Mini Book— <i>Dreaming, Mostly of Nameless Things</i>	2015

## Books, monographs authored/co-authored

Sl. No.	Name of Faculty Member	Title	Publisher	Author/Co-author
<b>Books</b>				
1	Jyotirmaya Tripathy and Sudarsan Padmanabhan	<i>Becoming Minority: How Discourses and Policies Produce Minorities in Europe and India</i>	Sage Publications Private Limited, 2014	—
2	Sonika Gupta and S. Padmanabhan (eds.)	<i>Politics and Cosmopolitanism in a Global Age</i>	Routledge, 2014; ISBN: 978-1-13-882240-5	—
3	Satya Sundar Sethy	<i>Contemporary Ethical Issues in Engineering</i>	IGI Global, Pennsylvania, USA, February 2015	—

### 4.10.4. Research and Consultancy

#### Sponsored research projects (ongoing and new)

Project Number	Start Date	Close Date	Value (lakhs of ₹)	Title	Coordinators
HSS1415043ICSSSSUA	15 May 2014	14 November 2015	14.00	Access to Credit by Small Firms: How Important Is the Role of Gender and Caste?	Subash S. and Malathy D.
HSS1415044ICSSANUK	1 January 2015	31 December 2017	9.00	An Assessment of Performance of Indian Textiles Industry	Anup Kumar Bhandari
HSS1415042INSASANO	23 October 2014	22 October 2015	2.33	Medicine and British Empire in South India: A Study of Psychiatry and Mental Asylums in Colonial Kerala	Santhosh Abraham
HSS1213036DSTXSUDH	28 March 2013	27 March 2016	533.74	Building an International Research Network on Sustainability to Enhance Strategic Knowledge for Climate Change	Sudhir Chella Rajan
HSS1314038MHRDVRMU	28 November 2013	27 November 2018	500.00	Centre for Technology and Policy (CTaP)	Muraleedharan V.R.
HSS1314039ICSSSATA	13 November 2013	12 November 2015	15.00	Professional Ethics for Higher Education Faculties in India: An Investigation into Its Development, Impacts and Relevance	Satya Sundar Sethy
HSS1314040ICSSBINI	13 November 2013	12 November 2015	50.00	Changing Contours of State Welfarism and Emerging Citizenship: A Comparative Study of Tamil Nadu and Kerala	Binitha V. Thampi
HSS1213035EURUPSUD	16 January 2013	31 July 2016	25.29	Interdisciplinary Bridges in Indo-European Studies (IBIES)—Erasmus Mundus Partnership	Sudarsan P. and Jyotirmaya Tripathy
HSS0910027IMRFSUDH	13 January 2010	31 March 2015	25.00	Indo-German Centre for Sustainability	Sudhir Chella Rajan
HSS1112032IITMSONI	3 October 2011	31 March 2016	5.00	China Studies Centre	Sonika Gupta
HSS1112566NFSCSABU	16 January 2012	15 January 2015	5.00	Impact of Environmental Regulation on the Performance of Indian Cement Firms	Sabuj Kumar Mandal
HSS1112034ICSSMSUR	1 March 2012	31 March 2015	5.94	Human Capital, Innovations and Firm Performance in Unorganised Manufacturing Industries	Suresh Babu M.

Project Number	Start Date	Close Date	Value (lakhs of ₹)	Title	Coordinators
HSS1213594NFSCSANO	29 November 2012	28 November 2015	29.55	Colonial Courts, Trials and Conflicts in Early British Malabar	Santhosh Abraham
HSS1213596NFSCMATH	4 December 2012	3 December 2015	5.00	Outsourcing Birth: Studying Kinship and Juridical and Emotional Subjectivity among Donors, Clients and Doctors in Chennai-Based Surrogacy Clinics	Mathangi Krishnamurthy
HSS1213602NFSCRAJK	31 January 2013	30 January 2016	4.90	Aspects of Tibeto-Burman Languages	Rajesh Kumar
HSS1213603NFSCANUK	31 January 2013	30 January 2016	5.00	Capital Asset Pricing Model: An Investigation into the Indian Stock Market	Anup Kumar Bhandari
HSS1314614NFSCSOLO	31 July 2013	30 July 2016	5.00	Transforming Economy and Space Making: An Exploration in Chennai and Other Indian Cities and Towns	Solomon J. Benjamin
HSS1314620NFSCHARE	9 October 2013	8 October 2016	5.00	Are Capital Inflows into India Interest Rate-Sensitive?	Harendra Kumar Behera
HSS1314801NFIGJOET	1 November 2013	31 October 2016	5.00	China's Foreign and Economic Policy	Joe Thomas Karackattu
HSS1314625NFSCJOET	31 October 2013	30 October 2016	5.00	Economic Interdependence and Vulnerability in Cross-strait Relations	Joe Thomas Karackattu
HSS1314821NFIGMERI	19 March 2014	18 March 2016	5.00	Literary Historiography Studies in India	Merin Simi Raj
HSS1415045IITMSUDH	24 February 2015	29 February 2016	80.04	Climate Change Adaptation and Resilience in Peri-urban Chennai in the Study Area of Sriperumbudur: Sustainable Resources Management Livelihoods and Governance	Sudhir Chella Rajan
HSS1415642NFSCMERI	16 June 2014	15 June 2017	5.00	A Social History of Publishing in Kerala	Merin Simi Raj
HSS1415648NFSCSPDH	28 November 2014	28 November 2016	5.00	The Paradox of Language and Literature	Dhanavel S.P.
HSS1415831RFERSANO	11 February 2015	10 February 2016	7.00	The Making of Psychiatric Institutions in British Colonial South India	Santhosh Abraham
ERP1314017RESFJBLO	14 February 2014	30 June 2015	8.30	Transfer of Technology: The Case of Tea and Coffee in Colonial India	John Bosco Lourdusamy

### Consultancy projects (ongoing and new)

Project Number	Start Date	Close Date	Value (lakhs of ₹)	Title	Coordinators
RB1112HSS001LONDVRMU	1 August 2011	31 December 2016	55.97	Resilient and Responsive Health Systems	Muraleedharan V.R.
RB1314HSS003MHRDMSUR	1 November 2013	31 October 2015	20.22	Monitoring SSA in Tamil Nadu, MHRD	Suresh Babu M.
RB1112HSS002WELOJBLO	1 March 2012	28 February 2015	80.67	Medical Ideas, Tools, Ethics and Pluralism in South India	John Bosco Lourdusamy
RB1314HSS002MHRDMILL	12 July 2013	11 July 2015	16.18	Monitoring RMSA in 13 Districts of Tamil Nadu, MHRD	Brahme Milind

Project Number	Start Date	Close Date	Value (lakhs of ₹)	Title	Coordinators
RB1314HSS004LONDUMAK	1 November 2013	31 December 2014	52.56	A Critical Analysis of Purchasing Arrangements in a Range of Law and Middle Income Countries	Umakant Dash
RB1415HSS001WELOMATH	1 April 2014	30 September 2014	5.09	The Politics and Ethics of High-End Diagnostic Testing and Genetic Engineering in India	Mathangi Krishnamurthy
RB1415HSS002LONDVRMU	1 April 2014	30 April 2016	52.04	A Longitudinal Study of Job Choice of Privately Trained Nurses in Tamil Nadu	Muraleedharan V.R.
RB1415HSS003PHFIVRMU	1 March 2014	31 December 2014	9.09	India Health System Transition Series	Muraleedharan V.R.
RB1415HSS006AIRUSUDH	1 July 2014	31 December 2017	85.90	Understand Sustainable Value in Aviation	Sudhir Chella Rajan
RB1415HSS007CMSUDMAL	18 August 2014	30 June 2015	13.8	Understanding ABL in Tamilnadu	Malathy D.
RB1415HSS008DIRTVRMU	1 March 2015	1 March 2016	10.00	Universal Health Coverage	Muraleedharan V.R.
RB1415HSS009PHFIUMAK	1 March 2015	28 February 2016	81.32	Strengthening Ecosystem for Sustainable and Inclusive Health Financing in India	Umakant Dash
RB1415HSS004WELOJBLO	1 June 2014	30 December 2014	4.75	Dissemination and Exploratory Visits to UK and Europe	John Bosco Lourdusamy
RB1415HSS005WELOSANO	13 June 2014	12 December 2014	4.71	The Making of Colonial Medical Jurisprudence	Santhosh Abraham

### Exchange programmes with other universities under MoUs

The following M.A. students were permitted to spend one semester (July–November 2014) at Hochschule Bremen, Germany, to undergo courses under a student-exchange programme.

Course No.	Name of Student
HS11H017	Charrlotte Adelina P.
HS11H008	Aparajitha K.
HS11H043	Urmila Reghunath
HS11H018	Diana Evangeline

The following students were permitted to spend one semester (January–May 2015) in the universities mentioned against their names (these universities have currently signed MoUs with IIT Madras).

Course No.	Name of Student	Venue
HS10H017	Kavin Aadithiyan C.	University of Ghent, Belgium

The following students are permitted to spend academic year 2014–2015 (July 2014 to May 2015) under Erasmus Mundus Interdisciplinary Bridges in Indo–European Studies (IBIES) at Aarhus University Denmark.

Course No.	Name of Student
HS10H009	Dhivya Jothi G.
HS10H006	Darsana Vijay
HS10H042	Vanya Rachel Gnaniah



## Research publications of faculty members and research scholars

1. R. Santhosh. July–December 2013. Contextualising Islamic contestations: Reformism, traditionalism and modernity among Muslims of Kerala. *Indian Anthropologist* 43(2).
2. J.T. Karackattu. January 2015. Assessing Sino–Indian economic relations in an interdependence framework: 1992–2008. *Economic and Political Studies* 3(1): 129–159.
3. S.P. Dhanavel. December 2014. Paradox in A.R. Ammons’s *Worldly Hopes*. *Literary Explorer* 12(1): 10–17.
4. A.I. Viswamohan. 2014. Haute couture and the discourse of stardom in globalized times: Sonam Kapoor as Hindi cinema’s representative fashion icon. *South Asian Popular Culture* (Routledge (UK)) 12(2): 73–88.
5. S.D. Reddy. 2015. The significance of testing for the effective teaching of English. *Proceedings of Seminar on Best Practices in English Teaching*, VRU, Thailand, 13 February, pp. 18–26.
6. A.K. Bhandari. 2014. Bank ownership and efficiency in India: Some fresh evidence. *Keio Economic Studies* 50: 1–28.
7. H. Jagadeesh and S. Subash. June 2014. Do stronger IPR regime influence the R&D efforts? Evidence from the Indian pharmaceutical industry. *Global Business Review* 15(2): 189–204.
8. S. Chaudhary. July 2014. Kothari commission, 1964–1966 on language education: In retrospect. *Language & Language Education* 3(2&5): 41–47.
9. S. Chaudhary and S. Sujitha. May–June 2014. English for civil aviation: An English language training programme for air traffic controllers. *ELT@I Journal* 56(3): 26–33.
10. S. Benjamin. 2014. Occupancy urbanism as political practice. In S. Parnell and S. Oldfield (eds.), *A Routledge Handbook on Cities of the Global South*, Chapter 27, Routledge, London.
11. P. Sudarsan. 2014. Paradox of doctrinaire violence and non-violence. In J. Schottli, J. Szaczhakowski and M. Thapa (eds.), *India in World Affairs*, Routledge.
12. S. Abraham. June–September 2014. Constructing the extraordinary criminals: Mappila Muslims and legal encounters in early British Malabar. *Journal of World History* (University of Hawai’i Press) 25(2&3): 373–395.
13. S. Rangarajan. 2014. Engaging with Prakriti: A survey of ecocritical praxis in India. *The Oxford Handbook of Ecocriticism*, Oxford University Press.
14. S. Subash and S.N.R. Raj. 2014. The growth barriers of informal sector enterprises: Evidence from India. *The Developing Economies* (Wiley-Blackwell) 52(4): 351–375.
15. T. Sundararaman, G. Vaidyanathan, S.D. Vaishnavi, K.R. Reddy, T. Mokashi, J. Sharma, R. Ved, U. Dash and V.R. Muraleedharan. 22 November 2014. Measuring progress towards universal health coverage: An approach in the Indian context. *Economic & Political Weekly* 49(47): 60–65.
16. S.-D. Applanaidu, S. Samsudin, J. Ali, U. Dash and A.R. Chik. September 2014. Technical and scale efficiency of public district hospitals in Kedah, Malaysia: A data envelopment analysis (DEA). *Journal of Health Management* (Sage) 16(3): 327–335.
17. S. Chaudhary. December 2014. Gandhiji and English [on] the anvil. *Journal of Literature & Academic Research in English* (ISSN: 23500638) 1: 67–88.
18. S. Chaudhary. December 2014. Knowledge of language and the multilingual mind. *Indian Linguistics* 75: 145–170.
19. H. Lehmann and S.C. Rajan. 2015. Sustainable Lifestyles: Pathways and Choices for India and Germany. Policy paper, Indo–German Expert Group on Green and Inclusive Economy, GIZ, Berlin.
20. B. Parvi and S. Rangarajan. 2015. The meaning of all things: The green hermeneutic of Rumi’s *Masnawi*. *The Ravenshaw Journal of Literary and Cultural Studies* 5.
21. S. Subash, P.J.J. Lukose and S. Komera. 2015. Financing constraints and investments in R&D: Evidence from Indian manufacturing firms. *Quarterly Review of Economics and Finance* (Elsevier) 55(1): 28–39.

## Distinguished visitors to the department

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1	Zakka Jacob, former journalist at CCTV, China	10 September 2014	Delivered Lecture
2	Dr. Joachim Betz, Professor, GIGA Institute of Asian Studies, Rothenbaumchaussee 32, D-20146 Hamburg/Germany	24 September 2014	Interaction with faculty members
3	Mr. Gopalkrishna Gandhi, Distinguished Professor at the department	11 November 2014	Lecture on independence
4	Mr. Gopalkrishna Gandhi, Distinguished Professor at the department	12 November 2014	Lecture on democracy
5	Mr. Gopalkrishna Gandhi, Distinguished Professor at the department	13 November 2014	Lecture on India
6	Prof. Brian Cantor, Vice Chancellor, University of Bradford, UK	18 November 2014	A delegation from the University of Bradford, UK, visited IIT Madras

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
7	Prof. Rachel Dwyer, University of SOAS, London	10 November 2014	R&D lecture
8	Prof. Ira Bhaskar, JNU, Delhi	6–8 February 2015	Department conference and R&D lecture
9	Clare Wilkinson Weber, Associate Professor, Washington State University, USA	10–11 February 2015	Lecture series

#### 4.10.5. Other Activities

- Mr. T. Ravibabu, Junior Assistant in the department, participated in a Hindi workshop conducted on 29 December 2014 as a part of the implementation of the official language and won the First Prize for Spoken Hindi.
- Academic Conference 2015 on Migration was organised by research scholars and M.A. students between 6 and 8 February 2015.

#### Research with immediate societal impact

Project	Faculty Member
Indian Climate Research Network (with IIT Delhi, IISc and CSE) for four years in a row for building capacity on climate change research among young scientists	Sudhir Chella Rajan
French CNRS-funded Suburban	Solomon Benjamin
Canadian SSHRC's MCRI-funded Global Suburbism	Solomon Benjamin
French CNRS-funded Land Titling in India	Solomon Benjamin
ICSSR India-funded Urban Markets	Solomon Benjamin
IBIES (Interdisciplinary Bridges in Indo-European Studies)	Sudarsan Padmanabhan and Jyotirmaya Tripathy
RBIC projects ( in the context of school education in Tamil Nadu)	Milind Brahme and Suresh
Good health at Low Cost (The Success Story of Tamil Nadu)	Muraleedharan V.R. and Umakant Dash

#### Major funded research projects

Project	Faculty Members Involved
Monitoring SSA and MDM in Tamil Nadu (since 2008); Evaluating ALM in Tamil Nadu (in 2010); Monitoring RMSA in Tamil Nadu (since 2013)	Milind Brahme, Suresh Babu
IBIES (Interdisciplinary Bridges in Indo-European Studies)	P. Sudarsan, Jyotirmaya Tripathy
Centre for Technology and Policy (CTaP)	V.R. Muraleedharan
Global Suburbism, funded by Canadian SSHRC's MCRI	Solomon Benjamin
Land Titling in India, funded by French CNRS	Solomon Benjamin
Urban Markets, funded by ICSSR India	Solomon Benjamin
Resilient and Responsive Health System, funded by DFID UK (2012–2016)	V.R. Muraleedharan, Umakant Dash
Good Health at Low Cost, funded by Rockefeller Foundation (2012)	V.R. Muraleedharan
Enhancing Strategic Knowledge on Climate Change through Collaborative Research	Sudhir Chella Rajan

#### Interdisciplinary projects

Project	Faculty Members Involved
A multinational comparative study on health care systems (by a consortium of 10 universities (from seven countries), supported by DFID (for five years, 2012–2016)	V.R. Muraleedharan, Umakant Dash
A five-country comparative study, Good Health at Low Cost, funded by the Rockefeller Foundation, concluded in 2012.	V.R. Muraleedharan, Umakant Dash
Wellcome Trust project, Medical Ideas, Tools, Ethics and Pluralism in South India (2012–2015)	John Bosco Lourdasamy, V.R. Muraleedharan, N. Sreekumar
Interdisciplinary Bridges in Indo-European Studies (IBIES) (2013–2016)	P. Sudarsan, Jyotirmaya Tripathy, EU partners

Project	Faculty Members Involved
Value for Sustainable Aviation	Sudhir Chella Rajan
Global Suburbism, funded by Canadian SSHRC;s MCRI	Solomon Benjamin
Land Titling in India, funded by French CNRS	Solomon Benjamin
Urban Markets, funded by ICSSR India	Solomon Benjamin
Peri-urban Sustainability in Sriperumbudur	Solomon Benjamin, Sudhir Chella Rajan, Suresh Babu, Christoph Woiwode
Professional Ethics for Higher Education Faculties in India: An Investigation into Its Development, Impacts, and Relevance	Satya Sundar Sethy, Santhosh Abraham

## IIT Madras China Studies Centre (CSC): Report of activities

### Events

Date	Events
17 April 2014	How China sees itself and its role in the world, Prof. Geremie R. Barme, Director of the Australian Centre on China in the World (CIW), Australian National University (ANU)
24–25 September 2014	Paper titled "Education policy toward ethnic minorities in China and India: The case of Tibetan teenagers" was presented by Iris Ruyu Lin at Juxtapose, conference organised by the Oxford Research Centre for the Humanities (TORCH), India–China Programme, JNU, New Delhi
22 August 2014	Media team from Guangdong Radio & Television and Nanfang Media Group in China visited CSC to interview Dr. Sonika Gupta and Prof. Solomon Benjamin to discuss China's proposal of the maritime silk route. This was in preparation for Chinese President Xi Jinping's visit to India in September.
14 January 2015	Seminar presentation: India–China bilateral relations—During the India–China Academic Dialogue 2015 [in collaboration with the Shanghai Institute for International Studies (SIIS)], Dr .Sonika Gupta, Associate Professor, IIT Madras, Indian Council for World Affairs, New Delhi
19 February 2015	Guest lecture: Social transformation in China: Economic growth and Nutrition in urban and rural areas, Dr. Sriram Natrajan, independent China scholar. Rapporteur: Kalyani Subbiah, intern, IIT Madras CSC
13 February 2015	Special report: China's new Silk Road—Foreign policy, security and economic implications, Kalyani Subbiah, intern, IIT Madras CSC
13–16 February 2015	Taiwan Education Programme–IIT Madras CSC in partnership with the Taipei Economic and Cultural Centre (Taiwan Consulate in Chennai)

### Online analysis

- Obama's Asian foray: Implications for US–China relations, P.R. Chari, Visiting Professor, Institute of Peace and Conflict Studies, New Delhi, 6 May 2014
- Xinjiang conflict and its changing nature, Avinash Godbole, Research Assistant, Institute for Defence Studies and Analyses, 14 August 2014
- Chinese President Xi Jinping's visit to Mongolia, Sana Hashmi, Associate Fellow, Centre for Air Power Studies, New Delhi, 3 September 2014
- China's Asia strategy and President Xi's visit to India, Avinash Godbole, Research Assistant, Institute for Defence Studies and Analyses, 18 September 2014
- Ilham Tohti's sentence and China's ethnic policy, Veena Ramachandran, research scholar, CSC, IIT Madras, 1 October 2014
- Hong Kong protests, Amrita Jash, Centre for East Asian Studies, School of International Studies, JNU, New Delhi, 14 October 2014
- China debates the rule of law, Abhishek Pratap Singh, doctoral candidate, Chinese Studies Division, School of International Studies, JNU, New Delhi, 13 November 2014
- Analysing Li Keqiang's maiden visit to Kazakhstan, Sana Hashmi, Associate Fellow, Centre for Air Power Studies, New Delhi, 24 December 2014
- China–Japan talk the 'CBM Way' to settle the Diaoyu/Senkaku crisis, Amrita Jash, doctoral candidate, Centre for East Asian Studies, School of International Studies, JNU, New Delhi, 31 January 2015
- Xi Jinping's "Four Comprehensives", Amrita Jash, doctoral candidate, Centre for East Asian Studies, School of International Studies, JNU, New Delhi, 16 March 2015
- China's anti-graft campaign, Abhishek Pratap Singh, doctoral candidate, Chinese Studies Division, School of International Studies, JNU, New Delhi, 13 March 2015

## 4.11. DEPARTMENT OF MANAGEMENT STUDIES

### 4.11.1. Introduction

The Department of Management Studies (DoMS) was formed in April 2004. The department offers a 2-year full-time M.B.A. programme (started in July 2001), an M.S. (Entrepreneurship) programme and research programmes leading to M.S. and Ph.D. degrees. Further, the department offers the Visionary Leadership in Manufacturing (VLM) programme, leading to a postgraduate diploma for executives (PGPEX-VLM), jointly with IIM Calcutta and IIT Kanpur.

The contributions of the faculty and research scholars have been highly acclaimed in academic circles and peer groups. The growing number of well-qualified applicants, with many having significant professional experience, both from industry and academia, is a good indication of the academic reputation of the department.

The summer and career placements offered to the students by globally and nationally reputed companies provide strong evidence of the growing stature of the programme and the attention it is receiving.

The department presently has the largest number of management research scholars in India. Its research programmes attract a very large number of applicants, a high proportion of whom are working professionals. The work of the research scholars is regularly published in reputed international and national journals and is presented at prestigious international and national conferences. In the recent past, research scholars have received international awards for their doctoral theses. The research papers of several research scholars have consistently received 'best paper' awards, and are well cited in the literature.

The alumni of the department have had scholastic achievements in different disciplines and continue to make significant contributions to the organisations and institutions they work for. Some of the qualities that characterise our students who have graduated include high levels of initiative and energy, a capacity for hard work, strong task orientation, a willingness to learn and a temperament suitable for teamwork. Many M.B.A. alumni have won prizes, awards, honours and promotions in their organisations even within their first year of work. They have also played a central role in making their organisations earn laurels from various quarters.

The full-time and visiting faculty members have excellent academic and professional backgrounds, and they collectively work for realising the department's vision, 'to be a globally unique and most valuable source of knowledge, insight, creativity and expertise in management thought and practice'.

Over the years of its existence, the department has thoroughly revised the curriculum of its M.B.A. programme, expanded its research activities, re-launched the M.S. (Entrepreneurship) programme with a new structure and worked toward establishing long-term relationships with globally reputed institutions and organisations. The following sections present an outline of the department's work.

Some major areas of research 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
- Quantitative strategy
- Services management
- Technology management

### 4.11.2. Academic Programmes (M.B.A., M.S., Ph.D., PGPEX (VLM))

#### New courses introduced

Sl. No.	Course No.	Title
1	MS 5150	Marketing Tools: Strategies and Innovation
2	MS 5474	HR in Mergers and Acquisitions
3	MS 5529	Behavioural Lab
4	MS 5614	Commodity Market

Sl. No.	Course No.	Title
5	MS 5615	Treasury Management
6	MS 6020	Business and Management: Advanced Concepts and Models
7	MS 7740	Research in IT and Organisations
8	MS 8300	Mathematical Foundations for Operations
9	MS 6600	Global Corporate Governance
10	MS 8041	Empirical Research in Family Business Management
11	MS 8040	Dynamics of Family Business

### Students on roll

Programme	I Year	II Year	III Year	IV Year	V Year and Later	Total
M.B.A.	61	72	—	—	—	133
M.S. (by research)/M.S. (Entrepreneurship)	04	14	25	08	06	57
Ph.D.	07	11	17	20	37	92
<b>Total</b>	<b>72</b>	<b>97</b>	<b>42</b>	<b>28</b>	<b>43</b>	<b>282</b>

### Names of students/scholars who attended conferences/seminars/symposia abroad/in India

Sl. No.	Name of the Student/ Scholar	Name of the Conference/Seminar/Symposium/ Workshop	Date and Venue	Financial Assistance from
<b>Abroad</b>				
1	Sarabjeet Natesan [Ph.D. scholar]	International Conference on Management in Leadership and Governance 2014	April 2014, Boston, USA	IIT Madras
2	S. Sowmya [Ph.D. (UGC) scholar]	Recent Developments in Financial Econometrics and Applications (international conference)	4–5 December 2014, Deakin University, Melbourne, Australia	IIT Madras
3	Shipra Maurya and Thenmozhi M.	2014 IMRA-KEAN International Conference Union	29–31 May 2014, USA	IIT Madras
4	Narend S. and Thenmozhi M.	Asian Finance Association	24–27 June 2014, Bali, Indonesia	IIT Madras
5	Sowmya Karunakaran, Venkataraghavan K. and R.P. Sundarraj	Australasian Conference on Information Systems	2014, Australia	IIT Madras
6	Aseem Pahuja, Venkataraghavan K. and R.P. Sundarraj	International Conference on Group Decision and Negotiation	2014, France	IIT Madras
7	A. Kalra and Rupashree Baral	74th Annual Meeting of Academy of Management	1–5 August 2014, Philadelphia, USA	IIT Madras
8	Manimegalai M. and Rupashree Baral	28th Australian and New Zealand Academy of Management (ANZAM) Conference	3–5 December 2014, Australia	IIT Madras
9	Narend S. and Thenmozhi M.	World Finance & Banking Symposium	11–12 December 2014, Singapore	IIT Madras
<b>India</b>				
1	Ranjitha Ajay [Ph.D. scholar]	Annual One-Day Conference on Government, Corporate Governance and Growth of Capital Markets	11 April 2014, Mumbai	IIT Madras
2	Shalini V. [Ph.D. scholar]	Second Pan-IIM World Management Conference, Kozhikode	5–8 November 2014, IIM Kozhikode	IIT Madras
3	Rajeev Ranjan Tripathi [Ph.D. scholar]	14th Consortium of Students in Management Research (COSMAR)	21–22 November 2014, IISc, Bangalore	IIT Madras
4	Ram Kishore K.R. [Ph.D. scholar]	14th COSMAR	21–22 November 2014, IISc, Bangalore	IIT Madras

Sl. No.	Name of the Student/ Scholar	Name of the Conference/Seminar/Symposium/ Workshop	Date and Venue	Financial Assistance from
5	Rofia R. and Rupashree Baral	Fourth International HR Conference	5–6 December 2014, SDMMIMD, Mysore	IIT Madras
6	Rajeev Ranjan Tripathi [Ph.D. scholar]	18th Annual International Conference of the Society of Operations Management (SOM)	12–14 December 2014, IIT Roorkee	IIT Madras
7	B. Vipin. [Ph.D. scholar]	18th Annual International Conference of SOM	12–14 December 2014, IIT Roorkee	IIT Madras
8	Narsimhalu U., Potdar V. and Arshinder Kaur	XVIII Annual International Conference of SOM	13–14 December 2014, IIT Roorkee	IIT Madras
9	Saranya K. [Ph.D. scholar]	Fourth India Finance Conference 2014	17–19 December 2014, IIM Bangalore	IIT Madras
10	Sowmya S. [Ph.D. scholar]	Fourth India Finance Conference 2014	17–19 December 2014, IIM Bangalore	IIT Madras

### Names of students/scholars who won outside prizes and awards

Sl. No.	Name of the Student/Scholar	Name of the Prize	Prize Awarded by
1	N. Srinivasan [M.S. research scholar]	Silver Award (with a cash prize of ₹21,000)	WorldQuant's WebSim Contest 2014 (WorldQuant Research (India) Private Limited)
2	Sarabjeet Natesan [Ph.D. scholar; guide: Rahul R. Marathe]	Best Ph.D. Paper Award	International Conference on Management in Leadership and Governance 2014, Boston
3	Ranjitha Ajay [Ph.D. scholar]	Second Outstanding Paper Award	Indian Institute of Capital Market, Mumbai
4	Nivethitha S. [Ph.D. scholar; guide: T.J. Kamalanabhan]	Best Paper Award	Fourth Annual International Conference on Business Strategy and Organisational Behaviour, Singapore
5	S. Arvind [Ph.D. scholar]	Erasmus Mundus Fellowship	A consortium of European universities (Corvinus University of Budapest, Hungary)
6	Kurian John (MS11D005) [Ph.D. scholar]	Best Paper Award	Supply Chain Management Track of the International Symposium, IISc Bangalore
7	Sai Prashanthi Ramesh and Aditya Mujumdar [M.B.A. students]	First prize	Arcturus–Ops Wise, IIM Trichy
8	Rohan Samria and Praveen Kumar [M.B.A. students]	First prize	PRATIMAAN—Business Analytics Competition, SJMSoM, IIT Bombay
9	Anurag Jha and Himanshu Agarwal [M.B.A. students]	Third prize	NMIMS, Hyderabad (for FINACOLADA)
10	Abhayraj Singh, Abdul Razik and Paras Aggarwal [M.B.A. students]	First prize	Chrysalis—Whizkids (Entrepreneurship), LIBA, Chennai
11	Arnab Saha, Pratik Gupta and Sudarshan Narayanan [M.B.A. students]	First prize	Arena of the Gods (marketing event), LIBA, Chennai
12	Alok Singh [M.B.A. student]	ICICI StockMIND—South Zone Winner	ICICI Bank
13	Gaurav Agrawal and Somaj Banerjee [M.B.A. students]	First prize	Backwaters (operations event), IIM Kozhikode
14	Gaurav Agrawal, Somaj Banerjee and Soumyakant Mishra [M.B.A. students]	Second prize	Innovation Contest—Wipro Nokia, R&D Challenge (Wipro and Nokia)



### 4.11.3. Faculty and Their Activities

#### Faculty

Name and Qualifications	Major Areas of Specialisation
<b>Professors</b>	
Arun Kumar G., M.Com., Ph.D.	Market microstructure; IPOs; mergers and acquisitions; joint ventures and multinational business
Ganesh L.S., B.E.(Hons.), M.Tech., Ph.D.	Systems thinking and applications; project management; technology management; data and decision analysis; forecasting
Kamalanabhan T.J., M.A., M.Phil., Ph.D. [Head]	Organisational behaviour; human resource management; training and development
Madhumathi R., M.Com., Ph.D.	Financial management and accounting; forex research; bank management; capital market studies
Narendran T.T., B.E., M.S., Ph.D.	Operations management; supply chain management; vehicle routing problems
Prakash Sai L., B.E., PG Dipl. (CM&P), M.Tech., Ph.D.	Strategic management; IT outsourcing and IT strategic planning business models; technology management; contemporary issues in management
Rajendran C., B.E.(Hons), M.E., Ph.D.	Operations management; production and materials management; supply chain management; scheduling
Srinivasan G., B.E. (Hons), M.S., Ph.D.	Fundamentals of operations research; advanced operations research; operations management; supply chain management; manufacturing systems management; O.R. applications; services operations management
R.P. Sundarraj, B.E. (Hons), M.S. (USA), Ph.D. (USA)	Information systems; supply chain management; e-business; computational optimisation; decision support systems
Thenmozhi M., M.Com., M.Phil., Ph.D.	Financial management; strategic management; computational finance
Thillai Rajan A., B.E., M.Sc., Fellow IIM Bangalore	Venture capital and private, equity project and infrastructure finance; public-private participation; corporate finance
<b>Associate Professors</b>	
Arshinder Kaur, M.Tech., Ph.D.	Operations research; supply chain management; total quality management (TQM); services operations management
Krishna Prasanna P., B.Com., M.Com., M.Phil., Ph.D.	Financial accounting; fixed income securities; financial risk management; market microstructure
Rahul R. Marathe, B.E., M.S. (USA), Ph.D. (USA)	Simulation; industrial engineering; TQM; operations research; operations management
Saji K. Mathew, B.Tech., Ph.D.	Management information systems; IT strategy; data mining and business intelligence; IT services and outsourcing; information systems development
Usha Mohan, M.Sc., M.Phil., Ph.D.	Quantitative models in operations management; probability and statistics; combinatorial optimisation
<b>Assistant Professors</b>	
Amit R.K., M.Tech., Ph.D.	Game theory; operations research; decision theory; natural resources management
Ganesh M.P., M.A., M.Phil., Ph.D.	Organisational behaviour; human resources management; industrial psychology
Geetha M., B.Sc., M.B.A., Ph.D.	Marketing management; consumer behaviour; brand management
Lata Dyaram, M.A., Ph.D.	Leadership development; corporate sustainability; cognition in organisations; organisational behaviour; organisational development; industrial and organisation psychology
Nandan Sudarsanam, M.S. (Indl Engg., USA), Ph.D. (Engg. Sys—MIT, USA)	Experimentation; data mining; applied statistics; algorithmic and heuristic approaches to problem solving
Richa Agrawal, B.A. (Econ.), M.B.A., Ph.D.	Customer relationship marketing; consumer behaviour and insight advantage

Name and Qualifications	Major Areas of Specialisation
Rupashree Baral, B.Sc., M.A. (IR & PM), Ph.D.	Strategic human resources management; organisational behaviour; work-life balance; employee engagement; diversity and inclusiveness; career exit and re-entry of women
V. Vijayalakshmi, M.Sc., Ph.D.	Positive organisational behaviour; social media and social design; neuro-linguistic programming
Varisha Rehman, B.Com. (Hons), M.B.A., Ph.D.	Marketing management and research; advertising and publicity; experiential marketing
<b>MHRD IPR Chair Professor</b>	
Feroz Ali Khader, B.A., LL.M., S.J.D., Ph.D.	Patent law and policy; intellectual property law; international trade law; law and technology

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

Sl. No.	Coordinators	Title	Dates
1	L.S. Ganesh, P. Krishna Prasanna	Half-Day Seminar on Piloting Corporate Governance (sponsored by IDBI Bank Limited and organised in collaboration with Central Depository Services (India) Limited (CDSL))	21 April 2014
2	G. Arun Kumar	Integrated Materials Management (management trainees from the officers of HAL Academy)	9–22 June 2014
3	M. Thenmozhi, P. Krishna Prasanna	Faculty Development Programme (supported by AICTE) on Understanding Business Processes Through Case Studies	22–26 September 2014
4	Lata Dyaram, R.P. Sundarraj, T.J. Kamalanabhan	Architect Readiness Programme for Senior Executives of Verizon Limited	1 August to 27 September 2014
5	Rupashree Baral, T.J. Kamalanabhan	Executive Development Programme for Senior Executives of HLL Lifecare Limited	9–11 October and 17–19 November 2014
6	Lata Dyaram, R.P. Sundarraj, T.J. Kamalanabhan	Architect Readiness Programme for Senior Executives of Verizon Limited	10 October to 12 December 2014
7	Rupashree Baral, M.P. Ganesh	Faculty Development Programme (sponsored by AICTE-STC)	13–17 October 2014
8	L. Prakash Sai	Two-day training programme, Effective Decision-Making Through Analytical & Cognitive Thinking (for the senior leadership of the Watanmal Group in Accra, Ghana)	24–25 October 2014
9	R.K. Amit, Saji Mathew	DoMS Research Symposium	16–17 January 2015
10	R.P. Sundarraj	Two-day workshop, Data Analytics–Health Issues	27–28 January 2015
11	M. Thenmozhi, T.J. Kamalanabhan	Supervisory Development Programme for the Executives of L&T Power Transmission and Distribution	9–14 February 2015
12	Feroz Ali	Workshop on intellectual property for research scholars at IIT Madras	15 March 2015

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

Sl. No.	Name of Faculty Member	Title	Institution	Dates
<b>Training programmes</b>				
1	Rupashree Baral	QMS ISO 9001:2008 Lead Auditor Training Course	IRCA	4–8 August 2014
<b>Seminars</b>				
1	T.J. Kamalanabhan	Residential Seminar	University of Mauritius	6–7 March 2015
<b>Conferences</b>				
1	Rupashree Baral	Changing Industrial Relations Environment	Federation of Indian Chambers of Commerce and Industry (FICCI), Chennai	27 June 2014

### Special lectures delivered by faculty members at other institutions

Sl. No.	Name of Faculty Member	Topic	Institution	Date
1	T.T. Narendran	Green logistics (at the session titled 'Inclusive Strategies for an Integrated, Efficient and Sustainable Transport Network' at the Conference on Logistics Summit 2014: Creating Value Across the Logistics Supply Chain)	Confederation of Indian Industry, Chennai	22 August 2014
2	R.K. Amit	Some results in behavioural operations management	IIT Kanpur	16 October 2014
3	T.T. Narendran	Driving environment-friendly supply chain (closing talk at the Conference on Green Logistics 2014)	Confederation of Indian Industry and Institute of Logistics, Mumbai	13 November 2014
4	G. Srinivasan	Socially responsible supply chains (keynote address at the biennial Supply Chain Conference)	IIM Bangalore	18–19 December 2014
5	M. Thenmozhi	Financial time series models	Cochin University of Science and Technology. (International Workshop on Reliability and Time Series Methodology Relevant to Business and Industry)	6 January 2015
6	Rupashree Baral	Career exit and re-entry of women	International Conference on Employee Engagement in Organisation: Role of Psychology	31 January 2015
7	Feroz Ali	The idea of intellectual property (invited speaker)	Department of Legal Studies, University of Madras	7 February 2015
8	Feroz Ali	1. Teaching advanced patent law 2. Teaching patents for engineers (invited speaker)	National Law University, Delhi (Fourth Annual Intellectual Property Teaching Workshop, conducted by NLU and CASRIP, University of Washington School of Law, Seattle, USA)	14 February 2015
9	T.T. Narendran	Leveraging technology for future supply chains across industries (keynote address at SPECTRUM 2015 Future Supply Chain for Global Competitiveness (a national event))	Indian Institute of Materials Management (IIMM)	20 February 2015
10	Rupashree Baral	Publishing in academic journals	Madras School of Social Work (UGC-sponsored one-day workshop, Writing for Publishing and Avoiding the Risk of Plagiarism and Copyright Violation)	5 March 2015
11	Rahul R. Marathe	Optimal wages to an optimistic contractor who has time-inconsistent preferences	Industrial Engineering and Operations Research Programme, IIT Bombay	12 March 2015
12	Feroz Ali	Intellectual property strategy for frugal innovation: How to navigate the IP world (keynote address)	Fourth IPR Researchers' Confluence on IP Challenges in Frugal Innovation, Sailesh J. Mehta School of Management, IIT Bombay	27 March 2015

### Visits abroad by faculty members

Sl. No.	Name of Faculty Member	Country Visited	Dates	Purpose of Visit	Funding from
1	T.J. Kamalanabhan	Fiji Islands	February–April 2014	Teaching courses on human resources management	Self
2	Saji K. Mathew	Germany	June 2014	Teaching a course on data warehousing and data mining at the University of Passau	Self

Sl. No.	Name of Faculty Member	Country Visited	Dates	Purpose of Visit	Funding from
3	T.J. Kamalanabhan	Germany	June 2014	Teaching a course, Talent Management and Acquisition	Self
4	C. Rajendran	Germany	June 2014	Teaching a course on operations research	Self

### Honours and awards obtained

Sl. No.	Name of Faculty Member	Name of Award	Awarded by	Awarded for	Date of Award
<b>Honours</b>					
1	Usha Mohan	Associate Editor, <i>Sadhana</i>	Indian Academy of Sciences	—	August 2013 onwards
2	C. Rajendran	DAAD Research Ambassador	DAAD, Germany	Research Ambassadors are senior scholars and scientists who have a long standing academic relationship with Germany.	December 2014
<b>Awards</b>					
1	Saji K. Mathew (with Chen Y.Y.)	Best Paper Runner-up Award	Editorial board of <i>Journal of Strategic Information Systems (JSIS)</i>	The paper titled 'Achieving offshore software development success: An empirical analysis of risk mitigation through relational norms'	July 2014
2	Chitra Dey and M.P. Ganesh	Best Paper (first prize) Award	14th Consortium of Management Students in Research (COSMAR 2014), IISc, Bangalore	The paper titled 'Measuring team boundary activity in software development teams'	21–22 November 2014
3	Richa Agrawal and Giridhar Ramachandran (Ph.D. research scholar)	Third prize (Syndicate Bank Best Paper Award)	IMR Doctoral Conference 2014, IIM Bangalore	The paper titled 'Benefits of flocking together: Perceived value of consumption community membership: Results of a qualitative study'	22–23 December 2014

### Books, monographs authored/co-authored

Sl. No.	Name of Faculty Member	Title	Publisher	Author/Co-author
<b>Books</b>				
1	Feroz Ali	<i>The Access Regime: How Reorganisation of Local Patent Laws Can Promote Global Access to Affordable Medicines</i>	Oxford University Press	—
<b>Monographs/Chapters</b>				
1	Feroz Ali	Proof of progress: The role of obviousness standard in the Indian Patent Office ( <i>Patent Law in Global Perspective</i> (editors, Okediji and Bagley))	Oxford University Press (2014)	Srividhya Ragavan, University of Oklahoma, USA
2	T.J. Kamalanabhan	Success and life satisfaction among women micro entrepreneurs (in <i>Entrepreneurial Ecosystem</i> )	Springer	Latha Krishnan
<b>Articles</b>				
1	A. Thillairajan	Ventures get a bigger bang from the domestic buck	<i>The Hindu Business Line</i> , 18 November 2014	—
2	A. Thillairajan	How politics shapes infrastructure	<i>Business Standard</i> , 18 September 2014	—

#### 4.11.4. Research and Consultancy

##### Sponsored research projects (ongoing only)

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Coordinators
1	Studying Cooperation for Recycling at Auto-clusters in India	March 2015 (for 2 years)	Nissan Research Support Programme	9.02	R.K. Amit
2	A Decision Support System for Pilot Landing in Adverse Conditions Taking Advantage Understanding Uncertainties in Image Registration System Reliability and Consequence-Based Decision in Pilot-Manned Aircraft and UAVs	February 2015 (for 3 years)	Aeronautics Research & Development Board	47.04	R.K. Amit with P. Ramu and Ganapathy Krishnamurthy (Department of Engineering Design)
3	IPR Chair at IIT Madras	October 2014 to July 2017	Ministry of Human Resource and Development	31.49	Feroz Ali
4	Role of Audit Committee and Audit Quality on the Earnings Informativeness in India	March 2014– March 2015	NSE IGIDR Collaboration Forum	USD 2000	P. Krishna Prasanna
5	Bond Market Developments in India: Expectations and Term Structure of Interest Rates	May 2014 to May 2016	Indian Council of Social Science Research	8.0	P. Krishna Prasanna
6	Financing of Small and Early State Business: Impact, Evolution, Imperatives and Opportunities	December 2013 to November 2016	All India Council for Technical Education	16.08	Thillai Rajan A.
7	Coping Strategies and Coping Costs for Accessing Safe Water in Chennai, India	September 2013 to September 2015	South Asian Network for Development and Environmental Economics	11.25	Amit R.K. and Subash S.
8	Dynamic Linkages Between Foreign Direct Investment and Domestic Investment: Impact on India post Euro Crisis	July 2013 to December 2015	South Asia Network of Economic Research Institutes	5.40	G. Arun Kumar
9	Buyer's Time-Preferences in Electronic Procurement Interactions: Effect of Situational Involvement, and Elicitation Models	July 2013 to January 2016	Indian Council of Social Science & Research	5.00	Sundarraaj R.P. and Amit R.K.
10	Financing of Entrepreneurial and SME Companies in Energy, Environment and Technology Sectors in India	June 2011 to April 2015	Nissan Research Support Programme	7.26	Thillai Rajan A. and Saji K. Mathew

##### Sponsored research projects (internal) (ongoing only)

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Coordinators
1	Shopping Missions, Need States and Shopper Behaviour: Investigating the Indian Shopper	January 2011 to April 2015	New Faculty Scheme	5.00	Richa Agrawal
2	Social Governance and Sustainability: A Cross-cultural Perspective	May 2011 to July 2015	New Faculty Scheme	5.00	Lata Dyaram
3	Decision Models for Internet-Based Negotiation Systems	July 2011 to July 2015	New Faculty Scheme	5.00	Sundarraaj R.P.
4	Career Break and Re-entry among Women in India: Exploring the Barriers and Opportunities	August 2011 to August 2015	New Faculty Scheme	5.00	Rupashree Baral
5	Emotional Contagion: An Organisation Development Tool	September 2011 to October 2015	New Faculty Scheme	5.00	Vijayalakshmi V.

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Coordinators
6	India Venture Capital and Private Equity Annual Report Series	July 2012 to July 2016	Alumni Association	2.40	Thillai Rajan A.
7	Visionary Leadership in Manufacturing (VLM): Phase II	August 2012 to March 2015	IIT Madras	35.61	Narendran T.T. and Venkatesh Balasubramanian
8	Algorithmic Approaches to Problem Solving	March 2014 to March 2016	New Faculty Initiation Grant	5.00	Nandan Sudarsanam
9	Role of Collective Self-esteem and Store Selection Criteria for Fashion Clothing Decisions: An Indian Perspective	July 2014 to July 2017	New Faculty Scheme	5.00	Varisha Rehman
10	Social Return on Investments (SROI) for SHG-Linked Microfinance Initiatives	February 2015 to February 2016	Exploratory Research Project	10.00	G. Arun Kumar
11	Research on Consumer Behaviour, Retailing and Social Marketing	February 2015 to February 2017	New Faculty Initiation Grant	5.00	Geetha M.
12	Role of CSR in Influencing Food Choice in India	February 2015 to February 2017	New Faculty Initiation Grant	5.00	Varisha Rehman
13	Integral Education: Towards a Holistic Perspective of Teaching, Learning and Education at IIT Madras	February 2015 to February 2016	Exploratory Research Project	3.50	Vijayalakshmi V.

#### Industrial consultancy projects (ongoing only)

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹)
1	Rahul Ratnakar Marathe	Formulations of and Solutions to Optimisation Problems for a Transportation Logistics Organisation with Consideration for Production Planning, Scheduling and Facility Locations	Common Code	0.51
2	Rajendran C.	Logistics and Container Handling	Cognizant Technology Solutions	5.00
3	Arun Kumar G.	Study on Training Need Assessment at KSK Energy Ventures Limited, Hyderabad	KSK Energy Ventures Private Limited	1.69

#### RBIC projects (ongoing only)

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹)
1	Thillai Rajan A. and Ashwin Mahalingam	Evidence on What Makes an Effect Urban Planning Framework in Low-Income or Informal Settlements	Department for International Development	44.94
2	Arun Kumar G. and Suresh Babu M.	Systematic Review of Microfinance for Well-being of the Poor	Department for International Development	37.60
3	Arun Kumar G. and Suresh Babu M.	Social Return Evaluation for Five Pillars of Hand in Hand	Hand in Hand	10.11
4	Nandan Sudarsanam	A Framework for Financial Behaviour Modelling in a Rural, Low-Income Environment	IFMR Finance Foundation	6.25

#### Retainer consultancy (ongoing only)

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹)
1	Lata Dyaram	Psychometric and Behavioural Interventions	Verizon Data Services India Private Limited	16.0
2	Nandan Sudarsanam	Data Modelling to Make Effective Business Decisions	IFMR Finance Foundation	7.50



Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹)
3	Lata Dyaram	MBTI Psychometric Assessment Base Workshop	Hindustan Aeronautics Limited	4.29
4	Nandan Sudarsanam	Implementing Effective Practices for Data Organisation and Management	Corporation of Chennai	1.35

### Exchange programmes with other universities under MOUs

#### Numbers of students who visited universities abroad

M.B.A. students	
MBS, Germany	3
UoP, Passau, Germany	8
EBS, Germany	3
MCI, Austria	6
UBC, Canada	3
M.S./Ph.D. research scholars	8
<b>Total</b>	<b>31</b>

#### Number of casual/foreign students who visited DoMS, IIT Madras: 46

#### Faculty members' participation with other institutions under MoUs

Sl. No.	Name of Faculty Member	Participation Details	University/Institution
1	R.P. Sundarraaj	Student Exchange	Rensselaer Polytechnic Institute
2	C. Rajendran	Student Exchange	University of Groningen, The Netherlands

### Research publications

Papers published in refereed national journals	:	6
Papers published in refereed international journals	:	33
Papers presented at national conferences	:	1
Papers presented at international conferences	:	4

#### Papers published in refereed national journals

1. N. Bhatnager, K. Ramachandran and J. Suresh. November 2014. Case study on Zandu Pharmaceutical Works: The takeover bid. *Indian School of Business* ISB045-PDF-ENG, ISB047-PDF-ENG.
2. K. Saranya and K. Prasanna. 2014. Portfolio selection and optimization with higher moments: Evidence from the Indian stock market. *Asia-Pacific Journal of Financial Markets* (IF: 0.51).
3. R. Bharathi and R. Baral. 2014. Factors influencing the attitudes, behaviours and career success of re-entry women: An Indian perspective. *Vikalpa: The Journal for Decision Makers* 39(2): 31–42.
4. A. Chandra and M. Thenmozhi. 2014. On asymmetric relationship of India volatility index (India VIX) with stock market return and risk management. *Decision* 42(1): 33–55.
5. G.N. Sumathi, T.J. Kamalanabhan and M. Thenmozhi. 2014. Healthcare professionals' perspective of support from public health department: A study in the PHCs of Tamil Nadu. *Indian Journal of Public Health* 58(4): 230.
6. S.K. Nair and M. Thenmozhi. 2014. Impact of changes in macroeconomic factors on treasury bond returns: Evidence from emerging and developed markets. *Amity Global Business Review* 9: 24–37.

#### Papers published in refereed international journals

1. R.K. Amit and A.K.S. Chand. 2015. Capital rationing under perfect information. *Economics Bulletin* 35(2): 878–884.
2. S.K. Mathew and Y. Chen. December 2013. Achieving offshore software development success: An empirical analysis of risk mitigation through relational norms. *The Journal of Strategic Information Systems* (Elsevier) 22(4): 298–314.
3. L.P. Sai, T.J. Kamalanabhan and K. Ellangovan. 2014. An importance performance analysis of performance dimensions in public hospitals. *International Journal of Business Innovation and Research* 8(6): 613–633.

4. L.P. Sai, T.J. Kamalanabhan and K. Ellangovan. 2014. A study on the secondary care hospitals in India: A data envelopment analysis approach. *Journal of Finance and Management in Public Services* 13(1).
5. S. Sudhindra, L.S. Ganesh and A. Kaur. 2014. Classification of supply chain knowledge: A morphological approach. *Journal of Knowledge Management (Emerald Insight)* 18(4): 812–823.
6. C. Rajendran, J. Krishnaraj, S. Pugazendhi and S. Thiagarajan. 2014. A heuristic algorithm to minimise the total flow time of jobs in permutation flow shops. *International Journal of Industrial and Systems Engineering* 17: 511–532.
7. P. Padma, L.P. Sai and C. Rajendran. 2014. Strategic action grids: A study in Indian hospitals. *International Journal of Health Care Quality Assurance* 27: 360–372.
8. M. Ganesh, S. Rangunathan and C. Rajendran. 2014. Distribution and equitable sharing of value from information sharing within serial supply chains. *IEEE Transactions on Engineering Management* 61: 225–236.
9. M. Ganesh, S. Rangunathan and C. Rajendran. 2014. The value of information sharing in a multi-product, multi-level supply chain: Impact of product substitution, demand correlation and partial information sharing. *Decision Support Systems* 58: 79–94.
10. V. Shalini and P.K. Prasanna. Impact of the financial crisis on Indian commodity markets: Structural breaks and volatility dynamics. *Journal Energy Economics (Elsevier–A star)* (Available online 25 February 2015 doi:10.1016/j.eneco.2015.02.011).
11. R.K. Amit, P. Mehta and R.R. Tripathi. 2015. Optimal shelf-space stocking policy using stochastic dominance under supply-driven demand uncertainty. *European Journal of Operational Research*.
12. V. Rehman and A. Vaish. Exploring the impact of need to evaluate on advertisements: A study of small city Indian consumers. *International Journal of Indian Culture and Business Management* 10(1): 110–121.
13. P. Padma, L.P. Sai and C. Rajendran. January 2015. Customer satisfaction in Indian hospitals: Moderators and mediators. *Quality Management Journal* 22: 10–29.
14. S. Karunakaran and R.P. Sundarraj. 2015. Bidding strategies for spot instances in cloud markets. *IEEE Internet Computing*.
15. S. Karunakaran, V. Krishnaswami and R.P. Sundarraj. 2015. Business view of cloud: Decisions, models and opportunities. *Management Research Review*.
16. A. Sampath and A.K. Gopaldaswamy. January 2015. Intraday seasonality: Evidence from Indian market. *The Empirical Economic Letters* 14.
17. V. Krishnapriya and R. Baral. 2014. Supply chain integration: A competency based perspective. *International Journal of Managing Value and Supply Chain (IJMVSC)* 5(3): 45–60.
18. F. Ali and S. Ragavan. 2015. The selection of patents: The choice between regulatory reforms and market reliance to weed out suspect patents. *IIC: International Review of Intellectual Property & Competition Law* 46(1): 38–65.
19. L. Harold and M. Thenmozhi. 2014. Information quality and banking success: A theoretical model with empirical validation. *International Journal of Information Quality (IJIQ)* 3(3): 251–272.
20. L. Harold and M. Thenmozhi. 2014. The development and application of information system driven value creation in Indian financial services sector. *International Journal of Business Information Systems (IJBIS)* 17(2): 198–220.
21. M. Kumar and M. Thenmozhi. 2014. Trading and forecasting performance of different hybrid ARIMA–neural network models for stock returns. *International Journal of Modelling in Operations Management* 4(3): 137–144.
22. N. Vadali, A.P. Tiwari and A.T. Rajan. 2014. Effect of the political environment on public private partnership projects: Evidence from road projects. *Journal of Infrastructure Development* 6(2): 145–165. doi:10.1177/0974930614564651
23. A.T. Rajan, B. Bansal and J. Gemson. 2014. Private equity investment and real estate development: Evidence from residential projects in India. *Journal of Financial Management of Property and Construction* 19(3): 202–225. doi:10.1108/JFMPC-02-2014-0001
24. P. John, A. Mahalingam, A. Deep and A.T. Rajan. 2015. Impact of private sector participation on access and quality of services: Systematic review of evidence from the electricity, telecommunications and water supply sectors. *Journal of Development Effectiveness* <http://dx.doi.org/10.1080/19439342.2014.955519>.
25. A.T. Rajan and S. Menon. 2014. Private equity investment in infrastructure: Evidence from India. *Journal of Private Equity* 17(4): 40–47.
26. M.S. Kumar and T.J. Kamalanabhan. 2014. Initial development and validation of a measure of intercultural development scale. *Psychological Studies* 59 (1): 52–58 (Springer) doi:10.1007/s12646-014-0238-x.
27. P.A. Job and T.J. Kamalanabhan. 2014. Assessing institutions of higher learning in India using EFQM instrument. *International Journal of Management Research and Business Strategy* 3(1): 77–91.

28. N. Sharma and T.J. Kamalanabhan. 2014. IT employees' brand attitudes and the role of internal corporate communication: A survey of Indian IT industry. *International Journal of Business Excellence* 7(1).
29. S. Nivethitha, L. Dyaram and T.J. Kamalanabhan. 2014. Human resource practices and employee turnover intentions in hospitality industry. *Global Journal of Management and Business Research* 14(1).
30. K. Prasanna. 2014. Firm-level governance quality and dividend decisions: Evidence from India. *International Journal of Corporate Governance (IJCG)* 5(3/4). (B category journal in ABCD rankings)
31. P.K. Prasanna and B. Bansal. 2014. Foreign institutional investment and liquidity of stock market: Evidence from India. *International Journal of Economics and Finance* 6 (6): 103. (C category journal of ABCD rankings).
32. K. Prasanna, M. Thenmozhi and N. Rana. 2014. Determinants of non-performing advances in Indian banking system. *Journal of Banks and Bank Systems* 9(2): 65–78 (C category journal of ABCD rankings).
33. P.C. Narayanan and M. Thenmozhi. 2014. Do cross-border acquisitions involving emerging market firms create value: Impact of deal characteristics. *Management Decision* 52(8): 1451–1473.

#### Papers published in proceedings of national conferences

1. G. Srinivasan. 2014. On a grouping and layout problem. *18th Annual International Conference of the Society of Operations Management*, IIT Roorkee, 12–14 December.

#### Papers published in proceedings of international conferences

1. P.K. Prasanna. 2014. Financialisation, speculation and macroeconomic interactions during global financial crisis: Evidence from Indian commodity market. *Eastern Finance Association Annual Meeting*, USA, 9–12 April.
2. A. Chandra and M. Thenmozhi. 2014. Liquidity in currency options market in India. *Financial Markets and Corporate Governance Conference* (www.ssrn.com), Queensland University of Technology, Brisbane, Australia, 22–24 April.
3. V. Rehman. 2014. Do we exactly know entertainment? Demystifying the lines of entertainment marketing. *Developments in Marketing Science: Annual Conference of Academy of Marketing Science*, Springer, USA, pp. 194–204, 21–23 May.
4. A. Thillairajan. 2014. Impact of private sector participation on access and quality of services: Systematic review of evidence from the electricity, telecommunications and water supply sectors. *Making Impact Evaluation Matter Conference*, Asian Development Bank, ADB Headquarters, Manila, Philippines, 1–5 September.

#### Distinguished visitors to the department

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1	Mr. Raja Raman, CEO, Aahaa Stores	3 April 2014	Giving a talk on opportunities with new multi-channel retailing formats to M.B.A. students on invitation by M.B.A. Invitation Lecture Series (MILS)
2	Mr. K.R. Narasiah, Retired marine engineer, scholar and writer	21 April 2014	Giving a Martin Luther King Jr oration talk on invitation by the Indo-American Association, Chennai (Ms Jenifer McIntyre, US Consul General, presided over the function)
3	Mr. Prakash Damodaran, IAS (former Secretary, Government of Tamil Nadu) Mr. T.T. Srinivasa Raghavan (MD, Sundaram Finance Limited) CA V. Murali (Institute of Chartered Accountants of India) Prof. Lakshmi Kumar (IFMR)	16 July 2014	A discussion, 'Budget 2014: Game Changer or False Dawn?', was organised for the M.B.A. students and scholars wherein the impact of Budget 2014 was discussed.
4	Prof. Gopal V. Krishnan, Chair, Department of Accounting and Taxation, Kogod School of Business, USA	17 July 2014	Interaction with research scholars and faculty members and discussion of his paper titled 'Is customer dependency associated with supplier's misstatement risk and audit fees?' (on invitation)
5	Mr. Glenn Forman, partner, McKinsey & Company	13 August 2014	Giving a talk, 'Knowledge at McKinsey' to M.B.A. students (on invitation)
6	Mr. Gopal Balasubramanian, Senior Director, IT Infrastructure Services, Cognizant Technology Solutions	21 August 2014	Giving a talk, 'IT infrastructure services: Trends and insights' to M.B.A. students (on invitation)
7	Prof. Murugappa 'Murgie' Krishnan, Yeshiva University, NY	22 August 2014	Giving a seminar talk, 'Foreign institutional investor (FII) trading around earnings announcements', to the research scholars and faculty members (on invitation)

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
8	Mr. R. Ramachandran, former Chairman and Managing Director, Andhra Bank	30 August 2014	Giving a talk, 'Are we at the turning point?', for M.B.A. students and research scholars (on invitation for a special extra-mural lecture)
9	Prof. O.R.S. Rao, Vice Chancellor, ICFAI University, Jharkhand	11 September 2014	Giving a lecture, 'How to manage your career successfully', to the M.B.A. students (on invitation)
10	Prof. Abhik Roychoudhury, Vice Dean, Graduate Studies, NUS School of Computing Prof. Kaushik Dutta, Associate Professor, NUS School of Computing	8 October 2014	Giving a lecture, 'Research at NUS School of Computing', to the research scholars on invitation
11	Prof. Carola Jungwirth, University of Passau, Germany	17 January to 5 February 2015	Handling elective course of M.B.A. students and research scholars (on invitation)
12	Prof. Gopala G. Ganesh, University of North Texas, USA	15 January to 5 May 2015	Handling core course of M.B.A. students and research scholars (on invitation)
13	Prof. Alena Slezáčková, Associate Professor, Masaryk University, Czech Republic	27 January 2015	Giving a lecture, 'Cross-cultural research on social capital', as part of the Cross-Cultural Management M.B.A. elective and sharing her experience of the well-being of university students across six countries (Czech Republic, India, New Zealand, South Africa, Malaysia and Malta), on invitation
14	Mr. Karthik Kumar, entrepreneur, trainer and founder, Evam Entertainment & Training Sideways, Chennai	29 January 2015	Giving a talk, 'Entrepreneurship: You are your dream!', as part of MILS
15	Mr. Sandeep Reddy, founder and Managing Director, Peepul Capital	12 February 2015	Giving a talk, 'Private equity: The mechanics and possibilities', as part of MILS
16	Dr. Satyen Mukherjee, Professor, Kellogg School of Management, Northwestern University and Northwestern Institute on Complex Systems	12 February 2015	Giving invited seminar talk, 'Assembly factors influencing the victor in head to head contests between competing teams', to the research scholars
17	Prof. David Vallerie, University of Passau	16–20 February 2015	Handling courses for research scholars on invitation
18	Mr. T.S. Venkateswaran, CEO, L&T Infrastructure Development Projects Limited	25 February 2015	Giving a lecture, 'Challenges and contributions of private sector in infrastructure development in India', as a part of the course MS 6620 Infrastructure Finance (on invitation)
19	Mr. Usama M. Fayyad, Chief Data Officer and Group Managing Director, Barclays PLC	27 March 2015	Giving a talk, 'Big data analytics: Getting the value out of the volume', as part of MILS

#### 4.11.5. Other Activities

1. Prof. L. Prakash Sai was invited by the Chairman, Hindustan Aeronautics Limited (HAL), to deliver a lecture, 'Strategic thinking and balanced scorecard', to the Executive Directors and Senior General Managers on 5 April 2014 at Bangalore.
2. Dr. Feroz Ali was appointed a member of the Expert Committee of the All India Council for Technical Education (AICTE) for formulating a scheme for management of intellectual property rights in technical educational institutions at the All India Council of Technical Education, March–April 2014.
3. Prof. G. Srinivasan was invited to be an expert member for faculty recruitment at IIT Kanpur, 27 May 2014.
4. Prof. M. Thenmozhi was invited to be a member of the Board of Studies by the Management Studies Department, Vellore Institute of Technology, for 2014–2015.
5. Dr. Feroz Ali was appointed a member of the expert committee for drafting the IPR policy of Telecommunications Standards Development Society, India (TSDSI), June–July 2014.
6. Number of students selected to pursue research at the department:

	M.S. (by research)	Ph.D.
July 2014	11	7
January 2015	4	7



7. Prof. G. Srinivasan was invited to be an expert member for faculty recruitment at NIT Calicut on 26 June 2014.
8. Prof. M. Thenmozhi was invited to be a member of the Board of Studies by PSG College of Engineering for the period from July 2014 to March 2015.
9. Prof. M. Thenmozhi was invited by PSG College of Technology to be a Member of Audit for their M.B.A. programme from September 2014 to February 2015.
10. Prof. M. Thenmozhi was invited to be a doctoral committee member for the Ph.D. scholars of Crescent Engineering College, Ethiraj College for Women and Vellore Institute of Technology.
11. The department started the Executive Programme in Business Administration on 16 August 2014 with 28 senior executives from various organisations. The duration of the course is from August 2014 to April 2016. It is offered by the Department of Management Studies under the Centre for Continuing Education of IIT Madras. Dr. M. Thenmozhi and Dr. T.J. Kamalanabhan are the coordinators of the programme.
12. Prof. T.J. Kamalanabhan and L. Prakash Sai were invited by IIT Bombay to serve as expert members in their faculty selection committee on 19 August 2014.
13. Prof. M. Thenmozhi was invited to be an external examiner to conduct a Ph.D. viva voce at KSR College of Engineering, Erode, 23 August 2014.
14. Prof. G. Arun Kumar was invited by IIM Trichy on 11 September 2014 for faculty selection, as an expert member.
15. Prof. M. Thenmozhi was invited for faculty recruitment as an expert member by Acharya Institute of Management Studies, Bangalore on 12 September 2014.
16. A fire safety training was organised for the research scholars of the department on 15 October 2014. The programme was organised by the institute's Security-cum-Fire Officer, with his team.
17. Ms Sipra Maurya, Ph.D. scholar, attended the faculty development programme on commodity market and futures trading organised by the Indian Institute of Plantation Management, Bangalore on 16 and 17 October 2014.
18. The annual management business festival, Samanvay, was organised between 17 and 19 October 2014. Mr. Suresh Kalpathi, CEO, Kalpathi Investments and AGS Entertainment, inaugurated the festival and delivered the keynote address, 'Application of management concepts in the movie industry', covering various aspects of movie making, production and release that require management thinking.

'Alternate Managerial Avenues' was the theme this year. Given the increased interest among management graduates in working across unconventional sectors, Samanvay explored opportunities in public administration, sports analytics and movie management.

This year's new features were the Pre-Samanvay Lecture Series and the Marathon.

Mr. Bharathan Kandaswamy, CEO, Kavithalaya Productions; Mr. N. Ramakrishnan, Founder, Sports Mechanics; and Mr. N. Gopalaswami, Former Chief Election Commissioner spoke on 11, 13 and 14 October 2014. Mr. Gopalaswami spoke on his experiences in public administration.

There were eight major events in different streams of management: 5 Samurai (strategy event); La Rascasse (a two-day sports auctioning and management event); Finnix (an evaluation event); Buzzar (marketing event); HRiith (HR case study event); Optio (operations event); Krunch (analytics event); and Udyami (entrepreneurship event).

Finance Conclave: A panel discussion, 'Financial Risk Management: Trends and Perspectives', was organised. Mr. Rajesh Srinivas, Group Executive Vice President, Yes Bank; Mr. Nikhil Pandey, Associate Director, Financial Risk Management, PwC; Mr. Madhavan Jaya Sankar, Director, Alternative Investment Advisory; Mr. Manu Balakrishnan, Asia Risk Practice Manager, McKinsey & Company; and Mr. Vijay Ramachandran, Manager, KPMG, were the panel members.

Participating corporates: PwC, McKinsey, KPMG, Yes Bank, Bahwan CyberTek, Alternative Investment Advisory, Peepul Capital, Latent View, CTS, Sutherland, NIIT, Kavithalaya Productions, Sports Mechanics, Kalpathi Investments, AGS Entertainment.

Participating colleges: Online prelims—around 8000 students from IIM Ahmedabad, S.P. Jain, IIM Bangalore, IIM Calcutta, MDI, SIBM Pune, SJMSOM, etc. participated. On-campus rounds—around 150 students from IIM Trichy, IIM Bangalore, SCMHRD, IIT Roorkee, Great Lakes, IIT Bombay, BIM Trichy and LIBA participated.

Sponsors: Bahwan Cybertek, OLA Cabs, Taxi For Sure, TI Cycles, Latent View, TCS, Vercello Russo.

Marathon: As part of Samanvay, a 5 km run was arranged in support of transgenders. There were around 1500 registrations from within the institute. The event was featured in dailies such as *Indian Express* and *Deccan Chronicle*.

Valedictory: An eventful Samanvay 2014 came to a close on 19 October 2014, with Mr. Sethuram Mahalingam, former CFO, TCS, delivering the keynote address.

Samanvay was truly a platform for confluence of ideas from the worlds of both industry and academia. Students were exposed to real-life case studies posed by industry.

Apart from soliciting the spirit of competition and participation, Samanvay also provided an opportunity for students to interact with the corporate community, exchange ideas and understand the requirements of industry better, thus enhancing the learning experience for one and all.

It was a great opportunity for all the student organisers to put into practice the management lessons learned over the year.

19. The sixth in the India Venture Capital and Private Equity Report series, titled 'The Fuel for Wealth Creation', authored by Dr. A. Thillairajan, was released on 3 November 2014 by the Director. The report focuses on a facet of the industry that has not been explored so far: Limited Partners (LPs), i.e., capital providers to VCPE firms, etc. The chief guest at the event was Mr. Vikram S. Gandhi, founder and CEO, VSG Capital Advisors.
20. Prof. G. Srinivasan was invited by IIM Indore to be a faculty selection committee member for their recruitment on 1 November 2014.
21. Prof. M. Thenmozhi was invited by Mother Teresa University and Bharathidasan University to be an external examiner for conducting Ph.D. viva voce examinations.
22. Prof. T.J. Kamalanabhan was invited to be an external member for conducting a Ph.D. viva voce examination at the Department of Management Studies, Pondicherry University, on 2 December 2014.
23. Cyber Security Privacy Day was observed at the department on 2 December 2014 by the organisation of an event in association with Cyber Security and Privacy Foundation, Chennai.

Prof. K. Ramamurthy, Dean, Academic Courses, IIT Madras, gave the welcome address.

The inaugural address was delivered by Padma Vibhushan Dr. C. Rangarajan, former Governor, RBI, and former Chairman of the Economic Advisory Council to the Prime Minister. The keynote address was delivered by Mr. Stuart Campbell, Deputy Consul General of Australia, Chennai.

Prof. V. Kamakoti, Department of Computer Science & Engineering, IIT Madras delivered the theme address, on information security challenges.

- Dr. Saji Mathew and Prakash Attili, of DoMS, gave a presentation, 'Data privacy in the Digital Age: A research review'.
- Mr. Subrahmanya Gupta Boda, CISO, GMR Group, gave a talk, 'IoT: Security perspectives'.
- Mr. Suryaprakash, Senior Security Researcher, CSPF, gave a talk, 'Latest security vulnerabilities affecting global networks'.

At the end of the session, the Lifetime Achievement Award was conferred on Padma Vibhushan Dr. C. Rangarajan by His Excellency Dr. K. Rosaiah, Governor of Tamil Nadu.

The citation address was delivered by Prof. T.J. Kamalanabhan, Head, Department of Management Studies, IIT Madras.

24. G. Srinivasan completed his term as President of the Society of Operations Management. Rahul Marathe was elected the Secretary and R.K. Amit the Treasurer of the society for the period 2014–2017.
25. Prof M. Thenmozhi was invited to be expert member for faculty recruitment, IIT Bombay, January 2015.
26. Prof. M. Thenmozhi, on invitation, delivered the convocation address and presented degrees to students at the Arasu College of Education for Women and Ponkalamman College of Education, Karur, on 25 January 2015.
27. Prof. M. Thenmozhi was invited to deliver the inaugural address at the National Seminar on Business Research Emerging Trends in Business Practices: Value Creation, organised by Dr. MGR Janaki College of Arts and Science for Women, Chennai, on 27 January 2015.
28. Dr. Nandan Sudarsanam received a grant of \$10,000 from NSE-IFF Financial Deepening and Household Finance Research Initiative (2014–2015) for his proposal for a researcher–practitioner collaboration, 'Pilot on Financial Inclusion and Deepening'.
29. Prof. A. Thillairajan was invited to be a member of the board of CloudAdic Intelligent Solutions Private Limited (from February 2015).
30. Dr. Richa Agrawal organised a lecture by Mr. R.S. Thakur, Chairman, TAL Manufacturing Solutions Limited (a Tata enterprise); Director, Drive India Enterprise Solutions Limited; and former MD and CEO, Tata AutoComp Systems Limited on 2 March 2015, in association with the Office of Alumni Affairs of IIT Madras, as part of the Prof. Sengupto Leadership Lecture Series 2015.
31. Prof. T.J. Kamalanabhan was invited to be an expert member for faculty recruitment at IIM Trichy on 12 March 2015.
32. Prof. T.J. Kamalanabhan was invited to be an external member for conducting a Ph.D. viva voce examination at the Department of Management Studies, JNTU Hyderabad, on 14 March 2015.



33. Prof. L. Prakash Sai delivered a lecture, 'Academic excellence in higher education institutions' at the NAAC Awareness on Quality Systems in Higher Education workshop, held at Anna University, Chennai, on 27 March 2015.
34. Prof. L. Prakash Sai was invited to serve as the President's Nominee in the senior staff selection committee at Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram, on 28 March 2015.
35. Prof. R.P. Sundarraj was nominated a Program Committee member for the International Conference on Group Decision and Negotiation for 2015.
36. Dr. Feroz Ali was appointed a member of the Committee on the Functioning of MHRD IPR Chairs, Ministry of Human Resource Development, Government of India, 2014.
37. Prof. M. Thenmozhi was invited to be a reviewer for *IIM Management Review: International Journal of Emerging Markets*.
38. Prof. M. Thenmozhi was invited to be a reviewer by the *Singapore Management Review: Studies in Economics and Finance*.

## 4.12. DEPARTMENT OF MATHEMATICS

### 4.12.1. Introduction

The Department of Mathematics was established in 1959 along with the institute. It offers the M.Sc. programme in Mathematics, the M.Tech. programme in Industrial Mathematics and Scientific Computing [IMSC] and the Ph.D. programme. In addition, the department has taken the responsibility of teaching mathematics courses to B.Tech., M.Tech. (other than IMSC), Dual Degree in ED, M.Sc. and Ph.D. students of the institute. The department has also signed an MoU for an exchange programme with TU Kaiserslautern under the DAAD Exchange Programme Network for 5 years, beginning in 2009.

**The major research areas of the department are the following:**

- |                                 |   |
|---------------------------------|---|
| 1 Algebra                       | 17 Graph theory and combinatorics       |
| 2 Algebraic geometry            | 18 Harmonic analysis                    |
| 3 Applied probability           | 19 Inverse and ill-posed problems       |
| 4 Approximation theory          | 20 Mathematical logic                   |
| 5 Automata and its applications | 21 Mathematical modeling                |
| 6 Coding theory                 | 22 Nonlinear analysis                   |
| 7 Combinatorics on words        | 23 Numerical analysis                   |
| 8 Complex analysis              | 24 Operator theory                      |
| 9 Computational fluid dynamics  | 25 Operations research                  |
| 10 Continuum mechanics          | 26 Probability theory                   |
| 11 Cryptology                   | 27 Stochastic processes                 |
| 12 Differential equations       | 28 Theory of codes                      |
| 13 Differential geometry        | 29 Theoretical computer science         |
| 14 Fluid mechanics              | 30 Unconventional models of computation |
| 15 Functional analysis          | 31 Wavelets and their applications      |
| 16 Fractal geometry             |   |

### 4.12.2. Academic Programmes

**New courses introduced**

Sl. No.	Course No.	Title
1	MA5013	Applied Regression Analysis
2	MA5014	Applied Stochastic Processes
3	MA5221	Tensor Analysis and Applications
4	MA5015	Basic Number Theory
5	MA5016	Ergodic Theory
6	MA5017	Representation Theory
7	MA5220	Integral Transforms and Applications

**Students on roll as of September 2014 + M.S. and Ph.D. scholars admitted in January 2015**

Programme	Number of Students
M.Sc.	96
M.Tech.	24
Ph.D.	58
Total	178

## Endowment prizes instituted

Sl. No	Endowment Prize	Purpose	Awarded from
1	Ms Lakshmikutty Amma and Mr. A. Krishnakutty Nair Prize—instituted by retired professor Dr. P. Achuthan	For the best Ph.D. thesis in mathematics	From the 2013 convocation onwards

## Names of scholars who attended conferences/workshops/seminars/symposia abroad/in India

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposia/Workshop	Date and Venue
<b>Abroad (financial assistance from IIT Madras)</b>				
1	J. Balasuyambu	MA11D002	18th World Multiconference on Systemics, Cybernetics and Informatics (WMSCI 2014)	14–18 July 2014, USA
2	Hingu Dharini Ramesh	MA13D002	16th International Symposium on Dynamic Games and Applications	7–14 July 2014, The Netherlands
3	Kurma Rao Tyada	MA12D003	New Directions in Fractal Geometry (presented paper titled 'Constrained data visualisation using rational quadratic trigonometric fractal interpolation')	23–28 November 2014, Canberra, Australia
4	Madhukant Sharma	MA11D003	10th AIMS on Dynamical Systems, Differential Equations and Applications	5–14 July 2014, Spain
5	Mashetti Ravi Babu	MA11D001	International Conference on Falling Walls Difference, Germany (on behalf of Dean, I&AR)	7–10 November 2014, Berlin
6	Monisha Roy	MA11D012	15th International Heat Transfer Conference	11–15 August 2014, Japan
7	Regin Thangaraj	MA11D005	International Conference on Recent Advances in Pure and Applied Mathematics (presented a paper titled 'On the metric dimension of uniform fuzzy graphs')	5–11 November 2014, Turkey
8	Saurabh Kumar Katiyar	MA11D017	10th AIMS on Dynamical Systems, Differential Equations and Applications	5–14 July 2014, Spain
9	Saurabh Kumar Katiyar	MA11D017	New Directions in Fractal Geometry (presented a paper titled 'Hidden variable fractal interpolation functions')	23–28 November 2014, Canberra, Australia
10	Sharad Dwivedi	MA11D018	10th AIMS on Dynamical Systems Differential Equations and Applications	6–14 July 2014, Spain
11	Sukendu Ghosh	MA11D021	67th Annual Meeting of the APS Division of Fluid Dynamics (presented a paper titled 'Control strategy for a double-diffusive two-fluid channel flow: A stability analysis')	22–27 November 2014, San Francisco
12	W.I. Suresh Kumar	MA11D025	CMCGS (presented a paper titled 'Regulating a distributed computing model via Chomsky hierarchy')	25–26 January 2015, Singapore
<b>India</b>				
1	Ajoy Jana	MA14D001	Advanced Level Training Programme on Differential Equations	25 May to 15 June 2014, IISER, Thiruvananthapuram
2	Amit Kumar Singh	MA13D015	Workshop on Advanced Instructional School (AIS): Schemes and Cohomology	1–19 December 2014, Kerala School of Mathematics, Kozhikode, Kerala
3	Ankita Sharma	MA10D002	Conference on International Federation of Automatic Control-2014	24–29 August 2014, IIT Madras
4	Arundathi Krishnan	MA12D007	Workshop on Advanced Instruction School in Operator Theory	31 May to 22 June 2014, ISI, Bangalore

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposia/Workshop	Date and Venue
5	Asrifa Sultana	MA11D009	Presented a paper titled 'Fixed point theorem for Mizoguchi-Takahashi contraction on a matrix space endowed with a graph and applications'	27-30 December 2014, Indian School of Mines (ISM), Dhanbad
6	R. Balakrishnan	MA10D012	National Conference on Commutative Algebra and Algebraic Geometry (presented a paper titled 'A Northcott type inequality for Buchsbaum-Rim coefficients')	5-9 February 2015, IIT Guwahati
7	Geetanjali Chattopadhyay	MA13D017	Workshop on Finite Element Methods for Navier-Stokes Equations	8-12 September 2014, IISc, Bangalore
8	Komandla Mahipal Reddy	MA13D003	Presented a paper titled 'A novel approach to surface interpolation: Marriage of Coon's technique and univariate fractal functions' at International Conference on Recent Trends in Mathematical Analysis and its Applications	19-26 December 2014, IIT Roorkee
9	Kurma Rao Tyada	MA12D003	Presented a paper titled 'Constrained 2D data interpolation using rational cubic fractal functions' at International Conference on Recent Trends in Mathematical Analysis and its Applications	21-23 December 2014, IIT Roorkee
10	Kurma Rao Tyada	MA12D003	Presented a paper titled 'Positivity preserving rational cubic trigonometric fractal interpolation functions' at Second International Conference on Mathematics and Computing	6-10 January 2015, Haldia Institute of Technology, West Bengal
11	Kurma Rao Tyada	MA12D003	Presented a paper titled 'Dartially Blrided rational cubic trigonometric fractal interpolation surfaces over a plane' at International Conference on Applications of Fractals and Wavelets	10-12 January 2015, Amrita Vishva Vidhyapeetham, Coimbatore
12	Lavy Koilpitchai	MA13D019	Workshop on Advanced Instruction School in Operator Theory	1-22 June 2014, ISI, Bangalore
13	Mohan Kumar Malik	MA13D021	Workshop on Annual Foundation Schools-II	1-28 May 2014, Kerala School of Mathematics, Kozhikode, Kerala
14	Mohan Kumar Mallick	MA13D021	Workshop on ISL Numerical Analysis (2014)	9-28 June 2014, Panjab University, Chandigarh
15	Monisha Roy	MA11D012	Workshop on Finite Element Methods for Navier-Stokes Equations	8-12 September 2014, IISc, Bangalore
16	N. Poorna Pushkala	MA13D008	Workshop on Advanced Instructional School (AIS): Schemes and Cohomology	1-19 December 2014, Kerala School of Mathematics, Kozhikode, Kerala
17	N. Poorna Pushkala	MA13D008	Seminar on geometry	26-28 February 2015, ISI, Bangalore
18	Raisa Dsouza	MA13D005	Workshop on Annual Foundation School Part-2	30 April to 28 May 2014, Kerala School of Mathematics, Kozhikode, Kerala
19	Raisa Dsouza	MA13D005	Workshop on Advanced Instructional School (AIS): Schemes and Cohomology	1-19 December 2014, Kerala School of Mathematics, Kozhikode, Kerala
20	S. Rajesh	MA10D009	Presented a paper titled 'Chebyshev centres and fixed point theorems'	18-19 December 2014, NITK, Surathkal
21	Samprita Das Roy	MA14D016	Workshop on Variational Methods; Conference on Recent Advances in Differential Equations	12-17 December 2014, TIFR, Bangalore
22	Sangita Jha	MA14D017	International Conference on Applications of Fractals and Wavelets	10-11 January 2015, Amrita School of Engineering, Coimbatore
23	Sanjeev Singh	MA12D004	International Conference on Geometric Function Theory and Its Application	18-21 December 2014, IIT Kharagpur

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposia/Workshop	Date and Venue
24	Saurabh Kumar Katiyar	MA11D017	Presented a paper titled 'Quintic Hermite fractal interpolation in a strip: Preserving co-positivity' at International Conference on Recent Trends in Mathematical Analysis and its Applications	23 December 2014, IIT Roorkee
25	Saurabh Kumar Katiyar	MA11D017	Presented a paper titled 'Towards a unified methodology for fractal extension of various shape-preserving spine interpolants' at Second International Conference on Mathematics and Computing	5–10 January 2015, Haldia Institute of Technology, Haldia, India
26	Saurabh Kumar Katiyar	MA11D017	Presented a paper titled 'Smooth fractal interpolation with function scalings' at Second International Conference on Mathematics and Computing	22–24 January 2015, Kannur, Kerala
27	S. Selva Raja	MA13D024	Workshop on Annual Foundation Schools-II	1 May to 1 June 2014, Kerala School of Mathematics, Kozhikode, Kerala
28	Sharad Dwivedi	MA11D018	Presented a paper titled 'On stability of steady states for a two-dimensional network model of ferromagnetic nanowires'	21–23 December 2014, IIT Roorkee
29	Somnath Bera	MA12D015	International Conference on Optimisation, Computing and Business Analysis for Sustainable Development (presented a paper titled 'Sum of Parikh q-matrices and q-ambiguity')	20–22 February 2015, Central University of Rajasthan, Ajmer
30	B.N. Suhas	MA11D020	Workshop on Advanced Instructional School (AIS): Schemes and Cohomology	1–19 December 2014, Kerala School of Mathematics, Kozhikode, Kerala
31	Sukhendu Ghosh	MA11D021	Research collaboration with Prof. Rama Govindarajan	1–7 December 2014, TIFR, Hyderabad
32	Sukhendu Ghosh	MA11D021	IUTAM on Multiphase Flows with Phase Change and Challenges and Opportunities (presented a paper titled 'Stability analysis of a gravity-driven miscible two-fluid flow: Role of wall slip')	8–11 December 2014, IIT Hyderabad
33	Sukhendu Ghosh	MA11D021	IUTAM on Multiphase Flows with Phase Change and Challenges and Opportunities (presented a poster, 'Destabilising role of wall slip on the absolute instability of double-diffusive two-fluid channel flow')	8–11 December 2014, IIT Hyderabad
34	Sukhendu Ghosh	MA11D021	Presented a paper titled 'Linear stability of asymmetric channel flow with wall slip: Poiseuille type'	18–20 December 2014, NITK, Surathkal, India
35	Surendra Kumar Sharma	MA11D023	Advanced Level Training Programme and CIMPA	22 June to 21 July 2014, IISc, Bangalore

#### Names of students/scholars who won convocation/Institute Day prizes

Name of the Student/Scholar	Roll No.	Name of Prize	Name of Endowment
P. Viswanathan	MA10D001	Best Ph.D. Thesis in Mathematics 2014	Ms Lakshmi Kutty Amma and Mr. A. Krishnakutty Nair Endowment

#### 4.12.3. Faculty and Their Activities

##### Faculty

Name and Qualifications	Major Areas of Specialisation
<b>Professors</b>	
Arindama Singh, Ph.D. (IIT Kanpur)	Logic; numerical analysis
S.H. Kulkarni, Ph.D. (IIT Bombay)	Functional analysis; numerical analysis

Name and Qualifications	Major Areas of Specialisation
S. Ponnusamy, Ph.D. (IIT Kanpur) (currently working as Head, ISI, Chennai on deputation)	Complex analysis; function spaces; special functions; conformal geometry
R. Radha, Ph.D. (IMSc, Chennai)	Harmonic analysis; wavelets; time–frequency analysis
R. Rama, Ph.D. (Anna University)	Formal language and automata theory; molecular computing
Y.V.S.S.Sanyasiraju, Ph.D. (IIT Madras)	Computational fluid dynamics
Satyajit Roy, Ph.D. (IISc, Bangalore)	Convective heat and mass transfer; computational fluid dynamics
K.C. Sivakumar, Ph.D. (IIT Madras)	Functional analysis and mathematical programming
Subrahmanyam P.V., Ph.D. (IIT Madras)	Non-linear analysis—fixed point theory and functional equations; fuzzy sets; summability theory
S. Sundar, Ph.D. (IIT Madras)	Computational fluid dynamics, numerical analysis for partial differential equations, mathematical modeling
M. Thamban Nair, Ph.D. (IIT Bombay)	Spectral approximation; operator equations; inverse and ill-posed problems
R. Usha, Ph.D. (IIT Madras)	Fluid dynamics
P. Veeramani, Ph.D. (IIT Bombay)	Fixed point theorems and their applications to problems in optimisation and best approximation; fuzzy set theory
V. Vetrivel, Ph.D. (IIT Madras)	Non-smooth optimization; fixed point theory; complementarity problems
<b>Associate Professors</b>	
A.K.B. Chand, Ph.D. (IIT Kanpur)	Fractals; approximation theory; wavelets
Chidella Srinivasa Rao, Ph.D. (IISc, Bangalore)	Non-linear differential equations
S.R. Manam, Ph.D. (IISc, Bangalore)	Applied mathematics
<b>Assistant Professors</b>	
Arijit Dey, Ph.D., (Madras University, IMSc, Chennai)	Algebraic geometry
R. Balaji, Ph.D. (IIT Madras)	Linear algebra and optimisation
A.V. Jayanthan, Ph.D. (IIT Bombay)	Commutative algebra and algebraic combinatorics
Kalpna Mahalingam, Ph.D. (University of South Florida, Tampa)	Theory of codes; DNA computing; combinatorics of words
Kunal Krishna Mukherjee, Ph.D.	Operator algebras
N. Narayanan, Ph.D. (Madras University, IMSc, Chennai)	Graph colouring; structural and extremal graph theory probabilistic combinatorics; discrete mathematics
Neelesh S. Upadhye, Ph.D. (IIT Bombay)	Probability theory and applications
Santanu Sarkar, Ph.D. (ISI, Kolkata)	Cryptology and computational number theory
Sarang S. Sane, Ph.D. (TIFR, Bombay)	Commutative algebra; homological algebra; algebraic k-theory; algebraic geometry
A.J. Shaiju, Ph.D. (IISc, Bangalore)	Game theory; systems and control theory
Shruti Dubey, Ph.D. (IIT Kanpur)	Nonlinear analysis of functional differential equations; mathematical study of ferromagnetic systems
Sounaka Mishra, Ph.D. (ISI, Kolkata)	Discrete mathematics; approximation algorithm; combinatorial optimisation
Suhas Jaykumar Pandit, Ph.D. (ISI, Bangalore)	Geometric group theory and low-dimensional topology
V. Uma, Ph.D., (Madras University, IMSc, Chennai)	Topology and geometry of toric varieties and related spaces
W.B. Vasantha, Ph.D. (RIASM, Chennai)	Group theory; application of algebra; fuzzy algebra; linear algebra
T.E. Venkata Balaji, Ph.D. (CMI, Chennai)	Algebraic geometry and commutative algebra
<b>INSPIRE Faculty</b>	
Srilakshmi Krishnamoorthy, Ph.D. (Sheffield University, UK)	Number theory; arithmetic algebraic geometry; elliptic curves; modular forms and Galois representations
<b>Visiting Faculty</b>	



Name and Qualifications	Major Areas of Specialisation
Nathann Cohen (LRI, Orsay, France) [from 1 December 2014 to 31 January 2015]	Hypergraph; graph theory; Sage
Arun Kumar (IIT Bombay) [from 1 January to 31 December 2015]	Subordinated stochastic processes
Pierra Fima (CAEN University, France) [from 12 January to 11 July 2015]	Operator algebra
<b>Institute PDFs</b>	
Symphony Chakraborty (from 1 April 2013 to 2 December 2014)	Fluid mechanics
Pabitra Barik (from 16 September 2014 to date)	Algebraic geometry

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

Sl. No.	Coordinator(s)	Title	Period
<b>Workshops</b>			
1	Arindama Singh	APU-RMS workshop for school teachers	8–9 August 2014
2	Arindama Singh	APU-RMS workshop for school teachers	18–19 October 2014
3	T.E. Venkata Balaji and A.V. Jayanthan	Annual Foundation School-I, funded by National Centre for Mathematics	1–27 December 2014
<b>Conferences</b>			
1	Satyajit Roy	National Symposium on Mathematical Methods and Applications (NSMMA 2014)	22 December 2014
2	S. Sundar	International Conference on Mathematical Modeling and Computer Simulation	8–10 December 2014
3	Neelesh S. Upadhye	FORAYS-2015	1 March 2015

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

Sl. No.	Name of Faculty Member	Title	Institution	Period
<b>Seminars</b>				
1	A.V. Jayanthan	Hilbert Basis Theorem and Beyond	St. Berchmans College, Changanassery, Kerala	15–17 October 2014
2	Srilakshmi Krishnamoorthy (INSPIRE Faculty)	Sage Days 60 in Chennai	IMSc, Chennai	14–17 August 2014
3	Srilakshmi Krishnamoorthy	Number Theory Lunch Seminar	Sheffield University, UK	2–12 December 2014
4	Srilakshmi Krishnamoorthy	Workshop: Knot Theory, Number Theory and Connections	Sheffield University, UK	16–17 December 2014
5	Srilakshmi Krishnamoorthy	Asymptotic Growth of Some Knot Invariants	Sheffield University, UK	17 December 2014
6	Srilakshmi Krishnamoorthy	Groups of Power Series under Substitution and Automorphisms of Curves	IMSc, Chennai	22 January 2015
<b>Conferences</b>				
1	Shruti Dubey	International Congress of Mathematicians (ICM 2014)	Coex, Seoul, Korea	13–21 August 2014
2	A.V. Jayanthan	Edge Ideals: A Connection between Graph Theory and Commutative Algebra	Saiva Bhanu Kshatriya College, Aruppukottai	5–6 January 2015
<b>Short-term courses</b>				
1	A.V. Jayanthan	Refresher Course for College Teachers	Kerala School of Mathematics, Kozhikode	8–11 January 2015

## Special lectures delivered by faculty members at other institutions

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
<b>Professors</b>				
1	Arindama Singh	Linear algebra	Ramanujan Institute of Advanced Studies in Mathematics	31 May 2014
2	Arindama Singh	linear algebra (12 lectures)	MTTS, IIT Guwahati	23 June to 5 July 2014
3	Arindama Singh	Cardinality of sets	IISER, Trivandrum	27 August 2014
4	Arindama Singh	What is a real number?	APU-RMS Workshop, Chennai	8 August 2014
5	Arindama Singh	What is pi?	APU-RMS Workshop, Chennai	9 August 2014
6	Arindama Singh	(a) What is infinity? (b) The limit process	APU-RMS Workshop for School Teachers, Chennai	18–19 October 2014
7	Arindama Singh	Vector spaces (six lectures)	Ramanujan Institute, Chennai	7–9 November 2014
8	Arindama Singh	Logic and set theory	IMSc, Chennai	28 November 2014
9	S.H. Kulkarni	Banach algebras (three lectures)	National Institute of Technology Karnataka, Surathkal, Mangalore	3–5 June 2014
10	S.H. Kulkarni	Banach algebras	M.S. University, Tirunelveli	17–18 September 2014
11	S. H. Kulkarni	Numerical linear algebra	Ramanujan Institute of Advanced Study in Mathematics	19 November 2014
12	S.H. Kulkarni	Null space theorem	IIT Kanpur	27 November 2014
13	S.H. Kulkarni	Singular value decomposition and applications	Mohammad Sathak College of Arts and Science, Chennai	16 December 2014
14	S.H. Kulkarni	The null space theorem	International Conference on Linear Algebra and Applications, at Manipal University	18–20 December 2014
15	R. Rama	Firing Squad synchronisation problem	NSMMA-2014, IIT Madras	22 December 2014
16	Y.V.S.S. Sanyasiraju	Incompressible flow simulations using local RBF grid-free scheme with optimised parameter	Andhra University, Visakhapatnam	3–4 April 2014
17	Y.V.S.S. Sanyasiraju	Linear systems and numerical solutions of ordinary differential equations (eight lectures)	MANIT, Bhopal	9–14 June 2014
18	Y.V.S.S. Sanyasiraju	Numerical analysis using SCILAB	Ethiraj College for Women, Chennai	2 February 2015
19	Y.V.S.S. Sanyasiraju	Research methodologies	Madanapalle Institute of Technology and Sciences, Madanapalle	21 February 2015
20	Y.V.S.S. Sanyasiraju	Incompressible flow computations with ECHO scheme	KL University, Vijayawada	26 March 2015
21	Y.V.S.S. Sanyasiraju	An introduction to finite volume method	Sri Ramakrishna College of Engineering, Coimbatore	21 March 2015
22	Y.V.S.S. Sanyasiraju	Higher order compact and semi-compact schemes and HOSC to incompressible flow problems	South Asian University, New Delhi	13–17 March 2015
23	Y.V.S.S. Sanyasiraju	Grid-free computations with multi-quadric RBF	Bishep Heber College, Trichy	5–7 January 2015
24	Y.V.S.S. Sanyasiraju	Linear algebra using MATLAB	Ramanujan Institute, University of Madras	24–25 November 2015

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
25	Y.V.S.S. Sanyasiraju	Incompressible flow computations using infinitely smooth RBFs with optimum shape parameter	SV University, Tirupati	22 July 2014
26	Satyajit Roy	Mixed convection flows within tilted square cavity using heatlines and entropy generation concepts	AITS (autonomous), Rajampet, Andhra Pradesh	10–11 January 2015
27	Satyajit Roy	Analysis of natural and mixed convection flows within square cavity using heatlines concepts	Thiagarajar College, Madurai, Tamil Nadu	12–13 March 2015
28	K.C. Sivakumar	1. Linear optimisation and its applications 2. Farkas' lemma and its applications	Theivanai Ammal College for Women	20 September 2014
29	S. Sundar	Mathematical modeling	Department of Mathematics, IIT Guwahati	19–21 June 2014
30	S. Sundar	Computational methods for fluid flow	National Institute of Technology, Jamshedpur	26 June 2014
31	S. Sundar	Thinking with mathematical models: Basic themes	IISER, Thiruvananthapuram	18 December 2014
32	S. Sundar	Understanding the porosity effect of glass fibre insulation through multi-scale models	GVP College of Engineering, Madhurawada	22–23 December 2014
33	S. Sundar	Mathematics transcending theories	MOP Vaishnav College, Chennai	12 January 2015
34	S. Sundar	Recent trends in mathematics	St. Jones College, Tevara, Kochi	17 January 2015
35	S. Sundar	Recent advances in applied mathematics	St. Philomena's College, Mysore	23 January 2015
36	S. Sundar	Mathematical modeling and simulated reality: A case study in textile process	Sastra University	14 February 2015
37	S. Sundar	GPU scientific computing for flow problems	SIET College, Chennai	7 February 2015
38	S. Sundar	Computational PDE and numerical simulation	Sarada Vilas College, Mysore	20 February 2015
39	S. Sundar	Shape optimization: An introduction	LIAS-GSVP, Vizagapatnam	16 March 2015
40	M. Thamban Nair	Basics of Hilbert space theory (four lectures)	NIT, Karnataka	2–4 June 2014
41	M. Thamban Nair	Ill-Posed Problems	Kannur University, Kerala	5 June 2014
42	M. Thamban Nair	Compact operators in applicable analysis	ISI, Bangalore	19–21 June 2014
43	M. Thamban Nair	Some interesting consequences of elementary geometry	SSN College of Engineering	25 July 2014
44	M. Thamban Nair	On solution of linear equations	IISER, Thiruvananthapuram	16 October 2014
45	M. Thamban Nair	On solving ill-posed integral equations	IIST, Thiruvananthapuram	17 October 2014
46	M. Thamban Nair	On solving ill-conditioned systems	Brennen College, Thalassery, Kerala	31 October 2014

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
47	M. Thamban Nair	Understanding infinity	DST-INSPIRE talk, SRM University	29 December 2014
48	P. Veeramani	Chebyshev centres, fixed point theorems and best proximity point theorems	Kamaraj University, Madurai	21 August 2014
49	P. Veeramani	Compact operators	M.S. University, Tirunelveli	16 September 2014
50	P. Veeramani	Analysis and applied mathematics	NIT Trichy	28 November 2014
51	P. Veeramani	The role of best approximation theory in the study of fixed point theorems	Don Bosco College, Kannur, Kerala	23 January 2015
52	P. Veeramani	Applications of fixed point theorems	Shivaji University, Kolhapur	29–30 January 2015
53	P. Veeramani	Topology and fuzzy metric spaces	Sree Saraswathi Thiyagaraja College, Pollachi	6 February 2015
54	P. Veeramani	LUB Axiom, Zorn's lemma and their applications	Avinashilingam University for Women, Coimbatore	13 February 2015
55	V. Vetrivel	On non-smooth, non-linear programming	Govtment Polytechnic College, Nagapattinam	28 February 2015
56	V. Vetrivel	Lagrange multipliers and non-smooth analysis	Thiagarajar College of Arts and Science, Madurai	12 March 2015
<b>Associate Professors</b>				
57	A.K.B. Chand	An introduction to fractal functions and surfaces	Utkal University, Bhubaneswar, Odisha	18 March 2015
58	Chidella Srinivasa Rao	Green's functions and applications	NIT Warangal	8–9 January 2015
<b>Assistant Professors</b>				
59	Arijit Dey	Vector bundles of curves	ISI, Kolkata	24 January 2014 to 26 January 2015
60	A.V. Jayanthan	A basic introduction to number theory	Goa University, Goa	26 May to 7 June 2014
61	A.V. Jayanthan	Edge ideals: A connection between commutative algebra and graph theory	Saiva Bhanu Kshatriya College, Aruppukottai, Tamil Nadu	5 January 2015
62	N. Narayanan	Probabilistic method and discharging method	College of Engineering, Karunagapalli	24 April 2014
63	N. Narayanan	Lecture series on graph theory and algorithms	University of Kerala	21–25 July 2014
64	N. Narayanan	The polynomial method	National College, Trichy	24 July 2014
65	N. Narayanan	Pigeonhole principle	Bharatidasan University, Trichy	25 July 2014
66	N. Narayanan	Some nice applications of pigeonhole principle	St. Xavier's College, Aluva	7–9 August 2014
67	N. Narayanan	Many faces of the pigeonhole principle	VIT University	28 October 2014
68	N. Narayanan	Introduction to the probabilistic method	TKM Engineering College, Kollam	28 November 2014
69	N. Narayanan	Introduction to the probabilistic method	CUSAT	9 December 2014
70	N. Narayanan	The discharging method	CUSAT	9 December 2014
71	N. Narayanan	Design and analysis of algorithms: Lecture series	Kerala University	2–4 January 2015
72	N. Narayanan	Intersecting families	St. Joseph's College, Trichy	9–19 January 2015

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
73	Santanu Sarkar	Stream cipher	ISI, Delhi	21 March 2015
74	Suhas Jaykumar Pandit	ISL on geometric topology	BHU, Varanasi	10–18 July 2014
75	T.E. Venkata Balaji	Topology (12 lectures)	Annual Foundation School, Department of Mathematics, IIT Madras	1–27 December 2014
76	T.E. Venkata Balaji	Fascination of numbers	Hindu Senior Secondary School, Triplicane, Chennai	22 December 2014
77	T.E. Venkata Balaji	Riemann's zeta: The most mysterious and important function in mathematics	FORAYS-2015, Department of Mathematics, IIT Madras	1 March 2015
78	T.E. Venkata Balaji	Geometry of the real line	NPTEL Workshop, Amrapali Group of Institutions, Haldwani	23 August 2014
79	Srilakshmi Krishnamoorthy (INSPIRE Faculty)	On sign changes for almost prime coefficients of half- integral weight modular forms	Sheffield University, UK	2 December 2014

### Visits abroad by faculty members

Sl. No.	Name of Faculty Members	Place Visited	Date	Purpose of Visit	Funding from
1	R. Rama	USA	15–18 July 2014	18th World Multiconference on Systemics, Cybernetics and Informatics (WMSCI 2014)	IIT Madras
2	K.C. Sivakumar	Germany	8–12 June 2014	23rd International Workshop on Matrices and Statistics	IIT Madras
3	S. Sundar	Germany	1–21 October 2014	Visiting Professor, Technische Universitat Kaiserslautern	TU Kaiserslautern
4	Arjit Dey	Berlin, Germany	18 May to 6 September 2014	EFP Research Fellowship, awarded by the IMU Berlin Einstein Foundation (EFP)	IIT Madras
5	Shruti Dubey	South Korea	13–21 August 2014	International Congress of Mathematicians (ICM 2014)	IIT Madras
6	Srilakshmi Krishnamoorthy (INSPIRE Faculty)	UK	1–21 December 2014	Research collaboration with Dr. Neil Dummigan, attending 'Knot Theory, Number Theory and Connections' (conference) and delivering seminar talks at Sheffield University	DST-INSPIRE Fund

### Honours and awards obtained by faculty members

#### Session's Best Paper Award

Sl. No.	Name	Title of the Paper	Conference/Workshop
1	R. Rama and Bala Suyambu	New CA-based image encryption–compression scheme using wavelet transform	18th World Multiconference on Systemics, Cybernetics and Informatics, USA

#### Honour: Plaques of thanks and appreciation handed over by the Director, IIT Madras, 16 October 2014

Sl. No.	Name of Faculty Member	Awarded for
1	Arindama Singh	NPTEL video course on mathematical logic
2	S.H. Kulkarni	NPTEL video course on real analysis
3	R. Radha	NPTEL web course on Fourier analysis
4	Y.V.S.S. Sanyasi Raju	NPTEL web course on computation fluid dynamics for turbomachinery
5	M.Thamban Nair	NPTEL web course on functional analysis
6	T.E. Venkata Balaji	NPTEL video course on Riemann surfaces

## Books, monographs video courses authored/co-authored

Sl. No.	Name of Faculty Member	Title	Publisher	Author/Co-author
<b>Books</b>				
1	M. Thamban Nair	<i>Calculus of One Variable</i> (July 2014)	Ane Books Private Limited	Author

## Editorial boards of journals

Sl. No.	Name of Faculty Member	Position (Editor/Member)	Journal
1	S. Ponnusamy	Editor-in-Chief	<i>Mathematics Newsletter</i>
2	S. Ponnusamy	Managing Editor	<i>Journal of Analysis</i>
3	S. Ponnusamy	Associate Editor	<i>Bulletin of Malaysian Mathematical Sciences Society</i>
4	S. Ponnusamy	Editorial Board member	<i>Journal of Classical Analysis</i>
5	S. Ponnusamy	Vice President and editorial member	<i>Indian Academy of Mathematics</i>
6	S. Ponnusamy	Editorial Board member	<i>The Scientific World Journal: Mathematical Analysis</i> (Hindawi)
7	S. Ponnusamy	Editorial Board member	<i>Conference Papers in Mathematics</i> (Hindawi)
8	S. Ponnusamy	Editorial Board member	<i>Issues of Analysis</i> (Russian)
9	S. Ponnusamy	Editorial Board member	<i>Ilorin Journal of Science</i> (Nigeria)
10	Satyajit Roy	Advisory Committee member	<i>The Journal of the Indian Academy of Mathematics</i>
11	S. Sundar	Editorial Board member	<i>The Journal of the Indian Academy of Mathematics</i>
12	M. Thamban Nair	Editorial Board member	<i>Journal of Analysis &amp; Number Theory</i>

## 4.12.4. Research and Consultancy

### Sponsored research projects (ongoing and new)

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Coordinators
1	Analysis and Computation of Optimal Strategies in N-Person Differential Games	3 years from 8 July 2013	DST	3.132	A.J. Shaiju (PI), Ch. SrinivasaRao
2	Evolutionary Games with Continuous Strategy Space	3 years from 22 July 2013	NBHM	3.295	K.S. Mallikarjuna Rao, A.J. Shaiju (Co-PI)
3	A Network of Ferromagnetic Particles	3 years from 18 July 2011	IC&SR	5.00	Shruti Dubey
4	Development of Theory of Fractal Rational Splines and Applications in CAGD	3 years from 1 September 2011	DST	15.07	A.K.B. Chand, G. Saravana Kumar (ED)
5	Compound Negative Binomial Approximations and its Applications	3 years from 4 December 2012	NFSC	5.00	Neelesh S. Upadhye
6	Intersection Edge Colourings and Axiom characteristics of Geodesics	3 years from 10 September 2013	NFSC	5.00	N. Narayanan
7	Finite Element Methods for Parameter Identification Problems in Elliptic Partial Differential Equations	3 years from 16 July 2014	DST	12.13	M. Thamban Nair
8	Exploring Graph Products via Commutative Algebra	11 February 2015 to 10 February 2016	Center for IC&SR, IIT Madras	9.00	A.V. Jayanthan (PI), N. Narayanan, B.V. Raghavendra Rao

### Research publications of faculty members and research scholars

Papers published in refereed international journals: 40  
Papers presented at international conferences: 20

#### Papers published in refereed international journals

1. A.K. Singh, T. Basak, S. Roy and E. Momoniat. November 2014. Role of entropy generation on thermal management during natural convection in a tilted square cavity with isothermal and non-isothermal hot walls. *Numerical Heat Transfer, Part A: Applications* 66(11): 1243–1267.



2. A.K. Singh, T. Basak, A. Nag and S. Roy. 2015. Role of entropy generation on thermal management during natural convection in tilted porous square cavities. *Journal of the Taiwan Institute of Chemical Engineers* 50: 153–172.
3. A. Singh and M. Ravibabu. 2014. On refined Ritz vectors and polynomial characterisation. *Computers and Mathematics with Applications* 67: 1057–1064.
4. A. Singh and M.K. Raut. 2014. A survey on computing prime implicants and implicates in classical and non-classical logics. *International Journal of Computer Systems Science and Engineering* 2: 1–11.
5. A.A. Selvan and R. Radha. August 2014. Sampling and reconstruction in shift-invariant spaces on  $\mathbb{R}^d$ . *Annali di Matematica Pura ed Applicata* doi:10.1007/s10231-014-0439-x
6. A.K.B. Chand and P. Viswanathan. 2015. A  $C^1$ -rational cubic fractal interpolation function: Convergence and associated parameter identification problem. *Acta Applicandae Mathematicae* doi:10.1007/s10440-014-9882-3
7. A.K.B. Chand, P. Viswanathan and M.A. Navascues. 2014. Fractal perturbation preserving fundamental shapes: Bounds on the scale factors. *Journal of Mathematical Analysis and Applications*. doi:10.1016/j.jmaa.2014.05.019
8. A.K.B. Chand and N. Vijender. 2014. Shape preserving affine fractal interpolation surfaces. *Non-linear Studies* 21(2): 175–190.
9. A.K.B. Chand, M.A. Navascues, P. Viswanathan and M.V. Sebastian. 2014. Fractal interpolation functions: A short survey. *Applied Mathematics* 5: 1834–1841. doi:10.4236/am.2014. 512176
10. A.K.B. Chand and P. Viswanathan. 2014. A fractal procedure for monotonicity preserving interpolation. *Applied Mathematics and Computation* 247: 190–204. doi:10.1016/j.amc.2014.06.090
11. A.V. Jayanthan and R. Nanduri. 2014. On the depth of fibre cones of stretched M-primary ideals. *Indian Journal of Pure and Applied Mathematics* 45(6): 925–942.
12. G.K. Kumar and S.H. Kulkarni. 2015. Banach algebra techniques to compute spectra, pseudospectra and condition spectra of some block operators with continuous symbols. *Annals of Functional Analysis* 6(1): 148–169.
13. J. Mahipal. 2014. A scheme with discrete maximum principle and optimised rotation invariance for coherence enhancing diffusion. *Computers & Mathematics with Applications* 68: 859–871.
14. M. Roy, S. Roy and T. Basak. March 2015. Role of various moving walls on energy transfer rates via heat flow visualisation during mixed convection in square cavities. *Energy* 82: 1–22.
15. N. Mishra and Y.V.S.S. Sanyasiraju. 2014. Exponential compact higher order schemes and their stability analysis for unsteady convection–diffusion equations. *International Journal of Computational Methods* 11(1): 1350053 (1–18).
16. N. Narayanan, V. Borozan, G.J. Chang, N. Cohen, S. Fujita, R. Naserasr and P. Valicov. 2015. From edge colouring to strong edge colouring. *Electronic Journal of Combinatorics* 22(2).
17. N. Narayanan, K. Balakrishnan, M. Changat, A.K. Lakshmikuttyamma, J. Mathews, H.M. Mulder and P.G.N. Shenoi. 2015. Axiomatic characterisation of the interval function of a block graph. *Discrete Mathematics* 338: 885–894.
18. N. Narayanan, V. Borozan and L. Montero. Further results on strong edge colourings in outerplanar graphs. *Australasian Journal of Combinatorics* (accepted).
19. M.A. Navascues, A.K.B. Chand, P. Viswanathan and M.V. Sebastian. 2014. Fractal functions in interpolation and approximation: A bird’s-eye view. *Journal of Applied & Computational Mathematics* 3 (7).
20. S. Rajesh and P. Veeramani. 2015. Chebyshev centres and fixed point theorems. *Journal of Mathematical Analysis and Applications* 422(2): 880–885.
21. D. Ramakrishna, T. Basak, S. Roy and E. Momoniat. October 2014. Analysis of thermal efficiency via analysis of heat flow and entropy generation during natural convection within porous trapezoidal cavities, in inclined square cavities. *International Journal of Heat and Mass Transfer* 77: 98–113.
22. Y.V.S.S. Sanyasiraju and Ch. Satyanarayana. 2014. Upwind strategies for local RBF scheme to solve convection dominated problems. *Engineering Analysis with Boundary Elements* 48: 1–13.
23. S. Dubey and M. Sharma. 2014. Solutions to fractional functional differential equations with nonlocal conditions. *Fractional Calculus and Applied Analysis* 17(3): 654–673.
24. K.C. Sivakumar and M.R. Kannan. 2014. Intervals of certain classes of Z-matrices. *Discussiones Mathematicae: General Algebra and Its Applications* 34: 85–93.
25. S. Mishra, A. Pananjady and N.S. Devi. 2015. On the complexity of making a distinguished vertex minimum or maximum degree by vertex deletion. *Journal of Discrete Algorithms* (accepted) doi:10.1016/j.jda.2015.03.002
26. S. Mishra, A.C. Mane and N.S. Devi. 2015. Computational complexity of minimum  $P_4$  vertex cover problem for regular and  $K_{1,4}$ -free graphs. *Discrete Applied Mathematics* 184: 114–121.

27. S. Ghosh, R. Usha and K.C. Sahu. 2014. Double-diffusive two-fluid flow in a slippery channel: A linear stability analysis. *Physics of Fluids* 26: 127101.
28. S. Ghosh, R. Usha and K.C. Sahu. 2014. Linear stability analysis of miscible two-fluid flow in a channel with velocity slip at the walls. *Physics of Fluids* 26: 014107.
29. S. Sundar and S. Matle. 2014. Computation of transmission coefficients in the plain and corrugated electromagnetic wave guides using finite point set method. *Applied Mathematical Modelling* 38: 1838–1845.
30. T. Sarkar and S. Sundar. 2014. Nonlinear conservation law model for production network considering yield loss. *Journal of Nonlinear Science and Applications* 7(3): 205–217.
31. T. Sarkar and S. Sundar. 2014. On existence and stability analysis of a nonlinear conservation law model appearing in production system. *Nonlinear Studies* 21(2): 339–347.
32. T. Sarkar. 2015. An entropy admissible time splitting scheme for a conservation law model of manufacturing system. *International Journal for Numerical Methods and Applications* 12(1): 1–20.
33. T. Sarkar. 2014, 2015. Comment on: Traveling wave solutions for fifth-order KdV type equations with time-dependent coefficients. *Communications in Nonlinear Science and Numerical Simulation* 19: 404–408, 23(1–3): 17–20.
34. M.T. Nair. 2015. A unified treatment for Tikhonov regularisations using a general stabilising operator. 3. *Analysis and Applications* 13(2): 201–215.
35. R. Usha, M.H. Allouche, V. Botton, D. Henry, S. Millet and H.B. Hadid. 2015. Experimental determination of the viscosity at very low shear rate for shear thinning fluids by electrocapillarity. *Journal of Non-Newtonian Fluid Mechanics* 215: 60–69.
36. P. Veeramani, R. Espinola and G.S.R. Kosuru. 2015. Pythagorean property and best-proximity point theorems. *Journal of Optimization Theory and Applications* 164: 534–550.
37. P. Viswanathan and A.K.B. Chand. 2014. Alpha fractal-constrained fractal interpolation. *Electronic Transactions on Numerical Analysis* 41: 420–442.
38. P. Viswanathan and A.K.B. Chand. 2014. Fractal rational functions and their approximation properties. *Journal of Approximation Theory* 185: 31–50.
39. P. Viswanathan, A.K.B. Chand and M.A. Navascues. October 2014. A rational iterated function system for resolution of univariate constrained interpolation. *Revista de la Real Academia de Ciencias Exactas, Fisicas y Naturales. Serie A. Matematicas*. doi:10.1007/s13398-014-0197-z
40. P. Viswanathan and A.K.B. Chand. 2015. On cubic Hermite coalescence hidden variable fractal interpolation functions. *Applied Mathematics-JCU* 30(1): 55–76.

#### Papers published in proceedings of international conferences

1. R. Usha. 2014. Stability analysis of a gravity-driven miscible two-fluid flow: Role of wall slip. *Proceedings of IUTAM on Multiphase Flows with Phase Change and Challenges and Opportunities*, IIT Hyderabad, 8–11 December.
2. A.K.B. Chand, P. Viswanathan and M.A. Navascues. 2014. Uniform restricted range approximation with self-referential functions. *10th AIMS International Conference on Dynamical Systems, Differential Equations and Applications*, Universidad Autonoma de Madrid, Spain, 7–14 July.
3. A.K.B. Chand, S.K. Katiyar. 2014. Hidden-variable fractal functions and their monotonicity aspects. *10th AIMS International Conference on Dynamical Systems, Differential Equations and Applications*, Universidad Autonoma de Madrid, Spain, 7–14 July.
4. A.K.B. Chand and P. Viswanathan. 2014. Constrained approximation with fractal functions and SAIN property of fractal polynomials. *New Directions in Fractal Geometry*, Canberra, Australia, 23–28 November.
5. A.K.B. Chand and S.K. Katiyar. 2014. Approximation using hidden variable fractal interpolation functions. *New Directions in Fractal Geometry*, Canberra, Australia, 23–28 November.
6. A.K.B. Chand and K.R. Tyada. 2014. Constrained data visualisation using rational quadratic trigonometric fractal interpolation. *New Directions in Fractal Geometry*, Canberra, Australia, 23–28 November.
7. A.K.B. Chand and S.K. Katiyar. 2014. Quintic Hermite fractal interpolation in a strip: Preserving co-positivity. *ICRTMAA-2014*, IIT Roorkee, 21–23 December.
8. A.K.B. Chand, K.M. Reddy and P. Viswanathan. 2014. A novel approach to surface interpolation: Marriage of Coon's technique and univariate fractal functions. *ICRTMAA-2014*, IIT Roorkee, 21–23 December.
9. A.K.B. Chand and K.R. Tyada. 2014. Constrained 2D data interpolation using rational cubic fractal functions. *ICRTMAA-2014*, IIT Roorkee, 21–23 December.
10. A.K.B. Chand and S.K. Katiyar. 2015. Towards a unified methodology for fractal extension of various shape preserving spline interpolants. *ICMC-2015*, Haldia Institute of Technology, 5–10 January.
11. A.K.B. Chand and N. Vijender. 2015. A monotonic rational fractal interpolation surface and its analytical properties. *ICMC-2015*, Haldia Institute of Technology, 5–10 January.

12. A.K.B. Chand and K.R. Tyada. 2015. Positivity preserving rational cubic trigonometric fractal interpolation functions. *ICMC-2015*, Haldia Institute of Technology, 5–10 January.
13. A.K.B. Chand, M.A. Navascues, P. Viswanathan and S.K. Katiyar. 2015. Restricted range approximation with fractal trigonometric polynomials. *ICAFW-2015*, Amrita School of Engineering, 10–11 January.
14. A.K.B. Chand, N. Vijender and M.A. Navascues. 2015. Convexity/concavity and stability aspects of rational cubic fractal interpolation surfaces. *ICAFW-2015*, Amrita School of Engineering, 10–11 January.
15. A.K.B. Chand and S.K. Katiyar. 2015. A new class of rational quartic fractal function for curve fitting: Preserving positivity. *ICAFW-2015*, Amrita School of Engineering, 10–11 January.
16. A.K.B. Chand and K.R. Tyada. 2015. Partially blended rational cubic trigonometric fractal interpolation surfaces over a plane. *ICAFW-2015*, Amrita School of Engineering, 10–11 January.
17. A.K.B. Chand, M.A. Navascues, P. Viswanathan and S.K. Katiyar. 2015. Smooth fractal interpolation with function scaling factors. *IC-MACS 2015*, Don Bosco College, Kannur, 22–25 January.
18. A.J. Shaiju, D. Hingu and K.S.M. Rao. 2014. Evolutionary stability of dimorphic population states. *16th International ISDG Symposium*, Amsterdam, 9–12 July.
19. A.J. Shaiju and A. Sharma. 2014. Solution of affine quadratic control problems. *19th IFAC World Congress*, Cape Town, 24–29 August.
20. S. Dubey and S. Dwivedi. 2014. On stability of steady-states for a two-dimensional network model of ferromagnetic nanowires. *International Conference on Recent Trends in Mathematical Analysis and Its Applications (ICRTMAA)*, IIT Roorkee, India, 21–23 December.

### Chapters in books/proceedings/monographs

1. A.K.B. Chand and P. Viswanathan. 2014. A new class of rational cubic fractal splines for univariate interpolation. *Mathematics and Computing 2013*, Chapter 8, Springer (ISBN: 978-81-322-1951-4).
2. A.K.B. Chand, P. Viswanathan and M.A. Navascues. 2014. A new class of rational quadratic fractal functions with positive shape preservation. *Fractals, Wavelets and Their Applications*, Chapter 18, Springer (ISBN: 978-3-319-08104-5).
3. A.K.B. Chand and N. Vijender. 2014. C1-Rational cubic fractal interpolation surface using functional values. *Fractals, Wavelets and Their Applications*, Chapter 22, Springer (ISBN: 978-3-319-08104-5).
4. A.K.B. Chand and P. Viswanathan. 2014. On fractal rational functions. *Fractals, Wavelets and Their Applications*, Chapter 23, Springer (ISBN: 978-3-319-08104-5).

### Distinguished visitors to the department

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1	Dr. Sarbeswar Pal, post-doc	6–12 April 2014	Academic collaboration with Dr. Arjit Dey
2	Dr. Sarath Sasi, Department of Mathematics, University of West Bohemia, Plzeň, Czech Republic	22–24 May 2014	Delivering a seminar talk, 'Weighted quasilinear eigenvalue problems in exterior domains'
3	Prof. Daher, University of Hassan, Casablanca	30–31 August 2014	Academic collaboration with Prof. R. Radha
4	Prof. Luz Roncal, University of La Rioja, Logrono, Spain	30–31 August 2014	Academic collaboration with Prof. R. Radha
5	Prof. Ratnasingham Shivaji, H. Barton Excellence Professor and Head, Department of Mathematics & Statistics, University of North Carolina, Greensboro, USA	16–21 September 2014	Delivering a seminar talk, 'PDE theory for M.Sc./M.Tech./Ph.D. students'
6	Prof. V. Raghavendra, Department of Mathematics, IIT Kanpur	21–27 November 2014	Delivering lecture, 'Compact course partial differential equations theory, with a stress on elliptic equations of second order'
7	Prof. Jeffrey E. Froyd, TEES Research Professor, Dwight Look College of Engineering, Texas A&M University	8 January 2015	Presentation and interaction with faculty members, 'Problem-based learning as a useful method of teaching Ph.D. courses'
8	Prof. Mario Paul Ahues Blanchait, Institut Camille Jordan Unité CNRS 5208, Université Jean Monnet, Saint-Etienne, France	9–14 January 2015	Research collaboration with Prof. M. Thamban Niar and delivering special seminar talk at the department
9	Prof. Laurence Grammont, Institut Camille Jordan Unité CNRS 5208, Université Jean Monnet, Saint-Etienne, France	9–14 January 2015	Research collaboration with Prof. M. Thamban Niar and delivering special seminar talk at the department

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
10	Dr. Nathann Cohen, Universite Paris Sud, France	1 December 2014 to 19 January 2015	Research collaboration with Dr. A.V. Jayanthan and Dr. N. Narayanan
11	Prof. M.A. Navascues, University of Zaragoza, Spain	11–12 January 2015	Research collaboration with Dr. A.K.B. Chand
12	Prof. A.V. Tetenov, Gorno-Altai State University, Russia	25 February to 8 March 2015	Research collaboration with Dr. A.K.B. Chand

#### 4.12.5. Other Activities of the Department

##### Other activities of the faculty

Sl. No.	Name of Faculty Member	Title/Member/Programme	Institution	Period
<b>Professors</b>				
1	S.H. Kulkarni	Professors Selection Committee meeting	Lucknow	5 September 2014
2	S.H. Kulkarni	Ph.D. viva voce meeting	IIT Bhubaneswar	3 November 2014
3	S.H. Kulkarni	Ph.D. viva voce meeting	IIT Kanpur	27 October 2014
4	R. Rama	DC meeting for three students (attended as member)	VIT, Vellore	13 August 2014
5	R. Rama	DST-project presentation (attended as co-investigator)	IIT Gandhinagar	10 November 2014
6	R. Rama	DC meeting	VIT, Vellore	30 January 2015
7	Y.V.S.S. Sanyasi Raju	Ph.D. thesis and viva voce meeting (attended as examiner)	IIT Delhi	27 August 2014
8	Y.V.S.S. Sanyasi Raju	Board of Studies meeting of the Mathematics Board	Madanapalle Institute of Technology and Science, Madanapalle	4 September 2014
9	Y.V.S.S. Sanyasi Raju	Board of Studies meeting of the Mathematics Board	PSG College of Technology, Coimbatore	27 September 2014
10	Y.V.S.S. Sanyasi Raju	Ph.D. thesis and viva voce meeting (as examiner)	GITAM University	10 October 2014
11	Y.V.S.S. Sanyasi Raju	Ph.D. thesis and viva voce meeting (as examiner)	JNTU, Hyderabad	28 November 2014
12	Y.V.S.S. Sanyasi Raju	Ph.D. thesis and viva voce meeting (as examiner)	IIT, Guwahati	30 December 2014
13	Y.V.S.S. Sanyasi Raju	Ph.D. viva voce meeting	VIT, Vellore	23 January 2015
14	Y.V.S.S. Sanyasi Raju	DC meeting	VIT, Vellore	4 February 2015
15	Y.V.S.S. Sanyasi Raju	Board of Studies meeting	PSG College of Engineering, Coimbatore	28 February 2015
16	Y.V.S.S. Sanyasi Raju	Board of Studies meeting	GITAM, Visakhapatnam	28 March 2015
17	Satyajit Roy	Viva voce examination (attended as external examiner)	B.N.M. Institute of Technology, Bangalore	10 May 2014
18	Satyajit Roy	Comprehensive viva (attended as DC member)	Indian Institute of Space Science & Technology, Kerala	19 May 2014
19	Satyajit Roy	DC meeting (attended as member)	VIT Vellore	10 September 2014
20	Satyajit Roy	DC meeting (attended as member)	VIT Vellore	24 September 2014
21	Satyajit Roy	Ph.D viva voce meeting	IIT Guwahati	20 October 2014
22	Satyajit Roy	Ph.D. viva voce meeting	NIT Warangal	5 November 2014
23	K.C. Sivakumar	Board of Studies meeting; served as an expert in mathematics in academic audit	PSG College of Technology, Coimbatore	27 September 2014
24	K.C. Sivakumar	Chief guest at the inauguration of the Ramanujan Mathematics Association	Soka Ikeda College for Arts and Science for Women, Ambattur	16 September 2014



Sl. No.	Name of Faculty Member	Title/Member/Programme	Institution	Period
25	S. Sundar	Ph.D. viva voce examination (attended as an external examiner)	IIT Kharagpur	14 July 2014
26	S. Sundar	58th meeting of PAC-MS	University of Pune	9–10 June 2014
27	S. Sundar	Ph.D. viva voce (attended as examiner)	IIT Roorkee	17 August 2014
28	S. Sundar	Faculty selection committee meeting	NIT Trichy	3 August 2014
29	S. Sundar	DST-PAC (mathematical science meeting)	IIT Gandhinagar	10 November 2014
30	S. Sundar	Ph.D. viva voce meeting	TIFR–CAM, Bangalore	29 January 2015
31	S. Sundar	Faculty selection committee meeting	NIT Karnataka	11 February 2015
32	S. Sundar	Board of Studies meeting	NIT Patna	13 February 2015
33	S. Sundar	DRDO scientists selection committee meeting	Delhi	5 March 2015
34	S. Sundar	Ph.D. viva voce (attended as expert member)	IIT (BHU) Varanasi	20–21 March 2015
35	S. Sundar	Ph.D. viva voce (attended as expert member)	IIIT Allahabad	22 March 2015
36	M. Thamban Nair	Pre-departure session for students to France for higher studies, at Alliance Francais	Chennai	9 June 2014
37	R. Usha	Secondnd school board meeting	Hyderabad	8 September 2014
38	R. Usha	Collaboration with Prof. Kirti Sahu and Prof. Rama Govindarajan	IIT Hyderabad	1–2 December 2014
39	P. Veeramani	Ph.D. viva voce meeting	Aligarh Muslim University, Aligarh	22 November 2014
40	V. Vetrivel	Admission committee meeting	KIIT Bhubaneshwar, Orissa	22 February 2015
<b>Associate Professors</b>				
41	A.K.B. Chand	Presentation for ongoing DST project	IIT Gandhinagar	10 November 2014
42	Chidella Srinivasa Rao	General Test Committee meeting	VIT, Vellore	17 November 2014
43	Chidella Srinivasa Rao	Ph.D. viva voce meeting	VIT, Vellore	23 January 2015
<b>Assistant Professors</b>				
44	Arijit Dey	Conference on vector bundle	Hyderabad	23–27 March 2015
45	A.V. Jayanthan	Refresher course in algebra for college teachers (attended as resource person)	Kerala School of Mathematics, Kozhikode, Kerala	8–11 December 2014
46	Kalpana Mahalingam	DC meeting	VIT, Vellore	13 August 2014
47	Kalpana Mahalingam	DST project presentation	IIT Gandhinagar	10 November 2014
48	Sounaka Mishra	Indo-German workshop on algorithms	ISI, Kolkata	10–13 March 2015
49	Sounaka Mishra	DC meeting	IIITDM, Kanchipuram	4 March 2015
50	T.E. Venkata Balaji	Valedictory function of Ramanujan Day celebrations (attended as chief guest)	Hindu Senior Secondary School, Triplicane, Chennai	22 December 2014
51	Srilakshmi, INSPIRE hosted faculty	Research collaboration with Dr. Narasimha Kumar	IIT Hyderabad	12–24 May 2014

### Members of DST

Sl. No.	Name	Particulars	Period
1	S. Sundar	Member of DST—Programme Advisory Committee (Mathematical Sciences)	Since October 2012

### Weekly seminar talks

Sl. No.	Name of the Faculty Member	Title	Date
1	Prof. M. Thamban Nair, IIT Madras	Hilbert scales for optimal order estimates	3 April 2014
2	Dr. Sarbeswar, ISI, Bangalore	Moduli of non-very stable bundles over a compact Riemann surface	10 April 2014

Sl. No.	Name of the Faculty Member	Title	Date
3	Dr. Shreedevi, IMSc, Chennai	Rees' theorem	17 April 2014
4	Dr. Santanu Sarkar, CMI, Chennai	Cryptanalysis of RSA variants and implicit factorization	25 April 2014
5	Dr. Bhavin Moriya, HRI, Allahabad	Some weighted zero sum problems	8 May 2014
6	Dr. Antony Vijesh, Department of Mathematics, IIT Indore	Solution of a fractional differential equation via iteration	16 May 2014
7	Dr. Sarath Sasi, Department of Mathematics, University of West Bohemia Plze , Czech Republic	Weighted quasilinear eigenvalue problems in exterior domains	23 May 2014
8	Dr. Somnath Jha, Department of Mathematics, Osaka University, Japan	Functional equation for Selmer groups	22 May 2014
9	Dr. Sarang Sane, TIFR, Bombay	Euler classes and category theory	29 May 2014
10	Dr. Vishnu Narayan Mishra	Approximation of functions by positive linear operators	30 May 2014
11	Dr. Senthilkumar, Department of Mathematics, National Institute of Technology (NIT) Trichy	Stability of time delay systems	6 June 2014
12	Dr. Gibin Powathil, Department of Mathematics, University of Dundee, Scotland	Mathematical and computational modelling in cancer research	6 June 2014
13	Prof M. Ram Murty Department of Mathematics, Queen's University at Kingston, Canada	Transcendental numbers and modular forms	7 August 2014
14	Dr. Kunal Krishna Mukherjee Department of Mathematics, IIT Madras	Doubling	21 August 2014
15	Dr. Luz Roncal Gomez, Department of Mathematics and Computations, University of La Rioja, Logrono, Spain	Semigroups and harmonic analysis	1 September 2014
16	Dr. Mani Lakshminarayanan, Adjunct Faculty at Rutgers University, Biotechnology Clinical Development Statistics Group at Pfizer	Grammar of graphics: A visual data excursion in $\mathbf{R}$	4 September 2014
17	Prof. Ratnasingham Shivaji, H. Barton Excellence Professor and Head, Department of Mathematics and Statistics University of North Carolina at Greensboro, USA	Uniqueness of positive solutions for a class of singular nonlinear eigenvalue problem	18 September 2014
18	Dr. Krishna Jagannathan, Department of Electrical Engineering, IIT Madras	Zero-one laws in probability, and some applications	25 September 2014
19	Dr. Shanta Laishram, Department of Mathematics, ISI, Delhi	Powers in products of terms of binary recurrences sequences	10 October 2014
20	Dr. M. Rajesh Kannan, post-doctoral student, Department of Mathematics, Technion-Israel Institute of Technology, Haifa, Israel	Spectral theory of nonnegative tensors	16 October 2014
21	Prof. P.V. Subrahmanyam, Department of Mathematics, IIT Madras	Remarks on connectedness	30 October 2014
22	Dr. Amritanshu Prasad, IMSc, Chennai	The RSK correspondence and symmetric group representations	5 November 2014
23	Prof. P.R. Parthasarathy, retired faculty member, Department of Mathematics, IIT Madras	Transient queues	13 November 2014
24	Dr. Arun Kumar, IIT Bombay	Time changed processes	24 November 2014
25	Dr. Nathan Cohen, LRI, Orsay, France	Introduction to graph theory and linear programming in Sage	25 November 2014
26	Dr. H. Anathanarayan, Department of Mathematics, IIT Bombay	Zero-set topology on Cd and Gorenstein rings	8 December 2014
27	Prof. Sharad S. Sane, Department of Mathematics, IIT Bombay	Some interesting matrices and related combinatorial configurations	11 December 2014
28	Dr. Nathann Cohen, Visiting Faculty at the Department of Mathematics, IIT Madras	Introduction to combinatorial designs	23 December 2014



Sl. No.	Name of the Faculty Member	Title	Date
29	Prof. Mario Paul Ahues Blanchait and Prof. Laurence Grammont, Institut Camille Jordan Unité CNRS 5208, Université Jean Monnet, Saint-Etienne, France	Linearisation or discretisation: Which to start with?	12 January 2015
30	Dr. Jaban Meher, INSPIRE Fellow, IISc, Bangalore	Asymptotic formulas for the Fourier coefficients of certain modular functions	21 January 2015
31	Prof. Ar. Meenakshi, Professor Emeritus, Department of Mathematics, Annamalai University	A survey of regular inclines	29 January 2015
32	Dr. Shilpa Gondhali, University of Haifa, Israel	Modular class of a Lie algebroid with a Nambu structure	19 February 2015
33	Dr. Sivaram Ambikasaran, Courant Institute of Mathematical Sciences	Fast algorithms for data analysis and elliptic partial differential equations	17 February 2015
34	Dr. J. Jaikrishnan	Proper holomorphic mappings of balanced domains	26 February 2015
35	Dr. Andrei V. Tetenov, Gorno-Altai State University, Russia	On geometry of self-similar curves	5 March 2015
36	Dr. Sushmita Venugopalan, Chennai Mathematical Institute	Moment map and the vortex equation	11 March 2015
37	Dr. Soumya Bhattacharya, Centro Internazionale per la Ricerca Matematica, Trento	Factorisation of holomorphic eta quotients	19 March 2015
38	Dr. Makoto Yamashita, Department of Mathematics of Ochanomizu University, Japan	Categorical classification of quantum group actions	18 March 2015
39	Dr. Anirban Bose, IMSc, Chennai	Real elements in groups of type F4	26 March 2015

#### Ph.D. viva voce examinations

Sl. No.	Name of the Scholar/Guide	Title of the Thesis	Date of Viva
1	N. Safina Devi (MA09D001)/Sounaka Mishra	On the Approximability of Certain Node Deletion Problems on Graphs	19 August 2014
2	Tanmay Sarkar, (MA09D006)/S. Sundar	A Study on Nonlinear Conservation Law Model of Production System Incorporating Yield Loss	15 September 2014
3	Vijender Nallapu (MA09D012)/A.K.B. Chand	Shape-Preserving Fractal Interpolation Curves and Surfaces	23 October 2014
4	Anjalaiah (MA09D010)/R. Usha	Dynamics and Stability of Some Gravity-Driven Free-Surface Flows	20 November 2014
5	S. Rajesh (MA10D009)/P. Veeramani	Chebyshev Centres, Fixed-Point Theorems and Best Proximity Point Theorems	17 April 2015

## 4.13. DEPARTMENT OF MECHANICAL ENGINEERING

### 4.13.1. Introduction

The Department of Mechanical Engineering was established in 1959. The department offers Ph.D., M.S., M.Tech., B.Tech. and Dual Degree programmes. The department has excellent facilities to carry out state-of-the art research in three major disciplines of mechanical engineering, namely, thermal engineering, mechanical design and manufacturing engineering.

Thermal Engineering Stream: Heat Transfer and Thermal Power Laboratory; Hydro-turbo Machines Laboratory; I.C. Engines Laboratory; Refrigeration and Air Conditioning Laboratory; Thermal Turbomachines Laboratory; Thermodynamics and Combustion Laboratory

Design Stream: Machine Design Section; Machine Dynamics Laboratory

Manufacturing Engineering Stream: Manufacturing Engineering Section; Precision Engineering and Instrumentation Laboratory

### 4.13.2. Academic Programmes

#### New courses introduced

Sl. No.	Course No.	Title
1	ME6016	Mechanics of Thin Films for Microsystem Design
2	ME3940	Dynamic Modeling of Engineering Systems

#### New labs established

- High-Performance MWF Preparation and Characterisation Facility
- High-Vacuum (Fluxless) Precision Brazing Facility

#### Students on roll as of September 2014 + M.S. and Ph.D. scholars admitted in January 2015

Programme	I Year	II Year	III Year	IV Year	V Year and Others	Total
B.Tech.	82	77	82	80	9+1	331
Dual Degree	69	73	77	70	81+9	379
M.Tech.	91	102	3	—	—	196
M.S.	37	25	22	10	—	94
Ph.D.	57	40	34	21	16+5	173
<b>Total</b>	<b>336</b>	<b>317</b>	<b>218</b>	<b>181</b>	<b>121</b>	<b>1173</b>

#### Endowment prizes instituted

Prof. M.S. Shunmugam Endowment Award for best M.S./Ph.D. thesis on measurements relating to manufacturing

#### Names of students/scholars who attended conferences/workshops/seminars/symposia abroad/in India

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposium/Workshop	Date and Venue	Financial Assistance from
<b>Abroad</b>					
1	D.S. Mohan Varma	ME10D007	ASME 2014 International Mechanical Engineering Congress and Exposition (IMECE2014)	14–20 November 2014, Montreal, Quebec, Canada	IIT Madras
2	S. Arun Kumar	ME11D022	International Conference on Fracture, Fatigue and Wear, Kitakyushu, Japan	1–3 September 2014	IIT Madras
3	N.S. Kavitha	ME11D004	ECF 20, Trondheim, Norway	30 June–4 July 2014	Boeing grant
4	Atul Kulkarni	ME13S009	International Conference on Applications and Design in Mechanical Engineering	30–31 March 2015, Penang, Malaysia	IIT Madras

Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference/Seminar/ Symposium/Workshop	Date and Venue	Financial Assistance from
5	Deepak Ranjan Sahoo	ME12S023	Eighth International Youth Nuclear Congress	6–12 July 2014, Burgos, Spain	IIT Madras
6	Sudhakar G.	ME13D014	Ninth International Conference on Rotor Dynamics (IFTOMM)	22–25 September 2014, Milan, Italy	Ambigai Consultancy Services, Chennai
7	N. Harish Chandra	ME11D047	ASME Turbo Expo—2014	16–20 June 2014, Dusseldorf, Germany	IIT Madras
8	Sandip More	ME12S037	ICSV 14	July 2014, Beijing, China	IIT Madras
9	P. Mythrararuni	ME11D038	ASME 2014—International Mechanical Engineering Congress & Exposition (IMECE 2014)	14–20 November 2014, Montreal, Canada	DBT, GoI & IIT Alumnus
10	Somasree Roychowdhury	ME12D071	15th International Heat Transfer Conference (IHTC-15)	10–15 August 2014, Kyoto, Japan	IIT Madras
11	Neteesh George	ME12S006	The Fifth International Conference on Mechanical and Aerospace Engineering (ICMAE 2014)	12–14 December 2014, IIT Kanpur	IIT Madras
12	Somasree Roychowdhury	ME12D071	IHTC-15	10–15 August 2014, Kyoto, Japan	IIT Madras
13	Neteesh George	ME12S006	ICMAE 2014	12–14 December 2014, IIT Kanpur	IIT Madras
14	C. Kalyan	ME12S030	International Conference on Micromanufacturing (ICOMM2014)	25–28 March 2014, IIT Madras	IIT Madras
15	S. Babu	ME13D023	TMS 2015	Walt Disney World, Orlando, Florida, USA	IIT Madras
16	Bajwa Roodra Pratap Singh	ME13S052	International Mechanical Engineering Congress 2014	12–16 June 2014, NIT Thiruchirappalli	IIT Madras
17	Devshette Ajinkya Rajkumar	ME10B130	Control System Lab, Department of EIT	1 February–30 April 2015, TU Kaiserslautern, Germany	Prof. Steven Liu, TU Kaiserslautern, Germany
18	Arun Prasath	ME11S021	9th International Green Energy Conference (IGEC-IX)	25–28 May 2014, Tianjin, P.R. China	IIT Madras
19	Mohamed Ibrahim	ME09D013	7th International Exergy, Energy & Environment Symposium	27–30 April 2015, University of Valenciennes et du Hainuaut–Cambresis, France	IIT Madras
20	Viveganath M.	ME13S017	7th International Exergy, Energy & Environment Symposium	27–30 April 2015, University of Valenciennes et du Hainuaut–Cambresis, France	IIT Madras
<b>India</b>					
1	Sivakumar Subramanian	ME11D014	Sixth International Conference on Theoretical, Applied, Computational and Experimental Mechanics (ICTACEM 2014)	29–31 December 2014, IIT Kharagpur	IIT Madras
2	Sumit Kumar	ME12S058	ISRS 2014	December 2014, IIT Madras	IIT Madras
3	Pankaj Vaste	ME12M086	National Symposium on Acoustics 2014	12–14 November, Mysore	GKN Aerospace, Bangalore

Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference/Seminar/ Symposium/Workshop	Date and Venue	Financial Assistance from
4	Sudheesh Kumar C.P.	ME12D062	ICTACEM 2014	29–31 December 2014, IIT Kharagpur, India	IIT Madras
5	Yadvendra Kaushik	ME13S018	National Tribology Conference	15–17 December, Bangalore	IIT Madras
6	Raja P.	ME13D045	National Tribology Conference	15–17 December, Bengaluru	Self
7	Ramesh K.J.	ME14D041	Symposium on International Automotive Technology	23 January 2015, Pune, India	Kistler
8	Balasubramanian N.	ME12D031	National Propulsion Conference–2015	23–24 January 2015, IIT Bombay	Project
9	Manas Kumar Pal	ME12D040	National Propulsion Conference–2015	23–24 January 2015, IIT Bombay	Project
10	Sahar Ahsaas	ME14S032	Workshop on Mechanical Circulatory Support and Thoracic Organ Transplantation 2014	12–13 December 2014, The Leela Palace, Chennai	IIT Madras
11	K. Dharmasastha	ME15S007	Workshop on Exposure Monitoring Systems for Air Quality Management	12–13 December 2014, IIT Madras	IIT Madras
12	D.G. Leo Samuel	ME10D029	Workshop on Exposure Monitoring Systems for Air Quality Management	12–13 December 2014, IIT Madras	IIT Madras
13	K. Dharmasastha	ME15S007	Workshop on Air Quality Modelling	10–15 November 2014, IIT Madras	IIT Madras
14	K. Dharmasastha	ME15S007	COMSOL Conference 2014	November 2014, Bangalore	Project
15	D.G. Leo Samuel	ME10D029	Workshop on Air Quality Modelling	10–15 November 2014, IIT Madras	IIT Madras
16	D.G. Leo Samuel	ME10D029	COMSOL Conference 2014	November 2014, Bangalore	Project
17	Rayapati Subbarao	ME09D004	41st National Conference on Fluid Mechanics and Fluid Power	12–14 December 2014, Bhopal, India	IIT Madras
18	M. Suresh	ME10D051	ICTACEM 2014	29–31 December 2014, IIT Kharagpur	IIT Madras
19	C.T. Gajanan	ME12S025	ASME 2014 Gas Turbine India Conference	15–17 December 2014, New Delhi	IIT Madras
20	Arun Kumar Pujari	ME11D011	ASME 2014 Gas Turbine India Conference	15–17 December 2014	IIT Madras
21	Shubham Sunil Jain	ME11B157	Fifth International and 41st National Conference on Fluid Mechanics and Fluid Power	12–14 December 2014, Kanpur	PEC
22	Suresh Kannan I.	ME10D043	Fifth International and 26th AIMTDR Conference 2014	12–14 December 2014, IIT Guwahati	IIT Madras
23	Prudvi Reddy Parasi	ME12S039	Fifth International and 26th AIMTDR Conference 2014	12–14 December 2014, IIT Guwahati	IIT Madras
24	Manoj Kumar K.	ME11D031	Fifth International and 26th AIMTDR Conference 2014	12–14 December 2014, IIT Guwahati	IIT Madras
25	V. Rishikesan	ME14D125	International Conference on Advances in Manufacturing and Materials Engineering (AMME 2014)	27–29 March 2014	IIT Madras
26	T. Jagadesh	ME12D007	AMME 2014	27–29 March 2014	IIT Madras
27	Rajesh Babu	ME09D03	ICMMM 2014	8–9 August 2014	IIT Madras
28	Jai Karthik	Summer Fellowship	ICMMM 2014	8–9 August 2014	IIT Madras
29	T. Jagadesh	ME12D007	26th AIMTDR Conference 2014	12–14 December 2014	IIT Madras

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposium/Workshop	Date and Venue	Financial Assistance from
30	Rajesh Babu	ME09D03	26th AIMTDR Conference 2014	12–14 December 2014	IIT Madras
31	Faseeulla Khan	ME12D034	International Conference on Friction Based Processes-2014, IISc, Bangalore	3 September 2014, IISc, Bangalore	IIT Madras
32	S. Madhavan	ME12D039	International Welding Symposium (IWS2K14)	28–30 October 2014, Mumbai	IIT Madras
33	R. Srikanth	ME07D017	26th AIMTDR Conference 2014	12–14 December 2014, IIT Guwahati	IIT Madras
34	M. Uma Maheswari	ME10D045	International Conference on Advances in Design and Manufacturing	3–5 December 2014, NIT, Trichy	IIT Madras
35	R. Viramuthu	ME11D050	26th AIMTDR Conference 2014	12–14 December 2014, IIT Guwahati	IIT Madras
36	S. Rambabu	ME12D015	26th AIMTDR Conference 2014	12–14 December 2014, IIT Guwahati	IIT Madras
37	S. Chidambara Kumaran	ME11D023	Fifth International and 26th AIMTDR Conference 2014	12–14 December 2014, IIT Guwahati	IIT Madras

#### Names of students/scholars who won outside prizes and awards

Sl. No.	Name of the Student/Scholar	Roll No.	Name of Prize	Prize Awarded by
1	Vivek Sarda	ME09B102	Jed-I Project Challenge 2014	Leading companies in partnership with IISc, Bangalore
2	Sripriya Kalidoss, S.D. Karthikeyan and Vivek Sarda	ME11B133, ME11B086, ME09B102	Gandhian Young Technological Innovations (GYTI) Appreciation	Society for Research Initiatives for Sustainable Technologies and Institutions (SRISTI)
3	S. Madhavan	ME12D039	Best Paper Award at the International Welding Symposium (IWS2K14)	Welding Research Institute–Indian Welding Society in Association with Asian Welding Federation(AWF), German Welding Society (DVS) and Messe Dusseldorf
4	R. Viramuthu	ME11D050	Consolation prize	IMTEX 2014
5	Dheeraj Bharadwaj	B.Tech. 2014	Bagyalakshmi Krishna Iyenger Award	IIT Madras

#### Names of students/scholars who won convocation/Institute Day prizes

Sl. No.	Name of the Student/Scholar	Roll No.	Name of Prize	Name of Donor
1	T.S. Anand	ME12M004	Best M.Tech. Project Award	—
2	Vivek Sarda	ME09B102	Best Innovative Student Project	Mr. Chinmay Deodhar
3	Swostik Sourav Dash	ME08B088	J.C. Bose Patent Award	—

### 4.13.3. Faculty and Their Activities

#### Faculty

Name and Qualifications	Major Areas of Specialisation
<b>Professors</b>	
Prasad B.V.S.S.S. [Head]	Blade cooling; thermal hydraulics; computational fluid dynamics (CFD)
Sundararajan T.	Droplet combustion; supersonic reacting jet flows; CFD
Ajit Kumar Kolar	Fluidised bed combustion of coal and biomass fuel cells; advanced power generation system analysis
Babu Viswanathan	CFD; high-speed reacting flows; high-performance computing
Chakravarthy Balaji	Fundamental heat transfer; optimisation of thermal systems; inverse problems in heat transfer; satellite meteorology; numerical weather prediction

Name and Qualifications	Major Areas of Specialisation
Chandramouli P.	Nonlinear dynamics; acoustics and noise control
Sarit Kumar Das	Heat exchangers; two-phase flow; nano fluids; jet oscillations; nuclear heat transfer
Govardhan M.	Contra-rotating turbomachinery; secondary flow loss reduction techniques; rotating vaneless diffusers; CFD
Krishnan Balasubramaniam	Nondestructive evaluation; materials characterisation; online measurements
Maiya M.P.	Sorption technology; metal hydride systems; hybrid air conditioning
Mani A.	Refrigeration; desalination; solar energy
Mayuram M.M.	Surface engineering, wear and wear control; thermal sprayed coatings; fatigue and fracture aspects in design and analysis
Pramod S. Mehta	Combustion modelling; fluid dynamics in I.C. engines; engine emission control
Raju Sethuraman	Computational solid mechanics; fatigue and fracture of materials
Ramesh A.	I.C. engine combustion and emissions; electronic engine management; alternative fuels
Ramesh Babu N.	Manufacturing engineering—advanced machining processes; process modeling; precision machine tool development
Raghu Prakash V.	Fatigue and fracture mechanics, random load life prediction, product design
Seshadri Sekhar A.	Rotor dynamics; condition monitoring; tribology
Shunmugam M.S.	Metrology; manufacturing gear; BTA machining; reaming; centreless grinding; EDM; friction welding; manufacturing automation and robotics; computer applications in manufacturing—process planning, inspection planning, quality control
Shankar Krishnapillai	Structural vibrations; design optimization; system identification
Sitaram N.	Rotor–stator interaction; diffuser flows; boundary layers
Sujatha C.	Vehicle dynamics; machinery diagnostics; signal analysis
Srinivasa Reddy K.	Renewable energies; solar energy; energy conservation; energy environment; heat transfer in two-phase systems
Srinivasan K.	Jet flow and noise; active and passive flow control; measurement and instrumentation
Venkatrathnam G.	Refrigerant mixtures; new processes that work with refrigerant mixtures; improvement of performance of vapour compression refrigerators
Vijayaraghavan L.	Machining; CAD; surface engineering; grinding
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
Shaligram Tiwari	Thermocapillary convection; heat and mass transfer
<b>Associate Professor</b>	
Dhiman Chatterjee	Fluid mechanics; turbomachines; cavitation
Krishna Kannan	Continuum mechanics; thermodynamics; constitutive modelling of polymeric materials
Mallikarjuna J.M.	In-cylinder flow studies in engines; HCCI and GDI engines; alternate fuels
Raghavan V.	Combustion modeling; droplet combustion; laminar flames
Samuel G.L.	Machining; metrology and computer-aided inspection; micromachining
Shamit Bakshi	CFD in I.C. engines, liquid atomization and spray systems, fuel nozzle modeling
Sujatha Srinivasan	Assistive devices; biomechanics; mechanisms
Somashekhar S. Hiremath	Micromachining; mechatronic system design; oil hydraulics; system simulation and modelling; finite element method (FEM)
Sathyan Subbiah	Novel applications of machining; diamond turning; layered material exfoliation; surface texturing
Prabhu Rajagopal	Ultrasonic waves for nondestructive evaluation; health monitoring and process control; computational methods for modelling elastic wave phenomena
<b>Assistant Professors</b>	
Abhijit Sarkar	Vibration; acoustics; computational methods
Amitava Ghosh	Machining and grinding of advantage materials; development of abrasives
Anand T.N.C.	CFD simulations of I.C. engines processes; laser-based diagnostics of sprays and combustion



Name and Qualifications	Major Areas of Specialisation
Anand K.	Low-temperature combustion engines; surrogate modelling of automotive fuels; engine emission reduction through fuel modifications
Anil Kumar Meena	Casting processes; cast irons and steels manufacturing; microstructure and properties of ADI; dry and near-dry machining process
Arvind Pattamatta	Micro-/ nano-scale energy transport; computational heat transfer; mesoscopic modelling; phase change heat transfer; turbulence modelling
Arunachalam N.	Sustainable manufacturing; diagnostics; prognostics and health management of machine tools; smart machine tools; predictive modelling for machining-induced damage assessment
Ashis Kumar Sen	Microfluidics; microsystems; thermo-fluids
Manivannan P.V.	Instrumentation and controls; mechatronic system design; microprocessors
Manoj Pandey	Finite element analysis; dynamics; MEMS
Mayank Mittal	I.C. engines; optical diagnostics; fluid mechanics
Narasimhan Swaminathan	Computational materials science and mechanics; radiation damage in materials; multiscale modelling of complex phenomena in nuclear and fuel cell materials; FEM; continuum mechanics; multiscale modelling; radiation damage in materials; computational materials science
Parag Ravindran	Viscoelastic fluids; constitutive modelling
Ramkumar Penchaliah	Tribology; engine tribology; condition monitoring; nanolubrication
Ratna Kumar Annabattula	Finite element analysis; granular mechanics; buckle-driven delamination; fusion materials; mechanics of micro-systems
Ravikiran Sangras	Experimental fluid mechanics; combustion; turbulent flows
Sateesh Gedupudi	Heat exchangers; two-phase flow; nano fluids; jet oscillations; nuclear heat transfer
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 lightweight structural metallic materials
Soundarapandian S.	Additive manufacturing; computational modelling and simulation
Sourav Ratshit	Laser processing
Srikrishna Sahu	Spray dynamics, two-phase flows, optical diagnostics
Shyama Prasad Das	Unsteady hydro- and aerodynamics; turbomachines; interfacial hydrodynamics; transport
Sundararajan Natarajan	Computational mechanics; moving boundary problems; composite mechanics
K. Vishwanath	Turbomachinery noise
<b>Professors Emeriti</b>	
Ganesan V.	Theoretical and experimental studies in fluid flow, heat transfer and combustion in I.C. engines, gas turbines, after-burners and related engineering equipment
S. Narayanan	Vibration; nonlinear dynamics; random vibration; acoustics; vibration and noise control; smart structures
S.P. Venkateshan	Heat transfer; instrumentation
<b>Visiting Faculty</b>	
James Meyhew	Thermodynamics, fluid mechanics, heat transfer introduction to engineering, aerodynamics, aerospace design, propulsion and mechanical engineering laboratory courses from 23 July to 22 December 2014
O.N. Ramesh	Courses conducted: ME6040—Incompressible fluid flow; Turbulent flows in ME Department. Fourier analysis and random functions in AE Department and also delivering lectures on different aspects of fluid mechanics to research students from 1 August 2014 to 31 January 2015.

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

Sl. No.	Coordinators	Title	Period
<b>Conferences</b>			
1	Raghu Prakash	ASME IMECE 2014 (topic organiser)	November 2014
2	M.P. Maiya	International Conference on Polygeneration 2015	18–20 February 2015

Sl. No.	Coordinators	Title	Period
3	G.L. Samuel	ICMMM2014	8–9 August 2014
<b>Seminars</b>			
1	A. Ramesh	Performance and Exhaust Emissions of a Diesel Engine Operated on Natural Gas and Diesel Pilot, IIT Madras–Ashok Leyland	28 January 2015
2	A. Ramesh	HCCI Engines	28 January 2015
3	Mayank Mittal	Performance and Exhaust Emissions of a Diesel Engine Operated on Natural Gas and Diesel Pilot, IIT Madras–Ashok Leyland	28 January 2015
4	M. Murali Krishna, Mayank Mittal	Recent Trends in Internal Combustion Engines, Mechanica, IIT Madras 2015	14 March 2015
<b>Symposia</b>			
1	Sathyan Subbiah	Single-Point Diamond-Turning Theme Meeting, ICSR, IIT Madras (funding of ₹2.67 lakhs from OPSA)	31 January 2015
<b>Workshops</b>			
1	Arvind Pattamatta	Indo–German Workshop on Modelling and Measurement Techniques for Micro-scale Flows	23–25 February 2015
2	M.P. Maiya	The Fourth International Workshop on Ionic Liquids for Advanced Energy Systems (WILS2015), University Rovira I Virgili, Tarragona (Spain)	15–16 January 2015
3	S. Varunkumar, P.A. Ramakrishna	Second Prof. P.J. Paul Memorial Combustion Researchers Workshop	24–25 January 2015
<b>Short-term courses</b>			
1	K.S. Reddy	Advanced Solar Thermal Energy Technologies: Next-Generation CSP, Poly-generation and Storage	16–17 February 2015, IISc, Bangalore
2	C. Sujatha	Vibration Laboratory Course for Caterpillar	20 December 2014 to 5 January 2015
3	S. Narayanan	Noise Vibration and Harshness Analysis, for BEML Engineers	7–18 October 2014
4	P. Ramkumar	Transmission System Design for BEML Engineers	5–12 August 2014
5	Sushanta Kumar Panigrahi, G.L. Samuel	Advances in Composite Materials and Machining	2–6 February 2015
6	Anand K.	Expert in Diesel and Gasoline Engines for TAFE Engineers	1 November 2014 to 31 January 2015

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

Sl. No.	Name of Faculty Member	Title	Institution	Period
<b>Workshops</b>				
1	K. Anand	Improving Energy Sustainability: Conventional and Renewable	IIT Madras	5 December 2014
2	K. Anand	Promise and Challenges of Biodiesel as Sustainable Fuel for Future Use	IIT Madras	19–21 February 2015
3	Mayank Mittal	Faculty Development Programme	IIT Madras	January 2015
4	P. Ramkumar	Sixth Summer School on Tribology	Indian Oil Corporation, Gurgoan	23–27 June 2014
5	M.P. Maiya	The Fourth International Workshop on Ionic Liquids for Advanced Energy Systems (WILS2015)	Universitat Rovira i Virgili, Tarragona, Spain	15–16 January 2015
6	A. Mani	Roll on Technical Education Energy Conservation ISEE Conference	Sona Engineering College, Salem	5 February 2015
7	A. Mani	Roll on Technical Education Energy Conservation—ISTE Conference	Sona Engineering College, Salem	5 February 2015

Sl. No.	Name of Faculty Member	Title	Institution	Period
8	Srikrishna Sahu	Second P.J. Paul Memorial Workshop on Combustion	Chennai	24 January 2015
9	Shyama Prasad Das	Workshop on Fluid Dynamics: Theory and Industrial Applications	IIT Madras	17–22 November 2014
10	Ashis Kumar Sen	Indo-German Workshop on Micro-scale Flows	IIT Madras	18–21 February 2015
11	A. Ramesh	Ninth International Green Energy Conference	Tianjin, China	25–28 May 2015
12	A. Ramesh	SAE 2014, Small Engine Technology Conference	Pisa, Italy	17–20 November
13	Sateesh Gedupudi	Indo-German Workshop on Modeling and Measurement Techniques for Micro-scale Flows (IGWMF)	IIT Madras	23–25 February 2015
<b>Seminars</b>				
1	M.M. Mayuram	Institute Conference on Material Science and Technology (presented paper)	Pittsburg, USA	October 2014
2	Sujatha Srinivasan	National Seminar on Assistive Technology in Education and Sports for Total Inclusion of Persons with Disabilities	Ramakrishna Mission Vivekananda University, Coimbatore campus	6–7 February 2015
3	M.P. Maiya	5th International Seminar on Engineering Thermodynamics of Fluids	URV Tarragona, Spain	24 July 2014
4	Srikrishna Sahu	Second P.J. Paul Memorial Workshop on Combustion	Chennai	24–25 January 2015
<b>Symposia</b>				
1	Sujatha Srinivasan	Robotics in Medicine	DBT and IIST, Thiruvananthapuram	10 January 2015
2	A. Mani	Trombay Symposium on Desalination and Water Re-use Multi-effect Desalination System for Sea Water, Homi Bhabha Centre for Science Education	Tata Institute of Fundamental Research, Mankhurd, Mumbai	22–23 January 2015
<b>Conferences</b>				
1	J.M. Mallikarjuna	SIAT 2015	ARAI, Pune	21–23 January 2015
2	S. Narayanan	Ninth International Conference on Condition Monitoring and Mechanical Failure Prevention Technologies (CMMFPT-2014), Manchester, UK	British Institute of Non-destructive Testing (BINDT)	10–12 June 2014
3	S. Narayanan	Eighth European Nonlinear Dynamics Conference (ENOC2014), Vienna, Austria	Technical University, Vienna	6–11 July 2014
4	S. Narayanan	National Symposium on Acoustics (NSA 2014), Mysuru	All India Institute of Speech and Hearing	12–14 November 2014
5	Ratnakumar Annabattula	Role of Interface Adhesion on Buckling-Assisted Cracking in Hard Thin Films	Fracture: From micro-scale processes to macro-scale response	6–10 January 2015
6	M.P. Maiya	ASME 2014 International Mechanical Engineering Congress and Exposition	Montreal, Canada	14–20 November 2014
7	M.P. Maiya	Third International Energy Technologies Conference ENTECH'15	Yildiz Technical University, Istanbul, Turkey	21–23 December 2014
8	Dhiman Chatterjee	ICMEMS 2015	IIT Madras	December 2014
9	Ashis Kumar Sen	Fourth European Conference on Microfluidics	Ireland	8–12 December 2014
10	B.V.S.S. Prasad	Asian Congress on Gas Turbines	Seoul, Korea	18–20 August 2014

Sl. No.	Name of Faculty Member	Title	Institution	Period
11	B.V.S.S.S. Prasad	Fifth International and 41st Conference on Fluid Mechanics and Fluid Power (FMFP 2014)	IIT Kanpur	12–14 December 2014
12	B.V.S.S.S. Prasad	ASME Gas Turbine India Conference	New Delhi	15–17 December 2014
13	B.V.S.S.S. Prasad	National Conference on Advances in Thermal Engineering	ISM Dhanbad	19–20 December 2014
14	P. Ramkumar	National Tribology Conference	PES University, Bengaluru	15–17 December 2014
<b>Short-term courses</b>				
1	K. Anand	Engine Testing and Performance	BEML Limited, Kolar, Karnataka	22–23 July 2014
2	A. Ramesh	Fuel Injection and Turbocharging	BEML Limited, Kolar, Karnataka	20–22 July 2014
<b>MEETINGS</b>				
1	N. Ramesh Babu	Board of Governors (member)	Andhra University College of Engineering, Visakhapatnam	12 June 2014
2	N. Ramesh Babu	Syllabus Revision Committee (expert member)	Vignan University, Andhra Pradesh	24 March 2014
3	N. Ramesh Babu	Board of Studies (member)	GITAM University, Visakhapatnam	28–29 March 2014
4	N. Ramesh Babu	Project Advisory Group (member)	IIT Jodhpur	9–10 May 2014
5	N. Ramesh Babu	Faculty Selection Committee (expert member)	IIT Bombay	28 November 2014
6	N. Ramesh Babu	Faculty Selection Committee (expert member)	BIT Mesra	2 December 2014
7	N. Ramesh Babu	Academic Council (member)	Vel's Tech University, Chennai	14 February 2014
8	N. Ramesh Babu	Board of Studies (member)	Thiagarajar College of Engineering, Madurai	28 June 2014
9	N. Ramesh Babu	M.Tech. User-Oriented Programme on Automotive Technology (Coordinator)	TVS Motor Company Limited, Hosur	2011–2017
10	N. Ramesh Babu	Academic Council (member)	Mepco Schlenk Engineering, College, Sivakasi	2013–2015
11	N. Ramesh Babu	Departmental Promotion Committee (expert member)	ISRO, Bangalore	29–30 May 2014
12	N. Ramesh Babu	ARDB Materials and Manufacturing Panel (member)	Government of India	2011–2015
13	N. Ramesh Babu	Development Council on Machine Tools, Department of Heavy Industry (member)	Government of India	December 2014
14	N. Ramesh Babu	Production and Manufacturing Sector council, Department of Employment and Training (member)	Government of India	2013 onwards

#### Special lectures delivered by faculty members at other institutions

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
1	J.M. Mallikarjuna	Biodiesel production methods	University College of Engineering, Villupuram	5 March 2015
2	J.M. Mallikarjuna	Biodiesel production methods	IGCS Workshop on Promise and Challenges of Biodiesel as Sustainable Fuel for Future Use	19 February 2015

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
3	C. Balaji	The joy of teaching	Christ Junior College, Bangalore	24 June 2014
4	C. Balaji	A new ensemble-based data assimilation algorithm to improve track prediction of tropical cyclones	Centre for Applicable Mathematics, Tata Institute of Fundamental Research, Bangalore	1 July 2014
5	C. Balaji	Design in nature and engineering	Christ Junior College, Bangalore	2 July 2014
6	C. Balaji	The joy of teaching	PESIT University, Bangalore	4 July 2014
7	C. Balaji	The joy of research	Divecha Centre for Climate Change and Centre for Atmospheric and Oceanic Sciences, IISc, Bangalore	4 July 2014
8	C. Balaji	Design in nature and engineering	Sri Ramakrishna Vidyashala, Mysore	5 July 2014
9	C. Balaji	The joy of teaching	Faculty Development Workshop, K.S. Rangasamy College of Technology, Tiruchengode, Erode	12 December 2014
10	C. Balaji	The joy of research	Faculty Development Workshop, K.S. Rangasamy College of Technology, Tiruchengode, Erode	12 December 2014
11	C. Balaji	Vedanta and scientific temper	Centenary celebration of the magazine Vedanta Kesari, Mylapore	13 December 2014
12	C. Balaji	Assimilation of multi-channel radiances in mesoscale models with an ensemble technique to improve track forecasts of tropical cyclones	Advances in Thermal Engineering, ISM, Dhanbad	December 2014
13	S. Narayanan	Dynamics of nonlinear oscillators with friction	University of Aberdeen, UK (CADR seminar), Centre for Advanced Dynamics Research	26 June 2014
14	P. Chandramouli	Transient vibration analysis	VIT, Chennai	March 2015
15	Sujatha Srinivasan	Assistive device development for locomotor disabilities	Ramakrishna Mission Vivekananda University, Coimbatore campus	6 February 2015
16	Abhijit Sarkar	Engine dynamics	Government College of Engineering, Kannur	2 March 2015
17	Ratnakumar Annabattula	Mechanics of granular systems	Defence Electronics Research Laboratory, Hyderabad	9 February 2015
18	Manoj Pandey	Plasticity in FEA	IIT Hyderabad	17 December 2014
19	P Ramkumar	Structural design	Caterpillar	28 June & 12 July 2014
21	P. Ramkumar	Engine tribology	SA Engineering College	5 March 2015
22	P. Ramkumar	Electrostatic condition monitoring in engine tribology (keynote speech)	Jaipur Engineering College and Research Centre, Jaipur	14–15 March 2015
23	M.P. Maiya	Characterisation of solid state hydrogen storage materials	Fifth International Seminar on Engineering Thermodynamics of Fluids, URV Tarragona, Spain	24 July 2014
24	Dhiman Chatterjee	Cavitation in hydroturbomachines	VIT, Chennai	16 March 2015
25	Ashis Kumar Sen	Microfluidics for biomedical applications	CET, Thiruvananthapuram	30 January 2015
26	Ashis Kumar Sen	Microfluidics: Theory and applications	NIT Trichy	9 January 2015
27	B.V.S.S.S. Prasad	Gas turbine heat transfer (at ASME Gas Turbine Workshop)	NIT Surat	23 February 2014

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
28	B.V.S.S. Prasad	Gas turbine heat transfer (at National Propulsion Conference)	IIT Bombay	25 February 2014
29	A. Ghosh	Composite materials and grinding	Short-term course, 'Recent Advances in Composite Materials and Machining', IIT Madras	January 2015
30	G.L. Samuel	1. Robotics, automation and mechatronics 2. Advances in manufacturing	JNTU, Hyderabad	12–13 March 2014
31	G.L. Samuel	Recent trends in industrial metrology and calibration of measuring instruments	PSG College of Technology	20–23 April 2014
32	G.L. Samuel	Recent advances in manufacturing	SA Engineering College	3 February 2014
33	G.L. Samuel	1. Emerging research and advances in mechanical sciences 2. Advances in manufacturing process	Velammal Engineering College	28 March 2014
34	G.L. Samuel	1. Advances in manufacturing process 2. Micromachining	JNTU, Kakinada	28 February–1 March 2014
35	S. Soundarapandian	Localised laser microprocessing	NIT Trichy	3 April 2014
36	S. Soundarapandian	Innovation: An idea or end product	NS College of Engineering and Technology, Theni	13 March 2015
37	Sushanta Kumar Panigrahi	Bulk ultrafine grained aluminum alloys produced by cryorolling: New horizons in development	IISc, Bangalore	12 May 2014
38	Sushanta Kumar Panigrahi	Influence of friction stir processing on material Flow behaviour and microstructural modification of an Al–Si cast	IISc, Bangalore	3 September 2014
39	Sushanta Kumar Panigrahi	Advances in joining	Westin Hotel, Chennai	18 September 2014
40	Sushanta Kumar Panigrahi	A combined effect of annealing and ageing treatment on machining characteristics and mechanical properties of cryorolled Al alloys	Metz, France	1 July 2014
41	Sushanta Kumar Panigrahi	Research on solid state joining and bulk ultrafine grained materials	Ecolo Centrale Nantes, Nantes, France	7 July 2014
42	Sushanta Kumar Panigrahi	Introduction and overview of composite materials	IIT Madras	2 February 2015
43	Sushanta Kumar Panigrahi	Emerging trends in friction stir processing	IIT Madras	5 March 2015
44	Sathyan Subbiah	Machining: Micro, meso and nano	Workshop on Recent Research Trends in Manufacturing Engineering, Anna University, Chennai	10–11 October 2014
45	N. Ramesh Babu	Unconventional machining of composites	IIT Madras	4 February 2014
46	N. Ramesh Babu	Ice-bonded abrasive polishing process	NIT Trichy	21 February 2014
47	N. Ramesh Babu	Sheet metal forming	CII, Chennai	17 November 2014



Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
48	M.S. Shunmugam	Micro-machining of polymer matrix composites	IIT Madras	2–6 February 2015
49	M.S. Shunmugam	Virtual manufacturing	DRDL, Hyderabad	17 November 2014
50	M.S. Shunmugam	Research design and methodology	GITAM University, Visakhapatnam	14–15 March 2015
51	Somashekhar S. Hiremath	Micro air vehicles (MAVs): A new dimension in flight (at the Third International Conference on Recent Advances in Design, Development and Operation of Micro Air Vehicles)	JNTU, Hyderabad	5–7 November 2014
52	Somashekhar S. Hiremath	Mobile hydraulics	BEML Nagar, KGF	24 November–2 December 2014
53	P.V. Manivannan	Automotive ECU design	Department of Engineering Design, IIT Madras	5 February 2015
54	Somashekhar S. Hiremath	Hydraulic hybrid vehicles (technical talk at AICTE Short Term Course on Recent Advances in Automotive Systems)	Department of Engineering Design, IIT Madras	4 February 2015
55	A. Ramesh	Methods to boost the performance of small two- and four-stroke engines (invited talk)	SAE/JSAE Small Engine Technology Conference and Exhibition in Pisa, Italy	17–20 November 2014
56	A. Ramesh	HCCI engine control (invited talk)	Sophia University, Japan	9 July 2014
57	N. Arunachalam	Sustainable manufacturing (invited talk at two-day workshop on green manufacturing)	MIT, Anna University	17 February 2015
58	N. Arunachalam	Intelligent grinding (technical talk at one-day workshop on smart grinding technology)	Corborundum Universal Private Limited, New Delhi	25 March 2015
59	N. Arunachalam	IT-enabled manufacturing (technical talk at IT in Manufacturing, one-day national colloquium)	Society of Aerospace Manufacturing Engineers, VSSC, Thiruvananthapuram	30 March 2015

#### Visits abroad by faculty members

Sl. No.	Name of Faculty Member	Place Visited	Date of Visit	Purpose of Visit	Funding from
1	Sateesh Gedupudi	UK	6–11 September 2014	To present a paper at Fourth Micro and Nano Flows Conference and to explore possible collaboration	New Faculty Initiation Grant
2	S. Narayanan	UK	10–12 June 2014	To present a paper at the Ninth International Conference on Condition Monitoring and Mechanical Failure Prevention, Manchester, UK	PCF and personal funds
3	S. Narayanan	UK	25–27 June 2014	Technical visit to University of Aberdeen and delivering a seminar talk	—
4	S. Narayanan	UK	30 June to 3 July 2014	Technical visit to University of Swansea, Swansea	—
5	S. Narayanan	Austria	6–11 July 2014	Presenting a paper at the European Nonlinear Oscillations Conference, Technical University, Vienna	PCF and personal funds
6	Raghu Prakash	Italy	November–December 2014	Erasmus-Mundus Fellowship	Erasmus-Mundus, Europe

Sl. No.	Name of Faculty Member	Place Visited	Date of Visit	Purpose of Visit	Funding from
7	Abhijit Sarkar	Australia	14 November to 2 December 2014	Conference, visit to University of New South Wales	CPDA alumni funds, UNSW
8	Manoj Pandey	Germany	22 May 2014	Research collaboration	DAAD
9	A.S. Sekhar	Australia	16–19 November 2014	Presenting paper at Inter-Noise	CPDA/project funds
10	M.P. Maiya	URV Tarragona, Spain	10 June to 29 July 2014	Joint project (experienced researcher)	Project
11	M.P. Maiya	Montreal, Canada	13–21 November 2014	Conference	—
12	M.P. Maiya	Tarragona, Spain	22 November to 21 December 2014	Joint project (experienced researcher)	—
13	M.P. Maiya	Istanbul, Turkey	22–25 December 2014	Conference	—
14	M.P. Maiya	Tarragona, Spain	14–15 January 2015	Workshop	—
15	Dhiman Chatterjee	Germany	26 May to 25 July 2014	Visting faculty, TU Darmstad	DAAD
16	Ashis Kumar Sen	Ireland	8–12 December 2014	To attend the Fourth European Conference on Microfluidics	CPDA
17	M. Govardhan	Switzerland	11–23 July 2014	Private	Self
18	M. Govardhan	USA	24 July to 12 August 2014	Private	Self
19	Anil Kumar Meena	Austria	15–17 April 2015	Conference	CPDA
20	Sushanta Kumar Panigrahi	France	30 June to 9 July 2014	To present a paper at an international conference at Metz, France	CPDA, IIT Madras
21	Sathyan Subbiah	USA	9–13 June 2014	To attend ASME Manufacturing Science and Engineering Conference	Self
22	Sathyan Subbiah	The Netherlands	17 September 2015	To attend 2014 European PV Solar Energy Conference and Exhibition (EUPVSEC)	Self
23	Sathyan Subbiah	Singapore	8–19 December 2014	Visit to NTU Singapore for 2 weeks on invitation	NTU
24	Sathyan Subbiah	Italy	30 March to 2 April 2015	To attend 10th International Conference on Micro Manufacturing (ICOMM)	Self
25	N. Ramesh Babu	UK	15–19 June 2014	UK–India Workshop on Distributed Manufacturing	British High Commission, India
26	N. Ramesh Babu	UK	28 July to 1 August 2014	Indo–UK S&T Task Force Meeting	DST, GoI, New Delhi
27	P.V. Manivannan	USA	19 July to 8 August 2014	To teach the course ‘Mechatronics and Embedded Control’ (Visiting Professor)	UNL, Lincoln, Nebraska
28	A. Ramesh	Japan	3–12 July 2014	Joint research proposal on engine control	Sophia University Japan
29	A. Ramesh	China	25–28 May 2014	Ninth International Green Energy Conference	IIT Madras
30	A. Ramesh	Italy	17–20 November 2015	SAE Small Engine Technology Conference	IIT Madras

## Honours and awards obtained by faculty members

Sl. No.	Name of Faculty Member	Name of Award	Awarded by	Awarded for	Date of Award
<b>Honours</b>					
1	P.V. Manivannan	Teaching Fellowship, within the Erasmus Mundus Distinguished Lecture Series	Erasmus Mundus, EU	Teaching the course 'Embedded Systems' at Technical University of Kaiserslautern, Germany	19 May to 19 July 2014
2	A. Ramesh	Baghyalakshmi Krishna Iyengar Award	IIT Madras	Guiding the best B.Tech. project	Institute Day
<b>Awards</b>					
1	Sujatha Srinivasan	JC Bose Patent Award	—	Swimming pool lift for physically challenged	Alumni Day (19 July 2015)

## Books, monographs authored/co-authored

Sl. No.	Name of Faculty Member	Title	Publisher	Author/Co-author
1	C. Balaji	<i>The Joy of Research</i>	Ane Books India Private Limited, New Delhi	—
2	K. Srinivasan	<i>Frontiers in Aeroacoustics</i>	Multi-Science Publishing Company, UK	Prof. Ganesh Raman

## Fellowships of academies and professional societies

Sl. No.	Name of Faculty Member	Year of Admission
<b>Humboldt Fellowship</b>		
1	Arvind Pattamatta	2013–2014
2	S. Narayanan	1985
3	M. Prakash Maiya	2012
<b>INAE</b>		
1	S. Narayanan	1997
2	Arunn Narasimhan	2015
<b>Others</b>		
1	Fellow of Aeronautical Society of India	May 2014
2	Fellow of Royal Aeronautical Society (UK)	February 2015

## Editorial boards of journals

Sl. No.	Name of Faculty Member	Position (Editor/Member)	Journal
1	S. Narayanan	Member	<i>Probabilistic Engineering Mechanics</i> (Elsevier)
2	S. Narayanan	Member	<i>International Journal of Computational Methods</i> (World Scientific)
3	S. Narayanan	Member	<i>Advances in Engineering Sciences and Applied Mathematics</i> (Springer)
4	S. Narayanan	Member	<i>Journal of Acoustical Society of India</i>
7	M.P. Maiya	Member	<i>International Journal of Sustainable and Built Environment</i>
8	M.P. Maiya	Member	<i>International Journal of Low Carbon Technology</i>
9	M. Govardhan	Member	<i>International Journal of Thermal Science</i>
10	N. Sitaram	Editor	<i>Journal Advance Research in Applied Mechanics &amp; Computational Fluid Dynamics</i>
11	N. Sitaram	Editor	<i>Journal of Advance Research in Mechanical Engineering and Technology</i>
12	N. Sitaram	Editor	<i>STM Trends in Mechanical Engineering and Technology</i>
13	N. Sitaram	Editor	<i>Journal of Thermal Engineering and Application</i>
14	A. Ghosh	Reviewer	<i>International Journal of Advanced Manufacturing Technology</i>
15	A. Ghosh	Reviewer	<i>Journal of Engineering Manufacture: Part B. Proceedings of the Institution of Mechanical Engineers</i>

Sl. No.	Name of Faculty Member	Position (Editor/Member)	Journal
16	A. Ghosh	Reviewer	<i>Sadhana: Academy Proceedings in Engineering Sciences</i>
17	N. Ramesh Babu	Associate Editor	<i>Sadhana: Academy Proceedings in Engineering Sciences</i>
18	N. Ramesh Babu	Member	<i>International Journal of Additive and Subtractive Materials Manufacturing</i>
19	M.S. Shunmugam	Editor	<i>The International Journal of Advanced Manufacturing Technology</i>
20	M.S. Shunmugam	Member	<i>International Journal of Machine Tools and Manufacture</i>
21	M.S. Shunmugam	Member	<i>International Journal of Machining &amp; Forming Technology</i>
22	M.S. Shunmugam	Member	<i>Journal of Mechatronics and Intelligent Manufacturing</i>

#### 4.13.4. Design and Development Activities

##### New facilities added or major equipment procured

Sl. No.	Name of Equipment	Value (lakhs of ₹)
1	Phase space motion capture system	30
2	Nd:Yag double pulsed laser	23
3	Servo motor with drive	2.3
4	High-speed camera	14
5	Fluorescence attachment	7
6	Single-channel hot-wire anemometer	7
7	Automatic radial traverse mechanisms	3
8	Ultrasonically coupled block sonotrode for hybrid machining	Being processed
9	Portable refrigerant CNC table for precision dressing	2.5
10	State-of-the-art high-vacuum precision brazing equipment	40

##### Patents

##### Patents filed

Sl. No.	Name of Faculty Member	Topic of Patent
1	Saransh Jain, Anand T.N.C.	Mixture preparation unit for port fuel injection engines
2	Pratyush Garg, Anand T.N.C., SrikanthVedantam	Mechanism and methods for controlling lift and timing of engine valves using an inclined profile on the rocker arm
3	SrikanthVedantam, Pratyush Garg, Anand T.N.C.	Method of retrofitting and actuating variable cam profile for controlling lift and timing of engine valves
4	Sujatha Srinivasan, T.S. Anand	A prosthetic knee for uneven terrain
5	Dhiman Chatterjee (jointly with Mr. Joe Jacob, a research scholar (5427/CHE/2014, 30 October 2014)	A hybrid turbine system and a method of operating hybrid turbine system
6	Ashis Kumar Sen (with Anoop R.)	Capillary-driven flow enhancement in polymer microchannels having flexible wall(s) (application no. 944/CHE/2015)
7	A. Ramesh	A method of combusting a gaseous fuel containing at least one combustible gas in an internal combustion engine (application no. 104/CHE/2014 dated 9 January 2014)
8	A. Ramesh	Twin injector system for two stroke spark ignition engines and uses thereof (application no. 5296/CHE/2014)

##### Patents awarded

Sl. No.	Name of Faculty Member	Topic of Patent
1	S. Soundarapandian	Laser-assisted machining (LAM) of hard tissues and bone (US 20140263214 A1)

#### 4.13.5. Research and Consultancy

##### Sponsored research projects (ongoing and new)

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Coordinators
1	Development of an Ultrasonic Atomisation System for Small Engines	23 July 2013 to 22 July 2015	DST Fasttrack Scheme	20.3	Anand T.N.C.
2	Composition-Property-Performance Relationship of Biodiesel Fuels of Indian and German Origin for Use in Compression Ignition Engines	November 2013 to March 2015	DST	50	Pramod S. Mehta
3	Investigation of Heat Transfer Augmentation on Dimpled Surfaces Using Wall Jet and Impinging Jet Flows	2012–2015	DST	2.2	Arvind Pattamatta
4	Experiments and Modelling of the Size and Concentration Effect on the Enhancement of Various Modes of Heat Transfer in Nanofluids and Their Application in Automotive Engine (Co-PI)	2013–2016	DMSRDE, DRDO, India	7.5	Arvind Pattamatta
5	Impingement Heat Transfer Measurements Using Thermochromic Liquid Crystal Paint Technique	2014–2015	GE India, Bangalore	16.29	Arvind Pattamatta
6	Seat Attenuation System for Crew Module	2014–2016	VSSC (ISRO)	10	P. Chandramouli
7	The Vibration-Based Technique for Fatigue Shaft Crack Detection and Life Estimation of Rotors	2012–2015	CSIR, New Delhi	22.67	A. Seshadri Sekhar
8	Effect of Retained Austenite on Rolling Contact Fatigue Life of AISI 52100 Bearing Steel	2014–2017	DST, New Delhi	39.76	M. Kamaraj (MME), A. Seshadri Sekhar
9	Exercise Machine for Users with Lower Limb Disabilities	October 2014 to August 2015	IC&SR, IIT Madras	3.3	Sujatha Srinivasan
10	Mobility Device for Children with Cerebral Palsy (Saathi Walker)	October 2014 to August 2015	IC&SR, IIT Madras	0.5	Sujatha Srinivasan
11	Affordable Motorised Wheelchair	October 2014 to August 2015	IC&SR, IIT Madras	0.75	Sujatha Srinivasan
12	Biomechanical Analysis and Design of Improved Orthotic and Prosthetic Knee Joints	June 2014 to June 2016	DBT	44	Sujatha Srinivasan
13	Clinical Trials for Semi-flexion Orthotic Knee	November 2013 to June 2015	SBMT	9.96	Sujatha Srinivasan
14	Training and Mobility Device for Children with Cerebral Palsy	September 2013 to December 2014	ISP, IIT Madras	1.2	Sujatha Srinivasan
15	Assistive Gait Orthosis	September 2013 to December 2014	ISP, IIT Madras	2	Sujatha Srinivasan
16	Development of a Standing Wheelchair	January 2013 to June 2015	SRP, IIT Madras	6.5	Sujatha Srinivasan
17	Strain Measurement Along Two Mutually Perpendicular Directions During Creep Test on Metals	February 2014 to February 2015	IC&SR, IIT Madras	5	Parag Ravindran

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Coordinators
18	Investigation of Damage Mechanisms in Composite Material Under Cyclic Loading	6 February 2012 to 5 February 2015	AR&DB	75.71	H.S.N. Murthy, Parag Ravindran, P. Sriram
19	Solar Cooling and Production of Potable Water with Two-Stage Silica Gel-Water Adsorption System	2012–2015	DST	35.0	S. Srinivasa Murthy, M. Prakash Maiya
20	Development of Solar Tri-generation System for Cooling, Heating and Potable Water	2013–2016	DST	88.59	K.S. Reddy, M. Prakash Maiya
21	Solar Absorption Refrigeration Systems Operating with Ionic Liquids as Absorbents and Ammonia as the Refrigerant	2012–2015	DST	49	G. Venkatarathnam, R. Gardas
22	Thermodynamic refrigeration of IV Generation Working Fluids for Renewable Energy Technologies	2012–2015	DST	9	G. Venkatarathnam
23	Development of a Stirling Engine: First Step for Micro CCHP Systems Using Biomass and Solar Energy	11 February 2015 to 10 February 2016	IC&SR, IIT Madras	10	S. Varunkumar, T. Sundararajan
24	Experimental and Numerical Investigation of Bubble Motion Under Combined Hydrodynamic and Acoustic Field	2 September 2011 to 31 March 2015	Naval Research Board, New Delhi	72.004	Dhiman Chatterjee, Shamit Bakshi
25	A Study of the Mechanics of the Sitar String	14 February 2014 to 31 March 2015	IIT Madras	9.55	Sandipan Bandyopadhyay, S.P. Das, Dhiman Chatterjee
26	Experimental and Numerical Investigation of Ultrasonically Excited Encapsulated Microbubbles Inside Flexible Tubing	11 February 2015 to 10 February 2016	IIT Madras	10	Dhiman Chatterjee, Mukesh Doble
27	Sorting of Deformable Objects in a Microchannel	2013–2016	DBT	48.5	Ashis Kumar Sen, Mukesh Doble
28	Development of a MEMS-Based Microthruster	2013–2016	ISRO	38.0	Ashis Kumar Sen, Mahesh Panchagnula
29	Conjugate Heat Transfer Experiments and Analysis for Predicting the External and Internal Heat Transfer Coefficients of Gas Turbine Vanes and Blades	April 2011 to April 2014	GATET	45	B.V.S.S.S. Prasad, Dhiman Chatterjee, Y.V.S.S. Sanyasiraju
30	Aerodynamics and Acoustics of Axial Flow Fans with Serrated Trailing Edges	2014–2015	AR&DB	25	K. Viswanath
31	Effect of Forward Sweep Blades on the Performance of Axial Flow Compressor Stage	10 February 2015 to 9 February 2017	GTRE	23.2	M. Govardhan
32	End-Wall Contouring and Leading Edge Fillets for Reducing Secondary Losses in an Axial Turbine Stage	10 February 2015 to 9 February 2017	GTRE	16.075	M. Govardhan
33	Development of High-Performance Active Brazed Bond for Producing Superabrasive Grinding Tools	2013–2016	DST	47	Amitava Ghosh (PI)
34	Synthesis of Nano-engineered Cutting Fluid and Its Cryo-aided Application to Improve Surface Integrity of Ground EN31 steel and Ti-Alloy (A Sustainable Approach)	—	IC&SR, IIT Madras; NFSG	20	Amitava Ghosh (P)



Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Coordinators
35	Ultrasonic Assisted Finish Grinding of Ceramic Under Nano-SQCL Environment	2015–2016	IC&SR, IIT Madras	10	Amitava Ghosh (PI), A. Sarkar (Co-PI), Prabhu Rajagopal
36	Development of Next Generation High Precision Grinding Machine Tool (Co-PI)	2012–2016	DST	285	N. Ramesh Babu (P), Amitava Ghosh (Co-PI)
37	Performance Analysis and Development of Compact Vapour Jet Refrigeration System	August 2012 to July 2015	DST	88	A. Mani
38	Heat Transfer Enhancement Studies Using Metallic Foam Tubes in Multi-effect Distillation System	February 2014 to March 2017	Board of Research for Nuclear Sciences	19.81	A. Mani
39	Solar Multi-effect Desalination System	November 2014 to October 2016	Ministry of Earth Sciences	94.52	A. Mani
40	Development of Bi-Metallic Joining Technique and Realisation of Bi-metallic Adaptors for Launch Vehicles	2013–2016	ISRO, India	32	Sushanta Kumar Panigrahi, G.D. Janaki Ram
41	Development and Studies on Machinability and Mechanical Properties of Nano/Ultrafine Grained Magnesium Alloys	2012–2015	IIT Madras	23	Sushanta Kumar Panigrahi
42	Machinability and Mechanical Properties of Ultrafine Grained Automotive Aluminium Alloys	2012–2014	Renault Nissan Technology and Business Centre India Private Limited	10	Sushanta Kumar Panigrahi
43	Development of Next Generation High Precision Grinding Machine Tool	January 2012 to May 2016	OPSA	284.90	N. Ramesh Babu
44	Biomechanical Analysis and Design of Improved Orthotic and Prosthetic Knee Joints	2014–2016	DBT	44	Sujatha Srinivasan
45	Composition–Property–Performance Relationship of Biodiesel Fuels of Indian and German Origin for Use in Compression Ignition Engines	November 2013 to March 2015	DST	50	Pramod S. Mehta, Anand K.
46	Development of a Mode Switching Biogas–Biodiesel/ Diesel HCCI Engine with a High Pressure Common Rail Injection System	2011–2014	DST	86	A.Ramesh, K.M. Mallikarjuna
47	Development and Demonstration of Control Strategies for Common Rail Direct Injection Engines (CRDI) in a Reference Engine and Extension of the Technology to Armoured Fighting Vehicles	2013–2016	DRDO	299.63	A. Ramesh, J.M. Mallikarjuna
48	Experiments and Modelling of the Size and Concentration Effect on the Enhancement of Various Modes of Heat Transfer in Nano Fluids and Their Application in Automotive Engines	2013–2016	DRDO	75.6	Sarit Kumar Das, Aravind Pattamata, A. Ramesh

**Industrial consultancy projects (ongoing and new)**

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹)
1	Anand T.N.C.	MK10 HSPP BIS Approval	Greaves Cotton Limited	1.9
2	A.S. Sekhar, Abhijit Sarkar	Vibration and Stress Analysis of LP Stage Moving Blade for 195 MW Thermal Power Plant	BHELM, Bhopal	8
3	P. Chandramouli, A.S. Sekhar, Abhijit Sarkar, Parag Ravindran, Krishna Kannan, C. Sujatha, Shankar Krishnapillai	Seismic Testing of Electrical Equipment	ABB	6.0
4	P. Chandramouli, A.S. Sekhar, Abhijit Sarkar, Parag Ravindran, Krishna Kannan, C. Sujatha, Shankar Krishnapillai	Seismic Testing of Electrical Equipment	Crompton Greaves Limited	15.0
5	P. Chandramouli, A.S. Sekhar, Abhijit Sarkar, Parag Ravindran, Krishna Kannan, C. Sujatha, Shankar Krishnapillai	Seismic Testing of Electrical Equipment	Alstom T&D India Limited	20.0
6	P. Chandramouli, A.S. Sekhar, Abhijit Sarkar, Parag Ravindran, Krishna Kannan, C. Sujatha, Shankar Krishnapillai	Seismic Testing of Electrical Equipment	Toshiba Transmission India	11.0
7	P. Chandramouli, A.S. Sekhar, Abhijit Sarkar, Parag Ravindran, Krishna Kannan, C. Sujatha, Shankar Krishnapillai	Seismic Testing of Electrical Equipment	Lamco Industries, Hyderabad	15.0
8	P. Chandramouli, A.S. Sekhar, Abhijit Sarkar, Parag Ravindran, Krishna Kannan, C. Sujatha, Shankar Krishnapillai	Seismic Testing of Electrical Equipment	Siemens	2.5
9	P. Chandramouli, A.S. Sekhar, Abhijit Sarkar, Parag Ravindran, Krishna Kannan, C. Sujatha, Shankar Krishnapillai	Seismic Test of Radiators	Fine Radiators	4.5
10	P. Chandramouli, A.S. Sekhar, Abhijit Sarkar, Parag Ravindran, Krishna Kannan, C. Sujatha, Shankar Krishnapillai	Seismic Test of Electrical Equipment	Elettromeccaniche SpA, Italy	4.0
11	P. Chandramouli	Modal Correlation of Alternator Casing	Lucas TVS	1.2
12	P. Chandramouli	Measurement of Engine Vibrations to Extract Modal Data	LTIES	1.2
13	P. Chandramouli	Turbogenerator Balancing in Thermal Power Plant	OPG, Chennai	1.3
14	C. Sujatha	Seismic Test on OSKF 400 kV (Live Tank) CT	Alstom T&D, Hosur	213484
15	C. Sujatha	Seismic Test on 145 kV Horizontal Double Break Isolator with Two Earth Switch	GR Power Switchgear, Hyderabad	292136
16	C. Sujatha	Seismic Test on 198 kV Surge Arrester	Crompton Greaves, Nashik	213484
17	C. Sujatha	Seismic Testing on 120 kV, 10 kA Polymer Surge Arrester and 72 kV 10 kA Porcelain Arrester	Lamco Industries, Hyderabad	426968
18	C. Sujatha	Seismic Test on 390 kV Class-4 Polymeric Housed Surge Arrester at 0.5g	Crompton Greaves, Nashik	213484

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹)
19	C. Sujatha	Vibration Test on Radiator	Fine Radiators	179776
20	C. Sujatha	Seismic Test on 145 kV Circuit Breaker	Siemens, Aurangabad	213484
21	C. Sujatha	Seismic Test on 3AP2FI 420 kV Circuit Breaker	Siemens, Aurangabad	213484
22	C. Sujatha	Seismic Testing on 765 kV Knee-Type Disconnect Switches	Coelme, Italy	379113 (5955.08 Euro)
23	C. Sujatha	Vibration Laboratory Course	Caterpillar	393260
24	C. Sujatha	Seismic Test on 245 kV Circuit Breaker at 0.3g	ABB Vadodara Limited	185394
25	C. Sujatha	Seismic Test on 245 kV Circuit Breaker at 0.5g	ABB Vadodara Limited	185394
26	C. Sujatha	Seismic Test on 66 kV CT (Dead Tank), 66 kV CT (Live Tank) and 66 kV PT	Lamco Industries, Hyderabad	640452
27	Manoj Pandey	Generation of Midline	Caterpillar	0.97
28	Manoj Pandey	Hose Shape Determination	Caterpillar	2.6
29	C. Sujatha, Parag Ravindran	Seismic Test on 144 kV Class 2 Surge Arrester	Crompton Greaves Limited	2.13
30	C. Sujatha, Parag Ravindran	Seismic Test on Surge Arrester	Crompton Greaves Ltd.	2.13
31	P. Chandramouli, Parag Ravindran	Seismic Test of 245 kV GCB	Crompton Greaves Limited	2.13
32	C. Sujatha, Parag Ravindran	Seismic Test on 765 kV Disconnect	COELME Costruzioni Elettromeccaniche S.p.A.	3.79
33	Amitava Ghosh (Co-PI), N. Ramesh Babu (PI)	Investigation on Edge Grinding of Quality of Automotive Glasses	Saint-Gobain Abrasives	25
34	Sathyan Subbiah	Research Consultancy Related to Science, Technologies and Processes of Material Removal and Other Aspects of Mutual Interest	Saint-Gobain Research India	1.5

#### RBIC projects (ongoing and new)

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹)
1	Anand T.N.C., Shamit Bakshi	Study of Urea Droplet Evaporation and Spray Mixing	Caterpillar India Private Limited	50
2	Anand T.N.C., Shamit Bakshi	High Boost Pressure Influence on Smoke at Low Load Operating Zone	Mahindra and Mahindra	38.2
3	Shamit Bakshi, Anand T.N.C.	Experiments on Gas Atomisation of Low Melting Point Metal for Powder Production	Sandvik Asia Private Limited	28.7
4	P. Chandramouli	Analysis of BHEL Vent Silencer	BHEL	3.5
5	C. Sujatha	Experimental Modal Analysis of Engine Line Assembly	Caterpillar	4.4944
6	C. Sujatha	Dynamic Simulation and Instrumented Trial of Combat Vehicle	Ordnance Factory, Medak	45.00
7	C. Sujatha	Measurement of Acceleration and Stress/Strain of Combat Vehicle During Firing of Gun	Ordnance Factory, Medak	6.25
8	Sujatha Srinivasan	TTK Centre for R2D2	TTK group	368
9	Narasimhan Swaminathan	Mathematical Modeling of the Behavior of Filled Elastomeric Materials from a Microstructural Perspective	MRF	40.5

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹)
10	Abhijit Sarkar, C. Lakshmana Rao, B.S.V. Prasad, Patnaik	Blast Mitigation Through Fluid-Structure Interaction	DRDO	21
11	Ratnakumar Annabattula	Optimisation of Hose Shape Length Subjected to Curvature and Physical Constraints	Caterpillar India Private Limited	3.37
12	Ratnakumar Annabattula	Structural Analysis of a Combat Vehicle Hull	Ordinance Factory Board	50
13	Manoj Pandey	Dynamics Analysis of Tank	ODF, Hyderabad	50
14	P. Ramkumar	Evaluate Excavator Bucket Wear	Caterpillar, India	2.84
15	P. Ramkumar	Study Sliding Wear of Off-Road Heavy Vehicle	Caterpillar, India	5.62
16	S. Varunkumar, R. Vinu	Characterisation of Biomass Briquettes and Modelling of Reciprocating Grate Biomass Combustor to Arrive at Optimum Strategy for Combustion	Thermax	15.16
17	Dhiman Chatterjee, B.V.S.S.S. Prasad	Thermal Stress Analysis: Multiphase Steam/ Water Mixing of HP Bypass Valves	BHEL, Trichy	16.545
18	Dhiman Chatterjee, A. Ramesh, S.K. Das	Cooling System: Design for Tractor Application	TAFE	12
19	K. Arul Prakash, Dhiman Chatterjee	Orifice Size Selection Tool	Caterpillar	6.75
20	S.K. Bhattacharyya, Dhiman Chatterjee	Canister Flooding Dynamics	DRDL	22.472
21	Mahesh V. Panchagnula, Dhiman Chatterjee	Advanced Microspray Cooling Technologies for High Power Density Hydraulics	Eaton	33.708
22	B.V.S.S.S. Prasad, N. Sitaram, Sateesh Gedupudi	Multiphase Modelling and Testing of Steam Turbine Blades	Toshiba	US\$1
23	B.V.S.S.S. Prasad	Study of Solid Flow Pattern in Fluidised Bed Heat Exchanger (FBHE) System for 125 MW and 250 MW CLD Scale Down Models	BHEL, Trichy	20.2
24	Govardhan M.	Aerodynamics Characterisation of a Turbine Rear Frame Using Flow Measurement	GE Technologies, Bangalore	40.64
25	A. Mani	Development of Heat Pipe for Heat Management in Military Vehicles Crew Cabin	Defence Laboratory, Jodhpur	9.94
26	Sathyan Subbiah	Research Consultancy Related to Science, Technologies and Processes of Material Removal and Other Aspects of Mutual Interest	Saint-Gobain Research India	1.5
27	N. Ramesh Babu	Development of Analysis Tool for Prediction of Deformations in Sheet Metal Bending and Its Integration into Existing Sheet Metal Bending Software (ongoing)	Amada Soft India Private Limited	23.25
28	N. Ramesh Babu	Investigation on Edge Grinding Quality of Automotive Glass (ongoing)	Saint-Gobain Research India	45.68
29	N. Ramesh Babu	Design and Development of Laser Dressing Systems for Ultra-precision Grinding Machine (ongoing)	CMTI, Bangalore	5.00
30	N. Ramesh Babu	Accelerated Testing and Time-Dependent Data Analysis of Bonded Abrasive Wheels	Saint-Gobain Research India, Chennai	21.60
31	Raghu Prakash, P.V. Manivannan	Design Review and Vetting Arjun ARRV	BEML, Bangalore	20

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹)
32	A. Ramesh	Performance and Emission Analysis of Catalytic Nano Particle-Added Diesel-Fuelled CI Engine	NIT Calicut and HPCL	10
33	A. Ramesh	Development and Test Bed Demonstration of Electronically Controlled Fuel Injection and Spark Ignition Modules for an Indigenously Developed CSIR-NAL Wankel Engine	NAL-CSIR	21.328
34	A. Ramesh	Methods for Cold Starting a Diesel Engine	Mahindra and Mahindra	39

#### Retainer consultancy (ongoing and new)

Sl. No.	Name of Faculty Member	Title	Industry	Amount(lakhs of ₹)
1	P. Chandramouli	Noise and Vibration Control of Transformers/ Motors	Crompton Greaves Limited	2.0

#### Faculty members' participation with other institutions under MoUs

Sl. No.	Name of Faculty Member	Participation Details	University/Institution
1	C. Balaji	Member—Governing Body	KSR College of Technology (Autonomous), Tiruchengode
2	C. Balaji	Member—Academic Council	Sastra University, Thanjavur
3	Ashis Kumar Sen	Guiding a Ph.D. student jointly with Dr. Pouya Rezai, from York University, Canada	York University
4	A. Ramesh	Academic Council member	VIT University, Vellore
5	A. Ramesh	Academic Council member	PM University, Thanjavur
6	A. Ramesh	Member, Board of Studies, Anna University	Anna University
7	A. Ramesh	Member of the Core Group on Alternative Fuels	DST
8	A. Ramesh	Member of the EAG on Analytical and Industrial Instrumentation	DST
9	A. Ramesh	Member of the Expert Committee for the National Mission on Engine Development at DRDO	DRDO
10	A. Ramesh	Member of the Preliminary Design Review Meeting at NAL for 65 HP Wankel Engine	NAL/CSIR
11	A. Ramesh	Member of the Expert Committee for Funding of Projects	Institute of Road Transport
12	Sundararajan Natarajan	Co-supervising a Ph.D. Student jointly with Prof. Gangadhara Prusty	The University of New South Wales, Sydney, Australia
13	S. Narayanan	Member, Expert Review Committee, Aerospace Engineering Department	IIT Kanpur
14	S. Narayanan	Academic collaboration	School of Engineering, University of Swansea, Swansea, UK
15	S. Narayanan	Academic collaboration	Centre for Applied Dynamics Research, School of Engineering, University of Aberdeen, UK
16	S. Narayanan	Member, Board of Governors	IIT Delhi and Madras, Kancheepuram
17	S. Narayanan	PAC Member, Mechanical Engineering and Robotics SERB, DST	DST, New Delhi
18	S. Narayanan	Member, Academic Council	VIT University, Vellore
19	S. Narayanan	Member, Selection Committee, Young Engineer and Innovative Students Projects Awards	INAE
20	S. Narayanan	Member, Forum on Engineering Education	INAE

Sl. No.	Name of Faculty Member	Participation Details	University/Institution
21	S. Narayanan	Member, Steering Committee	INAE
22	S. Narayanan	Review Committee Member, Department of Mechanical Engineering. (review of research projects carried out by faculty members)	Kalasalingam University

### Research publications of faculty members and research scholars

Papers published in refereed national journals	8
Papers published in refereed international journals	151
Papers presented at national conferences	18
Papers presented at international conferences	101

#### Papers published in refereed national journals

1. S. Tewari, T.N.C. Anand, M.P. Nishikant and R.V. Ravikrishna. 2014. Study of liquid fuel transport in a small carburetted engine in the context of cold-start HC emission control. *Sadhana: Academy Proceedings in Engineering Science*.
2. C. Syamsundar, D. Chatterjee and M. Kamaraj. 2014. Experimental characterisation of silt erosion of 16Cr–5Ni steels and prediction using artificial neural network. *Transactions of the Indian Institute of Metals* doi:10.1007/s12666-014-0489-1
3. S. Krishnaswamy, S. Jain and N. Sitaram. 2014. Grid and turbulence model based exhaustive analysis of NACA 0012 airfoil. *Journal of Advanced Research in Applied Mechanics & Computational Fluid Dynamics* 1(1): 14–18.
4. S. Krishnaswamy, N. Sitaram and N. Jalaiah. 2014. Building an automation environment for CFD analysis of airfoils using Python. *Journal of Advanced Research in Applied Mechanics & Computational Fluid Dynamics* 1(1): 8–13.
5. N. Bansode and M. Govardhan. 2014. Aerodynamics of tip leakage flows near partial squealer rim in an axial flow turbine with and without wall motion. *Journal of Aerospace Sciences and Technologies* 66(3): 186–199.
6. A.K. Sumanta and M. Govardhan. 2015. Secondary flows in rotating ducts. *Journal of Aerospace Sciences and Technologies* 67(1): 66–82.
7. P.V. Ramakrishna and M. Govardhan. May 2014. Inception of casing wall flow instabilities and downstream flow evolution in subsonic axial compressor rotors at high rotor stagger angles. *Journal of Aerospace Sciences and Technologies* 66(2): 106–126.
8. M.S. Shunmugam. Machining challenges: Macro to micro cutting. *Journal of The Institution of Engineers (India): Series C*. doi:10.1007/s40032-015-0182-0

#### Papers published in refereed international journals

1. B.M. Devassy, S. Bakshi and A. Ramesh. 2013. A new injector concept for multimode operation in gasoline direct injection engines. *International Journal of Engine Research*.
2. V. Pradeep, S. Bakshi and A. Ramesh. 2014. Scavenging port based injection strategies for an LPG fuelled two-stroke spark-ignition engine. *Applied Thermal Engineering*.
3. F. Perini, K. Anand, Y. Ra and R.D. Reitz. September 2014. Computationally efficient simulation of multi-component fuel combustion using a sparse analytical Jacobian chemistry solver and high-dimensional clustering. *Journal of Engineering for Gas Turbines and Power* 136.
4. T. Jeyaseelan, K. Anand and P.S. Mehta. 2014. Experimental investigations on the increase in nitric oxide emissions using biodiesels and their mitigation. *Proceedings of the Institution of Mechanical Engineers, Part D: Journal of Automobile Engineering* 228(11): 1274–1284.
5. B. Harshavardan and J.M. Mallikarjuna. March 2015. Effect of piston shape on in-cylinder flows and air-fuel interaction in a direct injection spark ignition engine: A CFD analysis. *Energy* 81: 361–372.
6. B. Harshavardan and J.M. Mallikarjuna. 2015. Effect of combustion chamber shape on in-cylinder flow and air–fuel interaction in a direct injection spark ignition engine—A CFD analysis. *SAE International Journal* doi:10.4271/2015-26-0179
7. J.M. Mallikarjuna. Study on effect of engine operating parameters on flame characteristics. *SAE International Journal*.
8. J.M. Mallikarjuna. Transient spray characteristics of air-assisted fuel injection. *SAE International Journal*.
9. J.M. Mallikarjuna. Effect of piston shape on in-cylinder flows in a loop scavenged two-stroke gasoline direct injection engine: An analysis using CFD. *JSAE International Journal*.
10. J.M. Mallikarjuna. 2014. Effect of piston shape on scavenging in a two-stroke engine: A CFD analysis. *Applied Mechanics and Materials* 592–594: 1515–1519.



11. C. Balaji and S.P. Venkateshan. Joint conductance effects on estimation of effective thermal conductivities of anisotropic composites. *AIAA Journal of Thermophysics and Heat Transfer*.
12. C. Balaji and S.P. Venkateshan. Optimal distribution of discrete heat sources under mixed convection: A heuristic approach. *ASME Journal of Heat Transfer*.
13. C. Balaji. Bayesian estimation of heat flux and thermal diffusivity using liquid crystal thermography. *International Journal of Thermal Sciences*.
14. C. Balaji. Heat transfer and optimisation studies on layered porous stackings under an imposed pressure drop. *International Communications in Heat and Mass Transfer*.
15. C. Balaji. Porous body model based parametric study for sodium to air heat exchangers used in fast reactors. *Journal of Thermal Science and Engineering and Applications*.
16. A. Narasimhan. 2015. Convection enhanced intravitreal drug delivery in human eye. *ASME Journal of Heat Transfer*.
17. K.S. Reddy. 2014. Optical analysis of solar parabolic trough collector with flat concentrating photovoltaic receiver. *International Journal of Applied Mechanics and Materials* 592–594: 2396–2403.
18. K.S. Reddy, T.K. Mallick, T.S. Vikram and H. Sharon. 2014. Design and optimisation of elliptical hyperboloid concentrator with helical receiver. *Solar Energy* 108: 515–524.
19. K.S. Reddy. 2014. Design of a 16-cell densely-packed receiver for high concentrating photovoltaic applications. *Energy Procedia* 54: 185–198.
20. K.S. Reddy. 2014. Numerical investigation of micro-channel based active module cooling for solar CPV system. *Energy Procedia* 54: 400–416.
21. K.S. Reddy. 2015. Experimental performance investigation of modified cavity receiver with fuzzy focal solar dish concentrator. *Renewable Energy* 74: 148–157.
22. K.S. Reddy. 2015. Investigation of convective and radiative heat losses from modified cavity based solar dish steam generator using ANN. *International Journal of Thermal Sciences* 87: 19–30.
23. A. Pattamatta. Experimental investigation on the thermo-hydrodynamics of oscillatory meniscus in a capillary tube using FC-72 as working fluid. *International Journal of Multiphase Flow*.
24. A. Pattamatta. An optimisation study of heat transfer enhancement due to jet impingement over porous heat sinks using lattice Boltzmann method. *Journal of Porous Media*.
25. A. Pattamatta. A single-component non-homogeneous lattice Boltzmann model for natural convection in Al<sub>2</sub>O<sub>3</sub>/water nanofluid. *Numerical Heat Transfer Part A: Applications*.
26. A. Pattamatta. Trimodal charge transport in polar liquid-based dilute nanoparticulate colloidal dispersions. *Journal of Nano Particle Research*.
27. A. Pattamatta. Thermal conductivity and thermal interface resistance measurements of thin films using 3 method. *International Journal of Micro Nanoscale Transport*.
28. A. Pattamatta. Profile shape optimisation in multijet impingement cooling of dimpled topologies for local heat transfer enhancement. *Heat and Mass Transfer*.
29. A. Pattamatta. A comparative study of submicron phonon transport using Boltzmann transport equation and lattice Boltzmann method. *Numerical Heat Transfer Part B: Fundamentals*.
30. A. Pattamatta. A parametric study on phase change heat transfer due to Taylor-Bubble coalescence in a square minichannel. *International Journal of Heat and Mass Transfer*.
31. A. Pattamatta. Effect of flow maldistribution on the thermal performance of parallel microchannel cooling systems. *International Journal of Heat and Mass Transfer*.
32. A. Pattamatta. Investigation on flow maldistribution in parallel microchannel systems for integrated microelectronic device cooling. *IEEE Transactions on Components, Packaging and Manufacturing Technology*.
33. A. Pattamatta. Energy transport across submicron porous structures: A lattice Boltzmann study. *International Journal of Heat and Mass Transfer*.
34. A. Pattamatta. A study of thermophoresis-like force on a heated trapezoidal nano-object confined between parallel plates. *International Journal of Heat and Mass Transfer*.
35. S. Gedupudi. 2014. Combined cycle for power generation and refrigeration using low-temperature heat sources. *International Journal of Energy Optimization and Engineering* 3(3): 34–56.
36. S.K. Das. 2015. Anomalously augmented charge transport capabilities of bio-mimetically transformed collagen intercalated nanographene-based biocolloids. *Langmuir* (accepted).
37. S.K. Das. 2015. Optimisation of ethanol reforming with micro-channels in plate type reformer configuration. *International Journal of Micro-Nano Scale Transport* (accepted).
38. S.K. Das. 2015. The effect of non-uniform under-rib convection on reactant and liquid water distribution in PEM fuel cells. *Journal of Fuel Cell Science and Technology* (accepted).
39. S.K. Das. 2015. Near-field magnetostatics and Neel-Brownian interactions mediated magnetorheological characteristics of highly stable nano-ferrocolloids. *Soft Matter* 11: 1614–1627.

40. S.K. Das. 2015. Heat and mass transfer issues associated with nuclear reactor safety. *Heat Transfer Engineering* 36(10): 857–878 (editorial).
41. S.K. Das. 2015. Hydrogen distribution in nuclear reactor containment during accidents and associated heat and mass transfer issues: A review. *Heat Transfer Engineering* 36(10): 859–879.
42. S.K. Das. 2014. Subsurface tumor ablation with near-infrared radiation using intratumoral and intravenous injection of nanoparticles. *International Journal of Micro–Nano Scale Transport* 5(2): 69–80.
43. S.K. Das. 2014. Tri-modal charge transport in dilute polar liquid-based nanoparticulate colloidal dispersions. *Journal of Nanoparticle Research*.
44. S.K. Das. 2014. Flow and thermal transport studies in microchannel flows using lattice Boltzmann method. *International Journal of Micro–Nano Scale Transport*.
45. S.K. Das. 2014. Stability and resonant wave interactions of confined two-layer Rayleigh–Bénard systems. *Journal of Fluid Mechanics*.
46. S.K. Das. 2014. Experimental investigation of dry feed operation in a polymer electrolyte membrane fuel cell. *Journal of Power Sources* 260: 243–250.
47. S.K. Das. 2014. Effect of flow maldistribution on the thermal performance of parallel microchannel cooling systems. *International Journal of Heat and Mass Transfer*.
48. S.K. Das. 2014. A computational study of flow mal-distribution on the thermal hydraulic performance of an intermediate heat exchanger in LMFBR. *Journal of Nuclear Science and Technology* 51(6): 845–857.
49. S.K. Das. 2014. Temperature evolution in tissues embedded with large blood vessels during photo-thermal heating. *Journal of Thermal Biology* 41: 77–87.
50. S.K. Das. 2014. Accurate solutions of Rayleigh–Bénard convection in confined two-layer systems using spectral domain decomposition method. *Numerical Heat Transfer, Part A: Applications*.
51. S.K. Das. 2014. Colloidal graphite/graphene nanostructures using collagen showing enhanced thermal conductivity. *International Journal of Nanomedicine*.
52. S.K. Das. 2015. Experimental investigation of subcooled flow boiling in a minichannels. *Heat Transfer Engineering*.
53. S.K. Das. 2014. Investigation of non-Fourier effects in bio-tissues during laser-assisted photothermal therapy. *International Journal of Thermal Sciences* 76: 208–220.
54. A.S. Sekhar. February 2015. Dynamic analysis of fixed speed wind turbine drive train subjected to non-stationary wind load excitation. *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering and Science* 229: 429–446.
55. A.S. Sekhar. 2015. Detection and monitoring of coupling misalignment in rotors using torque measurements. *Journal of Measurements* 61: 111–122.
56. A.S. Sekhar and B.V.S.S. Prasad. 2015. On the choice of initial clearance and prediction of leakage flow rate for a rotating gas turbine seal. *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering and Science*. doi:10.1177/0954406215581692
57. N.R. Nelson, N.S. Prasad and A.S. Sekhar. 2015. Effect of thermal loading on sealing behavior of single- and twin-gasketed flange joint. *Journal of Process Mechanical Engineering*. doi:10.1177/0954408915574295
58. P. Chandramouli. Design relations and simplified reactance formulas for multi-orifice Helmholtz resonators. *Acta Acustica United with Acustica* 101: 124–133.
59. P. Chandramouli and S. Naryanan. Nonlinear dynamics of shrouded turbine blade system with impact and friction. *Applied Mechanics and Materials* 706: 81–92.
60. P. Chandramouli. Experimental and numerical investigations of impacting cantilever beams: Second-mode response. *International Journal of Mechanical Sciences* 92: 187–193.
61. P. Chandramouli and S. Narayanan. Numeric–analytic solutions of the smooth and discontinuous oscillator. *International Journal of Mechanical Sciences* 84: 102–119.
62. C. Sujatha and S. Narayanan. May 2014. Response of a half-car model with optimal magnetorheological damper parameters. *Journal of Vibration and Control*. doi:10.1177/1077546314532300
63. M. Amarnath and C. Sujatha. 2015. Surface contact fatigue failure assessment in spur gears using lubricant film thickness and vibration signal analysis. *Tribology Transactions* 58(2): 327–336 (ISSN: 1040-2004 print/1547-397X). doi:10.1080/10402004.2014.971993
64. C. Sujatha and A.S. Sekhar. 2014. Vibration based damage detection of rotor blades in a gas turbine engine. *Engineering Failure Analysis* 46: 26–39.
65. S. Srinivasan and A. Ramesh. 2015. Development of a cam phaser system to improve the performance of a small engine. *SAE International Journal of Engines* 8(1): 250–257.
66. S. Srinivasan. 2015. Approximate spring balancing of linkages to reduce actuator requirements. *Mechanism and Machine Theory* 86: 108–124.

67. S. Srinivasan. 2014. Segmental contributions to the ground reaction force in the single-support phase of gait. *Mechanical Sciences* 5: 37–52.
68. R.K. Annabattula. 2014. The effect of interface adhesion on buckling and cracking of hard thin films. *Applied Physics Letters* 106: 161912.
69. R.K. Annabattula. 2014. A thermal discrete element analysis of EU solid breeder blanket subjected to neutron irradiation. *Fusion Science and Technology* 66: 83–90.
70. R.K. Annabattula. 2014. Size-dependent crush analysis of lithium orthosilicate pebbles. *Fusion Science and Technology* 66: 136–141.
71. R.K. Annabattula. 2014. Finite element modelling of stress-induced fracture in Ti–Si–N films. *Applied Mechanics and Materials* 553: 10–15.
72. R.K. Annabattula. 2014. Construction of PREMUX and preliminary experimental results, as preparation for the HCPB breeder unit mock-up testing. *Fusion Engineering and Design* 89: 1257–1262.
73. M. Pandey. Plasticity-based approach for failure modelling of unreinforced masonry. *Engineering Structures*.
74. Venkatarathnam G. Density marching method for calculating phase envelopes. *Industrial & Engineering Chemistry Research* 53: 3723–3730.
75. Venkatarathnam G. 2014. Density marching method for calculating phase envelopes: Part II—Three-phase envelopes. *Industrial & Engineering Chemistry Research* 53: 12122–12128.
76. S.K. Swarnkar, S.S. Murthy, R. Gardas and G. Venkatarathnam. 2014. Performance of a vapour absorption refrigeration system operating with ionic liquid–ammonia combination with water as co-solvent. *Applied Thermal Engineering* 72: 249–256.
77. Y. Madaria, A.K. Emadabathuni, M.P. Maiya and S.S. Murthy. Simulation of effective thermal conductivity of metal hydride packed beds. *Heat Transfer Engineering*.
78. H. Deshmukh, M.P. Maiya, S.S. Murthy. Continuous vapour adsorption cooling system with three adsorber beds. *Applied Thermal Engineering*.
79. B.S. Mohan, S. Tiwari and M.P. Maiya. Experimental investigations on performance of liquid desiccant–vapor compression hybrid air conditioner. *Applied Thermal Engineering* 77: 153–162.
80. A. Eshack, D.G.L. Samuel, S.M.S. Nagendra and M.P. Maiya. February 2015. Monitoring and simulation of carbon monoxide concentrations in mechanically ventilated car parks. *Journal of Thermal Engineering* 1(5): 295–302.
81. P.B. Jiautheen and M. Annamalai. 2014. Review on ejector of vapour jet refrigeration system. *International Journal of Air-Conditioning and Refrigeration* 22: 1430003. doi:10.1142/S2010132514300031
82. P.K. Shijin, S.S. Sundaram, V. Raghavan and V. Babu. Numerical investigation of laminar cross-flow non-premixed flames in the presence of a bluff body. *Combustion Theory and Modeling*.
83. V.B. Sabareesh, K. Srinivasan and T. Sundararajan. Acoustic characteristics of equal and unequal twin circular slot jets. *Journal of Sound and Vibration*.
84. G. Raman, R. Ramachandran, K. Srinivasan and R. Dougherty. 2013. Advances in experimental aeroacoustics. *Noise Notes* 13(2): 93–140. doi:10.1260/1475-4738.13.2.93 (republished from *International Journal of Aeroacoustics*)
85. K.C. Bellidega, A. Dhamanekar and K Srinivasan. Acoustic characteristics of annular jets. *Inter-Noise and Noise-Con Congress and Conference Proceedings* 249(2): 5032–5039.
86. R. Ashokkumar, S. Sankaran, K. Srinivasan and T. Sundararajan. 2015. Effects of vacuum chamber and reverse flow on supersonic exhaust diffuser starting. *Journal of Propulsion and Power* 31(2): 750–754.
87. M. Manjunath, P. Prakash, V. Raghavan and P.S. Mehta. Composition effects on thermo-physical properties and evaporation of suspended droplets of biodiesel fuels. *SAE International Journal of Fuels and Lubricants* 7(3): 833–841. doi:10.4271/2014-01-2760
88. T.M. Premkumar, P. Kumar and D. Chatterjee. 2014. Cavitation characteristics of S-blade used in fully reversible pump–turbine. *ASME Journal of Fluids Engineering* 136(5): 51101.
89. R. Nayak, S. Savithiri, D. Chatterjee and S.K. Das. 2014. Flow and thermal transport studies in microchannel flows using lattice Boltzmann method. *International Journal of Micro–Nano Scale Transport* 5(1): 39–50.
90. T.M.P. Kumar and D. Chatterjee. 2015. Computational analysis of flow over a cascade of S-shaped hydrofoil used in fully reversible pump–turbine. *Renewable Energy* 77: 240–249.
91. A.K. Sen. Analytical modeling, simulations and experimental studies of a PZT-actuated planar valveless PDMS micropump. *Sensors & Actuators A: Physical*.
92. A.K. Sen. Alternating and merged droplets in a double T-junction microchannel. *BioChip*.
93. A.K. Sen and P. Sajeesh. Hydrodynamic resistance and mobility of deformable objects in microfluidic channels. *Biomicrofluidics*.
94. A.K. Sen. Flow and heat transfer analysis of an electro-osmotic flow micropump for chip cooling. *Journal of Electronic Packaging*.



95. S. Jain, N. Sitaram and S. Krishnaswamy. 2015. Computational investigations on the effects of gurney flap on airfoil aerodynamics. *International Scholarly Research Notices* 2015 (article ID 402358) 11 pp. <http://dx.doi.org/10.1155/2015/402358>
96. N. Sitaram and K. Srikanth. 2014. Effect of chamfer angle on the calibration curves of five hole probes. *International Journal of Rotating Machinery* 2014 (article ID704315) 10 pp. <http://dx.doi.org/10.1155/2014/704315>
97. A.K. Pujari, B.V.S.S.S. Prasad and N. Sitaram. 2014. Conjugate heat transfer study at interior surface of NGV leading edge with combined shower head and impingement cooling. *International Journal of Rotating Machinery* 2014 (article ID754983) 16 pp. <http://dx.doi.org/10.1155/2014/754983>
98. R. Jangir, N. Sitaram and Ct. Gajanan. A miniature four-hole probe for measurement of three-dimensional flow with large gradients. *International Journal of Rotating Machinery* 2014 (Article ID297861): 12. <http://dx.doi.org/10.1155/2014/297861>.
99. N. Sitaram, R. Jangir and Gajanan. 2014. Miniature four-hole probe for three-dimensional boundary layer measurements. *Applied Mechanics and Materials* 592–594: 1978–1982. doi:10.4028/www.scientific.com/AMM592-594.1978
100. A.K. Pujari, B.V.S.S.S. Prasad and N. Sitaram. 2014. Conjugate heat transfer study at interior surface of NGV leading edge with combined shower head and impingement cooling. *International Journal of Rotating machinery* 2014 (article ID 754983): 1–14.
101. P.M.D. Chandran and B.V.S.S.S. Prasad. 2014. Conjugate heat transfer study at coolant–mainstream interaction surface of NGV leading edge with combined shower head and impingement cooling. *International Journal of Rotating Machinery* 2014 (article ID 315036): 1–15.
102. R.K. Panda and B.V.S.S.S. Prasad. 2014. Conjugate heat transfer from an impingement and film-cooled flat plate. *Journal of Thermophysics and Heat Transfer (AIAA)* 28: 647–666.
103. N. George and M. Govardhan. 2014. Computational studies of turbulent flows in rotating radial and 20° backward swept diverging channels. *Journal of Advanced Materials Research* 1016: 540–545. doi:10.4028/www.scientific.net/AMR.1016.540
104. K.N. Kumar and M. Govardhan. May 2014. On topology of flow-turbine cascade. *ASME Journal of Fluids Engineering* 136(8): 081201 (paper ID: FE-13-1325) doi:10.1115/1.4026056
105. D.R. Rajkumar, S. Ramamurthy and M. Govardhan. June 2014. Experimental investigations on effects of tip clearance in mixed flow compressor performance. *Proceedings of the Institution of Mechanical Engineers, Part G: Journal of Aerospace Engineering* 1–14. doi:10.1177/0954410014541102
106. A. Ghosh. Assessment of spray quality from an external mix nozzle and its impact on SQL grinding performance. *International Journal of Machine Tools and Manufacture*.
107. A. Ghosh. Synthesis of MWCNT nanofluid and valuation of its potential besides soluble oil as micro cooling–lubrication medium in SQL grinding. *International Journal of Advanced Manufacturing Technology*.
108. A. Ghosh. Comparison of tribological properties of MoS<sub>2</sub> and graphite–PTFE coatings and its impact on machining of aluminium by HSS end mills. *Materials and Manufacturing Processes*.
109. A. Ghosh. High-speed turning of AISI 4140 steel by multi-layered TiN top-coated insert with minimum quantity lubrication technology and assessment of near tool-tip temperature using infrared thermography. *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*.
110. A. Ghosh. Effect of cryogenic cooling on spindle power and G-ratio in grinding of hardened bearing steel. *Procedia Materials Science*.
111. A. Ghosh. Dry machining of AA7075 by H-DLC coated carbide end mill. *Procedia Materials Science*.
112. B.R.P. Singh and P.V. Manivannan. 2014. Input shaping for feedforward control of a flexible polymethyl methacrylate beam manipulator. *Applied Mechanics and Materials* 592–594: 2160–2164.
113. P. Suresh and P.V. Manivannan. 2014. Neural network-based hybrid adaptive controller for an autonomously driving car using thin plate spline radial basis activation function. *Applied Mechanics and Materials* 592–594: 2184–2188.
114. P.V. Manivannan, M. Singaperumal and A. Ramesh. April 2014. A new method for measurement air–fuel ratio based on the response time of a binary exhaust gas oxygen (BEGO) sensor for application in small spark ignition (SI) engines. *Transactions of the Institute of Measurement and Control* 36(2): 175–183.
115. V. Nalam and P.V. Manivannan. 2014. Development of a contact-based human arm motion analysis system for virtual reality applications. *Applied Mechanics and Materials* 592–594: 2184–2188.
116. V. Nalam and P.V. Manivannan. 2014. Development of a contact based human arm motion adaptation system. *International Journal of Automation, Mechatronics & Robotics (IJAMR)* 1(3).
117. R.K. Sahu, S.S. Hiremath, P.V. Manivannan and M. Singaperumal. 2014. Generation and characterisation of copper nanoparticles using micro-electrical discharge machining. *Materials and Manufacturing Processes (Taylor and Francis)* 29(4): 477–486.

118. R.K. Sahu, S.S. Hiremath, P.V. Manivannan and M. Singaperumal. 2014. An innovative approach for generation of aluminium nanoparticles using micro electrical discharge machining. *Journal of Procedia Materials Science* (Elsevier) 5: 1205–1213.
119. L. Raju, V.S. Sanghvi, S.S. Hiremath and M. Singaperumal. 2014. Effect of process parameters on quality of micro holes machined on copper plate using developed  $\mu$ -EDM setup. *Applied Mechanics and Materials* (Trans Tech Publications) 592–594: 229–233.
120. S.S. Kumar and S.S Hiremath. 2014. Microstructure and mechanical behaviour of nanoparticles reinforced metal matrix composites: A review. *Applied Mechanics and Materials* 592–594: 939–944.
121. L. Paul, S.S. Hiremath and J. Ranganayakulu. 2014. Experimental investigation and parametric analysis of electrochemical discharge machining. *International Journal of Manufacturing Technology and Management* 28(1/2/3): 57–79.
122. L. Paul and S.S. Hiremath. 2014. Effect of process parameters on heat affected zone in micro machining of borosilicate glass using  $\mu$ -ECDM process. *Applied Mechanics and Materials* (Trans Tech Publications) 592–594: 224–228.
123. K. Bellad, S.S. Hiremath, M. Singaperumal and S. Karunanidhi. 2014. Optimisation of PID parameters in electro-hydraulic actuator system using genetic algorithm. *Applied Mechanics and Materials* (Trans Tech Publications) 592–594: 2229–2233.
124. S. Natarajan. 2015. SBFEM for fracture analysis of piezoelectric composites under thermal load. *International Journal of Solids and Structures* 52: 114–129.
125. S. Natarajan. 2015. Crack propagation modelling in functionally graded materials using scaled boundary polygons. *International Journal of Fracture*.
126. G.L. Samuel. 2014. Analysis of cutting forces and surface roughness in hard turning of AISI 4340 using multilayer coated carbide tool. *International Journal of Machining and Machinability of Materials*.
127. G.L. Samuel. Evaluation of surface profile parameters of a machined surface using confocal displacement sensor. *Procedia Materials Science*.
128. G.L. Samuel. Investigations into cutting forces and surface roughness in micro turning of titanium alloy using coated carbide tool. *Procedia Materials Science*.
129. G.L. Samuel. Cutting mode analysis in high-speed finish turning of AlMgSi alloy using edge-chamfered PCD tools. *International Journal of Materials Processing Technology*.
130. G.L. Samuel. Optimisation of a parallel machine scheduling problem using a genetic algorithm based heuristic. *International Journal of Productivity and Quality Management*.
131. G.L. Samuel. Modelling and verification of stability of micro-milling process. *International Journal of Machining and Machinability of Materials*.
132. G.L. Samuel. Modeling and analysis of crater formation during wire electrical discharge turning (WEDT) process. *The International Journal of Advanced Manufacturing Technology*.
133. G.L. Samuel. Characterisation of dimensional features of meso-scale component using capacitive sensor. *International Journal of Advanced Manufacturing Technology*.
134. G.L. Samuel. Dynamic response of a micro end mill cutter by mode superposition method and study of damping effect on its dynamic performance. *International Journal of Precision Technology*.
135. S. Soundarapandian. Laser-assisted Fe-based bulk amorphous coating: Thermal effects and corrosion. *Journal of Alloys and Compounds*.
136. S. Soundarapandian. MC3T3-E1 osteoblast adhesion to laser induced hydroxyapatite coating on Ti alloy. *Biomaterials and Biomedical Engineering*.
137. S.K. Panigrahi. Enhancing strength, ductility and machinability of an Al–Si cast alloy by friction stir processing. *Journal of Manufacturing Processes*.
138. Sivaraman, L. Vijayaraghavan and S. Sankaran. Effect of microstructure on the surface finish during machining of V-microalloyed steel: Comparison between ferrite–bainite–martensite and ferrite–pearlite microstructures. *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*. doi:10.1177/0954405414535922
139. M.S. Shunmugam. 2014. Adaptive sampling strategies for measurement of free-form surfaces using coordinate measuring machines in continuous scanning mode. *International Journal of Precision Technology* 4: 3–18.
140. M.S. Shunmugam. 2014. Analysis of structural integrity of special purpose miniaturised machine tool and performance evaluation for micro machining applications. *International Journal of Computer Aided Engineering and Technology* 6: 366–382.
141. M.S. Shunmugam. Mechanistic approach for prediction of forces in micro-drilling of plain and glass-reinforced epoxy sheets. *The International Journal of Advanced Manufacturing Technology* 75: 1177–1187.
142. M.S. Shunmugam. 2014. Investigation into effect of particle impact damping (PID) on surface topography in boring operation. *The International Journal of Advanced Manufacturing Technology* 75: 1219–1231.

143. M.S. Shunmugam. 2015. Effect of manufacturing errors on load distribution in large-diameter slewing bearings of fast breeder reactor rotatable plugs. *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science* 1–12. doi:10.1177/0954406215579947
144. M.S. Shunmugam. Effect of shaft misalignment and mitigation through crowning in spur gear transmission. *International Journal of Computer Aided Engineering and Technology* (accepted).
145. M.M. Ibrahim and A. Ramesh. 2014. Investigations on the effect of intake charge temperature and charge dilution in a hydrogen fuelled HCCI engine. *International Journal of Hydrogen Energy* 39: 14097–14108.
146. P.S. Satyanarayana, B. Loganathan, V. Lakshminarasimhan, A. Ramesh and S. Sujatha. January 2015. Development of a cam phaser system to improve the performance of a small engine. *SAE International Journal of Engines* 8: 250–257.
147. S. Narayanan and S. Gupta. 2014. Finite element solution of Fokker-Planck equation of nonlinear oscillators subjected to colored non-Gaussian noise. *Probabilistic Engineering Mechanics* 38: 143–155.
148. S. Narayanan. 2014. Diagnosis of manufacturing defects in a gear pair using wavelet analysis of vibration and acoustic signals and an ANN-based inference technique. *Insight—Non-Destructive Testing and Condition Monitoring* 56(8): 426–433.
149. S. Narayanan. 2015. Rotary motion of parametric and planar pendulum under stochastic wave excitation. *International Journal of Non-linear Mechanics* 71: 30–38.
150. S. Narayanan. 2014. Longitudinal vibration response of a vibration isolation module with Kevlar-29 fabric strength member. *Mechanics of Advanced Materials and Structures* 21(6): 457–467.
151. S. Narayanan. 2014. Fokker-Planck equation analysis of randomly excited nonlinear energy harvester. *Journal of Sound and Vibration* 353(7): 2040–2053.

#### Papers published in proceedings of national conferences

1. N. BalaSubramanian, S. Bakshi and T.N.C. Anand. 2015. Fuel injection rate profile measurement on a common rail injector. *National Propulsion Conference 2015*, 23–24 February.
2. M.K. Pal, A. Bhagwat, G. Pundlik, R. Velusamy, D.S.K. Reddy, T.N.C. Anand and S. Bakshi. 2015. Spray visualisation of high-pressure diesel sprays at various ambient conditions. *National Propulsion Conference 2015*, 23–24 February.
3. K.S. Reddy. 2015. Performance investigation of passive double-sided vertical solar still uninternational conference on polygeneration. *Anna Universityder various Influencing Factors, Chennai*, 18–20 February.
4. K.S. Reddy. 2015. Thermal performance of a solar concentrating photovoltaic module with spiral mini channel heat sink. *Anna Universityder various Influencing Factors, Chennai*, 18–20 February.
5. K.S. Reddy. 2015. Thermal effectiveness and mass usage of natural convective micro-fins for concentrating photovoltaic applications. *Anna Universityder various Influencing Factors, Chennai*, 18–20 February.
6. A. Pattamatta. 2014. Heat line analysis of natural convection in a porous enclosure filled with Cu–H<sub>2</sub>O nanofluid. *5th International and 41st National Conference on Fluid Mechanics and Fluid Power*, Kanpur, India, 12–14 December.
7. P. Chandramouli. 2014. Optimisation of sheet metal panel geometric features for effective noise control. *ASI (NSA)*, November.
8. K. Kannan, S. Krishnapillai and K. Kannan. 2014. Calculation of dynamic shear displacement distribution is soft said track interaction modeling. *Seoul Korea*, 22–25 September.
9. K. Sangam, S. Krishnapillai and K. Kannan. 2015. Investigation into rheological behavior of deep sea paste soil. *ISOPE*, Hawaii.
10. V. Kumar, R.K. Sandeep and K. Kannan. 2015. A thermodynamically consistant constitute equation for a new class of latic bodies and its application to a classical problem. *Ninth European Solid Mechanics Conference (ESMX)*, 6–10 July (accepted for oral presentation).
11. V. Kumar, Krishnakannan and P. Ravindran. 2015. A study of two dimensional torsional deformation and shut-pulling for a non-linear rate-type visco-elastic material. *Fourth International Conference on Material Modeling*, UC Berkeley, 27–29 May.
12. P. Ramkumar. 2015. Effect of soot on tribological properties using steel and hybrid sliding contacts. *National Tribology Conference*, Tribology Society of India, pp. 232–238, MacGraw Hill Publisher, 15–17 December.
13. S. Jain, N. Sitaram and S. Krishnaswamy. 2014. Effect of mounting angle of Gurney flap on airfoil aerodynamics. *National Level Industry–Institute Symposium on Turbomachines (NIST-2014)*, MNNIT, Allahabad, 5 April.
14. B.V.S.S.S. Prasad. 2014. Analysis of secondary air systems or a gas turbine engine. *Advance in Thermal Engineering*, ISM, Dhanbad, 19–20 December.
15. A. Mani. 2015. Solar refrigeration systems: Current status and future trends. *ISTE Regional Conference*, Sona College of Technology, Salem, February.



16. M.S. Shunmugam. 2014. Manufacturing in the eyes of a metrologist. *World Metrology Day*, CMTI Bangalore, 20 May.
17. M.S. Shunmugam. 2014. Machining challenges-macro to micro cutting. *29th National Convention of Production Engineers*, IE(I) Tamil Nadu Centre, 1–2 August (Taylor memorial lecture).
18. S. Narayanan. 2014. Optimisation of energy harvesting from nonlinear dynamic vibration absorbers. *National Symposium on Acoustics (NSA2014)*, Mysore, 12–14 November.

#### Papers published in proceedings of international conferences

1. C. Balaji. 2014. Experimental investigation of thermal performance of phase change material based composite heat sink with discrete heat sources. *International Heat Transfer Conference*, Kyoto, Japan, 9–16 August.
2. C. Balaji. 2014. Numerical investigation of fluid flow and heat transfer characteristics of partial length pin fins in vertical parallel plate channel. *International Heat Transfer Conference*, Kyoto, Japan, 9–16 August.
3. C. Balaji. 2014. Parameter estimation using heat transfer models with experimental data using combined ANN–GA approach. *International Heat Transfer Conference*, Kyoto, Japan, 9–16 August.
4. A. Pattamatta. 2015. Augmented thermal transport and rheological characteristics of graphene and carbon nanotube pastes. *ASME-ATI-UIT 2015 Conference on Thermal Energy Systems: Production, Storage, Utilisation and the Environment*, Napoli, Italy, 17–20 May.
5. A. Pattamatta. 2014. Numerical investigation of natural convective heat transfer characteristics of Al<sub>2</sub>O<sub>3</sub>–water nanofluid through porous media embedded in a square cavity. *10th European Fluid Mechanics Conference EFMC-10*, Denmark, 14–18 September.
6. A. Pattamatta. 2014. An optimisation study of heat transfer enhancement due to jet impingement over porous heat sinks using lattice Boltzmann method. *Proceedings of the 15th International Heat Transfer Conference, IHTC-15*, Kyoto, Japan, 10–15 August.
7. S. Gedupudi. 2014. Flow boiling in rectangular microchannels: 1-D modelling of the influence of inlet resistance on flow reversal. *Fourth Micro and Nano Flows Conference*, UCL, London, UK, 7–10 September.
8. K.S. Reddy. 2014. Technical issues and challenges in the fabrication of a large high-concentrating photovoltaic receiver. *40th IEEE Photovoltaic Specialists Conference*, Colorado Convention Center, Denver, Colorado, USA, 8–15 June.
9. K.S. Reddy. 2014. Performance analysis of spiral flow heat recovery system for cooling of CPV module. *10th International Conference on Concentrator Photovoltaics (CPV-10)*, New Mexico, USA, 7–9 April.
10. K.S. Reddy. 2014. Development of a novel 144-cell semi-densely packed 500× CPV assembly on insulated metal substrate. *10th International Conference on Concentrator Photovoltaics (CPV-10)*, New Mexico, USA, 7–9 April.
11. K.S. Reddy. 2014. Design and experimental performance analysis of a high concentrating photovoltaic system. *10th International Conference on Concentrator Photovoltaics (CPV-10)*, New Mexico, USA, 7–9 April.
12. P. Chandramouli and S. Narayanan. 2014. Nonlinear dynamics of a two-degree-of-freedom oscillator with a snap-through mechanism. *ENOC*, Austria, July.
13. P. Chandramouli. 2014. Power flow-based analysis of a floating raft vibration isolation system. *ICSV 2014*, Beijing, July.
14. P. Chandramouli. 2014. Single-cylinder diesel engine mount configuration for reduced vibration in a three-wheeled vehicle. *Small Engine Technology Conference*, Italy, November.
15. P. Chandramouli. 2014. An experimental investigation of cavity noise control using mistuned Helmholtz resonators. *Inter-Noise*, Melbourne, November.
16. C. Sujatha and S. Krishnapillai. 2014. Vibro-acoustic behaviour of a non-uniform beam traversed by a moving point load. *JSME Proceedings of the Twelfth International Conference on Motion and Vibration Control (MOVIC)*, Sapporo, Japan, 4–6 August.
17. C. Sujatha and S. Krishnapillai. 2014. A comparative study of the dynamic behavior of uniform and sinusoidal beams under high speed moving loads. *Proceedings of Sixth International Conference on Theoretical, Applied, Computational and Experimental Mechanics (ICTACEM 2014)*, paper 266, IIT Kharagpur, India, 29–31 December.
18. C. Sujatha. 2014. Effect of geometry modification on the natural frequencies of simply supported beams. *Proceedings of Sixth International Conference on Theoretical, Applied, Computational and Experimental Mechanics (ICTACEM 2014)*, IIT Kharagpur, India, 29–31 December.
19. S. Srinivasan. 2014. Minimal kinematic model for inverse dynamic analysis of gait. *Proceedings of the ASME 2014 & International Mechanical Engineering Congress and Exposition IMECE 2014*, Montreal, Quebec, Canada, 14–20 November.
20. S. Rakshit. 2015. Simultaneous multiple impact with distributed restitution. *15th Pan-American Congress of Applied Mechanics*, 18–21 May.

21. A. Sarkar, R. Srinath and A.S. Sekhar. 2014. Parametrically excited vibration in rolling element bearings. *Inter-Noise 2014*, Melbourne, Australia, 16–19 November.
22. A. Sarkar, R.S. Mohan and A.S. Sekhar. 2014. Vibration of steam turbine blades (Invited paper). *Inter-Noise 2014*, Melbourne, Australia, 16–19 November.
23. M. Pandey. 2014. Nonlinear dynamic analysis of cantilever beam using POD-based reduced-order mode. *International Conference on Applications and Design in Mechanical Engineering*, 14–20 November.
24. A.S. Sekhar. 2014. Detection and monitoring of shaft misalignment in rotors using Hilbert Huang transform. *ASME Turbo Expo 2014*, Dusseldorf, Germany, 16–20 June.
25. A.S. Sekhar. 2014. Dynamic analysis of rotors supported on journal bearings by solving Reynolds equation using pseudospectral method. *Ninth International Conference on Rotor Dynamics (IFTOMM)*, Milan, Italy, 22–25 September.
26. A.S. Sekhar. 2014. Effect of gear tooth breakage on the dynamic response in a wind turbine drive train subjected to stochastic load excitation. *Ninth International Conference on Rotor Dynamics (IFTOMM)*, Milan, Italy, 22–25 September.
27. A.S. Sekhar and B.V.S.S. Prasad. 2014. Computational prediction of rotor dynamic coefficients for a rotating labyrinth gas turbine seal with centrifugal growth. *Sixth International Conference on Theoretical, Applied, Computational and Experimental Mechanics, ICTACEM 2014*, IIT Kharagpur, 29–31 December.
28. A.S. Sekhar and A. Sarkar. 2014. Vibration of rolling element bearings. *Inter-Noise 2014*, Melbourne, Australia, 16–19 November.
29. A.S. Sekhar and A. Sarkar. 2014. Turbine blade vibrations. *Inter-Noise 2014*, Melbourne, Australia, 16–19 November.
30. P. Ravindran and P. Mythrararuni. 2014. Ageing in soft tissues: Influence of chemical reactions on mechanical response. *Proceedings of the ASME 2014, IMECE*, Montreal, Canada, 15–20 November.
31. D.G.L. Samuel, S.M.S. Nagendra and M.P. Maiya. 2015. Impact of ceiling fan in passive concrete core-cooled building. *International Conference on Polygeneration 2015*, 18–20 February.
32. S. Jaiswal and M.P. Maiya. 2015. Performance of triple-effect absorption system for cogeneration of cooling and desalination. *International Conference on Polygeneration 2015*, 18–20 February.
33. A. Gurubalan. 2015. Development of nano fibrous membrane-based absorber suitable for vapour absorption refrigeration system. *International Conference on Polygeneration 2015*, 18–20 February.
34. D.G.L. Samuel, S.M.S. Nagendra and M.P. Maiya. 2014. Performance of concrete core cooling system coupled to cooling tower. *International Conference on Environment and Energy*, Hyderabad, 15–17 December.
35. A. Singh, V. Naicker, M.P. Maiya and S.S. Murthy. 2014. Performance simulation of a metal hydride hydrogen storage device embedded with finned heat exchanger tubes. *International Conference on Environment and Energy*, Hyderabad, 15–17 December.
36. H. Deshmukh, M.P. Maiya and S.S. Murthy. 2014. Steady-state analysis of three-bed continuous vapour adsorption cooling system. *International Conference on Environment and Energy*, Hyderabad, 15–17 December.
37. S. Jaiswal, M.P. Maiya and S.S. Murthy. 2014. Performance of single-effect absorption system for cogeneration of cooling and desalination. *International Conference on Environment and Energy*, Hyderabad, 15–17 December.
38. A. Singh, M.P. Maiya, S.S. Murthy. 2015. Optimisation of finned tube heat exchanger embedded in a solid-state hydrogen storage. *Fourth International Workshop on Ionic Liquids*, IIT Madras, 15–16 January.
39. H. Deshmukh, M.P. Maiya and S.S. Murthy. 2015. Heat and mass transfer-based analysis of an adsorption cooling system for solar energy applications. *Fourth International Workshop on Ionic Liquids*, Tarracona, Spain, 15–16 January.
40. S. Jaiswal, A.P. Rao, M.P. Maiya and A. Coronas. 2014. Performance of ammonia–ionic liquid pairs in absorption refrigeration system. *Sustainable Refrigeration Technologies for Hot Climate*, Tarracona, Spain, 18–20 June.
41. D.G.L. Samuel, S.M.S. Nagendra and M.P. Maiya. 2014. Feasibility of passive concrete core cooling at hot-semiarid climatic conditions. *VII Ibero-American Congress of Refrigeration Science and Technologies*, Tarracona, Spain, 18–20 June.
42. A. Eshack, D.G.L. Samuel, S.M.S. Nagendra and M.P. Maiya. 2014. Monitoring and simulation of mechanically ventilated car parks. *Energy Technologies Conference—ENTECH '14*, Istanbul, Turkey, 22–24 December.
43. P.B. Jiautheen, S. Tiwari and A. Mani. 2014. Three-dimensional numerical investigations on ejector of vapour jet refrigeration system. *15th International Refrigeration and Air Conditioning Conference*, Purdue, 14–17 July.
44. G. Venkatarathnam. 2014. Thermodynamics of refrigerant mixtures used in cryogenic mixed-refrigerant processes. *National Symposium on Cryogenics*, Hyderabad, India, 8–10 December.

45. G. Venkatarathnam. 2015. Mixed-refrigerant technology for refrigeration and liquefaction. *37th National Seminar on Industrial Gases*, Chennai, India, 1–3 February.
46. S. Jerome and G. Venkatarathnam. 2014. Comparative study of Helmholtz, Peng-Robinson and PC-SAFT equation of state applied to a J-T cryocooler. *National Symposium on Cryogenics*, Hyderabad, 8–10 December.
47. V. Narayanan and G. Venkatarathnam. 2014. A mixed-refrigerant cycle for providing refrigeration below 70 K for superconducting application. *National Symposium on Cryogenics*, Hyderabad, 8–10 December.
48. S. Sahu. 2014. Application of combined ILIDS+PLIF technique for evaporative sprays. IIT Madras, 2–7 July.
49. S. Aggarwal, P.E. Brainerd, A. Das Gupta and D. Chatterjee. 2014. Design of efficient piezoelectric actuator for MEMS devices. *International Conference on MEMS and Sensors (ICMEMSS 2014)*, Chennai, 18–20 December.
50. N. Sitaram and M. Suresh. 2014. Reynolds number effects on the calibration curves of a four-hole probe. *ICTACEM 2014* (paper no. 243), Khargpur, India, 29–31 December.
51. M. Suresh and N. Sitaram. 2014. Effect of Gurney flap configuration on the performance of a centrifugal fan. *ICTACEM 2014* (paper no. 240), Khargpur, India, 29–31 December.
52. C.T. Gajanan and N. Sitaram. 2014. Reynolds number effects on the calibration of a subminiature four-hole three-dimensional wake probe, *GTINDIA2014-8215, ASME 2014 Gas Turbine India Conference*, New Delhi, 15–17 December.
53. A.K. Pujari, B.V.S.S.S. Prasad and N. Sitaram. 2014. An internal heat transfer study in a cooled nozzle guide vane of a linear cascade, *GTINDIA2014-8191, ASME 2014 Gas Turbine India Conference*, New Delhi, 15–17 December.
54. S. Jain, N. Sitaram and S. Krishnaswamy. 2014. Effect of Reynolds number on aerodynamics of airfoil with Gurney flap. *International and 41st National Conference on Fluid Mechanics and Fluid Power* (paper no. 650), Kanpur, India, 12–14 December.
55. A.K. Pujari, B.V.S.S.S. Prasad and N. Sitaram. 2014. Conjugate heat transfer study in internal region of nozzle guide vane in a cascade. *Asian Congress on Gas Turbines (AGGT 2014)*, Seoul, 18–20 August.
56. A.K. Pujari, B.V.S.S.S. Prasad and N. Sitaram. 2014. An internal heat transfer study in a cooled nozzle guide vane of a linear cascade. *ASME 2014 Gas Turbine India Conference*, New Delhi, India, 15–17 December.
57. P.R. Kukutla and B.V.S.S.S. Prasad. 2014. Combined CFD and flow network analysis of gas turbine nozzle guide vane. *Fifth International and 41st Conference on Fluid Mechanics and Fluid Power (FMFP2014)*, IIT Kanpur, India, 12–14 December.
58. N. George and M. Govardhan. 2014. Computational studies of turbulent flows in rotating radial and 20° backward swept diverging channels. *Fifth International Conference on Mechanical and Aerospace Engineering (ICMAE 2014)* (pp. 1–6), Madrid, Spain, 18–19 July.
59. M.V.H. Babu and M. Govardhan. 2014. Aerodynamics of tip leakage flows near squealer rims in an axial flow turbine. *Asian Congress on Gas Turbines (AGGT 2014)*, Seoul, 18–20 August.
60. K. Vijayraj and M. Govardhan. 2014. Effect of hub ratio on the characteristics of contra-rotating axial flow fans. *Asian Congress on Gas Turbines (AGGT 2014)*, Seoul, 18–20 August.
61. R. Subbarao and M. Govardhan. 2014. Computational studies on the effect of speed ratio and stagger angle in a counter-rotating turbine with respect to flow field and performance. *Fifth International and 41st National Conference on Fluid Mechanics and Fluid Power*, IIT Kanpur, 12–14 December.
62. A.K. Meena and M. Mansori. 2015. Microstructure induced wear mechanisms of PVD-coated carbide tools during dry drilling of newly produced ADI. *18th International ESAFORM Conference*, TU Graz, Austria, 15–17 April.
63. A. Ghosh. 2014. Potential of vegetable oils as micro lubrication/cooling medium for SQL-grinding. *AIMTDR-2014*, 12–14 December.
64. A. Ghosh. Effect of cryogenic cooling on surface quality of ground AISI 52100 steel. *AIMTDR-2014*, 12–14 December.
65. A. Ghosh. Performance of MoS<sub>2</sub> spray-coated end mills in reduction of built-up edge formation (BUE) in machining aluminium. *AIMTDR-2014*, 12–14 December.
66. R. Abraham and A. Mani. 2014. Computational fluid dynamic (CFD) studies on heat transfer for falling film evaporation in multi-effect desalination system. *International Conference on Innovative Technologies and Management for Water Security (INDACON 2014)*, Chennai.
67. S.K. Panda and A. Mani. 2014. Bubble dynamics study with tangential nozzles in a bubble absorber. *International Sorption Heat Pump Conference (ISHPC 2014)*, Washington, DC, USA, 31 March–3 April.
68. A. Mani. 2014. Studies on ejector: Current status and future trends. *22nd International Conference of Mechanical Engineering*, Shahid Chamran University, Ahvaz, Iran, 22–24 April.



69. S.K. Panda and A. Mani. 2014. Experimental study on bubble absorber with multiple tangential nozzles. *15th International Conference on Refrigeration and Airconditioning*, Purdue, 14–17 July.
70. K.M. Arun, S. Tiwari and A. Mani. 2014. Two-dimensional numerical analysis on ejector of vapour jet refrigeration system. *15th International Conference on Refrigeration and Airconditioning*, Purdue, 14–17 July.
71. J.P. Banu, S. Tiwari and A. Mani. 2014. Three-dimensional numerical investigations on ejector of vapour jet refrigeration system. *15th International Conference on Refrigeration and Airconditioning*, Purdue, 14–17 July.
72. S.S. Kumar and S.S. Hiremath. 2015. Machining of internal features using the developed abrasive flow machine. *International Conference on Advances in Production and Industrial Engineering (INCAPIE-15)*, NIT Trichy, 20–21 February.
73. N.R. Babu, R. Vairamuthu, M.B. Bhushan and R.S. Kanth. 2014. Performance analysis of cylindrical grinding process with a portable diagnostic tool. *5th International & 26th All India Manufacturing Technology, Design and Research Conference*, IIT Guwahati, 12–14 December.
74. N.R. Babu and S.R. Babu. 2014. Improved cooling unit with automatic temperature controller for enhancing the life of ice-bonded abrasive polishing tool. *5th International & 26th All India Manufacturing Technology, Design and Research Conference*, IIT Guwahati, 12–14 December.
75. N.R. Babu and S.R. Babu. 2014. Effect of temperature on the properties of ice-bonded abrasive polishing tool. *ACM Symposium on User Interface Software and Technology*, Honolulu, USA, 5–8 October.
76. N.R. Babu and U. Maheshwari. 2014. Prediction of white layer formation in AISI52100 steel using power measurement in grinding, NIT Trichy, 3–5 December.
77. M.S. Shunmugam. 2014. Trends in metrology. *International Conference on Industrial Mechanical and Production Engineering*, MIT, Bhopal, 27–29 November.
78. M.S. Shunmugam. 2014. Study of profile changes in magneto-rheological abrasive honing by an ingenious relocation technique. *Fifth International and 26th AIMTDR Conference*, IIT Guwahati, 12–14 December.
79. M.S. Shunmugam. 2014. Machining research: Snorkeling or scuba diving? *Fifth International and 26th AIMTDR Conference*, IIT Guwahati, 12–14 December (invited talk).
80. M.S. Shunmugam. 2015. Machining challenges: Micro cutting. *International Conference on Advanced Production Industrial Engineering*, NIT Trichy, 20–12 February (invited talk).
81. M.S. Shunmugam. 2015. Virtual manufacturing. *International Conference on Advanced Industrial Polymeric Materials*, CIPET, India, 20–22 February (invited talk).
82. G.L. Samuel. 2014. Finite element analysis of cutting edge radius effect in high speed micro turning of aluminum alloys using PCD tool. *The 9th International Conference on Micro Manufacturing (ICOMM 2014)*, National University of Singapore, 25–28 March.
83. G.L. Samuel. 2014. Evaluation of surface profile parameters of a machined surface using confocal displacement sensor. *International Conference on Advances in Manufacturing and Materials Engineering*, NITK, Surathkal, 27–29 March.
84. G.L. Samuel. 2014. Investigations into cutting forces and surface roughness in micro turning of titanium alloy using coated carbide tool. *International Conference on Advances in Manufacturing and Materials Engineering*, NITK, Surathkal, 27–29 March.
85. G.L. Samuel. 2014. Evaluation of static stiffness of micro end mill cutter by analytical approach utilising equivalent diameter concept. *ICMMM 2014*, IIT Madras, 8–9 August.
86. G.L. Samuel. 2014. Evaluation of surface area of a corrugated surface using a confocal displacement sensor-based measurement system. *ICMMM 2014*, IIT Madras, 8–9 August.
87. G.L. Samuel. 2014. Finite element modeling for prediction of cutting forces during micro turning of titanium alloy. *5th International and 26th All India Manufacturing Technology, Design and Research Conference (AIMTDR 2014)*, IIT Guwahati, 12–14 December.
88. G.L. Samuel. 2014. Experimental modal analysis (EMA) of a spindle bracket of a miniaturised machine tool (MMT). *5th International and 26th All India Manufacturing Technology, Design and Research Conference (AIMTDR 2014)*, IIT Guwahati, 12–14 December.
89. S.K. Panigrahi. 2015. Friction stir welding of austenitic stainless steel to an aluminium–copper alloy. *TMS 2015—144th Annual Meeting and Exhibition*, Orlando, Florida, USA, 15–19 March.
90. S.K. Panigrahi. 2014. A combined effect of annealing and ageing treatment on machining characteristics and mechanical properties of cryorolled Al alloys. *6th International Conference on Nanomaterials by Severe Plastic Deformation 2014*, Metz, France, 30 June–4 July.
91. S.K. Panigrahi. 2014. Influence of friction stir processing on material flow behaviour and microstructural modification of an Al–Si cast, IISc, Bangalore, India, 3–5 September.

92. B. Jayasena, S. Subbiah and C.D. Reddy. 2014. Wedge radius effects in mechanical exfoliation of HOPG: A molecular simulation study. *ASME 2014 International Manufacturing Science & Engineering Conference MSEC'2014*, Detroit, Michigan, USA, 9–13 June.
93. A.S. Adnan, S. Subbiah and K.J. Hoon. 2014. Flatness improvement in single-point diamond turning of finite-sized workpieces. *Proceedings of NAMRI/SME*, Vol. 42.
94. K. Saptaji, H. Zarepour and S. Subbiah. 2014. Improved surface roughness of diamond wire-sawn wafers using ultrasonic vibration-assist. *Proceedings of the 2014 European PV Solar Energy Conference*.
95. H. Zarepour, K. Saptaji and S. Subbiah. 2014. Novel diamond-slurry wire-sawing process for silicon wafering. *Proceedings of the 2014 European PV Solar Energy Conference*.
96. G.R. Srinivas, K. Saptaji, S. Subbiah and H. Zarepour. 2014. Novel texturing method to remove amorphous silicon on diamond wire-sawn wafer surfaces. *Proceedings of the 2014 European PV Solar Energy Conference*.
97. K.A. Prasath and A. Ramesh. 2014. A low-pressure direct gas injection system for a four stroke LPG–diesel dual fuel engine. *Ninth International Green Energy Conference*, Tianjin, China, 26–28 May.
98. M. Vivegananth, K.A. Kanna and A. Ramesh. 2015. Experimental investigations on the effects of low compression ratio in a direct injection diesel engine. *Seventh International Exergy, Energy and Environment Symposium*, Valenciennes, France, April.
99. M.M. Ibrahim and A. Ramesh. 2015. Experimental analysis of hydrogen-fuelled homogeneous charge compression ignition (HCCI) engine. *7th International Exergy, Energy and Environment Symposium*, Valenciennes, France, 30 April.
100. S. Narayanan. 2014. Nonlinear dynamics of a two-degree-of-freedom oscillator with a snap-through mechanism. *Proceedings of the Eighth European Nonlinear Dynamics Conference, ENOC'2014*, Technical University, Vienna, Austria, 6–11 July.
101. S. Narayanan. 2014. Diagnosis of manufacturing defects in a gear pair using wavelet analysis of vibration and acoustic signals and an ANN-based inference technique. *Ninth International Conference on Condition Monitoring and Mechanical Failure Prevention Technologies (CM-MFPT-2014)*, Manchester, UK, 10–12 June.

#### Distinguished visitors to the department

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1	Prof. Emil J. Hopfinger, Emeritus Professor, LEGI, Grenoble, France	15–31 January 2015	Initiation of collaborative work on sloshing dynamics
2	Dr. Ing. Steven Liu, Professor, Technical University of Kaiserslautern, Germany	16–21 December 2014	Visiting Professor under DAAD Faculty Exchange Programme—initiation collaborative work with Dr. P.V. Manivannan in control systems and robotics
3	Dr. Shiv G. Kapoor, Professor, University of Urbana Champagne, Illinois, USA	16–18 December 2014	Interaction with faculty members and students and delivering two talks on carbon nanotube composites
4	Dr. Tony L. Schmitz, Professor, University of North Carolina, Charlotte, USA	23 February 2015	Interaction with faculty members and research students

#### 4.13.6. Other Activities of the Department

##### Invited keynote lectures

Case study of solar refrigeration systems, National Workshop on Hybrid Solar PVT Technologies, Madhav Institute of Technology and Science, Gwalior, February 2014

Solar refrigeration systems: Current status and future trends, ISTE Regional Conference, Sona College of Technology, Salem, November 2014

Heat transfer enhancement techniques: MED desalination systems, Trombay Symposium on Desalination and Water Reuse, Indian Desalination Association, Mumbai, January 2015

##### Continuing education

Organised a course on mobile airconditioning between 26 December 2014 and 4 January 2015 for engineers of Bharath Earth Movers Limited, Bangalore

## International collaboration

### Faculty visits

Sl. No	Name of the Faculty Member	Purpose of Visit	Date and Venue
1	C. Sujatha	To visit University of Hokkaido, Sapporo to establish collaboration	5 August 2014, Sapporo, Japan

### Student visits

Sl. No.	Name of the Student	Purpose of Visit	Date and Venue
1	Jaume Fito	Project work	23 February 2015, Universitat Rovira i Virgili, Spain
2	Hifni Mukhtar Ariyadi	Project work	27 February 2015, Universitat Rovira i Virgili, Spain
3	Shishir Jaiswal	NARILAR project work	27 January 2014 to 21 April 2015, Universitat Rovira i Virgili, Spain
4	A. Gurubalan	Project work	1 December 2014 to 11 January 2015 Universitat Rovira i Virgili, Spain



## 4.14. DEPARTMENT OF METALLURGICAL AND MATERIALS ENGINEERING

### 4.14.1. Introduction

The Department of Metallurgical and Materials Engineering (MME) is one of the oldest departments of IIT Madras, established in 1959 as the Department of Metallurgy, at the very inception of the institute. The department is actively engaged in research, education and industrial consultancy. It offers B.Tech., M.Tech., M.S. and Ph.D. degrees. The department's teaching, research and consultancy activities cover a broad spectrum of materials science and engineering and industrial metallurgy (metal casting, metal joining, metal forming and materials technology).

The department developed a unique character at the outset owing to its strong linkages with industry and the expertise of the faculty in industrial metallurgy. Over the years, the department has hosted excellent research infrastructure in the broad areas of material science and engineering. The department hosts excellent research infrastructure in the broad areas of materials processing (forming, joining, casting, particulate processing, nano-structured materials), characterisation (X-ray diffraction, electron microscopy, thermal analysis), mechanical testing, environmental degradation/corrosion, 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 country for teaching, research and consultancy in the emerging areas of material science and engineering while consolidating the strength in traditional areas of metallurgical engineering. The activities for the year 2014–2015 corroborate the department's progress in keeping with its vision.

### 4.14.2. Academic Programmes

#### New courses introduced

Sl. No.	Course No.	Title
1	MM5040	Defects in Materials
2	MM5030	Materials for Energy Technologies
3	MM5640	Sheet Metal Forming
4	MM5017	Electronic Materials, Devices and Fabrication

#### Students on roll as of September 2014 + M.S. and Ph.D. scholars admitted in January 2015

Programme	I Year	II Year	III Year	IV Year	V Year and Others	Total
B.Tech.	31	32	30	28	17	138
Dual Degree	13	11	11	14	18	67
M.Tech.	14	25	—	—	—	39
M.S.	4	12	5	1	—	22
Ph.D.	20	20	15	19	18	92
<b>Total</b>	<b>82</b>	<b>100</b>	<b>61</b>	<b>62</b>	<b>53</b>	<b>358</b>

#### Names of students/scholars who attended conferences/workshops/seminars/ symposia abroad/in India

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposium/Workshop	Date and Venue	Financial Assistance from
<b>Abroad</b>					
1	G.M. Karthik	MM11D021	TMS-ATM 2015	15–19 March 2015, Orlando, Florida, USA	IIT Madras
2	Venkateswararo Mannava	MM11D003	TMS-ATM 2015	15–19 March 2015, Orlando, Florida, USA	IIT Madras
3	Sai Kishore	MM12S013	TMS-ATM 2015	15–19 March 2015, Orlando, Florida, USA	IIT Madras

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposium/Workshop	Date and Venue	Financial Assistance from
4	R. Jayasree	MM11D018	24th Interdisciplinary Research Conference on Injectable Osteoarticular Biomaterials and Bone Augmentation Procedures (GRIBOI 2014)	5–7 May 2014, Nantes, France	IIT Madras
5	K. Madhumathi	MM12D005	Innovations in Biomedical Materials: Focus on Ceramics 2014	30 July to 1 August 2014, Ohio, USA	IIT Madras
6	K. Arun Babu	MM11S007	17th International Conference on Textures of Materials (ICOTOM-17)	24–29 August 2014, Dresden, Germany	IIT Madras
7	C.N. Athreya	MM12D002	ICOTOM-17	24–29 August 2014, Dresden, Germany	IIT Madras
8	Pramod S.L.	MM10D009	Material Science & Technology Conference and Exhibition (MS&T'14)	12–16 October 2014, Pittsburgh, USA	IIT Madras
9	Ebenezer D.	MM11D009	MS&T'14	12–16 October 2014, Pittsburgh USA	IIT Madras
10	Naveen Kumar N.	MM11D010	144th TMS Annual Meeting and Exhibition	15–19 March 2014, Florida, USA	IIT Madras
11	Jagannatham M.	MM11D011	MS&T'14	12–16 October 2014, Pittsburgh, USA	IIT Madras
12	Arun M.S.	MM11D014	Sixth International Conference on Nanomaterials by SPD	30 June to 4 July 2014, Metz, France	IIT Madras
13	Vasanth Kumar K.	MM12D013	144th TMS Annual Meeting and Exhibition	15–19 March 2014, Florida USA	IIT Madras
<b>India</b>					
1	Awin Wasan E.	MM12D018	NMD-ATM 2014	12–15 November 2014, College of Engineering, Pune	IIT Madras
2	Ameey Anupam	MM14D005	ATSC-2014	24–26 November 2014, Hyderabad	IIT Madras
3	Shakthi Priya	MM13M029	NMD-ATM 2014	12–15 November 2014, College of Engineering, Pune	IIT Madras
4	S. Praveen	MM09D025	NMD-ATM 2014	12–15 November 2014, College of Engineering, Pune	IIT Madras
5	Niraj Chawake	MM09D023	NMD-ATM 2014	12–15 November 2014, College of Engineering, Pune	IIT Madras
6	Venkateswara Rao Mannava	MM11D003	NMD-ATM 2014	12–15 November 2014, College of Engineering, Pune	IIT Madras
7	Ameey Anupam	MM14D005	NMD-ATM 2014	12–15 November 2014, College of Engineering, Pune	IIT Madras
8	G.M. Karthik	MM11D021	NMD-ATM 2014	12–15 November 2014, College of Engineering, Pune	IIT Madras
9	Rama Srinivas Varanasi	MM12B032	NMD-ATM 2014	12–15 November 2014, College of Engineering, Pune	IIT Madras
10	Koundinya N.T.B.N.	MM12D021	NMD-ATM 2014	12–15 November 2014, College of Engineering, Pune	IIT Madras
11	S. Chenna Krishna	MM09S003	NMD-ATM 2014	12–15 November 2014, College of Engineering, Pune	IIT Madras
12	K. Vasantha Kumar	MM12D013	NMD-ATM 2014	12–15 November 2014, College of Engineering, Pune	IIT Madras
13	N.S. Karthiselva	MM11D019	NMD-ATM 2014	12–15 November 2014, College of Engineering, Pune	IIT Madras

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposium/Workshop	Date and Venue	Financial Assistance from
14	T. Siva	MM13M031	TMS-ATM 2015	27 February to 1 March 2015, New Delhi	IIT Madras
15	T. Hanas	MM13D009	Indo-Australian Conference on Biomaterials (BiTERM-2015)	5-7 February 2015, Anna University, Chennai	IIT Madras
16	Viswanathan R.	MM12D028	EDSA 2015	IIT Madras	IIT Madras
17	Sai Kishore	MM12S013	TMS-ATM 2014	12-15 November 2014, College of Engineering, Pune	IIT Madras
18	Lavanya R.	MM13D201	NMD-ATM 2014	12-15 November 2014, College of Engineering, Pune	IIT Madras
19	Sonia Sharma	MM13D017	NMD-ATM 2014	12-15 November 2014, College of Engineering, Pune	IIT Madras
20	Venkateswara Rao Mannava	MM11D003	ISRS 2014	11-13 December 2014, IIT Madras	IIT Madras
21	G.M. Karthik	MM11D021	ISRS 2014	11-13 December 2014, IIT Madras	IIT Madras
22	Santhoshkumar Bhogi	MM12D024	ISRS 2014	11-13 December 2014, IIT Madras	IIT Madras
23	Niraj Mohan Chawake	MM09D023	ISRS 2014	11-13 December 2014, IIT Madras	IIT Madras
24	N.T.B.N. Koundinya	MM12D021	ISRS 2014	11-13 December 2014, IIT Madras	IIT Madras
25	Athul Atturan U.	MM13S001	ISRS 2014	11-13 December 2014, IIT Madras	IIT Madras
26	K. Sai Rajeshwari	MM13D208	ISRS 2014	11-13 December 2014, IIT Madras	IIT Madras
27	K. Vasanthakumar	MM12D013	ISRS 2014	11-13 December 2014, IIT Madras	IIT Madras
28	N.S. Karthiselva	MM11D019	ISRS 2014	11-13 December 2014, IIT Madras	IIT Madras
29	P. Jojibabu	MM13S015	NMD-ATM 2014	12-15 November 2014, College of Engineering, Pune	DST
30	P. Jojibabu	MM13S015	IACS 2015	23-26 January 2015, Kolkatta	DST
31	C. Srishilan	MM13S023	NMD-ATM 2014	12-15 November 2014, College of Engineering, Pune	IIT Madras
32	Yuvaraj G. Patil	MM13S025	NMD-ATM 2014	12-15 November 2014, College of Engineering, Pune	IIT Madras
33	Yuvaraj G. Patil	MM13S025	ICASPCT-2015	14-16 January 2015, Raigarh	IIT Madras
34	C. Srishilan	MM13S023	ICASPCT-2015	14-16 January 2015, Raigarh	IIT Madras
35	R. Jayasree	MM11D018	BiTERM-2015	5-7 February 2015, Anna University, Chennai	IIT Madras
36	R. Jayasree	MM11D018	ISRS-2014	11-13 December 2014, IIT Madras	IIT Madras
37	R. Jayasree	MM11D018	27th Annual Conference of Indian Society of Dental Research (ISDR 2014)	31 October-2 November 2014, Saveetha Dental College, Chennai	IIT Madras
38	Madhumathi	MM12D005	BiTERM-2015	5-7 February 2015, Anna University, Chennai	IIT Madras
39	G. Logesh	MM12D004	NMD-ATM 2014	12-15 November 2014, College of Engineering, Pune	IIT Madras
40	G. Harish	MM12S005	NMD-ATM 2014	12-15 November 2014, College of Engineering, Pune	IIT Madras

### Names of students/scholars who won outside prizes and awards

Sl. No.	Name of the Student/Scholar	Roll No.	Name of Prize	Prize Awarded by
1	Jayasree R.	MM11D018	Best Scientific Paper Award	27th Annual Conference of the Indian Society for Dental Research 2014, Saveetha Dental College, Chennai
2	Nandhakumar E.	MM14D003	Best Poster Award	ISRS 2014
3	N. Srinivasan	MM12D012	First Prize under the Non-ferrous Category for posters	52nd National Metallurgists Day (NMD 2014), Pune, 12–15 November 2014
4	G.M. Karthik	MM11D021	Best Oral Presentation Award	ISRS 2014
5	Joji Babu Panta	MM13S015	Second Prize for oral presentations	52nd National Metallurgist's Day and 68th Annual Technical Meeting of the Indian Institute of Metals, College of Engineering, Pune, 12–15 November 2014
6	S. Madhavan	ME12D039	Best Paper Award	International Welding Symposium (IWS2K14), Mumbai, 28–30 October 2014
7	M. Rashad	MM13D209	Best Oral Presentation Award	ISRS 2014

### Names of students/scholars who won convocation/Institute Day prizes

Sl. No.	Name of the Student/Scholar	Roll No.	Name of Prize
1	Divyasree P.K.	MM11B011	Sri Satish Pai Prize
2	Karthik A.	MM10B021	Ratna Award
3	Manoj Prabhakar	MM09B041	Prof. V. Sundaresan Prize, S. Anantha Ramakrishnan Memorial Prize
4	Soumya S.	MM12D030	Institute Merit Prize
5	Tanay Pandey	MM12M024	Sudarshan Bhat Memorial Prize
6	G. Varaprasad Reddy	MM07D010	Sudarshan Bhat Memorial Prize
7	L. Jeevan Rekha, Aparna Prasannan	MM10B023MM10B006	B. Krishnamurthy Award (joint winners)
8	Shahane Ninad Makarand	MM10B030	Dr. Dhandapani Memorial Prize, Vijay Jagannathan Award

### 4.14.3. Faculty and Their Activities

#### Faculty

Name and Qualifications	Major Areas of Specialisation
<b>Professors</b>	
M. Kamaraj [Head], Ph.D. (IIT Madras)	High-temperature deformation studies on super alloys (with corrosion environment) and welded joints; development of wear surfacing materials tribological tests on weld deposits (plasma transferred arc, plasma spray, HVOF processes, etc.)
M. Balasubramanian, Ph.D. (IIT Madras)	Advanced ceramics and composites; nanocomposites processing; materials characterization
S.S. Bhattacharya, Ph.D. (IIT Madras)	Nanocrystalline materials—synthesis, consolidation, characterisation and property evaluation; superplasticity of materials (analytical and experimental); superplastic forming; metal forming; high-temperature deformation behaviour of materials; 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
B.S. Murty, Ph.D. (IISc Bangalore)	Nanocrystalline materials; bulk metallic glasses; high-entropy alloys; composites; phase transformations; electron microscopy; atom probe tomography
Paramanand Singh, Ph.D. (IIT Bombay)	Study of advanced ceramics (both functional and structural ceramics); nanostructured materials; shape memory alloys and electronic materials; ceramic matrix composites; mechanical alloying; metallic foam and warm compaction; powder metallurgy; powder characterisation

Name and Qualifications	Major Areas of Specialisation
K.C. Hari Kumar, Ph.D. (IIT Delhi)	Computational thermodynamics and kinetics; ab initio calculations of thermochemical and thermophysical properties
Prathap Haridoss, Ph.D. (U. Wisconsin-Madison)	Production and characterisation of carbon nanotubes; synthesis of CdS nanocrystals; CO-tolerant PEM fuel cell catalysts
T.S. Sampath Kumar, Ph.D. (IISc, Bangalore)	Nanostructured biomaterials; antimicrobial ceramics and delivery systems; value-added biomaterials from natural wastes
Uday Chakkingal, Ph.D. (Rensselaer Polytechnic Institute)	Metal forming and material processing; severe plastic deformation processes; aluminium alloys; fatigue
G. Sundararajan, Ph.D. (Ohio State University)	Tribological behaviour of materials; indentation behaviour of materials; coatings on materials; deformation and fracture behaviour of materials
<b>Associate Professors</b>	
R. Bauri, Ph.D. (IISc, Bangalore)	Metal matrix composites; aluminium alloys; solid oxide fuel cells
A.S. Gandhi, Ph.D. (IISc, Bangalore)	Physical ceramics; ceramic nanomaterials; high-temperature protective coatings (environmental and thermal barrier coatings); materials for energy systems (solid oxide fuel cells (SOFCs)); phase stability and transformations; metastable effects; thermally driven interactions in layered systems; surface engineering; zirconia ceramics; non-equilibrium phenomena in oxides
G. Phanikumar, Ph.D. (IISc, Bangalore)	Solidification using electromagnetic levitation and melt spinning; transport phenomena in manufacturing processes; microstructure simulation and characterisation
N.V. Ravi Kumar, Ph.D. (MPI-Stuttgart)	Polymer-derived ceramics; silicon carbide/silicon nitride ceramics; high-temperature mechanical properties; object-oriented finite element programming for prediction of macroscopic properties
S. Sankaran, Ph.D. (IIT Kanpur)	Mechanical behaviour of materials; electron microscopy; structure–property correlations
V. Subramanya Sarma, Ph.D. (IIT Madras)	Materials processing, development, characterisation and microstructure; mechanical property correlations in engineering materials
G.D. Janki Ram, Ph.D. (IIT Madras)	Welding; additive manufacturing; failure analysis
V. Sampath, Ph.D. (IISc, Bangalore)	Shape memory alloys/smart materials; composite materials; powder metallurgy; structure–property correlations in materials
<b>Assistant Professors</b>	
Ajay Kumar Sukla, 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 (KUL), Belgium)	Microstructural approach to mechanics of materials; finite element method and fast Fourier transform approach to crystal plasticity (CPFEM and CPFPT); plastic anisotropy and crystallographic texture; microstructure evolution in irradiated systems
Lakshman Nellakantan, 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 characterization; physics of foaming; X-ray tomography; solidification
Parasuraman Swaminathan, Ph.D. (University of Illinois, Urbana-Champaign, USA)	Electronic materials; drying-mediated assembly of nanoparticles and thin films; MEMS device fabrication; phase transformations in nanoparticles and thin film systems
K. Ravi Sankar, Ph.D. (IISc, Bangalore)	High-temperature deformation; super plasticity; nanocrystalline materials; size effects in plastic deformation
Sabita Sarkar, Ph.D. (IISc, Bangalore)	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, etc.
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

Name and Qualifications	Major Areas of Specialisation
Tiju Thomos, 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
<b>Visiting Faculty</b>	
M. Sundararaman, Ph.D. (Visiting faculty from 21 July 2014 to 20 July 2016)	Phase transformation and structure property correlation in metallic materials; ordered-disordered transformation under equilibrium and non-equilibrium conditions; micromechanics of plasticity; material characterisation; physical metallurgy of super alloys; defect analysis using microscopy
G. Balachandran, Ph.D. (Visiting faculty from 1 September 2014 to 31 August 2015)	Extraction of metals; advanced melting processes; hydrogen storage alloys; advanced cast irons; steel process and grade development
<b>Distinguished Visiting Professor</b>	
R. Natarajan, Vice President (TII), — Chennai	

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

Sl. No.	Coordinators	Title	Period and Venue
<b>Conferences</b>			
1	V. Subramanya Sarma	Gleeble User Workshop India (GUWI 2014) and National Conference on Thermomechanical Simulation Using Gleeble Systems	10–12 July 2014, IIT Madras
2	B.S. Murty (Convener)	Practical Metallography, organised by IIM Chennai Chapter	21–24 July 2014, Metco, Chennai
3	Prathap Haridoss	Corrosion Prevention and Control (CPC 2014)	12–13 September 2014, IIT Madras
4	T.S. Sampath Kumar	Indo-Australian Conference on Biomaterials, Tissue Engineering, Drug Delivery Systems and Regenerative Medicine (BiTERM 2015)	5–7 February 2015, Anna University
<b>Symposia</b>			
1	Uday Chakkingal, N.V. Ravikumar	Sixth International Symposium for Research Scholars in Metallurgy, Materials Science and Engineering (ISRS 2014), Department of Metallurgical and Materials Engineering, IIT Madras, ASM International Chennai Chapter and the Indian Institute of Metals Chennai Chapter	11–13 December 2014, IIT Madras
<b>Workshops</b>			
1	K. Ravi Sankar, Srinivasa Rao Bakshi	Two-day workshop on surface coating technologies, Department of Metallurgical and Materials Engineering, IIT Madras, ASM International Chennai Chapter and Indian Institute of Metals Chennai Chapter	1–2 December 2014, IIT Madras
2	Uday Chakkingal, S.S. Bhattacharya	Workshop on Metal Forming Technology	21 June 2014, IIT Madras
3	B.S. Murty	Two-day workshop on nano science and technology	14–15 April 2014, IIT Madras
4	Ranjit Bauri	One-day NRB research dissemination workshop, 'Friction Stir Processing of Aluminium Alloys and Composites'	5 March 2015, IC&SR, IIT Madras
5	M. Kamaraj, G.D. Janakiram, Koteswara Rao	Two-day NRB knowledge dissemination workshop, 'Joining and Surfacing Using Friction Stir and Cold Metal Transfer (CMT)–MIG Processes'	30–31 January 2015
6	N.V. Ravi Kumar	International workshop, 'Stress-Assisted Environmental Damage in Structural Materials'	27 February to 2 March 2015, IIT Madras
7	B.S. Murty	National workshop, 'High-Entropy Alloys: Prospects and Challenges'	28–29 March 2015, IIT Madras



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

Sl. No.	Name of Faculty Member	Title	Institution	Period
<b>Workshops</b>				
1	T.S. Sampath Kumar	Biomaterials: Current Activities and Future Directions	AMREC, Kulim, Malaysia	27–28 October 2014
<b>Symposia</b>				
1	Janaki Ram	Solid Freeform Fabrication Symposium 2014	University of Texas at Austin, USA	3–6 August 2014
2	Ashutosh S. Gandhi	NMD-ATM 2014 (made an oral presentation)	Pune	12–14 November 2014
3	Ashutosh S. Gandhi	Sixth ATSC-2014 (presented a paper, 'Toughness evolution of zirconia-based thermal barrier materials upon high-temperature exposure')	Hyderabad	24–26 November 2014
4	Srinivasa Rao Bakshi	Sixth ATSC-2014 (presented a paper, 'Thermally sprayed fly-ash coatings on mild steel substrates')	Hyderabad	24–26 November 2014
5	B.S. Murty	International Symposium on Nanocrystalline High-Entropy Alloys: A New Class of Exciting Materials (gave a presentation)	Ryerson Symposium, Ryerson University, Toronto, Canada	29 May 2014
6	B.S. Murty (Chairman)	International Symposium on Innovation of Light Metals for Transportation Industries (a symposium in honour of Prof. C. Ravi Ravindran) at MS&T 2014	Pittsburgh, USA	13 October 2014
7	B.S. Murty (Convener)	Symposium on Casting and Solidification, NMD-ATM 2014	Pune	12–15 November 2014
8	V. Subramanya Sarma	UGC–NRC for Materials Symposium on Severe Plastic Deformation (delivered a lecture)	IISc, Bangalore	12 May 2014
9	Uday Chakkingal	UGC–NRC for Materials Symposium on Severe Plastic Deformation (delivered a lecture)	IISc, Bangalore	12 May 2014
10	Ravi Sankar K.	UGC–NRC for Materials Symposium on Severe Plastic Deformation (delivered a lecture)	IISc, Bangalore	12 May 2014
11	Ranjit Bauri	NMD-ATM 2014 (gave an oral presentation)	College of Engineering, Pune	12–14 November 2014
<b>Conferences</b>				
1	V. Sampath	International Conference on Martensitic Transformations (ICOMAT-2014) (presented a paper)	Spain	6–11 July 2014
2	S.S. Bhattacharya	XII International Conference on Nanostructured Materials (NANO 2014) (presented papers)	Lomonosov Moscow State University, Moscow, Russia	13–18 July 2014
3	Ashutosh S. Gandhi	Engineering Conferences International—Thermal Barrier Coatings IV (presented a paper titled 'Mechanism of molten salt attack on zirconia-based thermal barrier materials')	ISREE, Germany	22–27 July 2014
4	Ravi Sankar Kottada	Conference on Trends and Innovations in Materials Testing	Zwick Roell India Private Limited, Gurgaon	19 January 2015
5	Ashutosh S. Gandhi	Sixth Asian Thermal Spray Conference (ATSC-2014)	Hyderabad	22–24 November 2014
6	Srinivasa Rao Bakshi	ATSC-2014	Hyderabad	22–24 November 2014

Sl. No.	Name of Faculty Member	Title	Institution	Period
7	T.S. Sampath Kumar	International Conference on Advance in Materials and Materials Processing (AMMP-15) (delivered keynote lecture on micro/nano featuring of metal implants)	Karunya University, Coimbatore	23 January 2015
8	Ranjit Bauri	Second International Conference on Nano Technology (ICNT-2015) (gave oral presentation)	Haldia Institute of Technology, Haldia, West Bengal	19–22 February 2015
9	Ranjit Bauri	Fourth International Conference on Materials Processing and Characterization (ICMPC 2015) (gave oral presentation)	GRIET, Hyderabad	14–15 March 2015
<b>Short-term courses</b>				
1	V. Subramanya Sarma	QIP/CEP Short Term Training Programme—Recent Advances in Composite Materials and Machining (delivered lecture)	IIT Madras	2–6 February 2015

### Special lectures delivered by faculty members at other institutions

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
1	B.S. Murty	Advanced materials by non-equilibrium processing	Tohoku University, Sendai, Japan	25 June 2014
2	B.S. Murty	Nanomaterials by top–down approach	Tohoku University, Sendai, Japan	9 July 2014
3	B.S. Murty	Industrial applications of nanotechnology	Institute of Engineers, Chennai	2 August 2014
4	B.S. Murty	Phase formation and stability in high-entropy alloys	RQ 15, Shanghai, China	24–30 August 2014
5	B.S. Murty	Nano crystalline materials with exceptional properties	Dalian University of Technology, China	29 August 2014
6	V. Subramanya Sarma	Principles of microscopy	SVCE, Chennai	3 May 2014
7	K.C. Harikumar	Computational thermodynamics (series of talks)	Sandvik Asia Limited, Pune	9–15 June 2014
8	T.S. Sampath Kumar	Nano CaP for hard tissue regeneration	Centre for Stem Cell Research, Vellore	4 July 2014
9	T.S. Sampath Kumar	Nanophase calcium phosphate carriers and composites for bone regeneration	IISc, Bangalore	23 May 2014
10	Uday Chakkingal	Severe plastically deformed Al and Mg alloys: Some potential applications in metal forming and biomaterial developments	IISc, Bangalore	12 May 2014
11	B.S. Murty	Aluminium-based in situ composites for automotive and aerospace applications (invited talk) at MS&T 2014	Pittsburgh, USA	13 October 2014
12	B.S. Murty	Nanocrystalline high-entropy alloys: A new class of exciting materials	Carnegie Melon University, USA	16 October 2014 (FN)
13	B.S. Murty	Nano materials for structural applications developed by far-from-equilibrium processing	University of Pittsburgh, USA	16 October 2014 (AN)
14	B.S. Murty	Nano materials for functional applications developed by far-from-equilibrium processing	University of Oakland, USA	17 October 2014
15	M. Balasubramanian	Advanced composite materials	NSN College of Engineering and Technology, Karur	17 October 2014
16	Parasuraman S.	Electronic materials: Basics, properties and applications	IIITD&M, Kancheepuram	20 October 2014

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
17	Lakshman N.	Nano-structuring NiTi alloys by selective dissolution and the novel tool for concurrent electrochemical-fatigue studies of NiTi wires	NMD-ATM 2014, Pune	12–15 October 2014
18	K.C. Harikumar	Computational materials science (series of talks) (also chaired a session)	NMD-ATM 2014, Pune	12–16 November 2014
19	Ravi Kumar N.V.	X-Ray crystallography and powder diffraction, at National Workshop on Recent Trends in X-ray Diffraction Techniques	Sathyabhama University, Chennai	28–29 November 2014
20	T.S. Sampath Kumar	Nanophase ceramics for hard tissue regeneration	NIT Rourkela	14 November 2014
21	Ravi Sankar K.	High-temperature mechanical testing on Mg alloys and their deformation behaviour, at Mechanical Testing and Characterisation (one-day workshop)	NIT Surathkal	31 October 2014
22	M. Kamaraj	Erosion resistance coatings, at the Sixth ATSC 2014	ARCI, Hyderabad	24–26 November 2014
23	M. Kamaraj	Surface coatings for engineering applications, for the Continuing Education Programme (CEP) on Surface Science and Engineering	DMRL Hyderabad	8 January 2015
24	T.S. Sampath Kumar	Bioceramic nanocarriers: Current opportunities, at the Seminar on Recent Trends in Biomaterials	Central Leather Research Institute, Chennai	16 December 2014
25	T.S. Sampath Kumar	Drug delivery aspects of bioceramic nanocarriers, at the National Conference on Drug Carriers in Medicine and Biology	Bannari Amman Institute of Technology, Sathyamangalam	7–8 January 2015
26	B.S. Murty	Excitement and challenges in nanotechnology”	RGUKT, Nuzvid	1 December 2014
27	B.S. Murty	Nanocrystalline high-entropy alloys	Andhra University, Visakhapatnam	21 January 2015
28	V. Subramanya Sarma	Electron back scatter diffraction: Principles and applications, Workshop on Advanced Characterisation Techniques of Materials (ACTM-2015)	Anna University, Chennai	24 February 2015
29	V. Subramanya Sarma	Development of textured coated high-temperature superconducting (HTS) cables in the National Resource Center Materials	IISc, Bangalore	18 February 2015
30	Ravi Sankar Kottada	Thermal stability and mechanical properties of high-entropy alloys, at Indo-US Workshop on Frontiers of Structural Materials Research	Orange County Resorts, Coorg	22–26 February 2015
31	T.S. Sampath Kumar	Nano CaP carriers and composites	IIT Kanpur	20 February 2015
32	Ranjit Bauri	Development of electrolyte materials for intermediate-temperature solid oxide fuel cells	Pondicherry University	3 March 2015

### Visits abroad by faculty members

Sl. No.	Name of Faculty Member	Place Visited	Date	Purpose of Visit	Funding from
1	G.D. Janaki Ram	Malaysia	14–15 May 2014	Invited talk at International Conference on Metallurgy & Welding Technology (ISWMT 2014), Malaysia	Institute of Metals, Malaysia
2	B.S. Murty	Canada	15 May to 15 June 2014	Visiting Professor, Ryerson University, Toronto, Canada	Ryerson University, Toronto, Canada

Sl. No.	Name of Faculty Member	Place Visited	Date	Purpose of Visit	Funding from
3	B.S. Murty	Japan	16 June to 15 July 2014	Visiting Professor, IMR Tohoku University, Sendai, Japan	Tohoku University, Sendai, Japan
4	V. Sampath	Spain	5–12 July 2014	Attending the International Conference on Martensitic Transformations (ICOMAT-2014), Bilbao, Spain, and presenting a paper	CPDA
5	S.S. Bhattacharya	Moscow, Russia	13–18 July 2014	Participating in the XII International Conference on Nanostructured Materials, NANO 2014	CPDA
6	B.S. Murty	Shanghai, China	24–30 August 2014	Delivering an invited talk at RQ15, Dalian University of Technology	CPDA
7	M. Kamaraj	Shenyang, China	26–29 September 2014	Attending the Fifth MRS China–India–Singapore Trilateral Conference on Advances in Nanomaterials: Energy, Water Healthcare	IIT Madras
8	G.D. Janakiram	NIST, Gaithersburg, MD, USA	22–24 September 2014	Technical discussion	NIST
9	B.S. Murty	Pittsburgh, USA	12–20 October 2014	Organising a symposium—MS&T	ASM and IIM
10	Ranjit Bauri	University of Birmingham and Loughborough University, UK	3–6 December 2014	Technical meeting and discussion	CPDA
11	K.C. Harikumar	Katholiek Universiteit Leuven, Belgium	21–28 January 2015	Ph.D. examination of a student as jury member	Katholiek Universiteit Leuven, Belgium
12	B.S. Murty	Washington, DC, USA	18–19 December 2014	NAE–INAE Meeting on Grand Challenges in Engineering Education	INAE
13	V. Sampath	Orlando, Florida, USA	15–19 March 2015	TMS-2015 Annual Technical Meeting & Exhibition	CPDA
14	M. Balasubramanian	Orlando, Florida, USA	15–19 March 2015	Presenting a paper at TMS-2015 Annual Technical Meeting and Exhibition	CPDA
15	M. Kamaraj	Nagaoka, Japan	23–27 March 2015	Attending a meeting on academic and educational collaboration between IIT Madras and Nagaoka University of Technology (NUT)	NUT, Nagaoka, Japan
16	T.S. Sampath Kumar	Malaysia	27–31 October 2014	Visiting Professor; organising a workshop, ‘Biomaterials: Current Activities and Future Directions’, and an internal colloquium among researchers at the Advanced Materials Research Centre, Kulim	SIRIM, Malaysia

### Honours and awards received by faculty members

Sl. No.	Name of Faculty Member	Name of Award	Awarded by	Awarded for	Date
<b>Honours</b>					
1	T.S. Sampathkumar	Chief guest at ARTBM'15, Padalam; delivered the inaugural address	—	—	19 March 2015

Sl. No.	Name of Faculty Member	Name of Award	Awarded by	Awarded for	Date
2	V. Sampath	Session chair at TMS-2015 Annual Technical Meeting & Exhibition, Florida, USA	—	—	15–19 March 2015
<b>Awards</b>					
1	B.S. Murty	ASM–IIM North America Lectureship Award (2014)	ASM International and IIM	—	—
2	Srinivasa Rao Bakshi	Ourstanding Professional Award	ASM International Chennai Chapter	Contributions to the activities of the chapter	13 September 2014
3	T.S. Sampath Kumar	JBT Best Paper Award	JBT Editorial Committee and American Scientific Publishers	Accelerated sonochemical synthesis of calcium-deficient hydroxyapatite nanoparticles, co-authored with Namitha Varadarajan, Rajkamal Balu, Deepti Rana and Murugan Ramalingam, published in the <i>Journal of Biomaterials and Tissue Engineering (JBT)</i>	22 January 2015

#### Books, monographs authored/co-authored

Sl. No.	Name of Faculty Member	Title	Publisher	Author/Co-author
<b>Books</b>				
1	B.S. Murty	<i>High-Entropy Alloys</i>	Elsevier	S. Ranganathan, J.W. Yeh
2	Ashutosh S. Gandhi	Metastable phase selection and low-temperature plasticity in chemically synthesised amorphous Al <sub>2</sub> O <sub>3</sub> –ZrO <sub>2</sub> and Al <sub>2</sub> O <sub>3</sub> –Y <sub>2</sub> O <sub>3</sub> , in <i>Oxide Nanostructures: Growth, Microstructures, and Properties</i>	Pan Stanford Publishing	Arindam Paul, Shailendra Singh Shekhawat, Umesh Waghmare, Vikram Jayaram

#### Fellowships of academies and professional societies

Sl. No.	Name of Faculty Member	Year of Admission
<b>INSA</b>		
1	B.S. Murty, FNA	2014
<b>Others</b>		
1	B.S. Murty, Fellow of Asia Pacific Academy of Materials (FAPAM)	2014

#### Editorial boards of journals

Sl. No.	Name of Faculty Member	Position (Editor/Member)	Journal
1	Ravikumar N.V.	Member of editorial board	<i>Surface Innovations</i>
2	T.S. Sampath Kumar	Associate Editor	<i>Biomaterials</i>
3	T.S. Sampath Kumar	Key Reader	<i>Metallurgical and Materials Transactions A</i>
4	S.S. Bhattacharya	Key Reader	<i>Metallurgical and Materials Transactions A</i>
5	S. Ganesh Sundara Raman	Editor	<i>Transactions of Indian Institute of Metals</i>
6	K.C. Hari Kumar	Key Reader	<i>Metallurgical and Materials Transactions A</i>

#### 4.14.4. Design and Development Activities

##### New facilities added or major equipment procured

Sl. No.	Name of Equipment	Value (lakhs of ₹)
1	Electric discharge machining (EDSM)	40.12
2	Fume hood	0.85

Sl. No.	Name of Equipment	Value (lakhs of ₹)
3	Thin film coating unit	4.06
4	Automatic polishing machine	5.51
5	Portable electrolyte polishing machine	1.98
6	BSED detector	4.43
7	3D optical profilometer	27.56
8	High-speed camera	31.27

#### Patents filed

Sl. No.	Name of Faculty Member	Topic of Patent
1	T.S. Sampath Kumar, Uday Chakkingal, B. Ratna Sunil	An improved process for controlled degradation of grain-refined magnesium alloy in temporary orthopedic implants (application no. 2551-CHE-2014; filing date 13 May 2014)
2	T.S. Sampath Kumar, R. Jayasree, K. Pavani Siva Kavya	An improved bioceramic mineral-releasing bioactive tetracalcium phosphate cements and method of producing the same from egg shells waste (application no. 4901/CHE/2014; filing date 30 September 2014)
3	Prathap Haridoss	Footwear-based device for gait analysis by timed mapping of foot contact points

#### 4.14.5. Research and Consultancy

##### Sponsored research projects (ongoing and new)

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Coordinators
1	Rare-Earth Silicate Environmental Barrier Coatings for SiC-Based High-Temperature Materials	18 March 2013 to 17 March 2016	ISRO	23.844	Ashutosh S. Gandhi
2	Fatigue Behaviour of an Ultrafine-grained Aluminium Alloy Processed by Equal-Channel Angular Pressing	2 November 2011 to 1 November 2014	DST	40.8	Uday Chakkingal, S. Ganesh Sundara Raman
3	Oxidation and Hot Corrosion Studies on Gas Turbine Alloys	11 December 2013 to 7 November 2015	CARS-GTRE, Bangalore	9.576	M. Kamaraj, Lakshman Neelakantan
4	Synthesis and Thermomechanical Processing Effects on the Microstructure and Mechanical Properties of Ti–Al–Ni–Cr–Co–Fe-Based Multicomponent/High-Entropy Alloys	31 October 2013 to 30 October 2016	ISRO	28.28	Srinivasa Rao Bakshi, G. Phanikumar
5	Synthesis of Photo-catalytic Porous Silicon-Containing Nitride and Oxynitride Nanocomposites	1 May 2014 to 30 April 2017	Scientific Council of Indo-French Centre for the Promotion of Advanced Research	149.73	N.V. Ravi Kumar (PI—Indian), K.C. Hari Kumar (Co-PI)
6	Optimisation of Hot-Workability Parameters for Microstructure Control in High-Temperature Super Alloys for Aerospace Applications	2014–2016	ISRO	24.88	Ravisankar Kottada
7	Effect of Retained Austenite on Rolling Contact Fatigue Life AISI 52100 Bearing Steel	2014–2017	DST	39.76	Kamaraj M., Seshadri Sekhar A.
8	Studies on the Influence of State of Stress on Static and Dynamic Recrystallisation in Nickel and Titanium	2014–2017	DST	43.42	Subramanya Sharma, Srikanth Vedantam
9	Development of Carbon Nanotube-Based Polymer Composites for Acoustic and Vibration Damping Materials for Underwater Applications	2014–2016	NRB	21.3	Prathap Haridoss, Susy Varughese, Sankaran S.



Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Coordinators
10	Processing of and Characterisation of Quenched and Partitioned Steels	13 April 2015 to 12 April 2018	CSIR	8	Sankaran S., Harikumar K.C.
11	Combined Process and Alloy Design of a Micro-alloyed DP Forging Steel Based in Integrative Computational Material Engineering (DP-Forge)	2015–2018	Indo-German Science and Technology Centre	117.4	G. Phani Kumar, Bhattacharya S.S., Harikumar K.C.
12	Use of Second-Phase Material to Enhance the Stability of Metallic Coatings	2015–2018	NRB	19.2	Parasuraman S.
13	Process Optimisation for Development of Austenitic ODS Alloy	2014–2016	IGCAR	31.44	B.S. Murty
14	Full Solar Spectrum Absorbers for Photo-functional Applications, Liquid Crystal Nanoscience: A New Direction in Hybrid Materials Research	2012–2017	DST	24.682	Tiju Thomas

### Industrial consultancy projects (ongoing and new)

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹)
1	V. Sampath, M. Balasubramanian	Failure Analysis of Ceramic Insulators	Modern Insulators Private Limited	2.96
2	V. Sampath, M. Balasubramanian	Metallographic Analysis of Ceramic Samples	Modern Insulators Private Limited	0.73
3	Harikumar K.C., Subramanya Sarma V.	Precipitation Behaviour in Thin Slab Caster (TSCR) to Develop Conventional Grain-Oriented (CGO) Electrical Steels	Tata Steel	21
4	B.S. Murty	Synthesis of Aluminium and Magnesium Polyborides Using Ball Milling Method	DRDO	9.75
5	Kamaraj M.	Corrosion Studies of Type 316 Stainless Steel and Its Welded Joints in Sea Water Environment	Bharat Heavy Electricals Limited	8.54
6	Srinivasa Rao Bakshi, Janaki Ram G.D.	Characterisation of Advanced Steels and Their Weldments	JSW	4.78
7	Ravi Kumar N.V.	Chemical and Phase Composition Analysis of Samples	Exova (Qatar) L.L.C.	2.92
8	Kamaraj M., Lakshman Neelakantan	Effect of Hydrogen Environment Embrittlement (HEE) Sensitivity of Alloy 718 Weldments	Liquid Propulsion Systems Centre	20.09
9	Subramanya Sarma V.	SEM Analysis	Common Code	7
10	Ravi Kumar, Kamaraj M.	Failure Analysis of Primary Reformer Catalyst Tubes	Madras Fertilizers Limited	1.21
11	Ravi Kumar	Microstructural and Phase Analysis of Weld Samples and Burnt Steel Sample	Exova (Qatar) L.L.C	1.14
12	Ravi Kumar	Composition and Phase Analysis of Anode Slime Samples	United India Insurance Company Limited	1.03
13	Ravi Kumar	Residual Stress Measurements of Steel Pipes	Automotive Steel Pipe India Limited	1.01
14	Sankaran S.	TEM Analysis of Self-assembled Nanostructures	Common Code	0.38
15	M. Balasubramanian	Testing of Epoxy Resin	U-TECH Consultants and Engineers Private Limited	0.84

### RBIC projects (ongoing and new)

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹)
1	Anand Kanjarla	Strengthening Mechanisms in Supplementary Creep	GE-India	9
2	S. Sankaran, M. Kamaraj	TEM Studies on High Strain Rate-Tested T64 Alloy	GTRE	10
3	Parasuraman Swaminathan, Lakshman Neelakantan	Adhesion of Gold-Based Coatings on Intermetallic Films	Titan Company Limited	13.48
4	Raghu Prakasah,  S. Ganesh Sundara Raman	High-Temperature Evaluation of Fatigue Crack Growth of Austenitic Stainless Steel (Type 304 LN and 316 LN SS) Weld joints made of A-TIG and TIG Welding Processes and Comparison with That of the Base Metals	IGCAR	25.12
5	Ganesh Sundararaman S.,  H.S.N. Murthy	Fretting Fatigue Behaviour of Ti-6Al-4V	Gas Turbine Research Establishment	9.79
6	Ajay Kumar Shukla	Data-Based Modelling Approach (ANN) to Control Hot Metal Pretreatment (HMPT) Process at JSW Steel	JSW Steel Limited, Bellary	2.02
7	Ajay Kumar Shukla	Development of Static and Dynamic Control Model for BOF Process	JSW Steel Limited, Bellary	2.02
8	Ajay Kumar Shukla	Mathematical Modeling of RH Steelmaking Process for the Production of IF Grade Steels	JSW Steel Limited, Bellary	2.02

### Institute funding (ongoing and new)

Sl. No.	Name of Faculty Member	Title	Industry	Amount(lakhs of ₹)
1	Manas Mukherjee	Development of Metal Foam Processing Facilities	New Faculty Scheme	30
2	Srinivasa Rao Bakshi	AMC for SPS, XRD and NI	Maintenance of Capital Equipment	10
3	Tiju Thomas	Complex Oxides and Oxynitrides	New Faculty Initiation Grant	5
4	Bhattacharya S.S.	X-Ray Photoemission Spectroscopy (XPS)	Maintenance of Capital Equipment	17.5
5	Parasuraman Swaminathan	Inkjet Printed Devices	New Faculty Seed Grant	30

### Faculty members' participation with other institutions under MoUs

Sl. No.	Name of Faculty Member	Participation Details	Name of University/Institution
1	Ajay Kumar Shukla, Sabita Sarkar, S. Pushpavanam (CHE)	Conducting high-impact research in the area of iron and steel in priority areas including process intensification, development of new process and advanced environmental technologies, energy optimisation and recovery and advanced materials	JSW Steel Limited (MoU signed to set up the Joint Center for Applied Research (JICAR))

### Research publications of faculty members and research scholars

Papers published in refereed national journals	4
Papers published in refereed international journals	83
Papers presented at national conferences	1
Papers presented at international conferences	12

### Papers published in refereed national journals

1. A.R. Devi, J.A. Chelvane, P.K. Prabhakar, B. Venkateswarlu, M. Doble and B.S. Murty. 2014. Influence of surfactant variation on effective anisotropy and magnetic properties of mechanically milled magnetite nanoparticles and their biocompatibility. *IEEE Transactions on Magnetics* 50(11): #5201004.
2. M. Mandal, D. Singh, B.S. Murty, S. Sangal and K. Mondal. 2014. Porous copper template from partially spark plasma-sintered Cu–Zn aggregate via dezincification. *Bulletin of Materials Science* 37(4): 743–752.
3. R. Bauri. 2014. Optimisation of process parameters for friction stir processing (FSP) of Al–TiC in situ composite. *Bulletin of Materials Science* 37(3): 571–578.
4. B.R. Sunil, T.S.S. Kumar and U. Chakkingal. 2014. A mini review on fine-grained biodegradable magnesium-based implants. *IIM-SAC Journal* 2(4): 311–321.

### Papers published in refereed international journals

1. V.R. Mudinepalli, S.H. Song, J.Q. Li and B.S. Murty. 2015. Magnetoelectric properties of lead-free Ni<sub>0.93</sub>Co<sub>0.02</sub>Mn<sub>0.05</sub>Fe<sub>1.95</sub>O<sub>4</sub>–Na<sub>0.5</sub>Bi<sub>0.5</sub>TiO<sub>3</sub> multiferroic composites synthesised by spark plasma sintering. *Journal of Magnetism and Magnetic Materials* 386: 44–49.
2. R.A. Mondal, B.S. Murty and V.R.K. Murthy. 2014. Temperature- and frequency-dependent electrical properties of NiCuZn ferrite with CuO-rich grain boundary segregation. *Journal of Alloys and Compounds* 595: 206–212.
3. V.R. Mudinepalli, S.H. Song, M. Ravi, J.Q. Li and B.S. Murty. 2015. Multiferroic properties of lead-free Ni<sub>0.5</sub>Zn<sub>0.5</sub>Fe<sub>1.9</sub>O<sub>4</sub>–Na<sub>0.5</sub>Bi<sub>0.5</sub>TiO<sub>3</sub> composites synthesised by spark plasma sintering. *Ceramics International* 41(5): 6882–6888.
4. R. Damodaram, S.G.S. Raman, D.V.V. Satyanarayana, G.M. Reddy and K.P. Rao. 2014. Hot tensile and stress rupture behaviour of friction-welded alloy 718 in different pre- and post-weld heat treatment conditions. *Materials Science and Engineering: A* 612: 414–422.
5. R. Sujith and R. Kumar. 2014. Room temperature strain rate sensitivity in precursor-derived HfO<sub>2</sub>/Si–C–N(O) ceramic nanocomposites. *AIP Advances* 4(1): #017129.
6. M. Preethi, B.S. Murty, S.G.S. Raman and R. Natarajan. 2014. Control of UFG microstructure in welded carbon steel tubes by cold drawing and annealing. *Transactions of the Indian Institute of Metals* 67(5): 681–690.
7. A.B. Kousaalya, R. Kumar and B.T.N. Sridhar. 2015. Thermal conductivity of precursor derived Si–B–C–N ceramic foams using *Metroxylon sagu* as sacrificial template. *Ceramics International* 41(1): 1163–1170.
8. S. Jothi, S. Ravindran and R. Kumar. 2014. Corrosion of polymer-derived ceramics in hydrofluoric acid and sodium salts. *Advances in Science and Technology* 89: 82–87.
9. P. Manda, U. Chakkingal and A.K. Singh. 2014. Hardness characteristics and shear band formation in metastable Ti alloys. *Materials Characterization* 96: 151–157.
10. N. Mary and T. Thomas. 2015. Nanorod to quantum dot conversion in ZnO dispersions with co-surfactants. *RSC Advances* 5: 15154–15158.
11. G.K. Soujanya, T. Hanas, V.Y. Chakrapani, B.R. Sunil and T.S.S. Kumar. 2014. Electrospun nanofibrous polymer-coated magnesium alloy for biodegradable implant applications. *Procedia Materials Science* 5: 817–823.
12. K. Santhy and K.C.H. Kumar. 2015. Thermodynamic reassessment of Nb–Ni–Ti system with order-disorder model. *Journal of Alloys and Compounds* 697: 733–747.
13. V.B. Rajkumar and K.C.H. Kumar. 2015. Gibbs energy modeling of Fe–Ta system by CALPHAD method assisted by experiments and ab initio calculations. *CALPHAD* 48: 157–165.
14. S. Balakrishnan, K. Ananthasivan and K.C.H. Kumar. 2014. Studies on the synthesis and sintering of nanocrystalline yttria. *Ceramics International* 40: 6777–6785.
15. V.B. Rajkumar and K.C.H. Kumar. 2014. Thermodynamic modeling of the Fe–Mo system coupled with experiments and ab initio calculations. *Journal of Alloys and Compounds* 611: 303–312.
16. S. Ghosh, B.P. Reddy, K. Nagarajan and K.C.H. Kumar. 2014. Experimental investigations and thermodynamic modeling of KCl–LiCl–UCl<sub>3</sub> system. *CALPHAD* 45: 11–26.
17. N. Maheswari, S.G. Chowdhury, K.C.H. Kumar and S. Sankaran. 2014. Influence of alloying elements on the microstructure evolution and mechanical properties in quenched and partitioned steels. *Materials Science and Engineering: A* 600: 12–20.
18. G. Tennyson, G.M. Karthik and G. Phanikumar. 2015. MPI + OpenCL implementation of a phase-field method incorporating CALPHAD description of Gibbs energies on heterogeneous computing platforms. *Computer Physics Communications* 186: 48–64.
19. S. Sandhya, R. Mahemaa and G. Phanikumar. 2014. Microstructure evolution during fusion welding of rheocast AA7075 alloy. *Procedia Materials Science* 5: 408–415.

20. S.K. Singh, K. Chattopadhyay, G. Phanikumar and P. Dutta. 2014. Experimental and numerical studies on friction welding of thixocast A356 aluminum alloy. *Acta Materialia* 73: 177–185.
21. S.R. Kala, N.S. Prasad and G. Phanikumar. 2014. Studies on multipass welding with trailing heat sink considering phase transformation. *Journal of Materials Processing Technology* 214(6): 1228–1235.
22. H. Nath and G. Phanikumar. 2014. Microstructure and phase evolution of Ni<sub>2</sub>FeGa Heusler alloy extended to different degrees of undercooling. *Materials Science Forum* 790: 199–204.
23. R.V.S. Prasad, M. Srinivas, M.M. Raja and G. Phanikumar. 2014. Microstructure and magnetic properties of Ni<sub>2</sub>(Mn,Fe)Ga Heusler alloys rapidly solidified by melt spinning. *Metallurgical and Materials Transactions A* 45: 2161–2170.
24. D. Sudevan, R.V. Prakash and M. Kamaraj. 2015. Post-impact fatigue response of CFRP laminates under constant amplitude and programmed FALSTAFF spectrum loading. *Procedia Engineering* 101: 395–403.
25. H. Nath and G. Phanikumar. 2015. Premartensite transition in Ni<sub>2</sub>FeGa Heusler alloy. *Materials Characterization* 102: 24–28.
26. K. Rajan, N. Rai, V.S. Sarma and B.S. Murty. 2014. Isothermal grain growth studies on nanostructured 9Cr–1Mo and 9Cr–1W ferritic steels containing nano-sized oxide dispersoids. *Metallurgical and Materials Transactions A* 45: 1684–1688.
27. B.P. Kumar, H.H. Kumar, D.K. Kharat, M. Balasubramanian and B.S. Murty. 2014. Investigations on PZT-based nanostructured functional materials. *Synthesis and Reactivity in Inorganic, Metal-Organic, and Nano-Metal Chemistry* 44: 991–994.
28. M. Battabyal, P. Spätig, B.S. Murty and N. Baluc. 2014. Investigation of microstructure and microhardness of pure W and W–2Y<sub>2</sub>O<sub>3</sub> materials before and after ion-irradiation. *International Journal of Refractory Metals and Hard Materials* 46: 168–172.
29. M. Divya, C.R. Das, S.K. Albert, S. Goyal, P. Ganesh, R. Kaul, J. Swaminathan, B.S. Murty, L.M. Kukreja and A.K. Bhaduri. 2014. Influence of welding process on type IV cracking behavior of P91 steel. *Materials Science and Engineering: A* 613: 148–158.
30. S. Vincent, A. Daiwile, S.S. Devi, M.J. Kramer, M.F. Besser, B.S. Murty and J. Bhatt. 2015. Bio-corrosion and cytotoxicity studies on novel Zr<sub>55</sub>Co<sub>30</sub>Ti<sub>15</sub> and Cu<sub>60</sub>Zr<sub>20</sub>Ti<sub>20</sub> metallic glasses. *Metallurgical and Materials Transactions A* 46: 2422–2430.
31. V.R. Mudinepalli, S.H. Song and B.S. Murty. 2014. Enhanced magnetoelectric properties in lead-free Ni<sub>0.83</sub>Co<sub>0.15</sub>Cu<sub>0.02</sub>Fe<sub>1.90</sub>4–δ–Na<sub>0.5</sub>Bi<sub>0.5</sub>TiO<sub>3</sub> composites by spark plasma sintering. *Scripta Materialia* 82: 9–12.
32. N. Chawake, L.D. Pinto, A.K. Srivastav, K. Akkiraju, B.S. Murty and R.S. Kottada. 2014. On joule heating during spark plasma sintering of metal powders. *Scripta Materialia* 93: 52–55.
33. N.K. Murthy, G.D.J. Ram, B.S. Murty, G.M. Reddy and T.J.P. Rao. 2014. Carbide-free bainitic weld metal: A new concept in welding of armor steels. *Metallurgical and Materials Transactions B* 45: 2327–2337.
34. C.R. Das, S.K. Albert, K. Laha, J. Swaminathan, S. Ravi, A.K. Bhaduri, B.S. Murty, P. Mayr. 2014. Influence of coincidence site lattice boundary on creep resistance of P91 steel weldments. *Procedia Engineering* 86: 80–87.
35. R.A. Mondal, B.S. Murty and V.R.K. Murthy. 2014. Maxwell–Wagner polarisation in grain boundary-segregated NiCuZn ferrite. *Current Applied Physics* 14: 1727–1733.
36. R.A. Mondal, B.S. Murty and V.R.K. Murthy. 2015. Origin of magnetocapitance in chemically homogeneous and inhomogeneous ferrites. *Physical Chemistry Chemical Physics* 17: 2432–2437.
37. V.R. Mudinepalli, L. Feng, W.C. Lin and B.S. Murty. 2015. Effect of grain size on dielectric and ferroelectric properties of nanostructured Ba<sub>0.85</sub>Sr<sub>0.2</sub>TiO<sub>3</sub> ceramics. *Journal of Advanced Ceramics* 4: 46–53.
38. N.S. Karthiselva, B.S. Murty and S.R. Bakshi. 2015. Low-temperature synthesis of dense TiB<sub>2</sub> compacts by reaction spark plasma sintering. *International Journal of Refractory Metals and Hard Materials* 48: 201–210.
39. S. Vincent, B.S. Murty, M.J. Kramer and J. Bhatt. 2015. Micro and nano indentation studies on Zr<sub>60</sub>CuAl<sub>15</sub>Ni<sub>15</sub> bulk metallic glass. *Materials & Design* 65: 98–103.
40. A.S.M. Ang, C.C. Berndt, M.L. Sesso, A. Anupam, S. Praveen, R.S. Kottada and B.S. Murty. 2015. Plasma-sprayed high entropy alloys: Microstructure and properties of AlCoCrFeNi and MnCoCrFeNi. *Metallurgical and Materials Transactions A* 46: 791–800.
41. R.A. Mondal, B.S. Murty and V.R.K. Murthy. 2015. Grain size-dependent phase transition and superparaelectric behaviour of ferroelectric BST. *Physica B: Condensed Matter* 461: 10–16.
42. A.K. Srivastav, N. Chawake and B.S. Murty. 2015. Grain size-dependent non-monotonic lattice parameter variation in nanocrystalline W: The role of non-equilibrium grain boundary structure. *Scripta Materialia* 98: 20–23.
43. S. Praveen, B.S. Murty and R.S. Kottada. 2014. Effect of molybdenum and niobium on the phase formation and hardness of nanocrystalline CoCrFeNi high-entropy alloys. *Journal of Nanoscience and Nanotechnology* 14: 8106–8109.



44. M. Vaidya, S. Armugam, S. Kashyap and B.S. Murty. 2014. Amorphisation in equiatomic high-entropy alloys. *Journal of Non-Crystalline Solids* 413: 8–14.
45. S. Vincent, J. Bhatt and B.S. Murty. 2014. Thermodynamic basis for glass formation in Cu–Zr-rich ternary systems and their synthesis by mechanical alloying. *Metallurgical and Materials Transactions A* 45: 2363–2370.
46. S.G.K. Manikandan, D. Sivakumar, K.P. Rao and M. Kamaraj. 2015. Laves phase in alloy 718 fusion zone: Microscopic and calorimetric studies. *Materials Characterization* 100: 192–206.
47. S.G.K. Manikandan, D. Sivakumar, K.P. Rao and M. Kamaraj. 2014. Microstructural characterisation of liquid nitrogen-cooled alloy 718 fusion zone. *Journal of Materials Processing Technology* 214(12): 3141–3149.
48. D. Jeyasimman, R. Narayanasamy, R. Ponalagusamy, V. Anandkrishnan and M. Kamaraj. 2014. The effects of various reinforcements on dry sliding wear behaviour of AA 6061 nanocomposites. *Materials & Design* 64: 783–793.
49. R.K. Kumar, S. Seetharamu and M. Kamaraj. 2014. Quantitative evaluation of 3D surface roughness parameters during cavitation exposure of 16Cr–5Ni hydro turbine steel. *Wear* 320: 16–24.
50. K.G. Prashanth, B. Debalina, Z. Wang, P.F. Gostin, A. Gebert, M. Calin, U. Kühn, M. Kamaraj, S. Scudino and J. Eckert. 2014. Tribological and corrosion properties of Al–12Si produced by selective laser melting. *Journal of Materials Research* 29: 2044–2054.
51. B. Selvam, P. Marimuthu, R. Narayanasamy, V. Anandkrishnan, K.S. Tun, M. Gupta and M. Kamaraj. 2014. Dry sliding wear behaviour of zinc oxide-reinforced magnesium matrix nano-composites. *Materials & Design* 58: 475–481.
52. G.P. Rajeev, M. Kamaraj and S.R. Bakshi. 2014. Al–Si–Mn alloy coating on aluminium substrate using cold metal transfer (CMT) welding technique. *Journal of Metals* 66: 1061–1067.
53. P.A. Manojkumar, A.S. Gandhi, M. Kamaraj and A.K. Tyagi. 2014. Sliding wear behaviour of alumina coatings prepared from mechanically milled powders. *Wear* 313: 11–18.
54. F. García-Moreno, S.T. Tobin, M. Mukherjee, C. Jiménez, E. Solórzano, G.S.V. Kumar, S. Hutzler and J. Banhart. 2014. Analysis of liquid metal foams through X-ray radiography and microgravity experiments. *Soft Matter* 10: 6955–6962.
55. J. Gubicza, Z. Hegedűs, J.L. Lábár, A. Kauffmann, J. Freudenberger and V.S. Sarma. 2015. Solute redistribution during annealing of a cold rolled Cu–Ag alloy. *Journal of Alloys and Compounds* 623: 96–103.
56. A. Kauffmann, J. Freudenberger, H. Klauß, W. Schillinger and V.S. Sarma. 2014. Efficiency of the refinement by deformation twinning in wire-drawn single-phase copper alloys. *Materials Science and Engineering: A* 624: 71–78.
57. S. Mandal, M. Jayalakshmi, A.K. Bhaduri and V.S. Sarma. 2014. Effect of strain rate on the dynamic recrystallization behaviour in a nitrogen-enhanced 316L(N). *Metallurgical and Materials Transactions A* 45: 5645–5656.
58. P. Bhaskar, A. Dasgupta, V.S. Sarma, U.K. Mudali and S. Saroja. 2014. Mechanical properties and corrosion behaviour of nanocrystalline Ti–5Ta–1.8Nb alloy produced by cryo-rolling. *Materials Science and Engineering: A* 616: 71–77.
59. B.R. Sunil, C. Ganapathy, T.S.S. Kumar and U. Chakkingal. 2014. Processing and mechanical behaviour of lamellar structured degradable magnesium-hydroxyapatite implants. *Journal of the Mechanical Behavior of Biomedical Materials* 40: 178–189.
60. B.R. Sunil, K.K. Kumar, P. Jojibabu, T.S.S. Kumar and U. Chakkingal. 2014. Effect of processing route and working temperature on microstructure evolution of AZ31 magnesium alloy during equal channel angular pressing. *Procedia Materials Science* 5: 841–846.
61. T.S.S. Kumar, K. Madhumathi, B. Rajkamal, S. Zaheetha, A.R. Malar and S.A. Bai. 2014. Enhanced protein delivery by multi-ion-containing eggshell-derived apatitic–alginate composite nanocarriers. *Colloids and Surfaces B: Bio-interfaces* 123: 542–548.
62. B.R. Sunil, T.S.S. Kumar, U. Chakkingal, V. Nandakumar and M. Doble. 2014. Friction stir processing of magnesium–nanohydroxyapatite composites with controlled in vitro degradation behaviour. *Materials Science and Engineering: C* 39: 315–324.
63. K. Madhumathi and T.S.S. Kumar. 2014. Regenerative potential and anti-bacterial activity of tetracycline-loaded apatitic nanocarriers for the treatment of periodontitis. *Biomedical Materials* 9: 035002.
64. B.R. Sunil, T.S.S. Kumar, U. Chakkingal, V. Nandakumar and M. Doble. 2014. Nano-hydroxyapatite-reinforced AZ31 magnesium alloy by friction stir processing: A solid state processing for biodegradable metal matrix composites. *Journal of Materials Science: Materials in Medicine* 25: 975–988.
65. D. Yadav and R. Bauri. 2015. Friction stir processing of Al–TiB<sub>2</sub> in situ composite: effect on particle distribution, microstructure and properties. *Journal of Materials Engineering and Performance* 24: 1116–1124.

66. C.N.S. Kumar and R. Bauri. 2014. Enhancing the phase stability and ionic conductivity of scandia-stabilised zirconia by rare earth co-doping. *Journal of Physics and Chemistry of Solids* 75: 642–650.
67. A.S. Babu and R. Bauri. 2014. Synthesis, phase stability and conduction behaviour of rare earth and transition elements-doped barium cerates. *International Journal of Hydrogen Energy* 39: 14487–14495.
68. R. Bauri, D. Yadav, C.N.S. Kumar and B. Balaji. 2015. Tungsten particle-reinforced Al 5083 composite with high strength and ductility. *Materials Science & Engineering: A* 620: 67–75.
69. D. Yadav and R. Bauri. 2015. Development of Cu particles and Cu core shell particles-reinforced Al composite. *Materials Science & Technology* 31: 494–500.
70. J. Jacob and R. Bauri. 2015. One-step synthesis and conductivity of alkaline and rare earth co-doped nanocrystalline CeO<sub>2</sub> electrolytes. *Ceramics International* 41: 6299–6305.
71. E. Kassab, A. Marquardt, L. Neelakantan, M. Frotscher, F. Schreiber, T. Gries, S. Jockenhoewel, J. Gomes and G. Eggeler. 2014. On the electropolishing of NiTi braided stents: Challenges and solutions (Über das Elektropolieren von geflochtenen NiTi-Stents—Herausforderungen und Lösungen). *Materials Science and Engineering Technology (Materialwissenschaft und Werkstofftechnik)* 45: 920–929.
72. B. Munirathinam and L. Neelakantan. 2015. Titania nanotubes from weak organic acid electrolyte: Fabrication, characterisation and oxide film properties. *Material Science and Engineering C, Materials for Biological Applications* 49: 567–578.
73. K. Prasad, P.S. Karamched, A. Bhattacharjee, V. Kumar, K.B.S. Rao and M. Sundararaman. 2015. Electron back-scattered diffraction characterisation of thermomechanical fatigue crack propagation of a near-alpha titanium alloy Timetal 834. *Materials and Design* 65: 297–311.
74. R.H. Krishna, B.M. Nagabhushana, B.N. Sherikar, N.S. Murthy, C. Shivakumara and T. Thomas. 2015. Luminescence enhancement in monoclinic CaAl<sub>2</sub>O<sub>4</sub>:Eu<sup>2+</sup>,Cr<sup>3+</sup> nanophosphor by fuel-blend combustion synthesis. *Chemical Engineering Journal* 267: 317–323.
75. R. Jayasree, T.S.S. Kumar, R.P. Nankar and M. Doble. 2014. Strontium-substituted C4P bone cement with enhanced radiopacity and mechanical properties. *European Cells and Materials* 28: 46–46.
76. S.A. Kumar, R. Sundar, S.G.S. Raman, H. Kumar, R. Kaul, K. Ranganathan, S.M. Oak, L.M. Kukreja and K.S. Bindra. 2014. Influence of laser peening on microstructure and fatigue lives of Ti–6Al–4V. *Transactions of Nonferrous Metals Society of China* 24: 3111–3117.
77. A.R. Devi, J.A. Chelvane, P.K. Prabhakar, P.V.P. Priya, M. Doble and B.S. Murty. 2014. Generation of drugs-coated iron nanoparticles through high-energy ball milling. *Journal of Applied Physics* 115: 124906.
78. A.R. Devi, J.A. Chelvane, P.K. Prabhakar, B. Venkateswarlu, M. Doble and B.S. Murty. 2014. Influence of surfactant variation on effective anisotropy and magnetic properties of mechanically milled magnetite nanoparticles and their biocompatibility. *IEEE Transactions on Magnetics* 50: #5201004.
79. V.R. Mudinepalli, N.R. Reddy, W.C. Lin, K.V.S. Kumar and B.S. Murty. 2015. Phase transitions of the ferroelectric Na<sub>0.5</sub>Bi<sub>0.5</sub>TiO<sub>3</sub> by dielectric and internal friction measurements. *Advanced Materials Letters* 6: 27–32.
80. F. Garcia-Moreno, M. Mukherjee, C. Jimenez and J. Banhart. 2015. Pressure-induced foaming of metals. *Journal of Metals* 67: 955–965.
81. S. Appari, V.M. Janardhanan, R. Bauri, S. Jayanti, O. Deutschmann. 2014. A detailed kinetic model for biogas steam reforming on Ni and catalyst deactivation due to sulfur poisoning. *Applied Catalysis A: General* 471: 118–125.
82. S. Appari, V.M. Janardhanan, R. Bauri and S. Jayanti. 2014. Deactivation and regeneration of Ni catalyst during steam reforming of model biogas: An experimental investigation. *International Journal of Hydrogen Energy* 39: 297–304.
83. M.B. Ponnuchamy and A.S. Gandhi. 2014. Lattice expansion and contraction in nanocrystalline yttria-stabilized zirconia powders. *Scripta Materialia* 83: 21–24.

#### Papers presented at national conferences

1. T. Siva, R. Sankar and M. Kamaraj. 2015. Al alloys characterisation by using thermal analysis method in aluminium recycling units. *The Institute of Indian Foundry Men 63rd Indian Foundry Congress*, Greater Noida, Delhi, 27 February to 1 March.

#### Papers presented at international conferences

1. V. Sampath, T.N. Raju and V. Sampath. 2014. Shape memory characteristics of a Cu–12.5 wt.%Al–3 wt.%Fe shape memory alloy with 0.9 wt.% cobalt addition. Bilbao, Spain, 6–11 July.
2. C.R. Kumaran, M. Chandran, K.M. Surendra, S.S. Bhattacharya and M.S.R. Rao. 2014. Growth and characterisation of diamond particles, diamond films and CNT–diamond composite films deposited simultaneously by hot filament CVD. Lomonosov Moscow State University, Moscow, Russia, 13–18 July.
3. B.M. Jolly, D.H. Bheda and S.S. Bhattacharya. 2014. Synthesis of nanocrystalline alpha-alumina (α-Al<sub>2</sub>O<sub>3</sub>) through pulsed electric current heating. Lomonosov Moscow State University, Moscow, Russia, 13–18 July.



4. R.L. Dcunha, S.M.J. Raju and S.S. Bhattacharya. 2014. Synthesis of nanocrystalline tin oxide by flame spray pyrolysis using sulphate precursors. Lomonosov Moscow State University, Moscow, Russia, 13–18 July.
5. M. Chandran, S.S. Bhattacharya and M.S.R. Rao. 2014. Pulsed laser deposition of PZT/diamond heterostructures for high-frequency SAW device applications. Lomonosov Moscow State University, Moscow, Russia, 13–18 July.
6. M. Chandran, S.S. Bhattacharya and M.S.R. Rao. 2014. Chemical vapour deposition of diamond thin films on sapphire substrates, Lomonosov Moscow State University, Moscow, Russia, 13–18 July.
7. N. Reddy and A.S. Gandhi. 2014. Mechanism of molten salt attack on zirconia-based thermal barrier materials. Irsee, Germany, 22–27 June.
8. J. Gubicza, Z. Hegedűs, J.L. Lábár, V.S. Sarma, A. Kauffmann and J. Freudenberger. 2014. Microstructure evolution during annealing of an SPD-processed supersaturated Cu–3 at.% Ag alloy. Metz, France, 30 June to 4 July.
9. N.T.B.N. Koundinya, V. Prasant and R.S. Kottada. 2014. Effect of alloying elements on deformation behaviour of magnesium alloys. IIT Madras, 11–13 December.
10. M.S. Arun and U. Chakkingal. 2014. Flow behaviour of magnesium alloy AZ 31 processed by equal channel angular pressing. *IOP Conference Series: Materials Science & Engineering*.
11. R.K. Kumar, M. Kamaraj and S. Seetharamu. 2014. Cavitation erosion resistance characteristics of HVOF- and HVAF-based 86WC–10Co–4Cr hydroturbine coatings. *Sixth Asian Thermal Spray Conference (ATSC 2014)*, ARCI, Hyderabad, 24–26 November.
12. M. Govindaraju, K. Balasubramanian, U. Chakkingal and K.P. Rao. 2015. Making ceramic–metal composite material by friction stir processing. *IOP Conference Series: Materials Science & Engineering*.

#### Distinguished visitors to the department

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1	Dr. Narendra B. Dahotre, University of North Texas, USA	2 April 2014	IIM seminar talk
2	Dr. Pulickel M. Ajayan, Department of Materials Science and Nano Engineering, Rice University	8 April 2014	IIM seminar talk
3	Dr. Lalgudi V. Ramanathan, Head, ENRI, Brazil	17 April 2014	IIM seminar talk
4	Dr. T.S. Sudarshan, President and CEO, MM Inc., Fairfax, VA	17 April 2014	IIM seminar talk
5	Dr. K.A. Natarajan, Emeritus Professor and NASI Senior Scientist Platinum Jubilee Fellow, IISc, Bangalore	21 April 2014	IIM seminar talk
6	Dr. Gaurav Mohanty, Research Fellow, Swiss Federal Laboratories for Material Science and Technology	29 April 2014	IIM seminar talk
7	Dr. Vaidehi Ganesan, IGCAR, Kalpakkam	30 April 2014	IIM seminar talk
8	Mr. Stefan Heineck, Head of Process Engineering, Stange-Elektronik GmbH, Germany	7 June 2014	IIM seminar talk
9	Dr. Anoop K. Mukhopadhyay, CSIR–CGCRI, Kolkata	13 June 2014	IIM seminar talk
10	Prof. Vikram Jayaram, Department of Materials Engineering, IISc, Bangalore	19 June 2014	IIM seminar talk
11	Prof. Rajan Ambat, Materials and Surface Engineering, Department of Mechanical Engineering, Technical University of Denmark, Lyngby, Denmark	25 July 2014	IIM seminar talk
12	Prof. M.P. Gururajan, Department of Metallurgical and Materials Engineering, IIT Bombay	7 August 2014	IIM seminar talk
13	Mr. R. Natarajan, Vice President, Corporate Technology Centre, Tube Investments of India, Chennai	22 August 2014	IIM seminar talk
14	Mr. R. Natarajan, Vice President, Corporate Technology Centre, Tube Investments of India, Chennai	9 September 2014	IIM seminar talk
15	Mr. Amol A. Gokhale, Director, DMRL, Hyderabad	16 October 2014	Dr. Placid Rodriguez Memorial Lecture
16	Mr. R. Natarajan, Senior Vice President, TII, and AICTE–INAE Distinguished Visiting Professor	27 October 2014	Interaction with postgraduate students
17	Dr. Somath Bhattacharyya, TIFR, Mumbai	7 November 2014	Faculty seminar

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
18	Dr. Sumanth Shankar, Professor of Mechanical Engineering, McMaster University, Canada	20 November 2014	Seminar talk
19	Dr. Kazuhiro Hono, NIMS Fellow and Director, Magnetic Materials Unit, NIMS, Tsukuba, Japan	12 November 2014	IIM seminar talk
20	Dr. Vinod Achutavarrier Prasad, School of Computer Engineering, NTU, Singapore	20 November 2014	Seminar talk
21	Dr. M. Okazaki, Professor, Nagaoka University of Technology, Tomioka, Nagaoka, Japan	11–15 December 2014	Meeting with deans, interaction meeting with MME/EE faculty, discussion about Joint Degree programme
22	Dr. Hisayuki Suematsu, Professor, Nagaoka University of Technology, Tomioka, Nagaoka, Japan	11–15 December 2014	Meeting with deans, interaction meeting with MME/EE faculty, discussion about Joint Degree programme
23	Prof. Dr.-Ing. Horst Hahn, Distinguished Professor of IIT Madras and Director, Institute for Nanotechnology, Karlsruhe Institute of Technology, Karlsruhe, Germany	5–7 January 2015	Meeting with deans, interaction meeting with MME faculty and research scholars, technical talk, interaction meeting with other research groups
24	Dr. Alan Lakshminarayanan, CSSBB, PMP	17 February 2015	IIM seminar talk
25	Prof. Eun Soo Park, Department of Materials Science and Engineering, Seoul National University, Republic of Korea	19 February 2015	Seminar talk
26	Dr. Branko Matovic, Department of Materials Science, VINS, Belgrade, Serbia	24 February 2015	IIM seminar talk
27	Dr. S. Srikanth, Director, NML, Jamshedpur	3 March 2015	Seminar talk
28	Dr. Ghatu Subhash, University of Florida Gainesville, USA	5 March 2015	IIM seminar talk
29	Dr. Abhik N. Choudhury, Department of Materials Engineering, IISc, Bangalore	27 March 2015	Invited talk

#### 4.14.6. Other Activities of the Department/Centre

##### Faculty visits

Sl. No.	Name of the Faculty Member	Purpose of Visit	Date and Venue
1	Ajay Kumar Shukla	To finalise MoU with JSW Steel Limited to work on three small RBIC projects (detailed presentation and discussions on action plans)	17–18 April 2014, JSW Steel Limited, Bellary
2	M. Kamaraj	To conduct a public viva voce examination	28 April 2014, NIT Hamirpur
3	T.S. Sampath Kumar	To attend Board of Research meeting as an external member	7 May 2014, Saveetha University, Chennai
4	Ranjit Bauri	To attend Review Committee meeting of DSIR as an external member	17 June 2014, TDDP, DSIR, New Delhi
5	S. Parasuraman	Visit to GE under GE–IIT Madras Industry Connect Programme	3–11 July 2014, Bangalore
6	Anand Krishna Kanjarla	Visited to GE under GE–IIT Madras Industry Connect Programme	22–25 July 2014, Bangalore
7	M. Kamaraj	To conduct a public viva voce examination	21 July 2014, IIT Bombay
8	M. Kamaraj	To conduct a Selection Committee meeting	24–25 July 2014, VNIT, Nagpur
9	M. Kamaraj	To conduct a public viva voce examination	28 July 2014, Pondicherry University
10	Ranjit Bauri	To visit E-Foundry Lab, Department of ME, IIT Bombay, for discussion to set up similar facilities at IIT Madras	24 July 2014, IIT Bombay
11	K.C. Harikumar	To train students and faculty members in Thermo-Calc and databases	24–25 June 2014, Jadavpur University

Sl. No.	Name of the Faculty Member	Purpose of Visit	Date and Venue
12	B.S. Murty	NRB Materials Panel meeting	18–19 July 2014, DMRL, Hyderabad
13	T.S. Sampath Kumar	NRB Materials Panel meeting	18–19 July 2014, DMRL, Hyderabad
14	B.S. Murty	DST INSPIRE program: Lecture to XI Grade school students	22 July 2014, SSN College, Chennai
15	B.S. Murty	NRB Board meeting	25 July 2014, DRDO HQ, New Delhi
16	B.S. Murty	To visit PSG Tech. as Distinguished Professor	28–29 July 2014, Coimbatore
17	B.S. Murty	INAE-AICTE Travel Fellowship discussion meeting	31 July 2014, INAE, New Delhi
18	S. Ganesh Sundara Raman	To attend a Selection Committee meeting as an expert member to interview candidates for temporary faculty positions	27 July 2014, NIT Trichy
19	Ajay Kumar Shukla	To discuss the progress of ongoing projects and future possibilities in other areas	22–23 August 2014, JSW Steel Limited
20	Ranjit Bauri	For discussion to set up similar facilities at IIT Madras	1 August 2014, E-Foundry Lab, IIT Bombay
21	M. Kamaraj	To conduct public viva voce examination	National Institute of Engineering, Mysore
22	M. Sundararaman, Visiting Faculty	To attend meeting to review the activities of the Microstructure Group at ARCI	5 August 2014, ARCI, Hyderabad
23	M. Kamaraj	To attend ARDB meeting	28 October 2014, IISc, Bangalore
24	M. Kamaraj	To attend Board of Studies meeting	29 November 2014, Ramakrishna Engineering College, Coimbatore
25	B.S. Murty	NRB Materials Panel meeting	3–4 November 2014, Chennai
26	T.S. Sampath Kumar	NRB Materials Panel meeting	3–4 November 2014, Chennai
27	T.S. Sampath Kumar	Board of Studies meeting, Faculty of Technology	10 November 2015, Anna University
28	Ganesh Sundara Raman	To attend a Selection Committee meeting as an expert member to interview a candidate for promotion	18 December 2014, IGCAR, Kalpakkam
29	T.S. Sampath Kumar	NRB Materials Panel meeting	15 January 2015, Visakhapatnam
30	Ajay Kumar Shukla	To discuss the progress of ongoing projects and to deliver a talk, Post-combustion-based dynamic control model for BOF steel-making process: A case study with reference to JSW Steel Plant data	23–24 January 2015, JSW Steel Limited
31	M. Sundararaman, Visiting Faculty	External expert member of Peer Review Committee for two projects in DMRL	23 January 2015, DMRL, Hyderabad
32	M. Kamaraj	To attend a Selection Committee meeting	5 February 2015, Ministry of Culture
33	Ajay Kumar Shukla	To conduct a public viva voce examination	6 February 2015, NITK, Surathkal
34	T.S. Sampath Kumar	Board of Research meeting	24 February 2015, Saveetha University
35	M. Kamaraj	To attend a Selection Committee meeting	27 February 2015, Ministry of Culture
36	T.S. Sampath Kumar	NRB Materials Panel meeting	13–14 March 2015, Goa
37	V. Sampath	To Serve as a member of the Selection Committee for UPSC for the post of Assistant Director (Metallurgy)	25–26 February 2015
38	V. Sampath	To serve as an expert member for the academic audit for the Ph.D. programme	25 March 2015, Karunya University, Coimbatore

Sl. No.	Name of the Faculty Member	Purpose of Visit	Date and Venue
39	V. Sampath	To serve as an examiner for Ph.D. thesis in mechanical engineering	31 March 2015, VIT University
40	N.V. Ravi Kumar	Department outreach programme	17–18 March 2015, NITTE, Mangalore

### Student visits

Sl. No.	Name of the Student	Purpose of Visit	Date and Venue
1	Sachin Santosh	Industrial visit to collect data for his Master's project from steel melting shop of JSW Steel Limited	17–18 April 2014, JSW Steel Limited, Bellary
2	C. Srishilan	Industrial visit to collect data for his Master's project from COREX shop of JSW Steel Limited	16–19 November, 2014, JSW Steel Limited, Bellary

### Major infrastructure development

#### Adhesive Bonding Laboratory (Adhesive Joining Technologies)

Sponsor: TDB project 'Multi-join'



Grit-blasting facility for sample preparation



Optosurf sensor for surface quality measurement



Dry ice blasting for surface cleaning



Triple-walled hot-air oven



Fume hood for joint preparation



Controlled environmental chamber for ageing studies



Wire EDM machine

## 4.15. DEPARTMENT OF OCEAN ENGINEERING

### 4.15.1. Academic Programmes

Students on roll as of September 2014 + M.S. and Ph.D. scholars admitted in January 2015

Programme	I Year	II Year	III Year	IV Year	V Year and Others	Total
B.Tech.	33	32	31	32	14	142
Dual Degree	15	17	15	20	25	92
M.Tech.	42	53	—	—	1	96
M.S.	9	21	10	21	—	61
Ph.D.	11	27	28	23	36	125
<b>Total</b>	<b>110</b>	<b>150</b>	<b>84</b>	<b>96</b>	<b>76</b>	<b>516</b>

Names of students/scholar who attended conferences/workshops/seminars/symposia abroad/in India

Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference/Seminar/ Symposium/Workshop	Date and Venue	Financial Assistance from
<b>Abroad</b>					
1	Loksha, Ph.D.	OE12D016	Student exchange programme	1 September to 31 October 2014, Germany	DAAD
2	E. Dinesh Kumar, Ph.D.	OE13D028	Student exchange programme	1 September to 31 October 2014, Germany	DAAD
3	R. Senthil Kumar, Ph.D.	OE10D012	Plenose Project of European Union	University of Reggio, Italy	Project
4	K.V. Anand, Ph.D.	OE11D002	Plenose Project of European Union	University of Reggio, Italy	Project
5	K.V. Anand, Ph.D.	OE11D002	Plenose Project of European Union	University of Lisbon, Portugal	Project
6	Senthil Kumar Ramasamy	OE10D012	IAHR-APD-2014	21-24 September 2014, Hanoi, Vietnam	IIT Madras
7	Sajumon Scaria	OE10D011	ISOPE-2014	15-20 June, 2014, Busan, Korea	IIT Madras
8	K. Vinay Kumar Varma	OE10D025	RENEW-2014	24-26 November 2014, Lisbon, Portugal	IIT Madras
9	Rameez Badhurshah	OE12S004	12th ASME Biennial Conference on Engineering Systems Design and Analysis	25-27 June 2014, Copenhagen, Denmark	IIT Madras
10	Arihant Sonawat	OE12S001	ASME Fluids Engineering Summer Meeting (FEDSM 2014)	3-7 August 2014, Chicago, USA	IIT Madras
11	S.A.I. Bellary	OE11D017	ASME Turbo Expo	16-20 June 2014, Dusseldorf, Germany	IIT Madras
12	S.A.I. Bellary	OE11D017	SPE Middle East Artificial Lift Conference and Exhibition	26-27 November 2014, Manama, Bahrain	IIT Madras
13	Paresh Halder	OE12D006	First International Conference on Renewable Energies Offshore	24-26 November, 2014, Lisbon, Portugal	IIT Madras
<b>India</b>					
1	K.V. Anand, Ph.D.	OE11D002	Indo-Japan Workshop on River Mouths, Tidal Flats and Lagoons	15-16 September 2014, IIT Madras	Project



Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference/Seminar/ Symposium/Workshop	Date and Venue	Financial Assistance from
2	R. Senthil Kumar, Ph.D.	OE10D012	Indo-Japan Workshop on River Mouths, Tidal Flats and Lagoons	15–16 September 2014, IIT Madras	Project
3	T.J. Jemi Jaya, Ph.D.	OE14D007	Indo-Japan Workshop on River Mouths, Tidal Flats and Lagoons	15–16 September 2014, IIT Madras	Project
4	S. John Ashlin, Ph.D.	OE14D200	Indo-Japan Workshop on River Mouths, Tidal Flats and Lagoons	15–16 September 2014, IIT Madras	Project
5	Senthil Kumar Ramasamy	OE10D012	HYDRO-2012	7–8 December 2012, IIT Bombay	IIT Madras
6	Sajumon Scaria	OE10D011	HYDRO-2012	7–8 December 2012, IIT Bombay	IIT Madras
7	Narendran Kumar	OE10D020	HYDRO-2012	7–8 December 2012, IIT Bombay	IIT Madras
8	K. Vinay Kumar Varma	OE10D025	INCHOE-2014	5–7 February 2014, NIO, Goa	IIT Madras
9	Srineash V.K.	OE13D202	INDO-MARICLIM	6–9 October 2014, Allepey, Kerala	Symposium fund
10	M. Tholkapiyan	OE09D005	Ocean Optics XXII Conference 2014	26–31 October 2014, Portland Maine, USA	Project
11	V. Sundarabalan	OE10D14	World Ocean Science Conference 2015	5–8 February 2015, Cochin, Kerala	Project
12	D. Srikant	OE10D016	ICPST 2014	3–5 November, IIT Madras	Project
13	J.R. Arthi Simon	OE11D012	Ocean Optics XXII Conference 2014	26–31 October 2014, Portland, Maine, USA	Project
14	Anuj Kulshreshtha	OE11D025	International Conference on Water Resources, Coastal and Ocean Engineering (ICWRCOE'15)	12–14 March 2015, Mangalore, Karnataka	Project
15	S. Pravin Jeba Dev	OE12D007	Ocean Optics XXII Conference 2014	26–31 October 2014, Portland Maine, USA	Project
16	S. Pravin Jeba Dev	OE12D007	World Ocean Science Conference 2015	5–8 February 2015, Cochin, Kerala	Project
17	Rakesh Kumar Singh	OE12D028	Ocean Optics XXII Conference 2014	26–31 October 2014, Portland, Maine, USA	Project
18	Rakesh Kumar Singh	OE12D028	World Ocean Science Conference 2015	5–8 February 2015, Cochin, Kerala	Project
19	R. Elamurugu (a) Gokul	OE14D003	ICWRCOE'15	12–14 March 2015, Mangalore, Karnataka	Project
20	T. Varunan	OE14S014	World Ocean Science Conference 2015	5–8 February 2015, Cochin, Kerala	Project
21	Rohit Adhav	—	ASME Gas Turbine India Conference 2014	15–17 December 2014, New Delhi	IIT Madras
22	Paresh Halder	—	ASME Gas Turbine India Conference 2014	15–17 December 2014, New Delhi	IIT Madras
23	Mrinal K.R.	—	Fifth International and 41st National Conference on Fluid Mechanics and Fluid Power	12–14 December 2014, IIT Kanpur	—
24	T. Karthikeyan	—	Fifth International Congress on Computational Mechanics and Simulation	10–13 December 2014, Chennai	IIT Madras
25	Sanoop M.	—	Third International Conference on Petroleum Science and Technology	3–5 November 2014, Chennai	IIT Madras
26	S. Ajay	PE13M008	Third International Conference on Petroleum Science and Technology	3–5 November 2014, Chennai	IIT Madras

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposium/Workshop	Date and Venue	Financial Assistance from
27	Paresh Halder	OE12D006	International Conference on Water Resources, Coastal and Ocean Engineering	12–14 March 2015, Surathkal	IIT Madras
28	Md. Hamid Siddique	OE13D032	10th Meeting of Special Interest Group on Multidisciplinary Design Optimisation (SIG-MDO)	7–8 March 2015, Bangalore	ISRO
29	Paresh Halder	OE12D006	SIG-MDO	7–8 March 2015, Bangalore	ISRO
30	Rameez Badhurshah	—	Humboldt Kolleg Interdisciplinary Science: Catalyst for Sustainable Progress	4–6 September 2014, Bangalore	IIT Madras

#### Names of students/scholars who won outside prizes and awards

Sl. No.	Name of the Student/Scholar	Roll No.	Name of Prize	Prize Awarded by
1	Anuj Kulshreshtha	OE11D025	Best Paper Award	ICWRCOE'15, NIT, Surathkal

#### Names of students/scholars who won convocation/Institute Day prizes

Sl. No.	Name of the Student/Scholar	Roll No.	Name of Prize	Name of Donor
1	Bhavik Shah	—	Prof. M.S. Ananth Prize	—
2	Vishal Devgan	—	Prof. M.S. Ananth Prize	—

### 4.15.2. Faculty and Their Activities

#### Faculty

Name and Qualifications	Major Areas of Specialisation
<b>Professors</b>	
V. Anantha Subramanian, Ph.D. (IIT Madras) [Head]	Computer-aided ship design; ship hydrodynamics and computational fluid dynamics (CFD) applications
S.K. Bhattacharya, Ph.D. (IIT Madras)	Computer aided structural analysis; analysis of motion characteristics of floating bodies; model studies
K. Ganesh Babu, Ph.D. (IIT Madras)	Analysis and design of ocean structures; behaviour of materials in ocean environment
J.S. Mani, Ph.D. (IIT Madras)	Coastal engineering; wave hydrodynamics
V. Sundar, Ph.D. (IIT Madras)	Wave–structure interaction; coastal protection; port and harbour structures; fluid flow problems
R. Sundaravadivelu, Ph.D. (IIT Madras)	Computer-aided analysis; design and experimental studies of coastal and offshore structures; port and harbour structures
S.A. Sannasiraj, Ph.D. (IIT Madras)	Wind–wave generation; data assimilation; simulation of breaking waves and their dynamics; wave–structure interaction; dynamics of floating bodies
K. Murali, Ph.D. (IIT Madras)	Numerical modelling of coastal hydrodynamics; sediment transport and pollutant transport; CFD modelling for pollutant transport; application of CFD to ship and underwater hydrodynamics
S. Surendran, Ph.D. (Yokohama National University, Japan)	Naval architecture; ship motion control; ship structures
P. Krishnankutty, Ph.D. (IIT Madras)	Numerical marine hydrodynamics; ship motions; wave wash and passenger comfort
S. Nallayarasu, Ph.D.	Analysis and design of offshore structures; wave–structure interaction; reliability in offshore structural design
P. Shanmugam	Satellite oceanography; ocean optics

Name and Qualifications	Major Areas of Specialisation
S. Chandrasekaran	Nonlinear dynamic analysis of offshore compliant structures; earthquake-resistant analysis and design of structures; modal pushover analysis of framed structures; base-isolated structures; semi-active damping devices for response control of structures; seismic analysis of offshore structures; shell structures under shock and impact loads
<b>Associate Professors</b>	
R. Panneer Selvam	System identification; nonlinear dynamics
G. Suresh Kumar	Reservoir simulation-enhanced oil recovery; hydrogeology
Rajesh R. Nair	Geophysics; seismic AVA inversion and interpretation
Rajiv Sharma	Design of deepwater drilling solutions and floating structures; computer-aided geometric design; computational geometry, visualisation and their applications in design; robotics and manufacturing; dynamic data-driven forecasting systems
Jitendra Sangwai	Gas hydrates; enhanced oil recovery; rheology of complex fluids; polymer science and engineering
<b>Assistant Professors</b>	
Abdus Samad	Turbomachinery; heat transfer; CFD; multi-disciplinary optimisation; artificial lift
Nilanjan Saha	Offshore structures; stochastic analysis; offshore renewable energy
Deepak Kumar	Structural dynamics; random vibration; stochastic control and stability; time-frequency domain analysis
V. Sriram	Hydro-elasticity; violent wave-current structure interactions; numerical modelling; computational hydrodynamics; mesh-free methods; experimental wave generation; extreme wave interactions
Tarun K. Chandrayadula	Underwater acoustics; statistical signal processing; EM/acoustic wave propagation through random media; inverse scattering methods
<b>Professors Emeriti</b>	
C.P. Vendhan, Ph.D. (IIT Kanpur)	Structural dynamics; offshore structures; finite element method; ocean acoustics
V.G. Idichandy, Ph.D. (IIT Madras)	Experimental techniques; instrumentation; analysis and testing of structural models and prototypes

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

Sl. No.	Coordinators	Title	Period
<b>Conferences</b>			
1	P. Shanmugam	Third International Conference on Petroleum Science and Technology 2014 (ICPST-2014)	3–5 November 2014
2	Jitendra Sangwai, Rajiv Sharma, R. Sundaravadivelu	ICPST-2014	3–5 November 2014
3	P. Krishnankutty, V. Anantha Subramanian	International Conference On Computational And Experimental Marine Hydrodynamics	3–4 December 2014
4	Abdus Samad	ICPST 2014	3–5 November 2014
<b>Seminars</b>			
1	Surabh Shah	Multi-scale Imaging of Carbonate Rocks Using Confocal Laser Microscopy and Micro-CT Scanning and Predicting Two-Phase Flow Using Lattice Boltzmann Simulation	26 November 2014
<b>Workshops</b>			
1	V. Sundar, K. Murali	Indo-Japan Workshop on River Mouths, Tidal Flats and Lagoons	15–16 September 2014
2	K. Murali	Indo-Japan Workshop on River Mouths, Tidal Flats and Lagoons	15–16 September 2014
3	P. Krishnankutty, V. Anantha Subramanian	International Workshop on EFD & CFD Applications in Ship Design (ECASD-2014)	1–2 December 2014

Sl. No.	Coordinators	Title	Period
<b>Short-term courses</b>			
1	K. Murali	Design of Coastal Adaptation Structures (Soft Measures)—Case Study: Mon Choisy	4–8 August 2014
2	K. Murali	Ocean Data Collection and Analysis	26–29 January 2015
3	S. Nallayarasu	Training Course on Basics of Offshore Structures	20–24 May 2014
4	S. Nallayarasu	Training Course on Advances in Offshore Structures	27–31 May 2014
5	S. Nallayarasu	Training Course on Structural Analysis Using SACS Software	7–11 July 2014
6	S. Nallayarasu	Training Course on Subsea and Pipeline Engineering	12–17 May and 14–19 July 2014
7	S. Nallayarasu	Ultimate Strength Analysis of Offshore Structures	15–19 December 2014
8	V. Anantha Subramanian, P. Krishnankutty	Hydrodynamic Model Tests For AMET University	16–23 September 2014

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

Sl. No.	Name of Faculty Member	Title	Institution	Period
<b>Workshops</b>				
1	V. Sundar	Indo-Japan Workshop on River Mouths, Tidal Flats and Lagoons	IIT Madras	15–16 September 2014
2	V. Sundar	Workshop on Coastal Adaptation Study (CAS)	Singapore	3–6 February 2015
3	K. Murali	Indo-Japan Workshop on River Mouths, Tidal Flats and Lagoons	IIT Madras	15–16 September 2014
4	Jitendra Sangwai	International Workshop on Gas Hydrates in Flow Assurance, Dubai, UAE	A Sum, USA and B Tohidi, UK	12–15 October 2015
5	Jitendra Sangwai	A–Z of Natural Gas and LNG, Dahej	Petronet LNG Limited	13–15 March 2015
6	V. Anantha Subramanian	SUPERGEN Wind Energy Workshop	Durham University, UK	20 March 2014
7	Abdus Samad	10th Meeting of Special Interest Group on Multidisciplinary Design Optimisation (SIG-MDO)	ISRO/IIT Bombay	7–8 March 2015
<b>Conferences</b>				
1	V. Sundar	Third IAHR Europe Congress	University of Porto, Portugal	14–16 April 2014
2	V. Sundar	Energy Ocean Conference	Atlantic City, USA	3–5 June 2014
3	V. Sundar	First International Conference on Renewable Energies Offshore	Instituto Superior Tecnico, Lisbon, Portugal	24–26 November 2014
4	V. Sundar	International Conference on Water Resources, Coastal and Ocean Engineering	NITK, Surathkal	12–14 March 2015
5	K. Murali	19th IAHR APD Conference	Hanoi, Vietnam	21–24 September 2014
6	K. Murali	First International Conference on Renewable Energies Offshore	Instituto Superior Tecnico, Lisbon	24–26 November 2014
<b>Short-term courses</b>				
1	V. Sundar	Design of Coastal Adaptation Structures (Soft Measures)—Case Study: Mon Choisy	University of Mauritius	4–8 August 2014
2	V. Sundar	Ocean Data Collection and Analysis	University of Mauritius	26–30 January 2015
3	K. Murali	Short-Term Course on Design of Coastal Protection	University of Mauritius	22 May 2014

### Special lectures delivered by faculty members at other institutions

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
1	V. Sundar	Performance of tsunami mitigation measures along Indian coast	National University of Singapore	6 February 2015
2	V. Sundar	Evaluation of coastal protection measures along Tamilnadu and Kerala coasts	NITK, Surathkal	12 March 2015
3	S.A. Sannasiraj	Tsunami research focus in India for engineering applications	IHC Tsunami Panel, ISOPE 2014, Busan	18 June 2014
4	S.A. Sannasiraj	Wave energy research at IIT Madras	University of Edinburg, UK	15–16 May 2014
5	P. Shanmugam	1. Atmospheric correction of satellite ocean colour imagery 2. In-water algorithms for satellite ocean colour applications	INCOIS, Hyderabad (International Ocean Colour Course Workshop)	14 November 2014
6	P. Shanmugam	Atmospheric correction algorithm and related ocean colour applications	NITK, Surathkal (ICWRCOE'15)	11 March 2015
7	S. Surendran	Scope of higher study in the Department of Ocean Engineering, IIT Madras	Civil Engineering Department, NIT Calicut	19 March 2015
8	S. Surendran	Scope of higher study for mechanical engineering graduates in Department of Ocean Engineering, IIT Madras	Mechanical Engineering Department, NIT Calicut	20 March 2015
9	Jitendra Sangwai	Phase equilibrium of natural gas hydrates: Experiments and modelling	International Workshop on Gas Hydrates in Flow Assurance, Dubai, UAE	12–15 October 2015
10	Jitendra Sangwai	Formation and dissociation of gas hydrates in porous media	Shri Guru Gobind Singhji, Institute of Engineering and Technology, Nanded	September 2014
11	Abdus Samad	Design optimisation via surrogate-based framework	The Petroleum Institute, Abu Dhabi, UAE	10 December 2014
12	Abdus Samad	Optimisation via multiple-surrogate model	10th Meeting of Special Interest Group on Multidisciplinary Design Optimisation (SIG-MDO), Bangalore	7–8 March 2015
13	Abdus Samad	Multiphase pumping challenges in oil and gas industry	Rajiv Gandhi College of Engineering, Chennai	5–6 March 2015

### Visits abroad by faculty members

Sl. No.	Name of Faculty Member	Place Visited	Date	Purpose of Visit	Funding from
1	V. Sundar	Portugal	14–16 April 2014	Presenting papers at conference	Project
2	V. Sundar	Mauritius	4–8 August 2014	Conducting a short course	CCE funds
3	V. Sundar	Lisbon	24–26 November 2014	Presenting papers at conference	Project
4	V. Sundar	Atlantic City	3–5 June 2014	Attending Energy Ocean Conference	Project
5	V. Sundar	University of Illinois, Chicago	12–14 May 2014	University visit and discussion	Project
6	V. Sundar	University of Florida, Atlantic University + cruise	15–24 May 2014	University visit and discussion	Project

Sl. No.	Name of Faculty Member	Place Visited	Date	Purpose of Visit	Funding from
7	V. Sundar	University of Texas A&M University, College Station, Texas	25–30 May 2014	University visit and discussion	Project
8	V. Sundar	Mauritius	26–30 January 2015	Conducting a short course	CCE funds
9	V. Sundar	Singapore	3–6 February 2015	Participating in workshop	Project
10	S.A. Sannasiraj	Edinburgh, UK	15–16 May 2014	Edinburgh–India Conference	Invitee
11	S.A. Sannasiraj	Busan, South Korea	15–19 June 2014	Conference	IIT Madras
12	S.A. Sannasiraj	Mauritius	5–7 August 2014	Organising short course	CCE
13	S.A. Sannasiraj	Hamburg, Germany	28 September to 2 October 2014	Conference	Sponsored project
14	S.A. Sannasiraj	Mauritius	30 January to 2 February 2015	Organising workshop	CCE
15	K. Murali	Lisbon	24–26 November 2014	Presenting papers at conference	Project
16	K. Murali	Italy	22 November to 21 December 2014	Plenose Project	European Commission
17	P. Shanmugam	France (Université du Littoral Côte d’Opale, Wimereux)	13–16 May 2014	Attending International Working Group Workshop on Atmospheric Correction Algorithms	IOCCG, Canada
18	P. Shanmugam	Portland, Maine, USA	26–31 October 2014	Attending Ocean Optics XXII Conference	CPDA, IIT Madras
19	Jitendra Sangwai	Dubai	12–15 October 2015	International Workshop on Gas Hydrates in Flow Assurance	Dubai
20	S. Nallayarsu	Malaysia	2–5 and 28–30 April, 2–4 and 25–27 June, 24–25 July, 14–15 August, 10–12 September, 1–3 October, 5–6 November, 4–5 December 2014; 6–7 January, 5–7 February and 5–6 March 2015	Meetings with client	The client
21	V. Anantha Subramanian	UK	20 March 2015	SUPERGEN Wind Energy Workshop	—
22	V. Anantha Subramanian	Baker & Hughes, Houston, and Kellogg Brown and Roots Offshore Engineering, Houston, USA	7–8 January 2015		
23	Abdus Samad	Bahrain	8–11 March 2015	Conference	IIT Madras
24	Abdus Samad	UAE	6–14 December 2014	Project meeting	The Petroleum Institute and partially by IIT Madras



## Honours and awards received by faculty members

Sl. No.	Name of Faculty Member	Name of Award	Awarded by	Awarded for	Date of Award
<b>Honours</b>					
1	Jitendra Sangwai	Research on enhanced oil recovery using nanoparticle featured in IIT Madras Annual Calendar 2015	IC&SR, IIT Madras	Research on enhanced oil recovery using nanoparticle, featured in IIT Madras Annual Calendar 2015	January 2014
<b>Awards</b>					
1	P. Shanmugam	Brain Pool Fellow	Korean Federation of Science and Technology (Korean Ministry of Education, Science and Technology), Government of Korea	Conducting research at Korea Ocean Satellite Research Centre (KOSC), Korea Institute of Ocean Science and Technology (KIOST)	May–November 2015
2	S. Surendran	Best Paper Award	Organising Committee, MARTEC 2014	Best paper of the conference	26 October 2014
3	S. Surendran	Certificate of appreciation	Organising Committee, MARTEC 2014	For support with organising the conference	26 October 2014
4	Jitendra Sangwai	Young Faculty Recognition Award, YFRA-2014, IIT Madras	IIT Madras	For excellence in reaching and research	5 September 2014
5	Jitendra Sangwai	Invention Award	Intellectual Ventures, Bangalore	For developing a method of recovering natural gas from gas hydrate reservoirs	2014

## Books, monographs authored/co-authored

Sl. No.	Name of Faculty Member	Title	Publisher	Author/Co-author
<b>Books</b>				
1	P. Shanmugam	<i>Petroleum Engineering: Technical Terms</i>	World Tamil Research Institute, Taramani	R. Ramasami, S.P. Subramaian, P. Shanmugam, R. Sundaravadivelu
2	Abdus Samad	<i>Turbomachinery Design and Optimization</i>	Lambert Academic Publishing	—
<b>Monographs</b>				
1	Abdus Samad	<b>Advances in Petroleum Science and Technology</b> (volumes 1 and 2)	ICPST 2014 (proceedings)	R. Sharma, R. Sundaravadivelu, P. Shanmugam, J.S. Sangwai

## Editorial boards of journals

Sl. No.	Name of Faculty Member	Position (Editor/Member)	Journal
1	V. Sundar	Member	<i>Journal of Applied Water Engineering and Research</i>
2	V. Sundar	Associate Editor	<i>Journal of Hydro-Environment Research</i> (Elsevier)
3	V. Sundar	Associate Editor	<i>Ocean Engineering Journal</i> (Elsevier)
4	V. Sundar	Member	<i>Institution of Mechanical Engineers, Part M: Journal of Engineering for the Maritime Environment</i>
5	V. Sundar	Associate Editor	<i>Indian Society of Hydraulics Journal</i>
6	V. Sundar	Member, Fourth Editorial Board	<i>China Ocean Engineering</i>
7	P. Shanmugam	Editorial Member (Oceanography Section)	<i>Dataset Papers in Geosciences</i>
8	P. Shanmugam	Editor (Remote Sensing of Coastal Ecosystems)	<i>International Journal of Geophysics and Remote Sensing</i>

### 4.15.3. Design and Development Activities

#### New facilities added or major equipment procured

New Lab on “Ocean Optics and Imaging Laboratory” established—Prof P. Shanmugam

Sl. No.	Name of Equipment	Value (lakhs of ₹)
1	CTD (conductivity–temperature–depth) sensors Beam attenuation and absorption spectrometer Backscattering sensor Fluorometer and turbidity sensor TRIOS above-water and underwater radiometers SATLANTIC underwater radiometers Perkin-Elmer spectrophotometer (UV–VIS) Ultra-pure water system In-water hydrocarbon detection flurometer Resistivity meter Filtration units Liquid nitrogen container Ultra-freezer mobile refrigerator Laboratory refrigerator Associated field and lab equipment Field generator	210 (P. Shanmugam)
2	Laser particle size analyser system Anemometer Polariser	65 (P. Shanmugam)
3	Desktop workstation computers (16 nos.) GETAC rugged laptop field computer (1 no.) Laptop computer (3 nos.)	12 (P. Shanmugam)
4	Hydrolight radiative transfer software	5 (P. Shanmugam)
5	ENVI-IDL, FLAASH and DEM software	7.5 (P. Shanmugam)
6	Autocad software, 15 licenses	1 (S. Surendran)
7	Paramarine design software, 30 licenses	11 (S. Surendran)
8	Development of high-speed miniature model-testing frame system	In-house design and fabrication and commissioning. This gives capability of simulating testing speeds of 35 knots in a miniaturised test set-up. (V. Anantha Subramanian)
9	Wave Energy and Fluids Engineering Lab	25.2 (Abdus Samad)
10	Multiphase pump set-up	10 (Abdus Samad)

#### Patents filed

Sl. No.	Name of Faculty Member	Topic of Patent
1	Abdus Samad, Ramasamy Karthikeshwaran	Progressive cavity pump
2	Abdus Samad	A point absorber apparatus for wave energy extraction
3	Abdus Samad	An apparatus to convert bidirectional linear motion to unidirectional rotary motion
4	Abdus Samad	Mechanical energy harvesting devices and methods
5	Abdus Samad	Bi-directional flow turbine

#### 4.15.4. Research and Consultancy

##### Sponsored research projects (ongoing and new)

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Coordinators
1	Wave Energy Converters for Combined Clean Energy and Coastal Protection	25 September 2012 to 24 September 2015	Norwegian University	78.64	V. Sundar S.A. Sannasiraj
2	Development of a New Method of Regime Characteristics Assessment for Wind and Waves Along the Indian Coast	2 years	DST	18.36	S.A. Sannairaj V. Sriram
3	The Coastal Inundation Risk Map Study for Singapore	November 2011–March 2015	National University of Singapore	14	S.A. Sannasiraj
4	OWC Wave Energy Converters for Combined Clean Energy and Coastal Protection	August 2012 to August 2015	Research Council, Norway	76	V. Sundar S.A. Sannasiraj
5	Development of a New Method of Regime Characteristics Assessment for Wind and Wave Along the Indian Coast	July 2014 to July 2016	DST, Russian Foundation for Basic Research	18	S.A. Sannasiraj V. Sundar V. Sriram
6	Development of Atmospheric Correction Algorithm and Up-scaling of In Situ Measurements to Derive Hyperspectral Remote Sensing Products Over River Ganga (approved)	2015–2018	DST	55	P. Shanmugam
7	Feasibility Study of Submarine Laser Communications (approved)	2015–2017	DRDO	282	P. Shanmugam, Tarun K. Chandrayadula, Hari Ramachandran, Balaji Srinivasan, Anil Prabhakar, Deepa Venkitesh, Radhakrishna Ganti, Andrew Thangaraj
8	Development of Atmospheric Correction Algorithm for OCM Sensor	January 2014 to December 2017	IIT Madras–ISRO Cell	20.5	P. Shanmugam
9	Observations, Algorithms and Analysis of HABs in Oceanic Waters Around India	April 2013 to March 2018	INCOIS, Hyderabad	68	P. Shanmugam
10	Development of Satellite-Based Operational Algorithm for Studying CDOM Distributions in Coastal Oceanic Waters	Space Application Centre (ISRO), Ahmedabad	April 2013 to March 2017	24.5	P. Shanmugam
11	Measuring and Monitoring of 3D Characteristics of Underwater Light Field in Coastal Waters	Naval Research Board, New Delhi	September 2011 to August 2014	105.6	P. Shanmugam, S.K. Bhattacharya
12	Experimental Investigations on the Kinetics of Natural Gas Hydrate Production in Porous Media Using Thermal Stimulation—Phase-II (Jitendra Sangwai)	2 years	NIOT, Chennai	INR 3.0 Million	Jitendra Sangwai (PI)
13	Flow Visualisation and Measurement around Damping Elements for Floating Bodies in Waves	31 August 2009 to 30 June 2014	Navel Research Board	7.74	S. Nallayarasu, S.K. Bhattacharya

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of ₹)	Coordinators
14	Wake-Adapted Analysis Optimisation of Propellers and Control Surfaces for High-Speed Applications	27 March 2013 to 26 March 2016	Naval Research Board	65	V. Anantha Subramanian
15	Flotation, Stability, Hydrodynamic Drag and Propulsion System for Combat Vehicle	—	Research and development-based design for combat vehicle for Ordnance Factory, Medak	98.7	V. Anantha Subramanian, Asokan (Engineering Design)
16	Development of Marine Energy System for Indian Remote Islands	1 January 2015 to 26 February 2016	UKIERI/DST	19	Nithya Venkateshan (VIT University), Eldad Avital (Queen Mary University (London)), Abdus Samad (co-PI)
17	Design and Optimisation of Bi-directional Flow Impulse Turbine	Extended till September 2015	NIOT	25	Purnima Jalihal (NIOT), Abdus Samad
18	A Novel Progressive Cavity Pump Design and Analysis	2012–2015	DST	17	Abdus Samad

#### Industrial consultancy projects (ongoing and new)

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹ unless specified otherwise)
1	K. Murali	Preparation of DPR for Reconstruction of Fishing Harbour, Mookaiyur: Mathematical and Physical Model Studies	WAPCOS Limited	23.59
2	K. Murali	Establishment of Offshore Numerical Tank at NIOT: Preparation of Project Report on Establishment of Physical Test Facility	NIOT	16.85
3	K. Murali	Mathematical Model Studies for Proposed Extension of Existing Groins to Prevent an Unpredicted Siltation in Open Channel of SWIOS, 2×800 MW SDSTPS, Nellore	Navayuga Engineering Company Limited	15.73
4	K. Murali	Consultancy Studies to Undertake Field Monitoring of Shoreline Changes and Intake Basin for SWIO System for a Period of One Year	Wapcos Limited	41.63
5	K. Murali	Study on Tidal and Wave Energy in India and Development of a Roadmap	CRISIL Risk & Infrastructure Solutions Limited	5.61
6	R. Sundaravadivelu, P. Shanmugam	Construction of Geo-tube Embankment for Coastal Erosion Protection, Pentha Village, Orissa	Integrated Coastal Zone Management Project [ICZMP], Odisha	36
8	S. Surendran	Design and Fabrication of 30 Seater FRP Hull	IWT Government of Odisha	1.5
9	S. Nallayarasu	Detailed Design of Pontoon and Superstructure for IREL Pontoon	M.N. Dastur & Company, Chennai	15
10	S. Nallayarasu	Design of Radiographic Equipment Room	Petro6 E&C, Chennai	2.0
11	S. Nallayarasu	Structural Feed for BCP a3 Process Complex (Bassain Redevelopment Project)	ONGC, Mumbai	40

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹ unless specified otherwise)
12	S. Nallayarasu	Feasibility Study for the Chemical Handling Terminal, El Gameel Port Said, Egypt	Chemplast Sanmar, Chennai	3.0
13	S. Nallayarasu	Structural Design Review of Temporary Living Quarter (TLQ) for Yetagun Platform Project	Petro6 E&C, Chennai	8.0
14	S. Nallayarasu	Development of Basic Concept and Drawings for Nigeria	Portman India Limited	2.0
15	S. Nallayarasu	Engineering Services for Design of Fabrication Yard Within Hazar Harbour, Turkmenistan	Saipem India Projects Limited	44
16	S. Nallayarasu	Consultancy for Offshore Structural Analysis using SACS	Aryatech, New Delhi	
17	S. Nallayarasu	Revision of Detailed Project Report for Thiruchopuram Marine Terminal for NOCL	Cuddalore Port Company Private Limited	7.0
18	S. Nallayarasu	Feasibility Study for the Offshore Platform Terminal for Loading/ Unloading, El Gameel Port Said, Egypt	Sanmar Engineering Services Limited	5.0
19	S. Nallayarasu	Revalidation of Metocean Study for FSRU Project	Gas Authority of India Limited	30
20	S. Nallayarasu	Consultancy Services for Detailed Design and Development of Coal Berth No. 3 Berth, Ennore Port	Portman India Limited	18
21	S. Nallayarasu	Vetting of Design for Second Chemical Berth, Pir Pau	Mumbai Port Trust	16
22	S. Nallayarasu	Design of Moving Roof Over Dry Dock No. 3	Pipavav Defence and Offshore Engineering Company Limited	36
23	S. Nallayarasu	Detailed Project Report for Development of Coal Berths 3 and 4, Ennore Port	Ennore Port Limited	10
24	S. Nallayarasu	Verification of Existing Coal Berths 1 and 2 for Capacity Enhancement	Ennore Port Limited	6.0
25	S. Nallayarasu	Feasibility Study for FSRU Terminal, Mumbai Harbour	Mumbai Port Trust	36
26	S. Nallayarasu	Verification of Existing Oil Terminal JD4 for Capacity Enhancement	Mumbai Port Trust	20
27	S. Nallayarasu	Finite Element Analysis of Loadout Skid Shoe and System for Gina Krog (Norway) Project	Aker Solutions, Malaysia	42
28	S. Nallayarasu	Bench Marking of Institute of Engineering and Ocean Technology, ONGC, Mumbai	ICS Mumbai	1.0
29	S. Nallayarasu	Ultimate Strength Analysis of Existing Offshore Platforms	IEOT-ONGC	15
30	S. Nallayarasu	Bergading Well Platform Preliminary Detailed Design	Aker Solutions, Malaysia	38
31	S. Nallayarasu	KNDP: A Brownfield Modification for Talisman, Malaysia	Aker Solutions, Malaysia	28
32	S. Nallayarasu	Verification of LNG Jetty, Lithuania	ABS, Singapore	1.0
33	S. Nallayarasu	Detailed Engineering for Decommissioning for NIKO Hazira Offshore Platform	Adsun Offshore Diving Contractors	25

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹ unless specified otherwise)
34	S. Nallayarasu	Pre-bid Design Of N-21 Wellhead Platform	Pipavav	10
35	S. Nallayarasu	Finite Element Analysis of Pedestal Crane Structure	ABS Consulting Inc.	US\$36,000
36	S. Nallayarasu	Detailed Design of LQ for Yetagun Platform	TVH Agnitio Park	17
37	S. Nallayarasu	Detailed Structural Engineering for Bergading Complex	Aker Solutions, Malaysia	US\$50,000
38	S. Nallayarasu	Preliminary Structural Engineering for Baronia Jacket and Bridge	Aker Solutions, Malaysia	US\$30,000
39	S. Nallayarasu	Structural Design of FPSO Module	TVH Agnitio Park	10
40	S. Nallayarasu	Structural Design for 3FPSO Modules	Oiltech Engineering Private Limited, Singapore	66
41	S. Nallayarasu	Pre-bid Structural Engineering for ONGC, Daman and Vasai East	Swiber Offshore Construction Private Limited, Singapore	84
42	S. Nallayarasu	Vibration Analysis of Gina Krog Topsides	Aker Solutions, Malaysia	73
43	S. Nallayarasu	Detailed Engineering Services for BNCPP-B Substructure	Aker Solutions, Malaysia	51
44	S. Nallayarasu	Structural Design Review	Aker Solutions, Malaysia	38
45	S. Nallayarasu	Verification Approach Trestle LF-FCB and FCB-SCB	Mumbai Port Trust	50
46	S. Nallayarasu	Setting up of Heliport, Nariman Point (Offshore)	Mumbai Port Trust	12
47	S. Nallayarasu	Structural Integrity Check for ONGC Platform B173-A	Essar Offshore Subsea Limited, Mumbai	11
48	S. Nallayarasu	Detailed Design of Coal Berth for 160,000 DWT Vessels	Kamarajar Port Limited	31
49	S. Nallayarasu	Port Selection Study for LNG Import Terminal, Odisha	Indian Oil Corporation Limited, Odisha	10
50	S. Nallayarasu	Preparation of Detailed Project Report for JD-5	Mumbai Port Trust	20
51	V. Anantha Subramanian	Estimation of Drag and Flow Characteristics for Wheeled Armoured Platform (WHAP)	DRDO	20
52	V. Anantha Subramanian	Design Analysis of Catamaran	Sri Parvati Engineering Services	13
53	V. Anantha Subramanian	Hydrodynamic Tests for 72 m General Cargo Vessel	Modest Infrastructure Limited	15
54	V. Anantha Subramanian	Design and Powering of Motorized Sailing Vessel	VEDAM	10
55	V. Anantha Subramanian	Model Testing of 7 m RIB	SHM Shipcare	6.0
56	V. Anantha Subramanian	Model Testing of Design, Construction and Supply of Workboats for NW-1 and NW-2	A.C. Roy & Company	9.0
57	V. Anantha Subramanian	25 T Capacity Self-Propelled Barges: Design, Monitoring	Odisha Construction Corporation Limited	12
58	V. Anantha Subramanian	Model Testing of Floating Platform	L&T Valdel	22



Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹ unless specified otherwise)
59	V. Anantha Subramanian	Model Testing of 19.75 m Fisheries Vessel	Goa Shipyard	20
60	V. Anantha Subramanian	Model Test of Fast Ferry Boat	SEDS, Cochin	6.0

#### RBIC projects (ongoing and new)

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of )
1	Jitendra Sangwai	Evaluation of Semiclathrate Hydrate for Natural Gas Storage and Transportation	GAIL India Limited	53.8
2	S. Nallayarasu, S.K. Bhattacharya	Hydrodynamic Coefficient for Vertiwind	Technip India Limited	15.14

#### Research publications of faculty members and research scholars

Papers published in refereed national journals	2
Papers published in refereed international journals	48
Papers presented at national conferences	19
Papers presented at international conferences	50

#### Papers published in refereed national journals

1. S.A. Sannasiraj, M. Kalyani, E.D. Kumar, K. Harini, G. Latha and V. Sundar. (2014). Inter comparison of wave height observations from buoy and altimeter with numerical prediction. *Indian Journal of Geo-Marine Sciences* 43(7): 1361–1364.
2. R. Balaji, S.A. Sannasiraj and V. Sundar. (2014). A load cell for the measurement of slack mooring forces. *Journal of the Institution of Engineers (India) Series C* 95(3): 193–205.

#### Papers published in refereed international journals

1. V. Sundar. 2014. A load cell for the measurement of slack mooring forces. *Journal of the Institution of Engineers (India): Series C* 95(3): 193–205.
2. D.C. Swapnadip and S.A. Sannasiraj. Numerical simulation of 2D sloshing waves using SPH with diffusive terms. *Applied Ocean Research* 47: 219–240.
3. G. Saravanan, S.A. Sannasiraj and V. Sundar. Asymptotic analysis of sloshing in a rectangular tank. *International Journal of Ocean and Climate Systems* 5(2): 89–103.
4. R. Manjula, S.A. Sannasiraj and K. Palanichamy. Experimental investigations of acceleration on slender cylindrical member under breaking waves. *International Journal of Ocean and Climate Systems* 5(3): 117–126.
5. K. Narendran, K. Murali and V. Sundar. Vortex-induced vibrations of elastically mounted circular cylinder at Re of the O(105). *Journal of Fluids and Structures* <http://dx.doi.org/10.1016/j.jfluidstructs.2014.12.006>.
6. S. Scaria, K. Murali and P. Shanmugam. 2015. Numerical analysis of tidal dynamics in the region around Gulf of Mannar and Palk Strait. *Ocean Dynamics* (in press).
7. S. Scaria, K. Murali and P. Shanmugam. A 3D hydrodynamic model for the area between Sri Lanka and India. *Ocean Dynamics* 65: 487–508. doi:10.1007/s10236-015-0819-9
8. J.D. Pravin and P. Shanmugam. A new theory and its application to mitigate the effect of surface-reflected light in above-surface radiance data from clear, turbid and eutrophic waters. *Journal of Quantitative Spectroscopy and Radiative Transfer* 142: 75–92 doi:10.1016/j.jqsrt.2014.03.021
9. J.D. Pravin and P. Shanmugam. A new model for the irradiance reflectance for clear and turbid waters. *Optics Express* 22: 9548–9566 doi:10.1364/OE.22.009548
10. Nashiha, P. Shanmugam and V.G. Hariharasundan. A new inversion model to estimate bulk refractive index of particles in coastal oceanic waters. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing* 3069–3083 doi: 10.1109/JSTARS.2014.2307292.
11. S.R. Kumar and P. Shanmugam. A novel method for estimating aerosol radiance and its extrapolation in the atmospheric correction of satellite ocean colour imagery over optically complex waters. *Remote Sensing of Environment* 142: 188–206 doi:10.1016/j.rse.2013.12.001
12. M. Tholkapiyan, P. Shanmugam and T. Suresh. Monitoring of ocean surface algal blooms in coastal and oceanic waters around India. *Journal of Environmental Monitoring and Assessment* 186: 4129–4137. doi:10.1007/s10661-014-3685-x

13. S.P. Tiwari and P. Shanmugam. A robust algorithm to estimate  $K_d(490)$  in coastal and oceanic waters. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing* 7(5): 1616–1622 doi:10.1109/JSTARS.2013.2282938
14. J. Vignesh, P. Shanmugam and R. Gokul. Simulation of inelastic scattering contributions to the upwelling radiance in coastal and inland waters: Implications for hyperspectral remote sensing. *Current Science* 108(5): 903–914.
15. V.B. Sundarabalan and P. Shanmugam. Modelling of underwater light fields in turbid and eutrophic waters: Application and validation with experimental data. *Ocean Science* 11: 33–52 doi:10.5194/os-11-33-2015
16. R. Gokul and P. Shanmugam. Modelling the inherent optical properties and estimating the constituents' concentrations in turbid and eutrophic waters. *Continental Shelf Research* 84: 120–138. doi: 10.1016/j.csr.2014.05.013.
17. T. Varunan and P. Shanmugam. A model for estimating size-fractionated phytoplankton absorption coefficients in coastal and oceanic waters from satellite data. *Remote Sensing of Environment* 158: 235–254 doi:10.1016/j.rse.2014.11.008
18. S.R. Kumar and P. Shanmugam. A robust algorithm for removal of glint effects from satellite ocean colour imagery. *Ocean Science (Discuss)* 10: 1–39.
19. T. Sharma, G.S. Kumar and J.S. Sangwai. 2015. Viscoelastic properties of oil-in-water (o/w) Pickering emulsion stabilized by surfactant–polymer and nanoparticle–surfactant–polymer system. *Industrial and Engineering Chemistry Research* 54: 1576–1584.
20. V.R. Avula, R.L. Gardas and J.S. Sangwai. 2015. An efficient model for prediction of CO<sub>2</sub> hydrate phase stability conditions in the presence of inhibitors and their mixtures. *Journal of Chemical Thermodynamics* 85: 163–170.
21. S. Sakthivel, S. Veluswamy, R.L. Gardas and J.S. Sangwai. 2015. Enactment of aromatic ionic liquids in the reduction of surface phenomena of crude oil–water system and their synergism along with brine. *Industrial and Engineering Chemistry Research* 54(3): 968–978.
22. S. Sakthivel, S. Veluswamy, R.L. Gardas and J.S. Sangwai. 2015. Adsorption of aliphatic ionic liquids at low waxy crude oil–water interfaces and the effect of brine. *Colloids and Surfaces A: Physicochemical and Engineering Aspects* 468: 62–75.
23. B.J. Shah, D.C. Tewari, S. Mondal, A.K. Anand, A. Buddhiwant and J.S. Sangwai. 2015. Estimation of uncertainty in sonic porosity using microcomputerized tomography images. *Journal of Petroleum Science and Engineering* 125: 100–106.
24. T. Sharma, G.S. Kumar, B.H. Chon and J.S. Sangwai. 2014. Viscosity of the oil-in-water Pickering emulsion stabilised by surfactant–polymer and nanoparticle–surfactant–polymer system. *Korea-Australia Rheology Journal* 26: 377–387.
25. D. Mech and J.S. Sangwai. 2014. Phase stability of hydrates of methane in tetrahydrofuran (THF) aqueous solution and the effect of salt. *Journal of Chemical and Engineering Data* 59: 3932–3937.
26. T. Sharma, G.S. Kumar and J.S. Sangwai. 2014. Enhanced oil recovery using oil-in-water (o/w) emulsion stabilised by nanoparticle, surfactant and polymer in the presence of NaCl. *Geosystem Engineering* (Invited article) 17: 195–205.
27. V.R. Avula, R.L. Gardas and J.S. Sangwai. 2014. An improved model for the phase equilibrium of methane hydrate inhibition in the presence of ionic liquids. *Fluid Phase Equilibria* 382: 187–196.
28. P. Mekala, M. Busch, D. Mech, R. Patel and J.S. Sangwai. 2014. Effect of silica sand size on the formation kinetics of CO<sub>2</sub> hydrate in porous media in the presence of pure water and seawater. *Journal of Petroleum Science and Engineering* 122: 1–9.
29. S. Sakthivel, S. Veluswamy, R.L. Gardas and J.S. Sangwai. 2014. Experimental investigation on the effect of aliphatic ionic liquids on the solubility of heavy crude oil using UV–visible, FT-IR, and <sup>13</sup>C-NMR spectroscopy. *Energy & Fuel* 28(9): 6151–6162.
30. T. Sharma, G.S. Kumar, B.H. Chon and J.S. Sangwai. 2014. Synergistic effect of nanoparticle, surfactant and polymer on the thermal stability of oil-in-water emulsions. *Journal of Industrial and Engineering Chemistry* (in press).
31. S. Sakthivel, S. Veluswamy, R.L. Gardas and J.S. Sangwai. 2014. Eco-efficient and green method for the enhanced dissolution of aromatic crude oil sludge using ionic liquids. *RSC Advances* 4: 31007–31018.
32. V.A. Subramanian and B.M. Shameem. Sea wave modelling for motion control applications. *Journal of Naval Architecture and Marine Engineering*.
33. A. Samad. Jet pump design optimisation by multi-surrogate modelling. *Journal of the Institution of Engineers (India): Series C, Mechanical Engineering*.
34. A. Samad and J. Sangwai. Analysis of flow through ocean energy harvesting bidirectional impulse turbine. *International Journal of Climate and Ocean Systems* 5.

35. A. Samad. Breakwater wave energy converters: A review. *International Journal of Earth Sciences and Engineering* 2.
36. Abdus Samad. Performance analysis of an ejector for flare gas recovery. *Geosystem Engineering*.
37. A. Samad. Multiple surrogate based optimisation of a bidirectional impulse turbine for wave energy conversion. *Renewable Energy*.
38. A. Samad. Surrogate assisted design optimisation of an air turbine. *International Journal of Rotating Machinery*.
39. A. Samad. Effectiveness of meta-models for multi-objective optimisation of centrifugal impeller. *Journal of Mechanical Science and Technology*.
40. A. Samad. Numerical analysis of centrifugal impeller for different viscous liquids. *International Journal of Fluid Machinery and Systems*.
41. A. Samad. A comparative study of Kriging variants for the optimisation of a turbomachinery system. *Engineering with Computers*. doi:10.1007/s00366-015-0398-x
42. A. Samad. Casing treatment of a wave energy extracting turbine. *Aquatic Procedia: International Conference on Water Resources, Coastal and Ocean Engineering (ICWRCOE'15)* 4: 516–521.
43. A. Samad. Comparative performance analysis of microjet impingement cooling models with different spent-flow schemes. *Journal of Thermophysics and Heat Transfer*.
44. D.S.B. Rao, R.P. Selvam and N. Srinivasan. December 2014. Experimental investigations on Tension Based Tension Leg Platform (TBTL). *Journal of Naval Architecture and Marine Engineering* 11(2): 105–116. (Global Impact Factor: 0.478).
45. D.S.B. Roa, R.P. Selvam and N. Srinivasan. December 2014. Experimental studies on a scaled model of a tension based tension leg platform under combined mooring and tether conditions. *International Journal of Ocean and Climate Systems* 5(4): 199–210.
46. R.R. Sheno, P. Krishnankutty and R.P. Selvam. 2014. Study of manoeuvrability of container ship by static and dynamic simulations using a RANSE-based solver. *Ships and Offshore Structures* <http://dx.doi.org/10.1080/17445302.2014.987439>.
47. N.X. Dao, M.A. Bagus, H. Tanaka and V. Sundar. (2014). Sensitivity analysis of relationship between tsunami disaster and coastal embankment structure. *Journal of Japan Society of Civil Engineers, Series B1 (Hydraulic Engineering)* 70 (4): I 43–I 48.
48. G. Saravanan, S.A. Sannasiraj and V. Sundar. (2014). Asymptotic analysis of sloshing in a rectangular tank. *International Journal of Ocean and Climate Systems* 5 (2): 89–103.

#### **Papers published in proceedings of national conferences**

1. V. Sundar, S.A. Sannasiraj, John Ashlin and B. Jegatheeswaran. 2014. An experimental study of an oscillating water column with different bottom configuration. 3rd IAHR Europe Congress, University of Porto, Portugal 14–16 April, ISBN: 978-989-96479-2-3.
2. V. Sundar. 2014. Phase control of oscillating water column device. Atlantic City, USA, 2–5 June.
3. V. Sundar. 2014. Post facto evaluation coastal protection measures along tsunami-hit Kerala coast of India, IIT Madras, 15–16 September.
4. V. Sundar. 2014. Sediment deposition pattern at selected inlets along the south-west coast of India. IIT Madras, 15–16 September.
5. V. Sundar. 2014. A new approach on the estimation of sedimentation due to combined action of waves and tide-induced currents. IIT Madras, 15–16 September.
6. V. Sundar. 2014. Development of fishing harbours inside estuaries in Goa, India. IIT Madras, 15–16 September.
7. V. Sundar. 2014. Shore protection work for the coast of Mousuni Island near the Ganga River Mouth Estuary in West Bengal, India. IIT Madras, 15–16 September.
8. V. Sundar. 2014. Sediment transport in the vicinity of erosion-prone coast of North Chennai. IIT Madras, 15–16 September.
9. V. Sundar. 2014. Numerical modelling of a tidally driven inlet using weakly coupled numerical models. Thuyloi University, Hanoi, Vietnam, 21–24 September.
10. V. Sundar. 2014. Mathematical modelling of sedimentation within an intake basin at Krishna Pattinam. Thuyloi University, Hanoi, Vietnam, 21–24 September.
11. V. Sundar. 2014. Performance of an oscillating water column device with different bottom profiles subjected to random waves. Hamburg, 28 September to 2 October.
12. V. Sundar. 2014. Vortex-induced vibration: Feasibility of energy extraction. Lisbon, Portugal, 24–26 November.
13. A. Samad and D. Kumar. Breakwater wave energy converters: A review. *Fifth Indian National Conference on Harbour and Ocean Engineering*.

14. A. Samad. Analysis of flow through ocean energy-harvesting bidirectional impulse turbine. *Fifth Indian National Conference on Harbour and Ocean Engineering*.
15. K.O.S.R.R. RadhaKrishnan and R.P. Selvam. Sea trials of a water-jet-propelled high-speed craft. *International Conference on Computational and Experimental Marine Hydrodynamics (MARHY) 2014*, Chennai, India, 3–4 December.
16. D.S.B. Rao, R.P. Selvam and N. Srivasan. 2014. Response analysis of tension-based tension leg platform under irregular waves. *Proceedings of Fifth Indian National Conference on Harbour and Ocean Engineering (INCHOE 2014)*, CSIR-NIO, Goa, India.
17. U. Ramayan, R.P. Selvam and N. Srinivasan. Static stability analysis of self-installing mono column wind float. *Structural Engineering Convention (SEC2014), Ninth Biennial Event*, IIT Delhi.
18. S.S. Kumar and R.P. Selvam. Response analysis of offshore guyed tower under damaged guy lines. *Structural Engineering Convention (SEC'2014), 9th Biennial event*, IIT Delhi.
19. K.S. Arunraj and R.P. Selvam. Dynamic analysis of a mega-float. *Structural Engineering Convention (SEC2014), Ninth Biennial Event*, IIT Delhi.

#### Papers published in proceedings of international conferences

1. V. Sundar, S.A. Sannasiraj, J. Ashlin and B. Jegatheeswaran. An experimental study of an oscillating water column with different bottom configuration. *Third IAHR Europe Congress: Water-Engineering and Research*, Porto, Portugal 14–16 April.
2. D.C. Swapnadip and S.A. Sannasiraj. A study on wave overtopping and seawall stability using SPH schemes. *ISOPE 2014*, Busan, 15–20 June.
3. J.J. Stephen, S.A. Sannasiraj and V. Sundar. 2014. Numerical evaluation of sloshing pressure in a rectangular tank fitted in a barge subjected to regular wave excitation. *International Conference on Computational and Experimental Marine Hydrodynamics, MARHY 2014*, 3–4 December.
4. J. Ashlin, S.A. Sannasiraj and V. Sundar. 2014. Performance of an oscillating water column device with different bottom profiles subjected to random waves. *11th International Conference on Hydroscience & Engineering*, 28 September to 2 October.
5. R. Senthilkumar, K. Murali and V. Sundar. 2014. Numerical modelling of a tidally driven inlet using weakly coupled numerical models. *Proceedings of 19th Congress of the Asia and Pacific Division of the International Association for Hydro-Environment Engineering and Research (IAHR-APD)*, Thuyloi University, Hanoi, Vietnam, 21–24 September.
6. K. Murali, V. Sundar and S.A. Sannasiraj. 2014. Mathematical modelling of sedimentation within an intake basin at Krishna Pattinam. *Proceedings of 19th Congress of the Asia and Pacific Division of the International Association for Hydro-Environment Engineering and Research (IAHR-APD)*, Thuyloi University, Hanoi, Vietnam, 21–24 September.
7. N. Kumar, K.V.K. Vinay, D. Amit, K. Murali and V. Sundar. 2014. VIO: Possibilities of energy extraction. *International Conference on Renewable Energies Offshore*, Lisbon, Portugal, 24–26 November.
8. S. Surendran. 2014. Structural optimisation of midship section of a container ship in preliminary design stage. *ICTW 2014*, PNU, Korea, October.
9. S. Surendran. 2014. On the use of patches on steel panels at elevated temperatures. *ICTW 2014*, PNU Korea, October.
10. V.R. Avula, R.L. Gardas and J.S. Sangwai. 2015. Model for the phase equilibrium semi-clathrate hydrates of carbon dioxide in TBAB and THF aqueous solution. *International Conference on Carbon Dioxide Utilisation*, National University of Singapore, Singapore, 5–9 July.
11. V.R. Avula, R.L. Gardas and J.S. Sangwai. 2014. Prediction of CO<sub>2</sub> hydrate phase stability conditions in the presence of ionic liquids, NaCl, KCl and CaCl<sub>2</sub> for oilfield applications. *Third International Conference on Petroleum Science and Technology (ICPST-2014)*, IIT Madras, 3–5 November.
12. A. Sharma, P. Singh P and J.S. Sangwai. 2014. Sensitivity analysis of a cyclic steam stimulation process. *3rd International Conference on Petroleum Science and Technology (ICPST-2014)*, IIT Madras, Chennai, India, 3–5 November.
13. A. Sharma, C. Vishnu and J.S. Sangwai. 2014. Maximising coal bed methane recovery using horizontal well technology and CO<sub>2</sub> injection. *Third International Conference on Petroleum Science and Technology (ICPST-2014)*, IIT Madras, 3–5 November.
14. E.C. Santhosh and J.S. Sangwai. 2014. A differential evolution algorithm approach towards assisted history matching. *Third International Conference on Petroleum Science and Technology (ICPST-2014)*, IIT Madras, 3–5 November.
15. N. Sakthipriya, M. Doble and J.S. Sangwai. 2014. Degradation of paraffins using *Pseudomonas fluorescens* for flow assurance enhancement. *Third International Conference on Petroleum Science and Technology (ICPST-2014)*, IIT Madras, 3–5 November.



16. B.M. Das, S.B. Gogoi, J.S. Sangwai and D. Mech. 2014. Revisiting the Nahorkotiya oil field for MAP-EOR. *Third International Conference on Petroleum Science and Technology (ICPST-2014)*, IIT Madras, 3–5 November.
17. J.S. Sangwai, P. Mekala, D. Mech and V.R. Avula. 2014. Phase equilibrium of natural gas hydrates: Experiments and modeling. *International Workshop on Natural Gas Hydrate in Flow Assurance*, Dubai, UAE, 13–15 October. (Invited talk)
18. P. Mekala, P. Babu, J.S. Sangwai and P. Linga. 2014. Formation and dissociation kinetics of methane hydrates in seawater and silica sand ICGH. *Eighth International Conference on Gas Hydrates*, Beijing-China, 28 July to 1 August.
19. V.R. Avula, R.L. Gardas and J.S. Sangwai. 2014. Modeling of methane hydrate inhibition in the presence of green solvent for offshore oil and gas pipeline. *24th (2014) International Ocean and Polar Engineering Conference*, Busan, Korea, 15–20 June.
20. G. Pandey, D. Mech and J.S. Sangwai. 2014. Simultaneous effect of promoters and inhibitors on the phase stability of methane gas hydrate. *Third International Conference on Petroleum Science and Technology (ICPST-2014)*, IIT Madras, 3–5 November.
21. T. Sharma, J.S. Sangwai, G.S. Kumar and A.K. Mishra. 2014. Nanoparticle-stabilised oil-in-water Pickering emulsion for enhanced oil recovery in the presence of salt. *Third International Conference on Petroleum Science and Technology (ICPST-2014)*, IIT Madras, 3–5 November.
22. N. Sakthipriya, M. Doble and J.S. Sangwai. 2015. Bioremediation of costal and marine pollution due to crude oil using a microorganism *Bacillus subtilis*. *Eighth International Conference on Asian and Pacific Coasts (APAC-2015)*, IIT Madras, India, 7–10 September.
23. S. Nallayarasu. 2014. Heave damping characteristics if a buoy form spar by CFD simulation and experimental studies. *International Conference on Computational and Experimental Marine Hydrodynamics*, Chennai, India.
24. S. Nallayarasu. CFD simulation and experimental studies on frequency and amplitude dependence of heave damping of spar hull with and without heave plate. *International Conference on Computational and Experimental Marine Hydrodynamics*, Chennai, India.
25. S. Nallayarasu. 2014. The effect of moonpool and damping plate on damping characteristics of spar hulls using CFD simulation. *International Conferences on Computational and Experimental Marine Hydrodynamics*, Chennai, India.
26. S. Nallayarasu. 2014. Experimental and CFD simulation of roll motion of ship with bilge keel. *International Conference on Computational and Experimental Marine Hydrodynamics*, Chennai, India.
27. V.A. Subramanian. Development of carbon fibre-reinforced propeller for marine screw. *Propulsion CIPET Conference*, 14–16 February.
28. A. Samad. 2014. Improvement of efficiency by design optimisation of a centrifugal pump impeller. *ASME Turbo Expo*, 16–20 June.
29. J. Sangwai and A. Samad. 2014. High-pressure rheological studies of nanofluid-treated water-based drilling fluids. *International Oil and Gas Conference and Exhibition*, 12–15 January.
30. A. Samad. 2014. Numerical analysis of flare gas recovery using ejector. *ASME Fluids Engineering Summer Meeting*, 3–7 August.
31. A. Samad. 2014. Oscillating water column wave energy system: A perspective. *First International Conference on Automation, Control, Energy and Systems*, 1–2 February.
32. A. Samad. 2014. Efficiency enhancement of a bidirectional impulse turbine using artificial neural network. *12th ASME Biennial Conference on Engineering Systems Design and Analysis*, 25–27 June.
33. A. Samad. Flare gas recovery using ejector. *International Symposium on Fusion Technology in Oil and Gas Development*, 9 January.
34. A. Samad. 2014. Optimal design of wave energy conversion system. *Humboldt Kolleg Interdisciplinary Science: Catalyst for Sustainable Progress*, 4–6 September.
35. A. Samad. CFD simulation of flow through progressive cavity pump. *Fifth International and 41st National Conference on Fluid Mechanics and Fluid Power*, 12–14 December.
36. A. Samad. Design optimisation of an electric centrifugal pump by multiple surrogate models. *19th Middle East Oil & Gas Show and Conference*, 8–11 March.
37. A. Samad. 2014. Effect of guide vane angle on Wells turbine performance. *ASME Gas Turbine India Conference*, 15–17 December.
38. A. Samad. 2014. Performance enhancement of electric submersible pump. *ASME Gas Turbine India Conference*, 15–17 December.
39. A. Samad. 2014. Multiphase flow challenges in artificial lifts. *SPE Middle East Artificial Lift Conference and Exhibition*, 26–27 November.

40. A. Samad. 2015. Design optimisation of an electric centrifugal pump by multiple surrogate models. *19th Middle East Oil & Gas Show and Conference*, 8–11 March.
41. A. Samad. 2014. Tip leakage effect on Wells turbine. *First International Conference on Renewable Energies Offshore*, 24–26 November.
42. A. Samad. 2014. Experimental characterisation of a step airlift pump. *3rd International Conference on Petroleum Science and technology*, 3–5 November.
43. A. Samad. 2014. Surface roughness effect on ESP performance. *Third International Conference on Petroleum Science and Technology*, 3–5 November.
44. A. Samad. 2014. Performance enhancement of an impulse turbine used for ocean energy extraction. *Fifth International Congress on Computational Mechanics and Simulation*, 10–13 December.
45. U. Ramayan, R.P. Selvam, N. Srinivasan and R. Sundaravadivelu. 2014. Hydrodynamic analysis of self-installing mono column wind float. *Energy Oceans*, Atlantic City, USA, 3 May. (Poster presentation)
46. U. Ramayan, R.P. Selvam and N. Srinivasan. 2014. Time and frequency domain analysis of self-installing mono column wind float during operational phase. *First International Conference on Renewable Energies Offshore (RENEW 2014)*, Lisbon, Portugal, 24–26 November.
47. J. Jose, R.P. Selvam, R. Sundaravadivelu. 2014. Hydrodynamic response of spar with disc 24794-MS. *OTC Conference*, Kuala Lumpur, Malaysia, 25–28 March.
48. A. Subbulakshmi, J. Jose, R. Sundaravadivelu and R.P. Selvam. 2015. Effect of viscous damping on hydrodynamic response of spar with heave plate. *International Conference on Water Resources, Coastal and Ocean Engineering (ICWRCOE 2015)*, 12–14 March.
49. U. Ramayan, R.P. Selvam and N. Srinivasan. Hydrodynamic analysis of self-installing mono column wind float during transportation phase. *Fifth International Congress on Computational Mechanics and Simulation (ICCMS 2014)*, CSIR, Chennai.
50. U. Ramayan, R.P. Selvam and N. Srinivasan. Hydrodynamic analysis of self-installing mono column wind float during transition phase. *International Conference on Computational and Experimental Marine Hydrodynamics (MARHY 2014)*, IIT Madras.

#### Distinguished visitors to the department

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1	Bo-Hyun Chon, Director Energy Resources Engineering	12–19 February 2015	Possible collaboration, MoU related discussion

#### 4.15.5. Other Activities of the Department

##### Results obtained from research work (M.S. and Ph.D. theses)

Abdus Samad: A mathematical optimisation and CFD modelling was done to redesign an ocean renewable energy harvesting turbine. The efficiency was enhanced by 25%, and the operating range of the turbine was increased. The turbine was tested in the lab. It was developed using funds from the Ministry of Earth Sciences. The same turbine will be tested in under real sea conditions by NIOT shortly.

##### International collaboration

- (a) With the Petroleum Institute: Dr. Abdus Samad of IIT Madras and Dr. Afshin Goharzadeh of the Petroleum Institute wrote a proposal for a project, 'Numerical and Experimental Investigation of Two-Phase (Liquid–Gas) Ejector for Flare Gas Recovery Applications'. Funds were given to the Petroleum Institute. Two M.Tech. students are working on the project using the funds at the Petroleum Institute. Dr. Abdus Samad visited the Petroleum Institute to review the progress of the project in December 2014. The project involves the use of both numerical and experimental work to reduce the quantity of polluting gases produced by the oil industry.  
On the basis of the preliminary results, the next project has been submitted to the Abudhabi National Oil Company (ADNOC)-UAE. If the project gets approved, IIT Madras will have funds from the company for further research in flare gas recovery.
- (b) Another collaboration, with Queen Mary University, London: A DST-UKIERI project with the university has been approved. Dr. Abdus Samad is a Co-PI (The PI is Dr. Nithya Venkateshan, of VIT University). Through this project a methodology for supplying energy from sea currents to remote Indian islands is being formulated. Faculty members and students of both groups have made visits.



## Faculty visits

Sl. No.	Name of the Faculty Member	Purpose of Visit	Date and Venue
1	Abdus Samad	Project meeting and discussion regarding further collaboration	The Petroleum Institute

Sl. No.	Name of the Faculty Member	Purpose of Visit	Date and Venue
1	V. Sundar	To conduct a short course	4–8 August 2014, University of Mauritius
2	V. Sundar	To conduct a short course	26–30 January 2015, University of Mauritius

## Student visits

Sl. No.	Name of Student	Purpose of Visit	Date and Venue
1	S. Ajay	Dissertation work	The Petroleum Institute
2	M.S. Sachin	Dissertation work	The Petroleum Institute

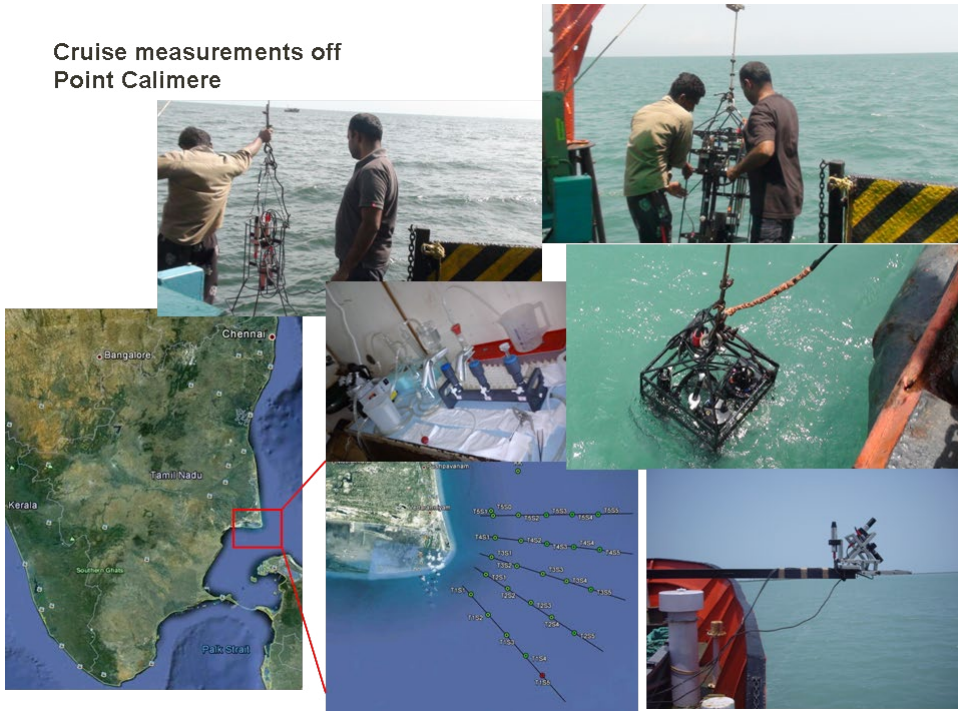
## Activities initiated

A new proposal was submitted to ADNOC.

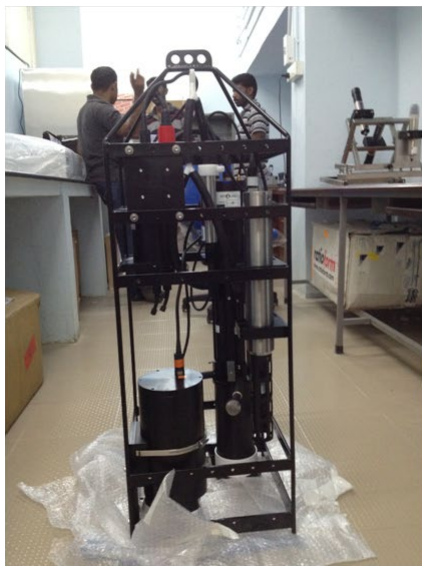
## Major infrastructure development

- Wave Energy & Fluids Engineering Lab (turbine testing facility). This is a facility where real turbines will be tested after they are designed by numerical modelling. The testing will be done prior to sea trials, to be conducted by NIOT. The project is funded by the Ministry of Earth Sciences (₹25 lakhs funding). The lab has been developed from scratch (it is required to provide a foundation for analysing/testing experimental results).
- Artificial Lift Lab: Two experimental set-ups were developed to understand the flow behaviour of pumps used in the oil industry. The funds were provided by IIT Madras and DST.
- The Ocean Optics and Imaging Laboratory was established.

### Cruise measurements off Point Calimere

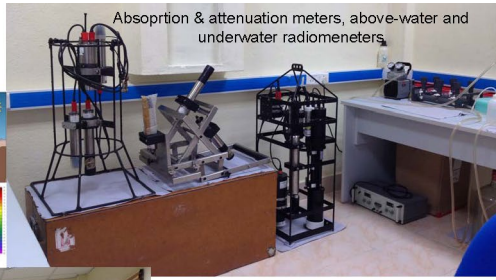
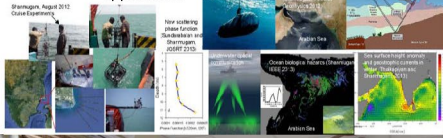


### WETLAB UNDERWATER SYSTEM & 2D WIND ANEMOMETER WITH OTHER SENSORS



# OCEAN OPTICS AND IMAGING LABORATORY

Field experiments and potential applications



Absorption & attenuation meters, above-water and underwater radiometers



Lab view

UV-VIS spectrophotometer



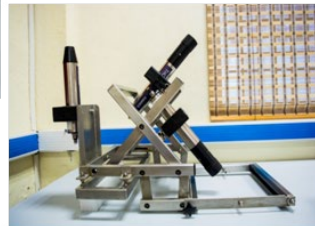
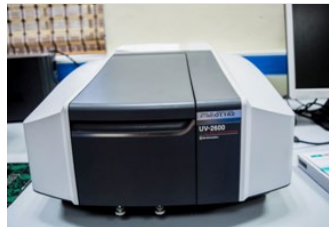
Particle extraction unit & weighing machine



Ultra pure water system



## OCEAN OPTICS AND IMAGING LABORATORY





## 4.16. DEPARTMENT OF PHYSICS

### 4.16.1. Introduction

The Department of Physics established in 1959, The department conducts research in many frontier areas in the sylvan campus of IIT Madras. These include experimental solid state physics, optical and laser physics, soft condensed matter physics and various aspects of theoretical and computational physics, ranging from condensed matter to string theory and cosmology.

The Department of Physics offers a vibrant undergraduate programme—the B.Tech. (Engineering Physics) programme— in conjunction with the Department of Electrical Engineering. The department offers three master’s programmes: the Dual Degree (B.S. and M.S.), M.Sc. and M.Tech. programmes in physics. The department also conducts a regular doctoral research (Ph.D.) programme.

### 4.16.2. Academic Programmes

Engineering Physics (B. Tech), M. Sc., Dual Degree (B.S and M.S.), M. Tech, (Solid State Technology) and Ph.D.

#### New courses introduced

Two courses were introduced for the B.Tech. (Engineering Physics) and Dual Degree (B.S. and M.S.) programmes.

Sl. No.	Course No.	Title
1	PH2140	Mathematics on the Computer
2	PH2070	Introduction to Biological Physics

#### Students on roll as of September 2014 + M.S. and Ph.D. scholars admitted in January 2015

Programme	I Year	II Year	III Year	IV Year	V Year and Others	Total
B.Tech.	31	25	25	28	8	117
Dual Degree	10	9	8	8	6+4=10	45
M.Sc.	42	35	—	—	—	77
M.Tech.	5	5	1	—	—	11
Ph.D.	38	41	37	19	21+24 =45	180
<b>Total</b>	<b>126</b>	<b>115</b>	<b>71</b>	<b>55</b>	<b>63</b>	<b>430</b>

#### Endowment prizes instituted

1. Lakshmi Raman Memorial Lecture Series
2. Brahmagupta Physics Colloquium Series
3. G.N. Ramachandran summer internship programmes

#### Names of students/scholars who attended conferences/workshops/seminars/symposia abroad/in India

Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference/Seminar/ Symposium/Workshop	Date and Venue	Financial Assistance from
<b>Abroad</b>					
1	Dhanya S. Murali	PH10D024	Pacific Rim Symposium on Surfaces, Coating and Interfaces (PacSurf 2014)	7–11 December 2014, Hapuna Beach Prince Hotel, Kohala Coast, Hawaii	IIT Madras, Alumni Travel Grant
2	Sudhakara Reddy B.	PH11D010	International Conference on Interdisciplinary Research and Global Outlook	24–25 October 2013, Irago Sea-Park & Spa Hotel, Tahara City, Aicji, Japan	IIT Madras

Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference/Seminar/ Symposium/Workshop	Date and Venue	Financial Assistance from
3	Madhusmita Tripathy	PH10D029	Ninth Liquid Matter Conference—Liquids 2014	21–25 July 2014, Lisbon, Portugal	—
4	Jemseena V.	PH10D027	EMBO Conference—Microtubules: Structure, Regulation and Functions	28–31 May 2014, EMBL Heidelberg, Germany	—
5	Ushasi Roy	PH13D014	Spring College on the Physics of Complex Systems	26 May to 20 June 2014, The Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy	ICTP and CICS
6	V. Sreenath	PH10D004	DESY Theory Workshop: Particle Cosmology after Planck	23–26 September 2014, DESY, Hamburg, Germany	Hamburg, Germany
7	V. Sreenath	PH10D004	CP3 Origins (The Centre for Cosmology and Particle Physics Phenomenology)	12–14 October 2014	University of Southern Denmark, Odense, Denmark
8	Sharannia M.P.	PH12D053	Croucher Summer Course on Neutron Scattering	11–15 August 2014, City University of Hong Kong, Hong Kong	Croucher Foundation, Hong Kong
9	Ganga B.G.	PH09D009	PacSurf 2014	7–11 December 2014, USA	IIT Madras, Alumni Fund
10	Madhumita Sahoo	PH11D017	Mind the Gap: Jumping the Hurdles Limiting Polymer Fuel Cell Performance and Commercialisation (Indo-UK DST project—research work)	28 April to 20 June 2014, School of Chemical Engineering and Advanced Materials, Newcastle University, Newcastle upon Tyne, UK	—
11	Ranjana Rani Das	PH13D042	Agilent Open Lab Workshop	3–7 December 2014, Hong Kong	—
12	Ranjana Rani Das	PH13D042	Neutron Scattering School	24 February to 6 March 2015, Berlin, Germany	—
13	Aleena Chacko	PH12D020	International Neutrino Summer School (INSS 2014)	10–22 August 2014, St. Andrew's University, Edinburgh	IIT Madras Alumni Fund
14	Aneesh V.V.	PH13D082	Lab visit	19 January to 30 March 2015, ORC, University of Southampton, UK	—
15	Pranati Nayak	PH10D011	New Advances in Carbon Nanomaterials: Faraday Discussion 173	1–3 September 2014, Royal Society of Chemistry, Burlington House, London	—
16	Mridula Baro	PH10D007	New Advances in Carbon Nanomaterials: Faraday Discussion 173	1–3 September 2014, Royal Society of Chemistry, Burlington House, London	—
<b>India</b>					
1	Raghwinder Singh	PH12D046	Recent Trends in Information Optics and Quantum Optics (IOQO-2014)	7–8 November 2014, IIT Patna	IIT Madras
2	Raghwinder Singh	PH12D046	Fourth International Conference on Current Developments in Atomic, Molecular, Optics and Nano Physics (CDAMOP-2015)	11–14 March 2015, University of Delhi, New Delhi	IIT Madras

Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference/Seminar/ Symposium/Workshop	Date and Venue	Financial Assistance from
3	Martando Rath	PH12D040	18th National Seminar on Ferroelectrics and Dielectrics—2014 (NSFD 2014)	3–5 November 2014, Manipur University, Imphal, Manipur	DRDO project (PHY/13-14/286/ DRDO/MSRA)
4	Sony Varghese	PH10D040	National Conference on Condensed Matter Physics	24–25 February 2012, BITS Pilani	IIT Madras
5	Sony Varghese	PH10D040	International Symposium for Research Scholars on Metallurgy, Materials Science and Engineering (ISRS-2014)	11–13 December 2014, IIT Madras	IIT Madras
6	Sony Varghese	PH10D040	10th National Conference on Solid State Ionics	22–24 December 2013, IIT Kharagpur	IIT Madras
7	Sony Varghese	PH10D040	ISRS-2014	11–13 December 2012, IIT Madras	IIT Madras
8	Md. Mahabul Islam	PH14D036	NCAMP-XX	12–14 December 2014, IIST, Thiruvananthapuram	IIT Madras provided the travelling and lodging allowances
9	Sutapa Samanta	PH13D052	National String Meet—2013 (NSM)	22–28 December 2013, IIT Kharagpur	TIFR, IMSC, HRI
10	Sutapa Samanta	PH13D052	SERC-THEP Preparatory School	2–28 June 2014, BITS Pilani, Hyderabad campus	DST-SERB
11	Sutapa Samanta	PH13D052	SERC-THEP Main School	20 December 2014 to 8 January 2015, BITS Pilani—K.K. Birla Goa campus	DST-SERB
12	Shibnath Samanta	PH12D055	NSFD 2014	3–5 November 2014, Manipur University, Imphal, Manipur	IIT Madras
13	Tapan Kumar Das	PH12D059	International Conference on Electron Microscopy (EMSI 2014)	7–11 July 2014, Delhi University	IIT Madras
14	Sudhakara Reddy B.	PH11D010	International Conference on Fibre Optics and Photonics	13–16 December 2014, IIT Kharagpur	IIT Madras
15	Sudhakara Reddy B.	PH11D010	International Conference on Current Developments in Atomic, Molecular Optical and Nano Physics with Applications	11–14 March 2015, University of Delhi, New Delhi	IIT Madras
16	Sudhakara Reddy B.	PH11D010	First Workshop on Ultrafast Photonic Processes and Interactions (collaboration of IIT Madras, DCU (Ireland) and ORC (UK))	3–4 February 2014, IIT Madras	—
17	Sudhakara Reddy B.	PH11D010	Second Workshop on Ultrafast Photonic Processes and Interactions (collaboration of IIT Madras, IIT Karagpur, DCU and ORC)	28–29 January 2015, IIT Madras	—
18	Sudhakara Reddy B.	PH11D010	School on Plasmonics and Nano-optics, ICTS Discussion Meeting on Emerging Themes in Plasmonics	24 June to 3 July 2012, Hyderabad Central University	—
19	Thirmal Chinthakuntla	PH11D030	International Workshop on Coatings and Surfaces in Biomedical Engineering	16–19 February 2014, IIT Madras, Chennai, Tamilnadu, India	—



Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference/Seminar/ Symposium/Workshop	Date and Venue	Financial Assistance from
20	Thirmal Chinthakuntla	PH11D030	International Workshop on Electronic Materials Technology	13–15 March 2014, Crystal Growth Centre, Anna University, Chennai, Tamilnadu, India	IIT Madras
21	Thirmal Chinthakuntla	PH11D030	National Symposium on Advances in Ferro- piezoelectrics	20–21 March 2014, Research Innovation Centre, IIT Madras Research Park	—
22	Thirmal Chinthakuntla	PH11D030	CSR Lecture Series	15–26 September 2014, UGC-DAE, University Campus, Indore	UGC-DAE
23	Thirmal Chinthakuntla	PH11D030	Short Course on Spectroscopic Ellipsometry	16–17 October 2014, IIT Madras	Impressed money
24	Thirmal Chinthakuntla	PH11D030	59th DAE Solid State Physics Symposium	16–20 December 2014, VIT University, Vellore	IIT Madras
25	Pradip Laha	PH13D040	IOQO-2014	7–8 November, Patna	IIT Madras
26	Radhika K	PH10D033	International Conference on Magnetic Materials and Applications 2014 (ICMagMA 2014)	15–17 September, Pondicherry University	IIT Madras
27	Radhika K.	PH10D033	ISRS-2014	11–13 December, IC&SR Auditorium, IIT Madras	IIT Madras
28	Taniya Mandal	PH12D013	Ninth Asian Winter School on Strings, Particles and Cosmology	18–27 January 2015, Busan, Korea	IIT Madras
29	Joynarayan mukherjee	PH11D015	ISRS-2014	11–13 December 2014, IIT Madras	IIT Madras
30	Sachin Krishnan T.V.	PH13D074	Second Soft Matter Young Investigators Meet 2014	18–20 December 2014, Pondicherry	—
31	Madhusmita Tripathy	PH10D029	DAE BRNS Symposium on Multiscale Modelling of Materials and Devices (MMMD–2014)	30 October to 2 November 2014, BARC, Mumbai	Shell Research, Bangalore
32	Raj Kumar Manna	PH12D017	Bangalore School on Statistical Physics—V	31 March to 12 April 2014, Raman Research Institute	Organising institute
33	Rajivgandhi R.	PH12D047	ICMagMA 2014	15–17 September 2014, Pondicherry University, Pondicherry	IIT Madras
34	Rajivgandhi R.	PH12D047	School on Neutron as Probes as Condensed Matter (NPCM–2015)	27–31 January 2015, BARC, Mumbai	UGC-DAE Consortium for Scientific Research (CSR), Mumbai Centre
35	V. Sreenath	PH10D004	Aspects of Cosmology	9–11 April 2014, Indian Institute of Astrophysics	IIT Madras
36	D. Jaffino Stargen	PH12D016	XXVIII Meeting of the Indian Association of General Relativity and Gravitation	18–20 March 2015, Raman Research Institute, Bangalore, India	IIT Madras
37	Debika Chowdhury	PH13D028	Preparatory SERC School in Theoretical High-Energy Physics	2–28 June 2014, BITS, Hyderabad Campus, Hyderabad, India	DST
38	Debika Chowdhury	PH13D028	Workshop on Galaxies and Cosmology	7–18 July 2014, National Centre for Radio Astrophysics, Pune, India	—

Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference/Seminar/ Symposium/Workshop	Date and Venue	Financial Assistance from
39	Debika Chowdhury	PH13D028	The XXVIII Meeting of the Indian Association of General Relativity and Gravitation	18–20 March 2015, Raman Research Institute, Bangalore	IIT Madras
40	Sharannia M.P.	PH12D053	ICMagMA 2014	15–17 September 2014, Pondicherry University	IIT Madras
41	Sharannia M.P.	PH12D053	5th Conference on Neutron Scattering	2–4 February 2015, Homi Bhabha Centre for Science Education, Mumbai	IIT Madras
42	Dinesh Kumar	PH12D005	Seventh National DAE-BRNS Symposium on Pulsed Laser Deposition of Thin Films and Nanostructured Materials	14–16 November 2013, IIT Kharagpur	Department of Physics, IIT Madras
43	Dinesh Kumar	PH12D005	International Union of Material Research Society (IUMRS-ICA) 2013	16–20 December 2013, IISc, Bangalore	Department of Physics, IIT Madras
44	Dinesh Kumar	PH12D005	NSFD 2014	3–5 November, 2014, Manipur University, Imphal	DST project
45	Lairenjam Pradipkanti Devi	PH12D036	National Workshop on Advanced X-ray Techniques and Applications (AXTA-2013)	27 April 2013, IIT Madras	IIT Madras
46	Lairenjam Pradipkanti Devi	PH12D036	Workshop on Dielectric Impedance Analyser System	20–21 January 2014, Raman Research Institute, Bangalore	Department of Physics, IIT Madras
47	Lairenjam Pradipkanti Devi	PH12D036	Basics of Magnetism and Investigations of Magnetic Properties of Materials Using Synchrotron Radiation	24–28 March 2014, RRCAT, Indore	RRCAT
48	Lairenjam Pradipkanti Devi	PH12D036	Workshop on Spectroscopic Ellipsometry	16–17 October 2014, IIT Madras	Department of Physics, IIT Madras
49	Lairenjam Pradipkanti Devi	PH12D036	NSFD 2014	3–5 November 2014, Manipur University, Imphal	Department of Physics, IIT Madras
50	Rashmi Chandrabhan Shende	PH12D049	National Workshop on Nano Science and Technology (NW-NST-2013)	18–19 October 2013, MITE, Mangalore	IIT Madras
51	Ankita Pandey	PH09D013	International Conference on Soft Materials (ICSM 2014), SMYIM 2014	Malaviya National Institute of Technology Jaipur (ICSM), Pondicherry, (SMYIM)	IIT Madras (ICSM), waiver (SMYIM)
52	Ushasi Roy	PH13D014	Indian Statistical Physics Community Meeting—I	1–3 February 2014, IISc, Bangalore	IIT Madras
53	Ushasi Roy	PH13D014	Bangalore School on Statistical Physics—V	31 March to 12 April 2014, Raman Research Institute, Bangalore	Raman Research Institute
54	Ushasi Roy	PH13D014	Dynamics Days Asia Pacific	21–24 July 2014, IIT Madras and IMSc, Chennai	IIT Madras
55	Ushasi Roy	PH13D014	Indian Statistical Physics Community Meeting—II	13–15 February 2015, IISc, Bangalore	IIT Madras
56	Madhumita Sahoo	PH11D017	In-House Symposium—2, Department of Physics	27–28 February 2015, IIT Madras	—
57	Madhumita Sahoo	PH11D017	Second International Conference on Nanotechnology (ICNT 2015)	19–22 February 2015, Haldia Institute of Technology, Haldia, West Bengal	IIT Madras

Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference/Seminar/ Symposium/Workshop	Date and Venue	Financial Assistance from
58	Madhumita Sahoo	PH11D017	Nanodays 2015	16–18 February 2015, S.N. Bose Sciences, Kolkata, West Bengal	—
59	Madhumita Sahoo	PH11D017	ISRS-2014	11–13 December 2014, IIT Madras, Chennai	IIT Madras
60	Madhumita Sahoo	PH11D017	Indo–US Workshop on Engineered Electrodes for Electrochemical Energy Storage	3–4 April 2014, Hotel Green Park, Chennai	—
61	Madhumita Sahoo	PH11D017	In-House Symposium, Department of Physics	8 March 2014, IIT Madras	—
62	Jemseena V.	Ph10D027	Indian Statistical Physics Community Discussion Meeting	1–3 February 2015, IISc, Bangalore	—
63	Deepak Bhat	PH10D022	Seminar on Modelling Motor-Protein-Based Intra-cellular Transport	26–27 February 2015, The National Center for Biological Sciences	—
64	Deepak Bhat	PH10D022	Seminar on Some of the Statistical Properties of Motor-Driven Intra-cellular Transport	23–25 February 2015, The International Center for Theoretical Sciences	ICTS
65	Deepak Bhat	PH10D022	Indian Statistical Physics Community Meeting	13–15 February 2015, IISc, Bangalore	IIT Madras
66	Deepak Bhat	PH10D022	Statphys—Kolkata VIII	1–5 December 2014, S.N. Bose National Centre for Basic Sciences, Kolkata	IIT Madras
67	Pritha Dolai	PH12D044	International Conference on Soft Materials (ICSM 2014)	6–10 October 2014, MNIT, Jaipur	IIT Madras
68	Pritha Dolai	PH12D044	Statphys—Kolkata VIII	1–5 December 2014, S.N. Bose National Centre for Basic Sciences, Kolkata	IIT Madras
69	Ajit Kumar Jena	PH12D002	Winter School on Materials and Processes for Applications in Energy and Environment	15–18 January 2015, JNCASR, Bangalore	Organisers
70	Ajit Kumar Jena	PH12D002	CTCMP 2015	19–22 February 2015, NISER, Bhubaneswar	IIT Madras
71	Pius Augustine	PH13D084	XVIII National Seminar on Ferroelectrics and Dielectrics	3–5 November 2014, Department of Physics, Manipur university	DRDO project No. PHY/13-14/286/DRDO/MSRA
72	Pius Augustine	PH13D084	ISRS-2014	11–13 December 2014, Department of Metallurgical & Materials Engineering, IIT Madras	—
73	Aneesh V.V.	PH13D082	Photonics 2014—International Conference on Fibre Optics and Laser Physics	4 days, IIT Kharagpur	IIT Madras
74	Pavana Sri Vamsi Mocherla	PH10D030	National Workshop on Materials Chemistry (Functional Materials), NWMC-2011 (FUN-MAT)	7–8 December 2011, Bhabha Atomic Research Centre (BARC), Mumbai and Society for Materials Chemistry (SMC)	UGC
75	Pavana Sri Vamsi Mocherla	PH10D030	International Conference on Advanced Materials, ICAM–2011 (gave an oral presentation on structural, electrical and magnetic properties of BiFeO <sub>3</sub> nanoparticles)	PSG College of Science and Technology, Coimbatore	UGC

Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference/Seminar/ Symposium/Workshop	Date and Venue	Financial Assistance from
76	Pavana Sri Vamsi Mocherla	PH10D030	International Conference on Raman Spectroscopy, ICORS-2012 (presented a poster titled 'Temperature- dependent Raman spectral studies on BiFeO <sub>3</sub> -CoFe <sub>2</sub> O <sub>4</sub> nanotube composite thin films')	12–17 August 2012, IISc, Bangalore	UGC
77	Pavana Sri Vamsi Mocherla	PH10D030	International Conference on Advanced Nano Materials (ANM)—2012 (gave oral presentation on the effect of particle size on the physical properties of Ca <sup>2+</sup> -doped BiFeO <sub>3</sub> nanoparticles)	17–19 October 2012, Nano Functional Materials Technology Centre (NFMTC), IIT Madras	UGC
78	Pavana Sri Vamsi Mocherla	PH10D030	International Union of Materials Research Society (IUMRS-ICA) (gave oral presentation on microstructural investigations of Ca-doped BiFeO <sub>3</sub> nanoparticles)	16–20 December 2013, IISc, Bangalore	UGC
79	Pavana Sri Vamsi Mocherla	PH10D030	EMSI 2014, organised by Electron Microscope Society of India (presented a poster titled 'Strain field contrast in Bi <sub>1-x</sub> Ca <sub>x</sub> Fe <sub>1-x</sub> Ti <sub>x</sub> O <sub>3</sub> nanoparticles')	9–11 July 2014, University of Delhi, New Delhi	UGC
80	Pavana Sri Vamsi Mocherla	PH10D030	In-House Symposium (gave an oral presentation on the optical properties of oxygen defect-rich Ca-doped BiFeO <sub>3</sub> nanoparticles)	27–28 February 2015, Department of Physics, IIT Madras	UGC
81	Ashok P.	PH11D012	ISRS-2014	11–13 December 2014, IIT Madras	—
82	Ashok P.	PH11D012	Indian Roadshow Workshop	10 November 2014, IIT Madras	—
83	Divya N.	PH09D001	ISRS-2014	11–13 December 2014, IIT Madras	—
84	A. Asalatha	PH12D026	ISRS-2014	11–13 December 2014, IIT Madras	—
85	A. Asalatha	PH12D026	Indo-US Workshop on Engineered Electrodes for Electrochemical Energy Storage	3–4 April 2014, Hotel Green Park, Chennai	—
86	A. Asalatha	PH12D026	Exploring the Current Issues in Sustainable Energy (seminar)	5 June 2014, IIT Madras	—
87	Pranati Nayak	PH10D011	New Advances in Carbon Nano Materials, Faraday Discussion 173, Royal Society of Chemistry (RSC)	1–3 September 2014, Burlington House, London, UK	—
88	Pranati Nayak	PH10D011	In-House Symposium	8 March 2014, Department of Physics, IIT Madras	—
89	Mridula Baro	PH10D007	New Advances in Carbon Nano Materials, Faraday Discussion 173, Royal Society of Chemistry (RSC)	1–3 September 2014, Burlington House, London, UK	—

Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference/Seminar/ Symposium/Workshop	Date and Venue	Financial Assistance from
90	Mridula Baro	PH10D007	In-House Symposium	8 March 2014, Department of Physics, IIT Madras	—
91	P. Tamilarasan	PH09D021	Indo-US Workshop on Engineered Electrodes for Electrochemical Energy Storage	3–4 April 2014, Hotel Green Park, Chennai	—
92	P. Tamilarasan	PH09D021	In-House Symposium	8 March 2014, , Department of Physics, IIT Madras	—
93	Madhumita Sahoo	PH11D017	Indo–US Workshop on Engineered Electrodes for Electrochemical Energy Storage	3–4 April 2014, Hotel Green Park, Chennai	—
94	Madhumita Sahoo	PH11D017	In-House Symposium	8 March 2014, Department of Physics, IIT Madras	—
95	Subhasis Samanta	PH12D056	DST SERC School on DFT and Beyond	24 November to 13 December 2014, Vadodara	—
96	Haricharan Padmanabhan	Project Associate	DAE Solid State Physics Symposium	15–18 December 2014, VIT, Vellore	—
97	Ajit Kumar Jena	PH12D002	Winter School on Materials and Processes	15–18 January 2015, JNCASR, Bangalore	—
98	Ajit Kumar Jena	PH12D002	CTCMP 2015	19–22 February 2015, NISER, Bhubaneswar	—
99	P.R. Shaina	PH12D052	Nanodays 2015	16–18 February 2015, S.N. Bose National Centre for Basic Sciences, Kolkata	—
100	P.R. Shaina	PH12D052	ICNT-2015	19–22 February 2015, Haldia Institute of Technology	—

#### Names of students/scholars who won outside prizes and awards

Sl. No.	Name of the Student/ Scholar	Roll No.	Name of Prize	Prize Awarded by
1	Raghwinder Singh	PH12D046	Best Poster Award at IOQO-2014	Department of Physics, IIT Patna
2	Madhusmita Tripathy	PH10D029	Best Poster, DAE BRNS Symposium on Multiscale Modeling of Materials and Devices (MMMD-2014)	BARC, Mumbai
3	P.R. Shaina	PH12D052	Best Poster Prize, Nanodays 2015, for presentation titled ‘Atomically thin membranes on spatially tuneable surfaces’	S.N. Bose National Centre for Basic Sciences, Kolkata
4	Ankita Pandey	PH09D013	Best oral presentation, ‘Flow-induced non- equilibrium self-assembly in suspensions of stiff, apolar, active filaments’, at ICSM 2014	Malaviya National Institute of Technology, Jaipur
5	Pius Augustine	PH13D084	Best Poster Presentation Award  Best Paper Presentation Award (Ceramics and Powder Metallurgy category)	Department of Physics, Manipur University  Sponsored by IIT Madras Alumni Association and a group of professors

### 4.16.3. Faculty and Their Activities

#### Faculty

Name and Qualifications	Major Areas of Specialisation
<b>Professors</b>	
Sunil Kumar P.B. [Head]	Complex fluids; biological physics; statistical mechanics
Arul Lakshminarayan	Dynamical systems; quantum information; mathematical physics
Neelima Gupte	Nonlinear dynamics; statistical physics
P.C. Deshmukh	Atomic and molecular physics
Prem B. Bisht	Ultrafast laser spectroscopy; fluorescence microscopy
Sethupathi K.	Magnetism and transport properties of colossal magnetoresistance; oxides at low temperatures; novel materials in the bulk, thin film and nanocrystalline forms
Govindarajan, Suresh	String theory
Srinivas V.	Magnetic properties; magnetotransport; thermoelectrics
Vijayan C.	Nanophotonics; light–matter interaction
Sankaranarayanan V.	Low-temperature physics and cryogenics; magnetocaloric effect; superconductivity
Ramaprabhu S.	Nanomaterials; fuel cells; nanofluids
Satyanarayana M.V.	Quantum optics; laser physics; photonics
Markandeyulu G.	Magnetism; magnetic materials
Lakshmi Bala S.	Classical and quantum dynamical systems; nonlinear dynamics and chaos; chaos in gauge theories; quantum information theory
Subrahmanyam A.	Photovoltaics; photocatalysis; electrochromics; bio-medical engineering; surface engineering
Subramanian V.	Microwaves; dielectrics; semiconductors
Kasiviswanathan S.	Near- and far-field response of plasmonic structures; films of transparent oxide and ternary semiconductors; systems exhibiting quantum coherence
Ramachandra Rao M.S.	Electronic and magnetic materials; thin films and bulk oxide electronics; magnetotransport studies in manganites and spintronics
Murthy V.R.K.	Microwave physics and materials
<b>Associate Professors</b>	
Ganesan A.R.	Applied optics; holography; adaptive optics
C.V. Krishnamurthy	Non-destructive evaluation; microstructural modelling; light scattering
James Libby	High-energy particle physics: Flavour and neutrino physics
Manoj Gopalakrishnan	Theoretical biophysics, stochastic processes
Murugavel P.	Ferroelectrics, dielectrics and multifunctional oxides for multiferroic and photovoltaic studies
Nirmala R.	Intermetallics
Prafulla Kumar Behera	Experimental high-energy physics
Rajesh Narayanan	Theoretical condensed matter; strongly correlated systems
Sriramkumar L.	Inflationary cosmology and the cosmic microwave background; semi-classical and quantum gravity
Santhosh P.N.	Magnetism in condensed matter physics; electroceramics; magnetic materials low temperatures; characterisation of advanced materials
Pattabiraman M.	Experimental atomic physics; quantum optics; magnetometry
Harish Kumar N.	Superconductivity; spintronics; novel magnetic materials; instrumentation; automation
Mahaveer Kumar Jain	Semiconductors; photovoltaics; chemical sensors
Prasanta Kumar Tripathy	String theory
<b>Assistant Professors</b>	
Aditi Simha	Soft condensed matter; non-equilibrium physics
Aravind G.	Photoionisation/photodetachment of ions, atoms and molecules; study of ion–atom collisions in ion-traps at low temperatures; collision-induced dissociation of anions



Name and Qualifications	Major Areas of Specialisation
Dillip Kumar Satapathy	Soft condensed matter physics; X-ray and neutron scattering; magnetic proximity effect
Jayeeta Bhattacharyya	Spectroscopic study of semiconductors; carrier dynamics; THz spectroscopy
Manu Jaiswal	Elastic and electronic properties of graphene and 2D systems; applications of graphene in solar energy, sensing and filtration, conducting polymers and other carbon-based systems
Prabha Mandayam	Quantum information theory; quantum optics
Prahallad Padhan	Investigation of crystal structure and physical properties of the transition metal oxides-based superlattices; fabrication and processing of transition metal oxides-based junctions using sputtering; synthesis of transition metal chalcogenide-based nanostructures
Birabar Ranjit Kumar Nanda	Graphene magnetism; energy materials; strongly correlated oxides
Sivarama Krishnan	Femto- and atto-second dynamics; synchrotron physics; atomic and nanoscale systems
Somnath Chanda Roy	Experimental materials science; nanostructure synthesis and application to gas sensors, photocatalysis and solar cells
Sudakar Chandran	Defect–structure–property correlations in oxides; nanomaterials for sensitised solar cell applications; lithium ion battery anodes and cathodes
Sunethra Ramanan	Nuclear structure; many-body techniques; problems in cold atomic systems that lie at the interface of nuclear structures
Dawood Kothawala	General relativity; semi-classical gravity; black hole physics

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

Sl. No.	Coordinators	Title	Period
<b>Conferences</b>			
1	Neelima Gupte	Dynamics Days Asia Pacific	21–24 July 2015
<b>Symposia</b>			
1	P.C. Deshmukh	In-House Symposium on Atomic and Molecular Physics, IIT Mandi	13 March 2015
<b>Workshops</b>			
1	James Libby	International Workshop on the CKM Unitarity Triangle (CKM2014), Vienna, Austria (co-convenor of Working Group 5)	8–12 September 2014
		First Belle-II Theory Interface Platform, KEK, Japan (co-convenor of Working Group 4)	7–8 November 2014
		Belle (II) Analysis Workshop 2015, IIT Madras (organizer)	9–17 March 2015
2	Prafulla Kumar Behera	Workshop on Higgs Discovery, IIT Madras	—
3	Somnath Chanda Roy	International Workshop on Material Challenges in Devices for Fuel Solar Production and Employment—ICTP, Trieste, Italy	May 2014
<b>Short-term courses</b>			
1	Rajesh Narayanan	Short lecture course on the fractional quantum Hall effect, by Prof. Xin Wan, at the Department of Physics, IIT Madras	—

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

Sl. No.	Name of Faculty Member	Title	Institution	Period
<b>Workshops</b>				
1	James Libby	India-Based Neutrino Observatory Collaboration Meeting (Rebin Raj)	VECC, Kolkata	3–5 April 2014
		Belle-II Theory Interface Platform kick-off meeting (Libby (oral presentation) and Prasanth K.P.)	KEK, Tsukuba, Japan	16–17 June 2014
		18th Belle-II General Meeting (Libby (oral presentation) and Prasanth K.P.)	KEK, Tsukuba, Japan	18 and 21 June 2014

Sl. No.	Name of Faculty Member	Title	Institution	Period
		65th Belle General Meeting (with Prasanth K.P.)	KEK, Tsukuba, Japan	22–23 June 2014
		India-Based Neutrino Observatory Collaboration Meeting (Rebin Raj)	Madurai	16–18 September 2014
		CMS India Collaboration Meeting (Libby)	Delhi University	4–5 November 2014
		20th Belle-II General Meeting (plenary session chair)	KEK, Japan	2, 3, 6 and 7 February 2015
		67th Belle General Meeting	KEK, Japan	4–5 February 2015
		Belle Physics Advisory Committee Meeting (oral presentation)	KEK, Japan	9–11 February 2015
		Belle (II) Analysis Workshop 2015 (Organiser; oral presentations by Libby, Prasanth K.P. (× 2), Resmi P.K., Gautam Venugopalan and Arvind Venkat)	IIT Madras	8–17 March 2015
2	Prafulla Kumar Behera	Short-term workshop offered by LTC, IIT Madras	IIT Madras	January 2015 (one week)
		International Workshop on Next Generation Nucleon Decay and Neutrino Detector ('Status of INO experiment', at plenary session)	APC Laboratory, Paris, France	4–6 November 2014
3	Sriramkumar, L.	International Workshop on Unification and Cosmology after Higgs Discovery and BICEP2	Department of Physics, Panjab University, Chandigarh	13–15 May 2014
		Workshop on Invisible Matters	Department of Physics, IIT Hyderabad, India	29–31 October 2014
<b>Seminars</b>				
1	Jayeeta Bhattacharyya	Faculty Development Programme	IIT Madras	5–7 January 2015
<b>Symposia</b>				
1	Ganesan A.R.	SPIE International Symposium on Optical Engineering + Applications	San Diego, California, USA	17–21 August 2014
2	Jayeeta Bhattacharyya	ILA short courses during National Laser Symposium—23	S.V. University, Tirupati	1–2 December 2014
3	P.C. Deshmukh	11th Asian International Symposium on Atomic and Molecular Physics	Sendai, Japan	6–10 October 2014
4	Srinivas V.	International Symposium for Research Scholars on Metallurgy, Material Science and Engineering (ISRS)	IIT Madras	11–13 December 2014
		59th DAE Solid State Physics Symposium	VIT University, Vellore	16–20 Decemeber 2014
<b>Conferences</b>				
1	Aditi Simha	International Conference on Soft Materials (ICSM 2014)	Malaviya National Institute of Technology, Jaipur	6–10 October, 2014
		Soft Matter Young Investigators Meet 2014	Pondicherry	18–20 December 2014
		Bangalore Statistical Physics School	Raman Research Institute, Bangalore	31 March to 12 April 2014
		Statistical Physics, Kolkata—VIII	SNBNCBS, Kolkata	1–5 December 2014
2	Ganesan, A.R.	Photonics 2014, International Conference on Fibre Optics and Photonics	IIT Kharagpur	13–16 December 2014

Sl. No.	Name of Faculty Member	Title	Institution	Period
		ICONN 2015, Third International Conference on Nanoscience and Nanotechnology—2015	SRM University, Chennai	4–6 February 2015
		ICOP-2015, International Conference on Optics and Photonics	Kolkata, India	20–22 February 2015
3	Arul Lakshminarayan	Non-Hermitian Random Matrices: 50 Years After Ginibre	Israel	22–27 October 2014
4	Aravind G.	National Conference in Atomic and Molecular Physics	Thiruvananthapuram	December 2014
5	James Libby	International Workshop on the CKM Unitarity Triangle (CKM2014) (co-convenor of working group, parallel session presentation and plenary review talk)	Vienna, Austria	8–12 September 2014
6	Prafulla Kumar Behera	Winter School on Astroparticle Physics	Ooty	21–29 December 2014
		INO Collaboration meeting	BARC	March 2014
		INO Collaboration meeting	Madurai	July 2014
		DAE–DST Vision Meeting of Nuclear, Particle and High-Energy Physics	BARC	24–25 August 2014
		DAE task force meeting for CSM and ALICE experiment	BARC	18 December 2014
		Alumni Reunion Day ('IIT Madras and CERN: A new beginning')	IIT Madras	26 December 2014
7	Prem B. Bisht	Ultrafast phenomena at the nano scale UP 2014	OIST, Okinawa	July 2014
		NLS 2014	Okinawa	July 2014
		Department seminar	Tirupati	December 2014
		Department seminar	IIT Madras	October 2014
8	Prahallad Padhan	Sixth International Symposium for Research Scholars on Metallurgy, Materials Science and Engineering ('Electronic structure of $\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3/\text{Zn}_{0.97}\text{Mg}_{0.03}\text{O}$ heterostructures', with U.K. Sinha, B.C. Behera and W. Prellier)	Department of Metallurgical and Materials Engineering, IIT Madras	11–13 December 2014
	Prahallad Padhan	International Conference on Magnetic Materials and Applications ('Superlattices of metallic ferromagnetic oxides: Interface antiferromagnetic coupling effect', with B.C. Behera, Venkata Ravindra A. and W. Prellier)	Department of Physics, Pondicherry University, Pondicherry	15–17 September 2014
9	Somnath Chanda Roy	International Conference on Sustainable Energy Technologies (ICSET 2014) ('Dye-sensitised solar cells based on solvothermally crystallised $\text{TiO}_2$ nanotube arrays', with B.M. Rao)	PSG College of Technology, Coimbatore	11–13 December 2014
		ICSET 2014 ('Graphene-functionalised $\text{TiO}_2$ nanowires and their photo-electrochemical properties', with Rambabu Yalavarthi)	PSG College of Technology, Coimbatore	11–13 December 2014
		International Conference on Nanotechnology (ICNT 2015) ('A comparative study of resistive and capacitive sensing behaviour of $\text{TiO}_2$ nanotube arrays', with B.M. Rao)	Haldia Institute of Technology, Haldia, West Bengal	19–22 February 2015

Sl. No.	Name of Faculty Member	Title	Institution	Period
10	Sriramkumar, L.	Cosmology Day	International Centre for Theoretical Sciences, Bangalore	8 April 2014
		Aspects of Cosmology	Indian Institute of Astrophysics, Bangalore	9–11 April 2014
		SYMPHY	Department of Physics, IIT Bombay	12–13 April 2014
		International Conference on Matters of Gravity and the Universe	Centre for Theoretical Physics, Jamia Millia Islamia, New Delhi	27–29 October 2014
		The Primordial Universe after Planck	Institut d'Astrophysique de Paris, Paris, France	15–19 December 2014
		Astronomy, Cosmology and Fundamental Physics with Gravitational Waves	Chennai Mathematical Institute, Chennai	2–4 March 2015
		XXVIII Meeting of the Indian Association of General Relativity and Gravitation	Raman Research Institute, Bangalore	18–20 March 2015
11	Srinivas V.	Intermag Europe—2014	Dresden, Germany	4–8 May 2014
12	Sankaranarayanan V.	NSFD—2014	Manipur University, Imphal	3–5 November 2014
13	Dawood Kothawala	The Spanish Relativity Meeting—ERE 2014	Valencia, Spain	1–5 September 2014
14	Neelima Gupte	Sigma Phi Statistical Physics	Rhodes, Greece	July 2014
		CNSD	IISER Mohali	March 2015
		Dynamics Days, Asia–Pacific	Central University, Rajasthan	
15	Sethupathi K.	XII International Conference on Nanostructured Materials (NANO 2014)	Lomonosov Moscow State University, Moscow, Russia	13–18 July 2014
		Advances in X-ray Imaging 2014	International Center for Theoretical Physics, Trieste, Italy	11–12 December 2014
	Sethupathi K.	CDAMOP 2015	Delhi University, New Delhi	11–14 March 2015
16	Sunil kumar P.B.	Soft Matter Conference, MNIT Jaipur	Jaipur, India	7–10 October 2014
		JNCASR, Bangalore	Bangalore	21–25 December 2014
		NISER, Bhubaneswar	Bhubaneswar	19–21 February 2015
		Soft Matter Young Investigator Meet, Pondicherry	Pondicherry	17–20 December 2014
17	Dillip Kumar Satapathy	Soft Matter Young Investigator Meet, Pondicherry	Pondicherry	17–20 December 2014
<b>Short-term courses</b>				
1	James Libby	Second Asia–Europe–Pacific School of High-Energy Physics (Prasanth K.P.)	Puri, Odisha	4–17 November 2014
		A short course on spectroscopic ellipsometry, attended by Thirmal Ch.	IIT Madras	16–17 October 2014

## Special lectures delivered by faculty members at other institutions

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
1	Ganesan A.R.	Adaptive optics and applications (invited talk at the one-day meeting on the theme 'Light', held in connection with the International Year of Light)	IGCAR, Kalpakkam	27 February 2015
2	Arul Lakshminarayan	Theoretical aspects of Quantum information and Quantum chaos. Random matrix theory and applications thereof	Central University of Tamilnadu, Tiruvarur	5 November 2014
		Resource person at the Science Academies' Lecture Workshop on Classical Mechanics	Loyola College, Chennai	4–6 December 2014
3	C.V. Krishnamurthy	Advanced NDE of composites	Sathyabama University	15 February 2014
4	C.V. Krishnamurthy	Magnetic sensors and modelling for NDE	IIT Hyderabad	16 November 2014
5	C.V. Krishnamurthy	NDE with radiography	CII	18 November 2014
6	C.V. Krishnamurthy	Modeling microstructure of materials (ISNT-NDE Conference)	Pune	5 December 2014
7	C.V. Krishnamurthy	Methods of Infrared Thermographic NDE	IGCAR	2 February 2015
8	C.V. Krishnamurthy	Modeling of composites	DRDL	27 February 2015
9	Manu Jaiswal	Graphene: Physics and devices (ICTP Master Class on Nanoscale Physics and Devices)	TIFR, Mumbai	7 October 2014
10	Neelima Gupte		Josef Stefan Institute, Ljubljana	November 2014
		SERC School in Nonlinear Dynamics	Central University, Rajasthan	December 2014
			CUSAT	February 2015
11	Nirmala R.	Materials for magnetic refrigeration: Recent trends (ongoing Golden Jubilee Special Lecture Series)	Department of Physics, NIT Trichy	17 October 2014
		Visited Department of Condensed Matter Physics and Materials Science (to carry out collaborative research work with Prof. A.K. Nigam's group)	TIFR	15–23 July 2013
12	Prabha Mandayam	Invited talk at the Discussion Meeting on Quantum Measurements (DMQM'14)	IISc, Bangalore	22–24 October 2014
13	P.C. Deshmukh	Four special lectures: (1) Symmetry and conservation laws in atomic physics (2) Just what is electron spin, and where is it hiding in the Dirac equation? (3) Professor A.V. Tankhiwale Memorial Lecture (4) Science in one line if all else perishes	Nagpur University	19–20 February 2015
14	Prafulla Kumar Behera	Discovery of Higgs boson (at Science Day programme)	MSU, Tirunelveli	—
15	Prem B. Bisht	Techniques and phenomena from THz to X-rays using picosecond to attosecond pulses (colloquium)	Physics Department, IIT Madras	—
16	Prem B. Bisht	Effect of surface plasmon resonances on optical Kerr effect in graphene–silver nanoparticle composites	Molecular Photoscience Research Centre, Kobe University, Kobe, Japan	—

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
17	Prem B. Bisht	A simple method of generating tunable femtosecond pulses in the 375–410 nm region (in the Physical Sciences section of the 102nd Indian Science Congress)	University of Mumbai	3–7 January 2015
18	Prem B. Bisht	Resonances of a microcavity: Experiments, simulations and applications (at the one-day meeting on the theme 'Light' held to celebrate the International Year of Light (IYL-2015))	IGCAR	27 February 2015
19	B.R.K. Nanda	Electrochemical, electronic and magnetic profile of lithium-based olivine phosphates	IIT Madras Research Park-ARCI	7 November 2014
		Long-range magnetic order in graphene	IISc, Bangalore	22 December 2014
		Curious case of $\text{Li}(\text{Fe}, \text{M})\text{PO}_4$ : It is not just a battery material—it has exotic electronic and magnetic phases as well	NISER, Bhubaneswar	19 February 2015
20	Sethupathi K.	Lectures on cryogenic instrumentation at the 'Refresher Course Participants of Instrumentation Sciences', organised by the School of Physical Sciences	University of Madras	29 November 2014
		Lecture on Nano Materials and naocomposites for magnetic refrigeration applications was delivered in the Short Term Programme	Nuclear Physics Department, University of Madras	11 June 2014
		$\text{TiO}_2$ nanotubes synthesized through an energy efficient crystallization process; National Symposium on Green Electronics	Amrita University, Coimbatore	December 2014
21	Sriramkumar L.	On the detection of the imprints of primordial gravitational waves on the CMB by BICEP2 (talk on the BICEP2 results)	Chennai Mathematical Institute, Chennai	21 and 26 March 2014
22	Sriramkumar L.	The BICEP2 results and its implications for the physics of the early universe (invited talk at 'Cosmology Day')	International Centre for Theoretical Sciences, Bangalore	8 April 2014
23	Sriramkumar L.	The BICEP2 results and its implications for the physics of the early universe	Department of Physics, Panjab University, Chandigarh	13–15 May 2014
24	Sriramkumar L.	Beyond power spectra: Inflationary three-point functions (invited talk at 'Aspects of Cosmology')	Indian Institute of Astrophysics, Bangalore	9–11 April 2014
25	Sriramkumar L.	SYMPHY	Department of Physics, IIT Bombay	12–13 April 2014
26	Sriramkumar L.	Computation and characteristics of inflationary three-point functions (invited talk at the International Conference on Matters of Gravity and the Universe)	Centre for Theoretical Physics, Jamia Millia Islamia, New Delhi	27–29 October 2014
27	Sriramkumar L.	Computation and characteristics of inflationary three-point functions	Department of Physics, IIT Hyderabad	29–31 October 2014
28	Sriramkumar L.	Exploding stars, distances to faraway galaxies, and the composition of the universe (inaugural talk at 'Spectra')	Department of Physics, Madras Christian College, Chennai	2 December 2014
29	Sriramkumar L.	Inflationary three-point functions (plenary talk at 'The Primordial Universe after Planck')	Institut d'Astrophysique de Paris, Paris, France	15–19 December 2014



Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
30	Sriramkumar L.	Observational constraints on the standard cosmological model and beyond (invited talk at 'Astronomy, Cosmology and Fundamental Physics with Gravitational Waves', Chennai)	Chennai Mathematical Institute	2–4 March 2015
31	Suresh Govindarajan	Estimating the asymptotics of solid partitions (colloquium)	IMSc, Chennai	15 July 2014
		Partitions of integers and their higher-dimensional generalisations (talk at the 'Aspects of Mathematics' programme)	IMSc	1 July 2014
32	Dawood Kothawala	Minimal length and small-scale structure of space-time	IMSc	5 February 2015
33	Ramaprabhu S.	Applications of nanomaterials (at refresher course)	Madras University, Chennai	9 February 2015
34	Ramaprabhu S.	Synthesis and characterisation of nanomaterials (at refresher course)	Madras University, Chennai	9 February 2015
35	Ramaprabhu S.	Green technologies for environmental pollution prevention and control (keynote lecture at an international conference)	Trichy	29 September 2014
36	Ramaprabhu S.	Carbon-based nanomaterials for energy applications (invited talk International Symposium on Energy Materials for Automotive Application)	JAIST, Japan	4 August 2014
37	Ramaprabhu S.	Science of carbon-based nanomaterials: Applications of nanomaterials (invited talk at Summer School on Advanced Nanoscience and Nanotechnology)		20 and 21 May 2014
38	Ramaprabhu S.	Nanotechnology (invited talk)	Agni College of Technology OMR, Thalambur, Chennai	9 May 2014
39	Ramaprabhu S.	Engineered electrodes for electrochemical energy storage (invited lecture)	Indo-US Science and Technology Forum (IUSSTF), Hotel Green Park, Chennai	3 April 2014
40	Ramaprabhu S.	Hydrogen energy storage technology (invited lecture at 'Advances in Energy Storage for Energy Management and Broader Use of Renewable Sources', workshop held at Institute for Energy Studies)	Anna University, Chennai	27 March 2014
41	Ramaprabhu S.	Micro and nano composites: Principles, manufacturing and applications	Thiagarajar College of Engineering, Madurai	20 March 2014
42	Ramaprabhu S.	Plenary lecture at International Workshop on Advanced Materials (IWAM-2014)	School of Physics, Alagappa University, Karaikudi	20 March 2014
43	Ramaprabhu S.	Carbon-based nanomaterials for energy application (at Materials for Energy Conversion and Storage (MECS 2014))	Pondicherry University, Pondicherry	8 March 2014

#### Visits abroad by faculty members

Sl. No.	Name of Faculty Member	Place Visited	Date	Purpose of Visit	Funding from
1	Aditi Simha	USA	1 August 2014 to 31 July 2015	Sabbatical—Department of Mathematics, University of West Virginia, USA	—

Sl. No.	Name of Faculty Member	Place Visited	Date	Purpose of Visit	Funding from
2	Ganesan A.R.	San Diego, California, USA	17–21 August 2014	Attending the SPIE International Symposium on Optical Engineering + Applications	—
3	Arul Lakshminarayan	Israel	22–27 October 2014	Workshop	—
4	James Libby	KEK, Japan	15–25 June 2014		—
		Vienna, Austria	8–12 September 2014		—
		University of Oxford, UK	4–7 December 2014		—
		CERN, Geneva, Switzerland	8–12 December 2014		—
		KEK, Japan	3–10 February 2015		—
5	Murugavel P.	Currently visiting IBS-CCEs, Department of Physics and Astronomy, Seoul National University, Seoul, Korea	One year		—
6	Neelima Gupte	Josef Stefan Institute, Ljubljana Slovenia	November–December 2014		—
7	Prabha Mandayam	Centre for Quantum Technologies, NUS, Singapore	28 September to 4 October 2014	Prabha Mandayam visited Dr. Hui Khoon Ng (Assistant Professor, Yale-NUS College)	—
8	P.C. Deshmukh	University of Western Ontario, London, Canada	May–July 2014	For research collaboration	—
9	Prafulla Kumar Behera	CERN, Switzerland	3–7 September 2014		—
		CERN, Switzerland	29 October to 9 November 2014		—
10	Sethupathi K.	Lomonosov Moscow State University, Moscow	13–18 July 2014	Attending and presenting a paper at XII International Conference on Nanostructured Materials (NANO 2014)	—
11	Sivarama Krishnan	Elettra Synchrotron, Trieste, Italy for beamtimes at the Gas Phase beamline	27 November to 23 December 2014	As part of the International Collaboration on Low-Density Matter	—
		Sivarama Krishnan, visited Politecnico di Milano, Milan, Italy, upon an invitation from Prof Giuseppe Sansone	8–10 December 2014	For a scientific meeting on “Emerging trends in attosecond physics”	—
12	Somnath Chanda Roy	ICTP, Trieste, Italy	May 2014	Talk titled ‘Photo-electro-chemical hydrogen generation through solvothermally crystallised TiO <sub>2</sub> nanotube arrays’ (with B.M. Rao) at International Workshop on Material Challenges in Devices for Fuel Solar Production and Employment	—
13	Sriramkumar L.	Institut d’Astrophysique de Paris, Paris, France	15–19 December 2014	Plenary talk at ‘The Primordial Universe after Planck’	—
14	Sunil Kumar P.B.	Mitchigan State University, MIT Boston, USA	15–28 June 2014	International conference	—
		Fu Berlin, Germany	1–5 April 2015	Workshop on membranes	—

### Books, monographs authored/co-authored

Sl. No.	Name of Faculty Member	Title	Publisher	Author/Co-author
Books				
1	Neelima Gupte	<i>Perspectives in Nonlinear Dynamics</i>	Indian Academy of Sciences, 2015 (edited volume)	
2	Vijayan C.	<i>Essentials of Nonlinear Optics</i>	International edition, Wiley (2014); Indian edition, Ane Books	Y.V.G.S. Murti

### Fellowships of academies and professional societies

Sl. No.	Name of Faculty Member	Year of Admission
<b>Humboldt Fellowship</b>		
1	Jayeeta Bhattacharyya	Humboldt Fellow
<b>INSA</b>		
1	Aravind G.	INSA Young Scientist. Awarded INSA Young Scientist Research Award
<b>Others</b>		
1	C.V. Krishnamurthy	Member, ISNT (Indian Society of Nondestructive Testing), 2009


### Editorial boards of journals

Sl. No.	Name of Faculty Member	Position (Editor/Member)	Journal
1	Ganesan A.R.	Associate Editor	Optical Engineering
2	Ramaprabhu S.	Editor-in-Chief	<i>Graphene</i>
		Member, Editorial Board	<i>Journal of Nanofluids</i> (American Scientific) <i>Nano Communications</i> (American Scientific)

### 4.16.4. Design and Development Activities

#### Details of process/instruments/equipment/software designed and developed

Sl. No.	Name of Faculty Member	Figure
1	G. Aravind	 <p>Complete photoelectron spectroscopy setup built at IIT Madras</p>
2	Ramaprabhu S.	 <p>TGA (Q 600 SDT, TA Instruments) (\$33,287)</p> <p>Uv-vis/ATR (Agilent Technologies) (\$27,150)</p>

Sl. No.	Name of Faculty Member	Figure
3	Department facility (Dillip Kumar Satapathy)	
Rigaku Smartlab X-ray diffractometer, Physics Department		

### New facilities added or major equipment procured

Sl. No.	Name of Faculty Member	Facility	Description	Amount (₹)
1	Aravind G.	Photoelectron spectroscopy experimental setup with Nd:YAG laser	The setup was completely designed and constructed by the group at the department. The laser was purchased.	39,26,750
		Quadrupole mass spectrometers (2 nos.)	Purchased	36
		Piezoelectric pulsed valve	Designed and constructed by our group	40
		Ion trap setup	Designed and now being constructed	90
2	Manu Jaiswal	Chemical vapour deposition unit for graphene (assembled in-house)	Set-up in final form completed recently and growth of high quality has been demonstrated	20
3	Murugavel P.	The sample holder for the thin film dielectric measurements was developed in-house.	—	5000
		The sample holder for measuring the magnetoelectric coefficient at different temperatures was developed in-house.	—	6000
		The ferroelectric loop measurement setup for thin films was developed in-house.	—	1 lakh
		The PE loop tracer for bulk samples was bought.	—	5 lakhs
		The electrometer for measuring charge, current and resistance was bought.	—	5 lakhs
4	P.C. Deshmukh	We have been involved in developing the methodology and algorithm to determine photoabsorption parameters using relativistic many-body theory	—	
5	Prafulla Kumar Behera	Proto-type RPC detector developed in-house. A similar detector of larger size will be used in the INO experiment.	—	25 lakhs
6	Sethupathi K.	Helium liquefier (L1610 Linde) and SQUID-based vibrating sample magnetometer	—	\$9,49,100 and \$5,10,000

Sl. No.	Name of Faculty Member	Facility	Description	Amount (₹)
7	Somnath Chanda Roy	Xenon light source with AM 1.5 G filter	—	7 lakhs
8	Sudakar Chandran	Solar cell I-V testing system with solar simulator	—	28 lakhs
		Solar cell spectral response external and internal quantum efficiency measuring system	—	50 lakhs
		Sputter deposition unit	—	32 lakhs
9	Srinivas V.	Electrodeposition (potentiostat/galvanostat)	—	\$11,035
10	Sankaranarayanan V.	(i) Stirling—4 nitrogen liquefiers (ii) Model 16110 helium liquefier (iii) SQUID vibrating sample magnetometer (all as central facilities)	—	
11	Ramaprabhu S.	TGA (Q 600 SDT, TA Instruments) Uv-Vis/ ATR (Agilent Technologies)	— —	\$33,287 \$27,150

#### Patents filed

Sl. No.	Name of Faculty Member	Topic of Patent
1	Manu Jaiswal	Graphene ferroelectric device and opto-electronic control of graphene ferroelectric memory device, US Patent Application No. 14/346,477, published on 21 August 2014
2	Ramaprabhu S.	Diatom (frustule)-based hybrid nanocomposites; V. Sangeetha, S. Abinaya, and Ramaprabhu S.; US; IN-874766, 2014  Zeolites-Mg-based novel storage nanomaterials (patent filed with GAIL; 103/che/2014), 9 January 2014  Thermal conductivity enhancement and stability of heat-exchange nanocoolant with hybrid carbon nanomaterial (215/KOL/2015)

#### 4.16.5. Research and Consultancy

##### Sponsored research projects (on going and new)

Sl. No.	Title	Period	Funding Agency	Amount (in lakhs of ₹)	Coordinators
1	Construction of Shack-Hartmann Aberrometer with Adaptive System for the Measurement and Correction of Human Ocular Aberrations	February 2012 to August 2015	SERB, DST	27.66 (IIT Madras) + 3.60 (VRF)	Ganesan A.R., Dr. Krishnakumar (VRF, Sankara Nethralaya)
2	Characterisation and Correction of Foveal and Parafoveal Aberrations in Human Eye Using Adaptive Optics	February 2012 to August 2015	SERB, DST	2.80 (IIT Madras) + 23.30 (VRF)	Ganesan A.R., Dr. Krishnakumar (VRF, Sankara Nethralaya)
3	Fibre Optic Sensor for Ammonia Vapour Sensing with Nanocrystalline Rare Earth-Doped SnO <sub>2</sub> and ZnO Materials Coating	October 2013 to October 2016	SERB, DST	20.06	Ganesan A.R.
4	Construction of a Photoelectron Spectroscopy Experiment for Studying Electronic Structure of Gas-Phase Interstellar Medium Anions	22 February 2013 to 21 February 2016	DAE-BRNS	39.26 (INR)	G. Aravind (Principal Coordinator), P.C. Deshmukh (Co-PI)
5	Construction of Radio-Frequency Multipole Ion Trap Experimental Setup for Studying Ion-Atom Collisions	28 November 2013 to 27 November 2016	DST	111.75 (INR)	G. Aravind (PI), P.C. Deshmukh (Co-PI)



Sl. No.	Title	Period	Funding Agency	Amount (in lakhs of ₹)	Coordinators
6	Construction of Ion–Molecule and Ion–Photon Collision Experimental Setup	23 January 2013 to 22 January 2016	INSA	15 (INR)	G. Aravind (PI)
7	Advanced Manufacturing Process Monitoring Using In-line Laser Thermography (AMPLAST)	2013–2014 (under extension)	Indo-German STC, Gurgaon	192 (ongoing)	Krishnan Balasubramaniam, Prabhu Rajagopal, C.V. Krishnamurthy
8	Development of Online, High Temperature, Non-Destructive Measurement/Sensing Techniques During Manufacturing of Power Plant Components	2014–2017	DST	290 (ongoing)	Krishnan Balasubramaniam, Prabhu Rajagopal, C.V. Krishnamurthy
9	Development of Advanced NDE Techniques (With Enhanced Sensitivity, Reliability and Reduced Inspection Time) for Detection and Characterisation of Flaws in Reactor Components/Process Equipment—Phase III	2010–2014 (under extension)	BRNS, Mumbai	530.0 (ongoing)	Krishnan Balasubramaniam, Prabhu Rajagopal, C.V. Krishnamurthy, Kavitha Arunachalam
10	THz Spectroscopic Studies of Organic Semiconductors	11 February 2015 to 10 February 2016	Exploratory Research Project, IC&SR, IIT Madras	10	Jayeeta Bhattacharyya (PI), Prem B. Bisht (CI), Debduitta Ray (CI)
11	Ultrafast Spectroscopy, Semiconductors, THz	17 October 2014 to 16 October 2016	NFIG, IC&SR, IIT Madras	5	J. Bhattacharyya
12	Quest for CP Violation in D Decay	1 March 2013 to 30 June 2015	British Council (UK–India Education and Research Initiative)	8.2	James Libby
13	Measurements of CP Violation with the Belle and Belle-II Experiments	8 July 2013 to 7 July 2016	DST	28.5	James Libby, P.K. Behera
14	R&D Efforts by University Groups for INO Projects	31 October 2013 to 30 October 2018	DST	321.8	P.K. Behera (Co-coordinator James Libby)
15	Multi-Stacked Two-Dimension Atomic Crystals for Lithographically Patterned Novel Tunnelling Transistors (IIT Madras)	May 2012 to May 2015	NFSC	29.3	Manu Jaiswal (Coordinator)
16	Graphene-Based Novel Hybrid Materials for Solar Energy Applications	July 2012 to July 2015	Nissan NRSP	11	Manu Jaiswal (Coordinator), T.S. Natarajan (Co-PI)
17	Tuning the Electronic Properties of Chemical Vapour Deposited Graphene by Strain Engineering and Doping	March 2013 to March 2016	DAE BRNS Young Scientist Research Award	16.9	Manu Jaiswal (Coordinator)
18	Engineering Electronic Properties of Graphene by Mechanical Deformation for All Graphene Electronic Circuit Applications	September 2013 to September 2016	DST Fast Track	22.32	Manu Jaiswal (Coordinator)
19	Flexible and High-Performance Perovskite-Based Solar Cells on Graphene Electrodes	October 2014 to October 2017	—	42.75	Manu Jaiswal (Coordinator—India), S.C. Roy (Co-PI), K.P. Loh (Coordinator—Singapore)



Sl. No.	Title	Period	Funding Agency	Amount (in lakhs of ₹)	Coordinators
20	TiO <sub>2</sub> –Graphene Photo-catalysts for Application to Sustainable Fuel Cell	August 2013 to August 2015	—	11	S.C. Roy (Coordinator), Manu Jaiswal (Co-PI)
21	Photovoltaic Effect on Rare Earth-Doped Bismuth Ferrite Thin Films	3 years	DST—Nanomission	38.2	P. Murugavel, V. Subramanian
22	Explosive Collective Phenomena	December 2013 to December 2015	CSIR	18	Neelima M. Gupte
23	Chimera States in Extended Systems	February 2014 to February 2015	IIT Madras	5	Neelima M. Gupte
24	Tracking Structural and Magnetic Transitions in Electron-Doped Manganite Oxides by Powder Neutron Diffraction (collaborative project; first year's funds received in February 2015)	February 2015	UGC–DAE–CSR (Mumbai node)	—	Nirmala R.
25	INSPIRE Faculty Fellowship (Project title: Quantum Information Theory)	August 2014 to August 2019	DST	7 (per annum)	Prabha Mandayam
26	INSPIRE Faculty Fellowship	—	DST	7 (per annum)	Dawood Kothawala
27	Photoabsorption Processes in Atomic and Molecular Physics	2012–2015	DST	18	P.C. Deshmukh, Hari Varma
28	Collision Processes in Atomic and Molecular Physics	2012–2015	DST	15	P.C. Deshmukh, Yugal Khajuria
29	Construction of Radiofrequency Multipole Ion Trap Experimental Setup for Studying Ion–Atom Collisions	2014–2017	DST	82.79	G. Aravind, P.C. Deshmukh
30	R&D Efforts by University Groups for INO Projects	31 October 2013 to 30 October 2018	DST	322	Prafulla Kumar Behera, James Libby, Anil Prabhakar, Nitin Chandrachudan, Nagendra Krishanpura, Anirudhan
31	Measurements of CP Violation with the Belle and Belle-II Experiments	8 July 2013 to 7 July 2016	DST	28.5	James Libby, Prafulla Kumar Behera
32	Plasmon-Assisted Charge-Transfer Studies by Using Picosecond Degenerate Four-Wave Mixing, CSIR	20 May 2014 to 19 May 2017	—	10	Prem B. Bisht (PI)
33	Ultrashort White Light Continuum for Applications in Laser Spectroscopy, DRDO New Delhi	15 September 2014 to 14 September 2017	—	16	Prem B. Bisht (PI)
34	Long-Range Magnetic Ordering in Graphene	February 2015 to February 2016	IIT Madras (Exploratory Research Project)	8.5	B.R.K. Nanda
35	Understanding Partial Discharge Activity in Cryogenic Insulation Under Harmonic Voltages Adopting Super High Frequency (SHF) Technique	2012–2015	DST	25.08	K. Sethupathi (PI), R. Sarathi (Co-PI)
36	Diagnostic Study on Partial Discharge Activity in Cryogenic Insulation Structure by Multi-sensor System	2012–2014	Central Power Research Institute	46.00	R. Sarathi (PI), K. Sethupathi (Co-PI)

Sl. No.	Title	Period	Funding Agency	Amount (in lakhs of ₹)	Coordinators
37	Realizing a Petahertz (PHz) Signal Detection Scheme and Metric	February 2015 to February 2016	IC&SR, IIT Madras	10.00	Sivarama Krishnan
38	Magnetoimpedance Studies of Electrodeposited Fe- and Co-Based Thin Film Alloys	2014–2017 (3 years)	DRDO (Naval Research Board)	24.96	V. Srinivas (PI), G. Markandeyulu (Co-PI)
39	Design of Hybrid Organometallic Coordination Complex Materials for Nonlinear Optics	(ongoing, from 2013)	DST (Indo-Australian), DST	14.66	C. Vijayan (PI)
40	Unit of Nanoscience Phase-II	(ongoing, from 2010)	DST (2010–2015)	500	T. Pradeep (PI), C. Vijayan (Co-PI)
41	Indo-European Project on Ultrafast Photonic Processes and Interactions	2013–2016 (ongoing, from 2013)	DST	22	Prem Bisht (PI), C. Vijayan (Co-PI)
42	Mind the Gap: Jumping the Hurdles Limiting Polymer Fuel Cell Performance and Commercialization	—	DST	112.9 [total value 348.7]	Ramaprabhu S.
43	Copper (Cu)–CNT-based Nanocomposite Formulations for Heat Recovery in Different Processes in a Steel Plant	—	MSTE	176.4 [total value 336]	
44	Development of Hydrogen Storage Nanomaterials	—	MNRE	581.68	
45	Titania Nanotubes as an Alternative Catalyst Support for Direct Methanol Fuel Cells	—	MNRE	52	
46	Glass Transition in Confined Polymers	—	BRNS	17.5	Dillip Kumar Satapathy

#### Industrial consultancy projects (ongoing and new)

Sl. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of ₹)
1	C.V. Krishnamurthy	Consultancy on Optical NDE for Window Materials (2014–2015)	Apple Inc. (US)	3
2	Sudakar Chandran	Atomic-Scale Visualisation of Fluorine and FeLi Antisite Defects in Fluorine-Doped LiFePO <sub>4</sub> by Aberration-Corrected High-Resolution Transmission Electron Microscopy	Samsung GRO	50
3	Ramaprabhu S.	Coupling of Hydrogen Storage Device with PEMFC Fuel Cell	GAIL	—
		Single-Walled/Multiwalled Carbon Nanotubes (CNTs)-Based Supercapacitors for Electrical Energy Storage	BHEL	—
4	Sunil Kumar P.B.	Shell Projects	Shell India	5

#### Faculty members' participation with other institutions under MoUs

Sl. No.	Name of Faculty Member	Participation Details	Name of University/Institution
1	Ramaprabhu S.	—	JAIST, Japan (Prof. Matsumi)

#### Research publications of faculty members and research scholars

Papers published in refereed national journals	1
Papers published in refereed international journals	119
Papers presented at national conferences	17
Papers presented at international conferences	20

### Papers published in refereed national journals

1. S. Sinha, S. Sinha, N. Gupte and R. Ramaswamy. 2015. PNLD 2013: Conference summary and perspective. *Pramana* 84(2): 167.

### Papers published in refereed international journals

1. B. Renganathan and A.R. Ganesan. 2014. Fibre optic gas sensor with nanocrystalline ZnO. *Optical Fiber Technology* 20: 48–52. <http://dx.doi.org/10.1016/j.yofte.2013.11.007>
2. B. Renganathan, D. Sastikumar, A.C. Bose, R. Srinivasan and A.R. Ganesan. 2014. Nanocrystalline cerium oxide-coated fibre optic gas sensor. *Current Applied Physics* 14: 467–471. <http://dx.doi.org/10.1016/j.cap.2013.12.022>
3. M.G. Nair, A.R. Ganesan and K. Ramamurthy. 2014. Conceptual design and assessment of profiled Fresnel lens daylight collector. *Lighting Research & Technology*. doi:10.1177/1477153514535421
4. B. Renganathan, D. Sastikumar, R. Srinivasan and A.R. Ganesan. 2014. Nanocrystalline samarium oxide-coated fibre optic gas sensor. *Material Science and Engineering: B* 186: 122–127. <http://dx.doi.org/10.1016/j.mseb.2014.03.018>
5. M.G. Nair, A.R. Ganesan and K. Ramamurthy. 2014. Daylight enhancement using laser-cut panels integrated with a profiled Fresnel collector. *Lighting Research & Technology*. doi:10.1177/1477153514556524
6. B. Renganathan and A.R. Ganesan. 2015. Influence of annealing on optical fiber gas sensing properties of TiO<sub>2</sub> nanomaterial. *International Journal of ChemTech Research* 7(2): 878–883.
7. K. Venkatramana and A.R. Ganesan. Tolerance analysis of misalignment in an optical system using Shack Hartmann wavefront sensor: An experimental study. *Optical Engineering* (accepted).
8. M. Nrisimhamurthy, G. Aravind, P.C. Deshmukh, and S.T. Manson. 2015. Autoionization resonances in the neon isoelectronic sequence using relativistic multichannel quantum-defect theory. *Physical Review A* 91: 013404.
9. T. Iwashita *et al.* (Belle Collaboration). 2014. Measurement of branching fractions for  $B \rightarrow J/\psi\eta K$  decays and search for a narrow resonance in the  $J/\psi\eta$  final state. *PTEP* 4: 043C01. doi:10.1093/ptep/ptu043
10. V. Chobanova *et al.* (Belle Collaboration). 2014. Measurement of branching fractions and CP violation parameters in  $B \rightarrow \omega K$  decays with first evidence of CP violation in  $B^0 \rightarrow \omega K_s^0$ . *Physical Review D* 90(1): 012002. doi:10.1103/PhysRevD.90.012002
11. G. Bonvicini *et al.* (CLEO Collaboration). 2014. Updated measurements of absolute  $D^+$  and  $D^0$  hadronic branching fractions and  $\sigma(e^+e^- \rightarrow DD^-)$  at  $E_{\text{cm}} = 3774$  MeV. *Physical Review D* 89(7): 072002. Erratum—*ibid.* 91(1): 019903. doi:10.1103/PhysRevD.89.072002; 10.1103/PhysRevD.91.019903
12. A. Zupanc *et al.* (Belle Collaboration). 2014. Measurement of the branching fraction  $B (A_c^+ \rightarrow pK^-\pi^+)$ . *Physical Review Letters* 113(4): 042002. doi:10.1103/PhysRevLett.113.042002
13. J. Libby *et al.* 2014. New determination of the  $D^0 \rightarrow K^-\pi^+\pi^0$  and  $D^0 \rightarrow K^-\pi^+\pi^+\pi^-$  coherence factors and average strong-phase differences. *Physical Letters B* 731: 197–203. doi:10.1016/j.physletb.2014.02.032
14. B.R. Ko *et al.* (Belle Collaboration). 2014. Observation of  $D^0 \rightarrow \bar{D}^0$  mixing in  $e^+e^-$  collisions. *Physical Review Letters* 112(11): 111801 Addendum.
15. S. Ryu *et al.* (Belle Collaboration). 2014. Measurements of branching fractions of  $\tau$  lepton decays with one or more  $K_s^0$ . *Physical Review D* 89(7): 072009. doi:10.1103/PhysRevD.89.072009
16. C.P. Shen *et al.* (Belle Collaboration). 2014. Updated cross section measurement of  $e^+e^- \rightarrow K^+K^-J/\psi$  and  $K_s^0K_s^0J/\psi$  via initial state radiation at Belle. *Physical Review D* 89(7): 072015. doi: 10.1103/PhysRevD.89.072015
17. N.K. Nisar *et al.* (Belle Collaboration). 2014. Search for CP violation in  $D^0 \rightarrow \pi^0\pi^0$  decays. *Physical Review Letters* 112: 211601. doi:10.1103/PhysRevLett.112.211601
18. T. Peng *et al.* (Belle Collaboration). 2014. Measurement of  $D^0 - \bar{D}^0$  mixing and search for indirect CP violation using  $D^0 \rightarrow K_s^0\pi^+\pi^-$  decays. *Physical Review D* 89 (9): 091103. doi:10.1103/PhysRevD.89.091103
19. S.H. Lee *et al.* (Belle Collaboration). 2014. Measurements of the masses and widths of the  $\Sigma_c(2455)^{0/++}$  and  $\Sigma_c(2520)^{0/++}$  baryons. *Physical Review D* 89(9): 091102. doi:10.1103/PhysRevD.89.091102
20. A.J. Bevan (ed.) *et al.* (BaBar and Belle Collaborations). 2014. The physics of the B factories. *European Physical Journal C* 74(11): 3026. doi:10.1140/epjc/s10052-014-3026-9
21. X.H. He *et al.* (Belle Collaboration). 2014. Observation of  $e^+e^- \rightarrow \pi^+\pi^-\pi^0\chi_{b_j}$  and search for  $Xb \rightarrow \omega Y(1S)$  at  $\sqrt{s} = 10.867$  GeV. *Physical Review Letters* 113(14): 142001. doi:10.1103/PhysRevLett.113.142001
22. L. Šantelj *et al.* (Belle Collaboration). 2014. Measurement of time-dependent CP violation in  $B^0 \rightarrow \eta'K^0$  decays. *JHEP* 10:165. doi:10.1007/JHEP10(2014)165
23. S. Sato *et al.* (Belle Collaboration), 2014. Observation of the decay  $B^0 \rightarrow \eta'K^*(892)^0$ . *Physical Review D* 90(7): 072009. doi:10.1103/PhysRevD.90.072009
24. K. Chilikin *et al.* (Belle Collaboration). 2014. Observation of a new charged charmoniumlike state in  $\bar{B}^0 \rightarrow J/\psi K^-p^+$  decays. *Physical Review D* 90(11): 112009. doi:10.1103/PhysRevD.90.112009

25. M. Nayak *et al.* 2015. First determination of the CP content of  $D \rightarrow \pi^+\pi^-\pi^0$  and  $D \rightarrow K^+K^-\pi^0$ . *Physical Letters B* 740(1). doi:10.1016/j.physletb.2014.11.022
26. J. Wiechczynski *et al.* (Belle Collaboration). 2015. Measurement of  $B^0 \rightarrow D_s^-K_s^0\pi^+$  and  $B^+ \rightarrow D_s^-K^+K^+$  branching fractions. *Physical Review D* 91(3): 032008. doi:10.1103/PhysRevD.91.032008
27. T. Saito *et al.* (Belle Collaboration). 2015. Measurement of the  $B^- \rightarrow Xs\gamma$  branching fraction with a sum of exclusive decays. *Physical Review D* 91(5): 052004. doi:10.1103/PhysRevD.91.052004
28. D. Dutta *et al.* (Belle Collaboration). 2015. Search for  $B_s^0 \rightarrow \gamma\gamma$  and a measurement of the branching fraction for  $B_s^0 \rightarrow \phi\gamma$ . *Physical Review D* 91(1): 011101. doi:10.1103/PhysRevD.91.011101
29. A. Bala *et al.* (Belle Collaboration). 2015. Observation of  $X(3872)$  in  $B \rightarrow X(3872)K\pi$  decays. *Physical Review D* 91(5): 051101. doi:10.1103/PhysRevD.91.051101
30. P.R. Shaina and M. Jaiswal. 2014. Strain and morphology of graphene membranes on responsive microhydrogel patterns. *Applied Physics Letters* 105: 193103. doi:10.1063/1.4901746
31. S. Saha, O. Kahya, M. Jaiswal, T. Venkatesan, B. Ozyilmaz *et al.* 2014. Unconventional transport through graphene on SrTiO<sub>3</sub>: A plausible effect of SrTiO<sub>3</sub> phase transitions. *Scientific Reports* (Nature Publications) 4: 6173. doi:10.1038/srep06173
32. J. Balakrishnan *et al.* 2014. Giant spin Hall effect in graphene grown by chemical vapour deposition. *Nature Communications* 5: 4748. doi:10.1038/ncomms5748
33. J. Magesh, P. Murugavel, J. Krishnamurthy, V. Adyam and W. Prellier. 2015. A study of magnetic ordering in multiferroic hexagonal Ho<sub>1-x</sub>Dy<sub>x</sub>MnO<sub>3</sub>. *Journal of Applied Physics* 117: 074104. doi:10.1063/1.4913219
34. R. Dhama, C. Nayek, T.Ch. Thirimal and P. Murugavel. 2014. Enhanced magnetic properties in low doped La<sub>1-x</sub>Ba<sub>x</sub>MnO<sub>3</sub> (x = 0, 0.1 and 0.2) nanoparticles. *Journal of Magnetism and Magnetic Materials* 364: 125–128. doi:10.1016/j.jmmm.2014.04.010
35. A. Tamilselvan, S. Balakumar, M. Sakar, C. Nayek, P. Murugavel and K.S. Kumar. 2014. Role of oxygen vacancy and Fe–O–Fe bond angle in compositional, magnetic and dielectric relaxation on Eu-substituted BiFeO<sub>3</sub> nanoparticles. *Dalton Transactions* 43: 5731. doi:10.1039/C3DT52260A
36. Ch. Thirimal, P. Murugavel\* and V. Subramanian. 2014. Impedance spectroscopic analysis of the organic ferroelectric diisopropylammonium bromide (DIPAB). *Current Applied Physics* 14: 688. doi:10.1016/j.cap.2014.02.018
37. C. Nayek, A. Tamilselvan, Ch. Thirimal, P. Murugavel and S. Balakumar. 2014. Origin of enhanced magnetisation in rare earth-doped multiferroic bismuth ferrite. *Journal of Applied Physics* 115: 073902. doi:10.1063/1.4865958
38. S. Das and N. Gupte. 2014. Dynamics of impurities in a 3-d volume preserving map. *Physical Review E* 90: 012906.
39. A. Das, Z. Jabeen and N. Gupte. 2014. Bifurcations, crisis, unstable dimension variability and the spreading transition in the coupled sine circle map system. *The European Physical Journal Special Topics* 224: 2869.
40. A.V. Morozkin, O. Isnard, R. Nirmala and S.K. Malik. 2015. Mo<sub>2</sub>NiB<sub>2</sub>-type (Gd, Tb, Dy)<sub>2</sub>Ni<sub>2.35</sub>Si<sub>0.65</sub> and La<sub>2</sub>Ni<sub>3</sub>-type (Dy, Ho)<sub>2</sub>Ni<sub>2.5</sub>Si<sub>0.5</sub> compounds: Crystal structure and magnetic properties. *Journal of Solid State Chemistry* 225: 368.
41. A.V. Morozkin, R. Nirmala and S.K. Malik. 2015. Magnetism and magnetocaloric effect in YNi<sub>4</sub>Si-type RNi<sub>4</sub>Si (R=Ce, Gd, Tb and Dy) compounds. *Journal of Magnetism and Magnetic Materials* 378: 221.
42. A.V. Morozkin, R. Nirmala and S.K. Malik. 2015. Magnetic and magnetocaloric properties of Ho<sub>6</sub>Co<sub>2</sub>Ga-type Dy<sub>6</sub>Co<sub>2.5</sub>Sn<sub>0.5</sub> compound. *Journal of Magnetism and Magnetic Materials* 378: 174.
43. R. Mondal, R. Nirmala, J.A. Chelvane and A.K. Nigam. 2014. Magnetic and magnetocaloric properties of rare earth intermetallic compounds HoCo<sub>2-x</sub>Ni<sub>x</sub> (x=0.75 and 1.25). *Physica B: Condensed Matter* 448: 9–12.
44. L. Dhal, Chattarpal, R. Nirmala, P.N. Santhosh, T.G. Kumary and A.K. Nigam. 2014. Bulk and nanocrystalline electron doped Gd<sub>0.15</sub>Ca<sub>0.85</sub>MnO<sub>3</sub>: Synthesis and magnetic characterisation. *Physica B: Condensed Matter* 448: 300–303.
45. G. Aarthi, J. Jose, S. Deshmukh, V. Radojevic, P.C. Deshmukh and S.T. Manson. 2014. Photoionisation study of Xe 5s: Ionization cross sections and photoelectron angular distributions. *Journal of Physics B: Atomic Molecular and Optical Physics* 47: 025004.
46. P.C. Deshmukh, A. Mandal, S. Saha, A.S. Kheifets, V.K. Dolmatov and S.T. Manson. 2014. Attosecond time delay in the photoionization of endohedral atoms A@C60: A probe of confinement resonances. *Physical Review A* 89: 053424.
47. P.C. Deshmukh, A. Ganesan, N. Shanthi, B. Jones, J. Nicholson and A. Soddu. 2014. The accidental degeneracy of the hydrogen atom is no accident! *Canadian Journal of Physics*. doi:10.1139/cjp-2014-0300
48. A. Kumar, H.R Varma, G.B Pradhan, P.C Deshmukh and S.T Manson. 2014. Photoionisation of Ca 4s in a spherical attractive well potential: Dipole, quadrupole and relativistic effects. *Journal of Physics B: Atomic Molecular and Optical Physics* 47: 185003.



49. S. Saha, A. Mandal, J. Jose, H.R. Varma, P.C. Deshmukh, A.S. Kheifets, V.K. Dolmatov and S.T. Manson. 2014. Relativistic effects in photoionisation time delay near the Cooper minimum of noble-gas atoms. *Physical Review A* 90: 053406.
50. M. Nrisimhamurthy, G. Aravind, P.C. Deshmukh and S.T. Manson. 2015. Autoionisation resonances in the neon isoelectronic sequence using relativistic multichannel quantum-defect theory. *Physical Review A* 91: 013404.
51. G. Aad (Freiburg U.) *et al.* (ATLAS Collaboration). 2014. The differential production cross section of the  $\phi$  (1020) meson in  $\sqrt{s} = 7$  TeV  $pp$  collisions measured with the ATLAS detector. *European Physical Journal C* 74: 2895. doi:10.1140/epjc/s10052-014-2895-2
52. N.K. Nisar *et al.* (Belle Collaboration). 2014. Search for  $CP$  violation in  $D^0 \rightarrow \pi^0\pi^0$  decays. *Physical Review Letters* 112: 211601. doi:10.1103/PhysRevLett.112.211601
53. S.D. Yang *et al.* (Belle Collaboration). 2014. Evidence of  $\Upsilon(1S) \rightarrow J/\psi + \chi_{c1}$  and search for double-charmonium production in  $\Upsilon(1S)$  and  $\Upsilon(2S)$  decays. *Physical Review D* 90: 112008. doi:10.1103/PhysRevD.90.112008
54. S.A. Ali, P.B. Bisht and B.S. Kalanoor. 2014. Tunable femtosecond pulses in 375–405 nm region with Ti:sapphire oscillator by chirped sum frequency. *Journal of Optics* 43: 269.
55. S.R. Bongu, P.B. Bisht, B.S. Kalanoor, R.C.K. Namboodri, P. Nayak and S. Ramaprabhu. 2015. Effect of complex formation on nonlinear optical parameters of dye-graphene system. *Journal of Photochemistry and Photobiology A: Chemistry* 299: 54.
56. S.R. Bongu, P.B. Bisht, R.C.K. Namboodiri, P. Nayak, S. Ramaprabhu, T.J. Kelly, C. Fallon and J.T. Costello. 2014. Influence of localised surface plasmons on Pauli blocking in graphene under femtosecond pumping. *Journal of Applied Physics* 116.
57. A.V. Ravindra, B.C. Behera, P. Padhan, O.I. Lebedev and W. Prellier. 2014. Tailoring of crystal phase and Néel temperature of cobalt monoxides nanocrystals with synthetic approach conditions. *Journal of Applied Physics* 116: 033912. (IF: 2.201)
58. B.C. Behera, A.V. Ravindra, P. Padhan and W. Prellier. 2014. Raman spectra and magnetisation of all-ferromagnetic superlattices grown on (110)-oriented  $\text{SrTiO}_3$ . *Applied Physics Letters* 104: 092406 (IF: 3.844).
59. B.C. Behera, A.V. Ravindra and P. Padhan. 2014. Structural phase transformation of nickel nanostructures with synthetic approach conditions. *Journal of Applied Physics* 115: 17B510. (IF: 2.201)
60. F. Hrahsheh, J.A. Hoyos, R. Narayanan and T. Vojta. 2014. Strong-randomness infinite-coupling phase in a random quantum spin chain. *Physical Review B* 89: 014401.
61. Hafner, J. Schindler, N. Weik, T. Mayer, S. Balakrishnan, R. Narayanan, S. Bera and F. Evers. 2014. Density of states in graphene with vacancies: Midgap power law and frozen multifractality. *Physical Review Letters* 113: 186802.
62. H. Barghathi, F. Hrahsheh, J.A. Hoyos, R. Narayanan and T. Vojta. 2014. Strong-randomness phenomena in quantum Ashkin-Teller models. *Physica Scripta*. (accepted for publication)
63. B.M. Rao and S.C. Roy. 2014. Water-assisted crystallisation, gas sensing and photo-electrochemical properties of electrochemically synthesised  $\text{TiO}_2$  nanotube arrays. *RSC Advances* 4: 49108–49114. doi:10.1039/C4RA06842D
64. B.M. Rao and S.C. Roy. 2014. Anatase  $\text{TiO}_2$  nanotube arrays with high-temperature stability. *RSC Advances* 4: 38133–38139. doi:10.1039/C4RA05882H
65. J. Martin, L. Sriramkumar and D.K. Hazra. 2014. Sharp inflaton potentials and bi-spectra: Effects of smoothening the discontinuity. *JCAP* 1409: 039.
66. V. Sreenath and L. Sriramkumar. 2014. Examining the consistency relations describing the three-point functions involving tensors. *JCAP* 1410: 021.
67. V. Sreenath, D.K. Hazra and L. Sriramkumar. 2015. On the scalar consistency relation away from slow roll. *JCAP* 1502: 029.
68. P.S.V. Mocherla, C. Karthik, R. Ubic, M.S. R. Rao and C. Sudakar. 2014. Effect of microstrain on the magnetic properties of  $\text{BiFeO}_3$  nanoparticles. *Applied Physics Letters* 105.
69. M.B. Sahana, S. Vasu, N. Sasikala, S. Anandan, H. Sepehri-Amin, C. Sudakar and R. Gopalan. 2014. Raman spectral signature of Mn-rich nanoscale phase segregations in carbon-free  $\text{LiFe}_{1-x}\text{Mn}_x\text{PO}_4$  prepared by hydrothermal technique. *RSC Advances* 4: 64429.
70. P. Thapa, G. Lawes, B. Nadgorny, R. Naik, C. Sudakar, W.J. Schaff and A. Dixit. 2014. Ferromagnetism and spin polarisation in indium nitride, indium oxynitride and Cr-substituted indium oxynitride films. *Applied Surface Science* 295: 189–193.
71. O.D. Jayakumar, C. Persson, A.K. Tyagi and C. Sudakar. 2014. Experimental and theoretical investigations of dopant, defect, and morphology control on the magnetic and optical properties of transition metal-doped  $\text{ZnO}$  nanoparticles. *Springer Series in Materials Science* 180: 341–370.

72. N. Destainville and S. Govindarajan. 2015. Estimating the asymptotics of solid partitions. *Journal of Statistical Physics* 158: 950. doi:10.1007/s10955-014-1147-z
73. S.K. Manna, V. Srinivas, D. Prabhu and R. Gopalan. 2014. AC magnetic properties and core loss behaviour of FeP soft magnetic sheets. *IEEE Transactions on Magnetics* 50: 2008604.
74. S. Mallesh, S. Kavita, R. Gopalan and V. Srinivas. 2014. On the question of thermal stability and magnetic properties of  $\text{Mn}_{0.6}\text{Zn}_{0.4}\text{Fe}_2\text{O}_4$  nanoparticles prepared by sol-gel method. *IEEE Transactions on Magnetics* 50: 2008204. doi:10.1109/TMAG.2014.2327694
75. S.K. Manna and V. Srinivas. 2015. Magnetoimpedance studies on  $(\text{Fe}_{70}\text{Co}_{30})_{80}\text{B}_{20-x}\text{Si}_x$  amorphous ribbons. *Journal of Applied Physics*. (in press)
76. R. Subha, V. Nalla, E.J.Q. Lim, C. Vijayan, B.B.S. Huang, W.S. Chin and W. Ji. 2015. Slowdown of charge transfer owing to auger recombination and two-photon action cross-section of CdS–CdSe–CdS segmented nanorods. *ACS Photonics* 2(1): 43–52.
77. M. Baro, C. Vijayan and S. Ramaprabhu. 2015. Enhanced photovoltaic performance in polypyrrole nanoparticles counter electrode due to incorporation of multiwalled carbon nanotubes. *Journal of Nanoscience and Nanotechnology* 15(7): 4941–4947.
78. J. Bingi, S. Vidhya, A.R. Warriar and C. Vijayan. 2014. Plasmonically tunable blue-shifted emission from coumarin 153 in Ag nanostructure random media: A demonstration of fast dynamic surface-enhanced fluorescence. *Plasmonics* 9 (2): 349–355.
79. R. Sumi, A.R. Warriar and C. Vijayan. 2014. Visible light-driven photocatalytic activity of  $\beta$ -indium sulfide ( $\text{In}_2\text{S}_3$ ) quantum dots embedded in Nafion matrix. *Journal of Physics D: Applied Physics* 47(10): 105103.
80. J. Bingi, A.R. Warriar and C. Vijayan. 2014. Enhancement of photoluminescence from defect states in ZnS random photonic crystal: An effect of electronic and photonic mode coupling. *Journal of Applied Physics* 115(4): 043105.
81. A. Ghosh, V. Jeseentharani, M.A. Ganayee, R.G. Hemalatha and K. Chaudhari. 2014. Approaching sensitivity of tens of ions using atomically precise cluster–nanofiber composites. *Analytical Chemistry* 86(22): 10996–11001.
82. D. Kothawala and T. Padmanabhan. 2014. Entropy density of spacetime as a relic from quantum gravity. *Physical Review D* 90: 124060. doi:10.1103/PhysRevD.90.124060
83. D. Kothawala. 2014. Intrinsic and extrinsic curvatures in Finsler-esque spaces. *General Relativity Gravitation* 46: 1836. doi:10.1007/s10714-014-1836-6
84. R. Shende and S. Ramaprabhu. 2015. Nitrogen-doped carbon-based hybrid composite dispersed nanofluids as working fluid for low-temperature direct absorption solar collectors. *Solar Energy Materials and Solar Cells*. (accepted)
85. P. Tamilarasan and S. Ramaprabhu. 2015. Polymerised ionic liquid-functionalised cathode catalyst support for proton exchange membrane CO<sub>2</sub> conversion cell. *RSC Advances*. (accepted)
86. R.I. Jafri, K.S. Dhathathreyan, N. Rajalakshmi and S. Ramaprabhu. 2015. Nitrogen-doped graphene prepared by hydrothermal and thermal solid state methods as catalyst supports for fuel cell. *International Journal of Hydrogen Energy*. (accepted)
87. N. Karthikeyan, B.P. Vinayan, M. Rajesh, K. Balaji, A.K. Subramani and S. Ramaprabhu. 2015. Highly durable platinum-based cathode electrocatalysts for PEMFC application using oxygen and nitrogen functional groups-attached nanocarbon supports. *Fuel Cells*. (accepted)
88. P. Nayak, P.N. Santhosh and S. Ramaprabhu. 2015. Directed self-assembly of copper-based hierarchical nanostructures on N-doped graphene and their field emission studies. *Journal of Physical Chemistry C* 119: 2917–2924.
89. Asalatha and S. Ramaprabhu. 2015. Hydrogen storage performance of palladium nanoparticles decorated graphitic carbon nitride. *International Journal of Hydrogen Energy* 40: 3259–3267. doi:10.1016/j.ijhydene.2014.12.065
90. P. Pradhan, R. Podila, M. Molli, A. Kaniyoor, V.S. Muthukumar, S.S.S. Sai, S. Ramaprabhu and A.M. Rao. 2015. Optical limiting and nonlinear optical properties of gold-decorated graphene nanocomposites. *Optical Materials* 39: 182–187.
91. S.R. Bongu, P.B. Bisht, B.S. Kalanoor, R.C. Namboodiri, P. Nayak and S. Ramaprabhu. 2015. Effect of complex formation on nonlinear optical parameters of dye–graphene system. *Journal of Photochemistry and Photobiology A: Chemistry* 299: 54–61.
92. P. Tamilarasan and S. Ramaprabhu. 2015. Task-specific functionalisation of graphene for capture and conversion of carbon dioxide. *Journal of Materials Chemistry A* 3: 797–804.
93. M. Sahoo, K.P. Sreena, B.P. Vinayan and S. Ramaprabhu. 2015. Green synthesis of boron-doped graphene and its application as high-performance anode material in Li ion battery. *Materials Research Bulletin* 61: 383–390. doi:http://dx.doi.org/10.1016/j.materresbull.2014.10.049



94. P. Tamilarasan and S. Ramaprabhu. 2015. Integration of polymerised ionic liquid with graphene for enhanced CO<sub>2</sub> adsorption. *Journal of Materials Chemistry A* 3: 101–108.
95. P. Nayak and S. Ramaprabhu. 2015. Cerium oxide nanoparticles-decorated graphene nanosheets for selective detection of dopamine. *Journal of Nanoscience and Nanotechnology* 15: 4855–4862.
96. M. Baro, C. Vijayan and S. Ramaprabhu. 2015. Enhanced photovoltaic performance in polypyrrole nanoparticles counter electrode due to incorporation of multiwalled carbon nanotubes. *Journal of Nanoscience and Nanotechnology* 15(7): 4941–4947.
97. P. Divya and S. Ramaprabhu. 2014. Hydrogen storage in platinum-decorated hydrogen-exfoliated graphene sheets by spillover mechanism. *Physical Chemistry Chemical Physics* 16: 26725–26729. doi:10.1039/C4CP04214J
98. M. Baro, C. Vijayan and S. Ramaprabhu. Multi-edged wrinkled graphene-like carbon-wrapped carbon nanotubes and highly conductive Pt-free counter electrode for dye-sensitised solar cells. *Journal of Nanoparticle Research* 16: 1–10.
99. P. Tamilarasan and S. Ramaprabhu. 2014. Effect of partial exfoliation of carbon nanotubes on carbon dioxide adsorption–desorption properties. *Journal of Applied Physics* 116: 124314.
100. S. Bongu, P. Bisht, R. Namboodiri, P. Nayak, S. Ramaprabhu, T. Kelly, C. Fallon and J. Costello. 2014. Influence of localised surface plasmons on Pauli blocking and optical limiting in graphene under FS pumping. *Journal of Applied Physics* 116: 073101.
101. P. Nayak and S. Ramaprabhu. 2014. Rapid detection of H<sub>2</sub>O<sub>2</sub> and glucose by Au–MWCNT–graphene hybrid composite-based biosensor. *RSC Advances* 4: 41670–41677.
102. A.K. Mishra and S. Ramaprabhu. 2014. Fe<sub>3</sub>O<sub>4</sub>–graphene nanocomposite for enhanced CO<sub>2</sub> capture by physicochemical adsorption. *Journal of Applied Physics* 116: 064306.
103. P. Tamilarasan and S. Ramaprabhu. 2014. Stretchable supercapacitors based on highly stretchable ionic liquid incorporated polymer electrolyte. *Materials Chemistry and Physics* 148: 48–56.
104. S.S.J. Aravind, P. Baskar, S. Das and S. Ramaprabhu. 2014. Thermophysical and electrical properties of MnO<sub>2</sub> and TiO<sub>2</sub> nanotubes-dispersed transformer oil. *Journal of Nanofluids* 3: 1–6.
105. Jaidev and S. Ramaprabhu. 2014. Nitrogen-enriched porous carbon nanostructures for supercapacitor applications. *Journal of Nanoscience and Nanotechnology*. (accepted)
106. P. Tamilarasan and S. Ramaprabhu. 2014. Ionic liquid-functionalised partially exfoliated multiwalled carbon nanotubes for high-performance supercapacitors. *Journal of Materials Chemistry A* 2: 14054–14063.
107. R.S.S. Siddhardha, V.L. Kumar, A. Kaniyoor, V.S. Muthukumar, S. Ramaprabhu, R. Podila, A.M. Rao and S.S. Ramamurthy. 2014. Synthesis and characterisation of gold–graphene composite with dyes as model substrates for decolorisation: A surfactant-free laser ablation approach. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy* 133: 365–371.
108. L.K. Ventrapragada, R.S.S. Siddhardha, A. Kaniyoor, R. Podila, M. Molli, V.S.M. Kumar, K. Venkataramaniah, S. Ramaprabhu, A.M. Rao and S.S. Ramamurthy. 2014. Gold-decorated graphene by laser ablation for efficient electrocatalytic oxidation of methanol and ethanol. *Electroanalysis* 26: 1850–1857.
109. M. Sahoo, B.P. Vinayan and S. Ramaprabhu. 2014. Platinum-decorated chemically modified reduced graphene oxide–multiwalled carbon nanotubes sandwich composite as cathode catalyst for proton exchange membrane fuel cell. *RSC Advances* 4: 26140–26148. doi:10.1039/C4RA02542C
110. P. Nayak, P.N. Santhosh and S. Ramaprabhu. 2014. Enhanced electron field emission of one-dimensional highly protruded graphene-wrapped carbon nanotube composites. *Journal of Physical Chemistry C* 118: 5172–5179.
111. J. Li, A. Pant, C.F. Chin, W.H. Ang, C. Ménard-Moyon, T.R. Nayak, D. Gibson, S. Ramaprabhu, T. Panczyk, A. Bianco and G. Pastorin. 2014. In vivo biodistribution of platinum-based drugs encapsulated into multiwalled carbon nanotubes. *Nanomedicine* 10(7): 1465–1475.
112. P. Divya and S. Ramaprabhu. 2014. Platinum–graphene hybrid nanostructure as anode and cathode electrocatalyst in proton exchange membrane fuel cell. *Journal of Materials Chemistry A* 2: 4912–4918. doi:10.1039/C3TA15181F
113. T.T. Baby, A. Kaniyoor, P. Divya and S. Ramaprabhu. 2014. Synthesis of carbon nanohelices using Sn-based bi-metal oxide catalysts. *Journal of Nanoscience and Nanotechnology* 14: 1–10.
114. A. Lakshminarayan, Z. Puchała and K. Życzkowski. 2014. Diagonal unitary entangling gates and contra-diagonal quantum states. *Physical Review A* 90: 032303.
115. S.K. Mishra, A. Lakshminarayan and V. Subrahmanyam. 2015. Protocol using kicked Ising dynamics for generating states with maximal multipartite entanglement. *Physical Review A* 91: 022318.
116. S.C.L. Srivastava and A. Lakshminarayan. 2015. Records in the classical and quantum standard map. *Chaos, Solitons & Fractals* 74: 67–78.
117. S. Kolkoori, C.V. Krishnamurthy and K. Balasubramaniam. 2015. Quantitative simulation of ultrasonic time of flight diffraction technique in 2D geometries using Huygens–Fresnel diffraction model. *Theory and Experimental Comparison, Ultrasonics*, Vol. 55, pp. 33–41, January.

118. P. Mandayam and M.D. Srinivas. 2014. Measures of disturbance and incompatibility for quantum measurements. *Physical Review A* 89: 062112, June.
119. P. Mandayam and M.D. Srinivas. 2014. Disturbance trade-off principle for quantum measurements. *Physical Review A* 90: 062128, December.

#### Papers published in proceedings of national conferences

1. N. Madugula, R. Chacko, P.C. Deshmukh and G. Aravind. 2014. Development of a photoelectron spectroscopy experimental setup to study the structure and dynamics of interstellar medium. *NCAMP-XX*, Thiruvananthapuram, Kerala.
2. K. Zingade, J.L.S. Bhargavi, Md. M. Islam, R. Chacko, N. Madugula and G. Aravind. 2014. Construction of pulsed piezo valve for molecular beam experiments. *NCAMP-XX*, Thiruvananthapuram, Kerala.
3. R. Chacko, N. Madugula, Md.M. Islam, P.C. Deshmukh and G. Aravind. 2014. A radiofrequency multi-pole ion-trap experimental setup for studying ion-atom collisions. *NCAMP-XX*, Thiruvananthapuram, Kerala.
4. N. Madugula, G. Aravind and P.C. Deshmukh. Study of autoionisation resonances in neon and the ions isoelectronic to it as a function of nuclear charge ( $Z$ ).
5. Ch. Thirimal, P. Murugavel and V. Subramanian. 2015. Synthesis and characterisation of PVDF- $\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3$  nanocomposite films. *AIP Conference Proceedings*. (accepted)
6. R. Chacko, N. Madugula, Md. M. Islam, P.C. Deshmukh and G. Aravind. 2014. A radiofrequency multi-pole ion-trap experimental setup for studying ion-atom collisions. *National Conference on Atomic and Molecular Physics*, Thiruvananthapuram, 9–12 December.
7. P.P. Manangath, R. Saha, P.C. Deshmukh, L. Nikolopoulos and J. Costello. 2014. TDSE studies on HHG in the single-active approximation using model potentials. *National Conference on Atomic and Molecular Physics*, Thiruvananthapuram, 9–12 December.
8. A. Ganesan, S. Deshmukh and P.C. Deshmukh. 2014. Low energy Ba 5s photoionisation cross section using RRPA, RRPA-R and MCTD approximation. *National Conference on Atomic and Molecular Physics*, Thiruvananthapuram, 9–12 December.
9. S. Kalyadan, H.R. Varma and P.C. Deshmukh. 2014. Photoabsorption studies of some closed-shell ions in the cerium isonuclear sequence. *National Conference on Atomic and Molecular Physics*, Thiruvananthapuram, 9–12 December.
10. A. Kumar, T. Priya, H.R. Varma and P.C. Deshmukh. 2014. Photoionisation studies of Ne@C60-5. *National Conference on Atomic and Molecular Physics*, Thiruvananthapuram, 9–12 December.
11. S.A. Ali, P.B. Bisht, A. Patra and S. Kasiviswanathan. 2014. Broad band saturable absorption behaviour in gold nanoparticle-embedded ZnO thin films. *National Laser Symposium*, Tirupati, 4–7 December.
12. S. Samanta, K. Sethupathi and V. Sankaranarayanan. 2014. Dielectric properties of lead zirconium titanate around morphotropic phase boundary. *18th National Seminar on Ferroelectrics and Dielectrics (NSFD 2014)*, Manipur University, Imphal, Manipur, 3–5 November.
13. S. Krishnan. 2015. Photoelectron imaging spectroscopy of He nanodroplets in extreme ultraviolet synchrotron radiation: charge-transfer, Penning ionisation and more. *Proceedings of Current Developments in Atomic, Molecular, Optical and Nanoscale Physics 2015 (CDAMOP 2015)*, Delhi University, New Delhi, 11–14 March.
14. L. Sriramkumar. 2014. Primordial gravitational waves, BICEP2 and beyond. *International Workshop on Unification and Cosmology after Higgs Discovery and BICEP2*, Department of Physics, Panjab University, Chandigarh, India, 13–15 May.
15. S. Mallesh and V. Srinivas. 2015. Investigation of thermal stability and magnetic properties of ZnO-coated  $\text{Mn}_{0.6}\text{Zn}_{0.4}\text{Fe}_2\text{O}_4$  nanoparticles. *AIP Conference Proceedings*. (in press)
16. S.M. Yasin, R. Saha, T.V.C. Rao, V. Srinivas, S. Kasiviswanathan and A.K. Nigam. 2015. Low-temperature magnetic and electrical transport behaviour of  $\text{Co}_{58.5}\text{Ga}_{41.5}$  alloy. *AIP Conference Proceedings*. (in press)
17. S. Samanta, K. Sethupathi and V. Sankaranarayanan. 2014. Dielectric properties of Lead zirconium titanate around morphotropic phase boundary. *18th National Seminar on Ferroelectrics and Dielectrics-2014 (NSFD 2014)*, Manipur University, Imphal, 3–5 November.

#### Papers published in proceedings of international conferences

1. K. Venkatramana and A.R. Ganesan. 2014. Study on decentration-induced optical aberrations in an optical system using Shack Hartmann wavefront sensor. *Optical System Alignment, Tolerancing, and Verification VIII, SPIE Optics & Photonics Conference*, San Diego, California, 16–20 August.
2. B. Renganathan and A.R. Ganesan. 2014. Effect of annealing on toxic gas sensing using samarium oxide as optical fibre cladding. *Photonics 2014, International Conference on Optics & Photonics*, IIT Kharagpur, India, 13–16 December.

3. M.G. Nair, A.R. Ganesan and K. Ramamurthy. 2014. Performance studies of anidolic concentrator with light pipes for daylighting in buildings. *International Conference on Materials Mechanics and Management*, College of Engineering Trivandrum, India, 17–19 December.
4. B. Renganathan and A.R. Ganesan. 2015. Fibre optic vapour sensor using nanocrystalline Al<sub>2</sub>O<sub>3</sub>-coated modified cladding. *ICOL 2015, International Conference on Optics and Photonics*, University of Calcutta, India, 22–24 February.
5. N. Gupte and A.D. Kachhvah. 2014. Transmission of packets on a hierarchical network: Avalanches, statistics and explosive percolation. *Proceedings of the International Conference on Theory and Application in Nonlinear Dynamics (ICAND 2012)*, edited by Visarath I.N., A. Palacios and P. Longhini, Vol. XI, pp. 193–202, Springer Series: Understanding Complex Systems, Springer, Switzerland.
6. R. Mondal, R. Nirmala, J.A. Chelvane, S. Rayaprol, S.D. Kaushik, V. Siruguri and A.K. Nigam. 2015. First-order transition in HoCoNi: Low-field magnetisation and neutron diffraction studies. *Conference on Neutron Scattering (CNS 2015)*, Homi Bhabha Centre for Science Education, Mumbai, 2–4 February.
7. R. Rajivgandhi, R. Nirmala, J.A. Chelvane, S. Quezado and S.K. Malik. 2014. Magnetic entropy change in rare earth intermetallic compound GdNi and its melt-spun ribbon. *International Conference on Magnetic Materials and Applications (ICMagMA 2014)*, Pondicherry University, Pondicherry, India, 15–17 September.
8. M.P. Sharannia, Santanu De, R. Nirmala and P.N. Santhosh. 2014. Studies of structural, magnetic and dielectric properties of NdFe<sub>0.5</sub>Cr<sub>0.5</sub>O<sub>3</sub>. *International Conference on Magnetic Materials and Applications (ICMagMA 2014)*, Pondicherry University, Pondicherry, India, 15–17 September. (presented as a poster)
9. A. Ganesan, G.B. Pradhan, B. Jones, J. Nicholson, A. Banik and P.C. Deshmukh. 2014. Photoionisation study of the 2p subshell in the Ar isonuclear sequence. *11th Asian International Symposium on Atomic and Molecular Physics*, Sendai, Japan, 6–10 October.
10. A. Ganesan, S. Deshmukh, P.C. Deshmukh, V. Radojevic and S.T. Manson. 2014. Photoionisation of Ba 5s using multi-configuration Tamm-Dancoff approximation. *11th Asian International Symposium on Atomic and Molecular Physics*, Sendai, Japan, 6–10 October.
11. A. Mandal, S. Saha, T. Banerjee, P.C. Deshmukh, A. Kheifets, V. Dolmatov and S.T. Manson. 2014. Relativistic, correlation and confinement effects on photoionisation time-delay near dipole and quadrupole Cooper minima in free and confined atomic mercury. *11th Asian International Symposium on Atomic and Molecular Physics*, Sendai, Japan, 6–10 October.
12. S. Kalyadan, H.R. Varma, P.C. Deshmukh, J. Costello and P. Hayden. 2014. Photoabsorption studies of some closed-shell ions in the La isonuclear sequence. *11th Asian International Symposium on Atomic and Molecular Physics*, Sendai, Japan, 6–10 October.
13. S. Saha, A. Mandal, T. Banerjee, P.C. Deshmukh, A. Kheifet, V. Dolmatov and S.T. Manson. 2014. Photoionisation time-delay studies across shape resonance of the (n-1)d subshells of atomic cadmium. *11th Asian International Symposium on Atomic and Molecular Physics*, Sendai, Japan, 6–10 October.
14. B.S. Reddy, B.S. Kalanoor, P.B. Bisht, D.V. Ramanaiah, T.T. Baby and S. Ramaprabhu. 2012. Ultrafast charge transfer in silver-decorated wrinkled graphene. *International Conference on Fibre Optics and Photonics*, Chennai.
15. P.B. Bisht and A. Vincent. 2014. Whispering gallery modes of tapered optical fibre for sensing refractive index. *12th International Conference on Fibre Optics and Photonics 2014*, Kharagpur.
16. P.B. Bisht and A. Ali. 2014. Femtosecond pulses in 375–405 nm region by chirped sum frequency. *UP 2014*, Okinawa, 7–11 July.
17. S.R. Bongu, P.B. Bisht, T.V. Thu and A. Sandhu. 2015. Multiple nonlinear optical response of gold decorated-reduced graphene oxide nanocomposite for photonic applications. *Fourth International Conference on Current Developments in Atomic, Molecular, Optical and Nanophysics with Applications*, Delhi University, 11–14 March.
18. R.N. Mahato, V. Sankaranarayanan and K. Sethupathi. 2014. Observation of large magnetocaloric effect and giant magnetoresistance in nanocrystalline manganites near room temperature. *XII International Conference on Nanostructured Materials, NANO 2014*, Lomonosov Moscow State University, Moscow, Russia, 13–18 July.
19. S. Krishnan. 2014. Imaging photoelectrons from nanoclusters under short-wavelength photon irradiation: Ionisation and disintegration. *Proceedings of the International Workshop on Advances in X-ray Imaging 2014*, International Centre for Theoretical Physics, Trieste, Italy, 11–12 December.
20. D. Kothawala. 2014. Minimal length and small-scale structure of spacetime. *Proceedings of the Spanish Relativity Meeting*. (to appear)

#### 4.16.6. Other Activities of the Department

##### Interdisciplinary group achievements

Sl. No.	Name of the Faculty Member	Activity
1	Aditi Simha	We study the mechanical and statistical properties of living systems using the framework provided by the active matter. Biofilaments and molecular motors (in vitro or in vivo) as in the cytoskeleton of living cells, swarms and suspensions of motile microorganisms, animal flocks and nonliving nonequilibrium systems (such as vibrated granular materials) are examples of active matter.
2	C.V. Krishnamurthy	Electromagnetic NDE of pavements (Department of Physics, Department of Civil Engineering and Department of Engineering Design, IIT Madras)
3	Jayeeta Bhattacharyya	We are collaborating with the Department of Electrical Engineering at IIT Madras, which is providing us with organic semiconductor samples.
4	James Libby	The INO Collaboration at IIT Madras has members from the Department of Electrical Engineering working on detector development.
5	Manu Jaiswal	We have initiated collaboration including a jointly supervised Ph.D. student in the ID category working on photonic and optoelectronic properties of graphene and 2D systems (collaborating department: EE). Further, one M.Tech. student is also co-supervised with the EE faculty.
6	P.C. Deshmukh	Our work on photoabsorption/autoionisation resonances in atoms and ions overlaps with astrophysics. Likewise, our work on photoabsorption of confined atoms overlaps with nanoscience.
7	Prafulla Kumar Behera	The development of the detector, simulation, software and electronics for the India Based Neutrino Observatory (INO) project is being carried out jointly by the Department of Physics and the Department of Electrical Engineering.
8	Sivarama Krishnan	We are engaged in studying photoelectrons in atomic-scale nano-cryostats—He nanodroplets—which are ‘personal chemical reactors’ for studying molecules in cold chemical environments.
9	Sudakar Chandran	Insertion-type alloy-based anode materials are being explored for battery applications in collaboration with Dr. Sankaran, of the Department of Metallurgical and Materials Engineering.
10	Srinivas V.	Magnetic and electrical transport properties of novel high-entropy alloys will be carried out in collaboration with Prof. B.S. Murty of the Department of Metallurgical and Materials Engineering. Equiatomic alloys consisting of multiple components present interesting structural properties and are expected to provide new directions in intermetallics.
11	S. Ramaprabhu	Joint students under interdisciplinary research work: (1) Sreetama Ghosh—Prof. S. Ramaprabhu, Department of Physics, and Dr. R. Sarathi, Department of Electrical Engineering (2) Sandhyarani M.—Prof. S. Ramaprabhu, Department of Physics, and Dr. M. Kamaraj, Department of Metallurgical and Materials Engineering (3) Vani R.—Dr. Prathap Haridoss, Department of Metallurgical and Materials Engineering. and Prof. S. Ramaprabhu, Department of Physics (4) Snehasruthi V.—Dr. M. Kamaraj, Department of Metallurgical and Materials Engineering, and Prof. S. Ramaprabhu, Department of Physics

##### Socially relevant activities

Sl. No.	Name of the Faculty Member	Activity
1	P.C. Deshmukh	Members of my group provided assistance during weekends to a school for children challenged by some disabilities such as autism. This is a very regular activity in my group. They assist this school in a variety of ways including conducting sessions during weekends.
2	Prafulla Kumar Behera	Promoting awareness about the INO experiment in Tamilnadu—organising and delivering public lectures at colleges and for industries
3	Sivarama Krishnan	We have initiated work on the development of self-adaptive incident light limiters for automotive applications—we seek to develop materials and systems for cost-effective glare mitigation.



## International collaboration

Sl. No.	Name of the Faculty Member	Collaborators
1	Aditi Simha	R.M.L. Evans, University of Leeds, UK
2	Arul Lakshminarayan	Max Planck Institute for Physics of Complex Systems, Dresden, Germany
	Arul Lakshminarayan	TU Dresden, Germany Polish Academy of Sciences, Warsaw Jageillonian University, Krakow, Poland
3	C.V. Krishnamurthy	The Indo-German Project involves one German institute and one German industry collaborating with IIT Madras and Dhvani Research Inc. (IIT Madras Research Park—representing an Indian industry counterpart)
4	James Libby	We have joined the CMS Collaboration, based at CERN, Switzerland. We have ongoing collaborations with the Belle and Belle II projects at KEK, Japan. I also have a collaboration with University of Oxford, UK. I have had visitors to Chennai from Belle II collaborating institutes (University of Melbourne, Australia, and Karlsruhe Institute of Technology, Germany) as well the University of Oxford, UK
5	Manu Jaiswal	A joint research project was sanctioned to Dr. Manu Jaiswal (PI) by DST under the DST-A*STAR Indo-Singapore Programme. The PI from Singapore is Prof. K.P. Loh, National University of Singapore. The collaboration aims to develop perovskite solar cells on flexible graphene electrodes. The project began in October 2014.
6	Neelima M. Gupte	Prof. B. Tadic, Ljubljana
7	P.C. Deshmukh	International experts in atomic physics A.S. Kheifets, Research School of Physics and Engineering, The Australian National University, Canberra ACT 0200, Australia V.K. Dolmatov, Department of Earth Science, University of Northern Alabama, Florence, AL 35632, USA S.T. Manson, Department of Physics and Astronomy, Georgia State University, Atlanta, 30303, USA Lampros Nikolopoulos, School of Physical Sciences, Dublin City University, Dublin 9, Ireland John Costello, School of Physical Sciences, Dublin City University, Dublin 9, Ireland
8	Prafulla Kumar Behera	Led the effort to have IIT Madras join the CMS international collaboration—IIT Madras is now a member of the CMS experiment at Geneva, Switzerland.
9	Prem B. Bisht	Dr W.S. Brocklesby, University of Southampton, UK, under the European Marie Curie IRSES Project—Ultrafast Photonic Processes and Interactions (UP-PI) Programme
10	Rajesh Narayanan	Missouri University of Science and Technology, Prof. T. Vojta's group Zhejiang University, Prof Xin Wan's group Karlsruhe Institute of Technology and Regensburg University (Prof. F. Ever's group) Neel Institute and Max Planck Institute for Physics of Complex Systems (Dr. Soumya Bera)
11	K. Sethupathi	Visited Department of Low-Temperature Physics and Superconductivity, Moscow State University (MSU), met Prof. Yaraslav Georgivitch Panomarev and Prof. Alexander N. Vasiliev and discussed with them the possibility of a research collaboration between MSU and IIT Madras
12	Sivarama Krishnan	Prof. Marcel Mudrich, University of Freiburg, Freiburg, Germany Prof. Giuseppe Sansone, Politecnico di Milano, Milan, Italy
13	Sunethra Ramanan	Ongoing collaboration with Dr. Michael Urban on pairing in infinite nuclear medium

## 5. SOPHISTICATED ANALYTICAL INSTRUMENT FACILITY

### 5.1. Introduction

The Sophisticated Analytical Instrument Facility (SAIF), established with financial support from the Department of Science and Technology, provides sophisticated instruments and equipment to students, scientists, researchers and faculty members from IIT Madras as well as academia, educational Institutions, national laboratories, R&D establishments and industries from all over India in general and south India in particular. The primary purpose 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 for 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 Members and Their Activities

#### Faculty and Staff

Name and Qualifications	Major Areas of Specialisation
<b>Professors</b>	
S.S. Bhattacharya [Head]	Nanocrystalline materials—synthesis and characterisation; superplasticity— theoretical and experimental; metal forming
<b>Adjunct Professors</b>	
S. Subramanian	Nuclear magnetic resonance spectroscopy; electron spin resonance spectroscopy
<b>Scientific Officers</b>	
R. Murugesan	Mass spectroscopy; chromatography
<b>Technical Staff</b>	
C. Baby	Nuclear magnetic resonance spectroscopy
K.V. Rama	ICP-OES
N. Sivaramakrishnan	Magnetometry
G.R. Kamalnab	Electronics and instrumentation

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

Sl. No.	Coordinators	Title	Period and Venue
<b>Workshops</b>			
1	N. Sivaramakrishnan	Workshop on HRSEM and Its Applications	9–10 December 2014, SAIF
2	C. Baby, S. Subramanian	Workshop on National Nuclear Magnetic Resonance (NMR) Spectroscopy	25–27 February 2015, SAIF

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

Sl. No.	Name of Faculty Member	Title	Period	Venue
1	C. Baby	Training on JES FA200 Model ESR Spectrometer	15–19 September 2014	JEOL Limited, Tokyo, Japan
2	C. Baby	Bruker pre-NMRS symposia	6 March 2015	GNDU, Amritsar
3	C. Baby	NMRS Conference	6–9 March 2015	GNDU, Amritsar



Sl. No.	Name of Faculty Member	Title	Period	Venue
4	N. Sivaramakrishnan	ESR Training	15–19 September 2014	JEOL Limited, Tokyo, Japan
5	R. Murugesan	Current State-of-Art Computational Methods in Accelerating the Discovery of Novel Biopharmaceuticals	20–21 March 2015	JSS College of Pharmacy, Ooty

#### Special lectures delivered by faculty members at other institutions

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
1	C. Baby	Introduction to protein structure determination by NMR	Department of Biotechnology, IIT Madras	10 November 2014
2	C. Baby	Two-dimensional NMR	Department of Biotechnology, IIT Madras	11 November 2014
3	C. Baby	Three-dimensional NMR	Department of Biotechnology, IIT Madras	14 November 2014
4	R. Murugesan	Applications of FTIR spectroscopy on solid and liquid samples	Department of Chemical Engineering, NIT Trichy	10 October 2014
5	Babu Varghese	Impact of crystallography on modern science	Government Arts and Science College, Kozhikode	4 December 2014
6	Babu Varghese	X-ray crystallography (National Seminar on Crystallography)	Sacred Heart College, Chalakkudi	29 September 2014
7	Babu Varghese	X-ray crystallography and its applications	M.G. University, Kottayam	6 December 2014

#### Industrial consultancy projects

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of ₹)
1	C. Baby	Structural Investigations on Sea Weeds (ongoing)	CMFRI, Kochi	4.14
2	N. Sivaramakrishnan	Material Characterisation	Renault Nissan, R&D Division, IIT Madras Research Park	8.00
3	N. Sivaramakrishnan	VSM–Magnetic Characterisation of Material at High Temperatures	Tata Steel, Jamshedpur	5.30
4	R. Murugesan	GC-MS Analysis	Sashun Chemicals and other chemical industries	5.00

### 5.3. Research and Consultancy

#### Research publications

Number of papers published in refereed international journals 21

#### Papers published in refereed international journals

1. C. Baby. 2014. Self-assembled supramolecular structure of NNN'N'-tetramethylenediammonium-bis-(4-nitrophenolate): Synthesis, single-crystal growth and photophysical properties. *RSC Advances* 4: 22350–22358.
2. C. Baby. 2014. Synthesis, characterisation and computational study of potential itaconimide-based initiators for atom transfer radical polymerisation. *RSC Advances* 4: 48163–48176.
3. C. Baby. 2014. Synthesis, anti-inflammatory and antioxidant activity of ring-A-monosubstituted chalcone derivatives. *Medicinal Chemistry Research* 23: 4383–4394.
4. C. Baby. 2015. Self-assembled supramolecular structure of 1-methyl piperzenium 4-nitrophenolate 4-nitrophenol monohydratephosphate: Synthesis, growth, thermal and photophysical properties. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*. (in press)
5. K.K. Chakrahari, D. Sharmila, S.K. Barik, B. Mondal, B. Varghese and S. Ghosh. 2014. Hypoelectronic metallaboranes: Synthesis, structural characterisation and electronic structures of metal-rich cobaltaboranes. *Journal of Organometallic Chemistry* 749: 188–196.

6. A. Singhamahapatra, L. Sahoo, B. Varghese and D. Loganathan. 2014. Synthesis of glycopeptoid sulfonamides diversifying *N*-glycopeptide linkage region mimic. *RSC Advances* 4: 18038–18043.
7. D.K. Roy, S.K. Barik, B. Mondal, B. Varghese and S. Ghosh. 2014. A novel heterometallic  $\mu_9$ -boride cluster: Synthesis and structural characterisation of  $[(\eta^5\text{-C}_5\text{Me}_5\text{Rh})_2\{\text{Co}_6(\text{CO})_{12}\}(\mu\text{-H})(\text{BH})\text{B}]$ . *Inorganic Chemistry* 53(2): 667–669.
8. R.S. Anju, D.K. Roy, B. Mondal, K. Yuvaraj, C. Arivazhagan, K. Saha, B. Varghese and S. Ghosh. 2014. Reactivity of diruthenium and dirhodium analogues of pentaborane(9): Agostic versus boratrane complexes. *Angewandte Chemie International Edition* 53(11): 2873–2877.
9. A. Srivastava, M. Mathiselvam, B. Varghese and D. Loganathan. 2014. Examination of the influence of C5-hydroxymethyl group and configurations of hydroxyl groups at C2, C3, and C4 stereocentres on the *N*-glycosidic torsion: Synthesis and X-ray crystallographic investigation of *N*-(*D*-ribopyranosyl) alkanamides as *N*-glycoprotein linkage region analogues. *Carbohydrate Research* 384: 37–45.
10. B. Sridhar, K. Ravikumar and B. Varghese. 2014. Tetra- and hexahydrates of bis(adeninium) zoledronate. *Acta Crystallographica, Section C: Structural Chemistry* 70(1): 67–74.
11. K.K. Chakrahari, D. Sharmila, S.K. Barik, B. Mondal, B. Varghese and S. Ghosh. 2014. Hypoelectronic metallaboranes: Synthesis, structural characterisation and electronic structures of metal-rich cobaltaboranes. *Journal of Organometallic Chemistry* 749: 188–196.
12. R. Soman, S. Sujatha, S. De, V.C. Rojisha, P. Parameswaran, B. Varghese and C. Arunkumar. 2014. Intermolecular interactions in fluorinated tetraarylporphyrins: An experimental and theoretical study. *European Journal of Inorganic Chemistry* 2014(16): 2653–2662.
13. D. Sharmila, R. Ramalakshmi, K.K. Chakrahari, B. Varghese and S. Ghosh. 2014. Synthesis, characterisation and crystal structure analysis of cobaltaborane and cobaltaheteroborane clusters. *Dalton Transactions* 43(26): 99769985.
14. C. Ashok Kumar, S. Karthikeyan, B. Varghese, V. Veena, N. Sakthivel and B. Manimaran. 2014. Synthesis, characterisation and cytotoxicity evaluation of rhenium(I)-based ester-functionalised dinuclear metalla-cyclophanes. *Journal of Organometallic Chemistry* 766: 86–94.
15. R. Saravanakumar, B. Varghese and S. Sankararaman. 2014. Isostructural 1D coordination polymers of Zn(II), Cd(II) and Cu(II) with phenylpropynoic acid and DABCO as organic linkers. *Journal of Molecular Structure* 1076: 280–284.
16. E. Sundaravadivel, S. Vedavalli, M. Kandaswamy, B. Varghese and P. Madankumar. 2014. DNA/BSA binding, DNA cleavage and electrochemical properties of new multidentate copper(II) complexes. *RSC Advances* 4(77): 40763–40775.
17. K. Yuvaraj, D.K. Roy, V.P. Anju, B. Mondal, B. Varghese and S. Ghosh. 2014. Mixed-metal chalcogenide tetrahedral clusters with an exo-polyhedral metal fragment. *Dalton Transactions* 43(45): 17184–17190.
18. S. Ghosh, D. Chakraborty and B. Varghese. 2015. Group 1 salts of the imino(phenoxide) scaffold: Synthesis, structural characterisation and studies as catalysts towards the bulk ring opening polymerisation of lactides. *European Polymer Journal* 62: 51–65.
19. P. Bhyrappa, U.K. Sarangi and B. Varghese. 2014. Switching the macrocycle conformation from nonplanar to planar in cobalt(II) and copper(II)  $\beta$ -tetra-2'-thienyl-meso-tetraphenylporphyrin cocrystallates with C60. *European Journal of Inorganic Chemistry* 2014(33): 5646–5650.
20. F.R. Kooriyaden, S. Sujatha, B. Varghese and C. Arunkumar. 2015. Synthesis of electron-deficient fluorinated porphyrins through scrambling: Characterisation and quantitative crystal structure analysis. *Journal of Fluorine Chemistry* 170: 10–16.
21. B. Mondal, B. Mondal, K. Pal, B. Varghese and S. Ghosh. 2015. An electron-poor di-molybdenum triple-decker with a puckered  $[\text{B}_4\text{Ru}_2]$  bridging ring is an oblatocloso cluster. *Chemical Communications (Cambridge, United Kingdom)* 51(18): 3828–3831.

## 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
- The institute faculty effectively participate and contribute to the institute's commitment of providing a broad base of learning opportunities through the following major activities:
- Academic programmes (M.Tech. and Ph.D.) under the Quality Improvement Programme (QIP) (sponsored by the AICTE)
- Short-term courses (STCs) under QIP (sponsored by the AICTE)
- Curriculum development activities under the Curriculum Development Cell (CD Cell)
- Book Writing Scheme under the CD Cell
- Continuing Education Programmes (CEPs) for professionals from industry
- User-Oriented Programmes (UOPs) for specific industries through which their engineers acquire higher degrees (M.Tech.)
- National Programme on Technology-Enhanced Learning (NPTEL)
- Educational Technology Cell (ETC)
- Central Photographic Section
- Conference/seminar/workshop/symposium facilitation
- Allotment of ISBN numbers for textbooks and other publications of faculty members
- Online continuing education programmes for industries

The Centre for Teaching Learning was established in 2011 under the auspices of the Centre for Continuing Education. This has now grown into a fully functional centre with its own administrative structure. This centre strives to be a Centre of Excellence and Innovation in the Teaching Learning Processes (TLP) and a new and sustainable paradigm in higher technical education, producing human resources of the highest professional and personal quality for the service of the nation.

### 6.1.2. QIP

The faculty development activities of the AICTE that are funded by the Ministry of Human Resources Development are geared to ensure quality, relevance, excellence and equity in technical education by supporting activities under the QIP Scheme. Deputation to the academic programmes (M.Tech. and Ph.D.) of the institute facilitates the career development of faculty members of AICTE-approved technical institutions in the country.

Since the inception of the programme till 2014–2015, 508 faculty members from other institutions have obtained Ph.D. degrees, and 597 faculty members have obtained M.Tech. degrees:

Period	Ph.D.			M.Tech.		
	Admitted	No. on Roll	Awarded	Admitted	No. on Roll	Awarded
2014–2015	11	63	10	1	9	17
Since inception	630	—	508	637	—	597

### 6.1.3. Short-Term Training Programmes Under QIP (AICTE-STC)

Organisation of short-term courses under QIP for faculty members of engineering institutions is supported by the AICTE, and these courses open up 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, 13 courses (with a total duration of 13 weeks) were conducted during 2014–2015. A total of 338 teachers of engineering institutions have participated in these programmes. From 1970–1971 to 2014–2015, 354 programmes have been conducted, and 8537 teachers from various engineering colleges have participated and benefited from these courses.

### Programmes held during 2014–2015 under AICTE-STC

Sl. No.	Departments	Coordinators	Title	Dates	Participants
1	Applied Mechanics, Aerospace Engineering	Sayan Gupta, Shaikh Faruque Ali, Sunetra Sarkar	Computational Dynamics	1–5 September 2014	29
2	Management Studies	P. Krishna Prasanna, M. Thenmozhi	Understanding Business Processes Through Case Studies	22–28 September 2014	30
3	Electrical Engineering	Balaji Srinivasan, N.J. Vasa	Optical Sensors and Instruments	6–10 October 2014	29
4	Management Studies	Rupashree Baral, M.P. Ganesh	Teacher Effectiveness Workshop	13–17 October 2014	30
5	Engineering Design	T. Asokan, N.J. Vasa	Industrial Automation and Mechatronics	13–18 October 2014	20
6	Civil Engineering, Chemical Engineering	S.M. Shiva Nagendra, R. Ravikrishna, Sachin S. Gunthe	Air Quality Modelling	10–15 November 2014	22
7	Applied Mechanics	Abhijit Chaudhuri, S. Vengadesan	Fluid Dynamics: Theory to Industrial Applications (FDTIA)	17–22 November 2014	21
8	Applied Mechanics	Arun K.Thittai, Saumendra K. Bajpai	Biomedical Systems, Signals and Images (STTP BSSI–2014)	17–21 November 2014	36
9	Chemical Engineering	T. Renganathan, A. Kannan	Thermodynamic Analysis of Modern Separation Processes	24–28 November 2014	26
10	Chemical Engineering	M. Chidambaram	Process Control	15–19 December 2014	41
11	Mechanical Engineering	Sushanta Kumar Panigrahi, G.L. Samuel	Recent Advances in Composite Materials and Machining	2–6 February 2015	26
12	Engineering Design	C.S. Shankar Ram	Recent Advances in Automotive Systems	1–7 February 2015	15
13	Ocean Engineering	V. Sriram, Deepak Kumar	Offshore, Coastal and Ship Structures	26–30 January 2015	13
<b>Total</b>					<b>338</b>

#### 6.1.4. Activities of the CD Cell

Support is available from the CD Cell with funding from the AICTE for activities such as course structuring, preparation of instructional and resource material (monographs, laboratory manuals, workshop materials, etc.) and development of computer-aided instruction packages to explore interesting avenues for innovation in design and delivery of courses (support is available under the CD Cell funded by AICTE). The material developed through these activities can be made available for use by the various engineering institutes in the country. During the year under review, four CD Cell activities, including workshops, were organised.

Sl. No.	Departments	Coordinators	Title of Activity	Dates	Sponsoring Agency
1	Civil Engineering, Chemistry	Arun Menon, Edamana Prasad	Self-awareness and Higher Goals in Education—AHGE 2014	2–6 June 2014	AICTE
2	Chemistry	Edamana Prasad	Symposium on Teaching Learning in Higher Technical Education	28–29 May 2014	AICTE
3	Ocean Engineering	Srinivasan Chandrasekaran	Advanced Marine Structures	5 months	AICTE
4	Humanities and Social Sciences	Rajesh Kumar	A Workshop on Acoustic Phonetics	4–6 September 2014	AICTE

### 6.1.5. Book Writing Scheme (BWS)

The BWS is designed to encourage teachers to write textbooks and monographs. Fifty-six books have been published by the institute's faculty members under this scheme so far. The number of books published under the Golden Jubilee Book Writing Scheme is 24. During the year under review, the following books were in different stage of progress:

Sl. No.	Name of the Author	Department	Title of the Book
1	C. Balaji	Mechanical Engineering	<i>Essentials of Radiation Heat Transfer</i>
2	Srinivasan Chandrasekaran	Ocean Engineering	<i>Health, Safety &amp; Environmental Management for Offshore &amp; Petroleum Engineers</i>
3	A. Mani	Mechanical Engineering	<i>Solar Energy and its Application</i>
4	Rajesh Kumar	Humanities and Social Sciences	हन्दिी के नकरात्तुक धरुवयि तत्तुवु का संरचनात्तुक अधययन
5	V. Ganesan	Mechanical Engineering	<i>Thermodynamics</i>

### 6.1.6. CEPs

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. CEPs are divided in to two categories: Internal CEPs and External CEPs. From the date of inception (1980) to 2014, a total of 1385 STCs have been conducted, from which 1,29,710 participants have benefitted. Eighty-five to 90 such programmes are organised every year. During 2014–2015, 87 STCs were conducted, and 88,364 participants attended these programmes. The following STCs were conducted under the programme during 2014–2015.

#### Internal CEPs

Sl. No.	Department	Coordinators	Title of the Proceedings	Duration	No. of Participants
1	Management Studies	L.S. Ganesh, G. Arun Kumar	Management Centre Innsbruck (MCI)	31 March to 11 April 2014	21
2	Civil Engineering	Indumati M. Nambi	MSW Dumpsite Fires: Environmental Monitoring Mitigation and Control	16 April 2014	100
3	Biotechnology	Mukesh Doble, Sathyanarayana Gummadi	Summer Workshop on Problem-Solving Skills in Bioprocess Engineering	16–20 June 2014	30
4	Mechanical Engineering	N. Siva Prasad, Ratna Kumar Annabattula	Mechanical Engineering Design	22 March to 12 July 2014	27
5	Management Studies	G. Arun Kumar	Career Development Programme for AMAZON	5–9 May 2014	21
6	Computer Science and Engineering	N.S. Narayanswamy, Nitin Chandrachoodan	Programming Application in Python	12–28 June 2014	25
7	Ocean Engineering	P. Krishnan Kutty, V. Anantha Subramanian, S.K. Bhattacharya	Laboratory Course in Towing Tank for Students	7–19 July 2014	80
8	Civil Engineering	Indumathi Nambi	Environment Management for Sago Industries	12–13 May 2014	30
9	Management Studies	Arun Kumar, Rahul R. Marathe, Saji Mathew	Programme for Management Trainees (IMM) of HAL	9 June to 5 July 2014	36
10	Teaching Learning Centre (TLC)	Edamana Prasad	Symposium on Teaching Learning in Higher Education	28–29 May 2014	45
11	Electrical Engineering	Ashok Jhunjhunwala	Digital Signal Processor and Applications	6–19 June 2014	50
12	Engineering Design	C.S. Shankar Ram	Modelling and Control of Dynamic Systems	26–27 June 2014	6
13	Mechanical Engineering	N. Siva Prasad, V. Raghu Prakash	CEP for BEML engineers	16 June to 31 October 2014	35

Sl. No.	Department	Coordinators	Title of the Proceedings	Duration	No. of Participants
14	Civil Engineering	S.R. Gandhi	Workshop on Geotechnical Investigation	12 July 2014	70
15	Electrical Engineering	Krishna Vasudevan	Targeted Training on Control Technologies and Implementation Techniques	18 June to 11 July 2014	25
16	Engineering Design	C.S. Shankar Ram	Fundamentals of Automotive Systems	10–11 July 2014	25
17	Civil Engineering	Ashwin Mahalingam	Executive Training Programme on Project Management for Engineers of Government of Tamil Nadu	7–8 and 23–24 July 2014	80
18	Chemical Engineering	A. Kannan, T. Renganathan	Thermodynamics Analysis of Modern Separation Processes	24–28 November 2014	10
19	Engineering Design	C.S. Shankar Ram	Fundamentals of Automotive Systems	13–14 August 2014	25
20	Management Studies	T.J. Kamalanabhan, M. Thenmozhi	Executive Programme in Business Administration	July–August 2014	20
21	Management Studies, Computer Science	T.J. Kamalanabhan, Lata Dyaram, R.P. Sundarraaj	Architect Readiness Programme (ARP) for Verizon India	1 August to 27 September 2014	20
22	Hindi Cell	Registrar, IIT Madras, Chairperson, OLIC	Technical Conference in Hindi	2 September 2014	100
23	Mechanical Engineering	K. Srinivas Reddy	Advances in Renewable Energy Technologies	9–10 December 2014	20
24	Civil Engineering	S.M. Shiva Nagendra	Industrial Air Pollution Control	9–10 September 2014	50
25	Ocean Engineering	S. Nallayarasu	Ultimate Strength Analysis of Offshore Structures	15–19 December 2014	20
26	Management Studies	G. Arunkumar, Saji K. Mathew, Rahul R. Marathe	Program for MTs (CS)—HAL	6–31 October 2014	12
27	Engineering Design	C.S. Shankar Ram	Fundamentals of Automotive Systems	18–19 September 2014	25
28	Civil Engineering	Indumathi M. Nambi, Ravi Krishna	Inland Oil Spills: Prevention, Environmental Pollution and Remediation	1 October 2014	30
29	Civil Engineering	Benny Raphael	Programming for Design Automation	10–18 September 2014	4
30	Management Studies	M. Thenmozhi	Understanding Business Processes Through Case Studies	22–26 September 2014	30
31	Engineering Design	Palaniappan Ramu	Design of Experiments, Reliability and Optimisation: Theory Hands-on	19–24 December 2014	37
32	Management Studies	Rupashree Baral, T.J. Kamalanabhan	Executive Development Programme	9–13 October 2014	30
33	Management Studies, Computer Science and Engineering	T.J. Kamalanabhan, Lata Dyaram, R.P. Sundarraaj	Architect Readiness Programme (ARP) for Verizon India	10–20 December 2014	20
34	Engineering Design	C.S. Shankar Ram	Fundamentals of Automotive Systems	18–19 September 2014	25
35	Civil Engineering	Ashwin Mahalingam	Training Programme for Engineers from Shapoorji Pallonji & Co.	24–28 November 2014	–
36	Civil Engineering, Chemical Engineering	S.M. Shiva Nagendra, R. Ravikrishna, Sachin S. Gunthe	Air Quality Modelling	10–15 November 2014	20



Sl. No.	Department	Coordinators	Title of the Proceedings	Duration	No. of Participants
37	Management Studies	Rupashree Baral, T.J. Kamalanabhan	Executive Development Programme	17–21 November 2014	30
38	Electrical Engineering	Ashok Jhunjhunwala	Digital Signal Processor and Applications	11–24 December 2014	50
39	Electrical Engineering	Balaji Srinivasan, N.J. Vasa	Optical Sensor and Instruments	6–10 October 2014	1
40	Civil Engineering	S.N. Kuiry, K.P. Sudheer, Balaji Narasimhan	Bentley Learning Day for Water GEMS and Sewer GEMS	11–12 December 2014	150
41	Civil Engineering	S.M. Shiva Nagendra	Workshop on Exposure Monitoring Systems for Air Quality Management	12–13 December 2014	50
42	Mechanical Engineering	Sushant Kumar Panigrahi, G.L. Samuel	Recent Advances in Composite Materials and Machining	2–6 February 2015	12
43	Engineering Design	C.S. Shankar Ram	Fundamentals of Automotive Systems	19–20 March 2015	30
44	Computer Science and Engineering	V. Kamakoti	Preparatory Course on Information Security	19–28 January 2015	30
45	Management Studies	T.J. Kamalanabhan, Thenmozhi M.	Supervisory Development Programme	9–14 February 2015	29
46	Chemical Engineering	Chidambaram M.	Process Control	15–19 December 2014	2
<b>Total</b>					<b>1588</b>

#### External CEPs

Sl. No.	Departments	Coordinators	Title of the Proceedings	Duration	No. of Participants
1	Mechanical Engineering	N. Ramesh Babu	Transformational Skills and Systems Thinking Training Programme	February–July 2014	40
2	NPTEL	Andrew Thangaraj	Online Certification Programme	March–July 2014	—
3	Electrical Engineering	R. Pasumarthy, A. Mahindrakar, B. Bhikkaji	Networked and Embedded Control for Complex	2–6 June 2014	30
4	International Alumni Relations	R. Nagarajan	Social Entrepreneurship	April–December 2014	25
5	Ocean Engineering	S. Nallayarasu	Subsea and Pipeline Engineering	8–10 May 2014 and 12–14 May 2014	30
6	Ocean Engineering	S. Nallayarasu	Offshore Structural Engineering	20–24 May 2014 and 9–13 June 2014	25
7	Mechanical Engineering	M. Govardhan	Fundamental Concepts and Design of Axial Flow Compressor	28–30 May 2014	13
8	Electrical Engineering	N. Lakshminarasamma, Kamalesh	Switched Mode Power Converters	12–13 June 2014	30
9	Computer Science and Engineering	V. Kamakoti, C. Pandurangan	Information Security Education and Awareness—Phase 2	1 April 2014 to 31 March 2019	—
10	Ocean Engineering	V. Sundar, K. Murali	Design of Coastal Adaptation Structures (Soft Measure)	4–8 August 2014	20
11	Engineering Design	C.S. Shankar Ram	Automotive Control Systems	28 August 2014	50
12	Civil Engineering	Koshy Varghese	Providing Training on Mentoring and Augmenting Planning Skills for Engineers from L&T Company Limited	1 October 2014 to 28 February 2015	45

Sl. No.	Departments	Coordinators	Title of the Proceedings	Duration	No. of Participants
13	Electrical Engineering	Shanthi Pavan	High-Performance Continuous-Time Delta Sigma Modulator Design	10–14 November 2014	20
14	NPTEL	Andrew Thangaraj, Nagendra Krishnapura	IITM-NPTEL Online Certification Programme	September–November 2014	20000
15	Management Studies	L. Prakash Sai	Effective Decision-Making Training Programme	24–25 October 2014	15
16	Civil Engineering	Manu Santhanam	Training Programme on Construction Technology and Management for Engineers	27–28 July 2014	40
17	Mechanical Engineering	K. Anand	IC Engines Course for TAFE	1 November 2014 to 17 January 2015	30
18	Engineering Design	Palaniappan Ramu, Saravana Kumar G.	Stochastic Optimisation	17–21 November 2014	20
19	Ocean Engineering	V. Sundar, K. Murali, S.A. Sannasiraj	Ocean Data Collection and Analysis	1–5 December 2014	20
20	Engineering Design	C.S. Shankar Ram	Fundamentals of Automotive Systems	22–23 January 2015	30
21	Aerospace Engineering	R.I. Sujith	Lectures on Thermoacoustic Instability	27–28 November 2014	15
22	Management Studies	L. Prakash Sai	Value Chain Analysis and Strategic Thinking Training Programme	10 January 2015	30
23	Metallurgical and Materials Engineering	K.C. Hari Kumar	Advanced Metallurgical Thermodynamics	January–April 2015	45
24	Engineering Design	Palaniappan Ramu, Saravana Kumar G.	Optimisation	8–9 January 2015	20
25	Electrical Engineering	Ganti Radha Krishnan, Srikrishna Bhashyam, Arun Pachai Kannu	Digital Communications, Estimation Theory and Sparse Signal Processing	28–29 January 2015	30
26	Engineering Design	Venkatesh Balasubramanian	Transportation Human Factors	23–24 January 2015	15
27	Metallurgical and Materials Engineering	Gandham Phanikumar	Course on Solidification	10–15 February 2015	30
28	NPTEL, Applied Mechanics	Andrew Thangaraj, Mahesh V. Panchagnula	IIT Madras–NPTEL Online Certificate on Engineering Mechanics Statics and Dynamics	January–March 2015	6192
29	NPTEL, Computer Science and Engineering	Andrew Thangaraj, V. Kamakoti	IIT Madras–NPTEL Online Certificate on Introduction to Information Security–I	January–March 2015	7720
30	NPTEL, Humanities and Social Sciences	Andrew Thangaraj, Aysha Iqbal	IIT Madras–NPTEL Online Certificate on Literary Theory and Literary Criticism	January–March 2015	1552
31	NPTEL, Humanities and Social Sciences	Andrew Thangaraj, Rajesh Kumar	IITM NPTEL Online Certificate on Language and Nind	January–March 2015	3477
32	NPTEL, Management Studies	Andrew Thangaraj, G. Srinivasan	IIT Madras–NPTEL Online Certificate on Introduction to Operations Research	January–March 2015	44
33	NPTEL, Computer Sciences and Engineering	Andrew Thangaraj, Madhavan Mukund	IIT Madras–NPTEL Online Certificate on Design and Analysis of Algorithms	January–March 2015	11064

Sl. No.	Departments	Coordinators	Title of the Proceedings	Duration	No. of Participants
34	NPTEL, Computer Sciences and Engineering	Andrew Thangaraj, Shankar Balachandran	IIT Madras–NPTEL Online Certificate on Introduction to Information Security—I	January–March 2015	7720
35	NPTEL, Ocean Engineering	Andrew Thangaraj, Srinivasan Chandrasekaran	IIT Madras–NPTEL Online Certificate on Dynamics of Ocean Structures	January–June 2015	2181
36	NPTEL, Ocean Engineering	Andrew Thangaraj, Srinivasan Chandrasekaran	IIT Madras–NPTEL Online Certificate on Health, Safety and Environmental Management in Offshore and Petroleum Engineering	January–June 2015	3734
37	NPTEL, Computer Sciences and Engineering	Andrew Thangaraj, Arun K. Tangirala	IIT Madras–NPTEL Online Certificate on Introduction to Time–Frequency Analysis and Wavelet Transforms	January–March 2015	2360
38	Electrical Engineering	Shanthi Pavan	High-Performance Continuous-Time Delta Sigma Modulator Design	23–27 March 2015	12
39	NPTEL	Andrew Thangaraj, Narayanaswamy	IIT Madras–NPTEL Online Certificate on Programming and Data Structures	January–March 2015	20052
<b>Total</b>					<b>86776</b>

### 6.1.7. UOPs

UOPs are designed to the requirements of industrial organisations. Two-year M.Tech. programmes are being organised to meet the specific needs of the associated industries. So far 17 programmes have been conducted or are being conducted by the Department of Civil Engineering and the Department of Ocean Engineering.

Sl. No.	Department	Coordinators	Course Number	Title
1	Civil Engineering	K.N. Satyanarayana, Koshy Varghese, K. Ananthanarayanan	CCE/CEP/UoP/15/KA&KV/CE/12-13	UOP M.Tech. (Construction Technology and Management) (15th batch)
			CCE/CEP/UoP/16/KA&KV/CE/13-14	UOP M.Tech. (Construction Technology and Management) (16th batch)
			CCE/CEP/UoP/17/KA&KV/CE/13-14	UOP Construction Technology and Management (17th batch)
2	Ocean Engineering	S. Nallayarasu, S.K. Bhattacharya	CCE/CEP/Uop/12/OE/SN-SKB/11-12	M.Tech. (Offshore Structural Engineering)
3	Civil Engineering	R.G. Robinson	CCE/CEP/UoP/13/CE/RGR/11-12	PG Diploma Programme (Metro Rail Technology and Management)

### 6.1.8. NPTEL: A Joint Initiative of the IITs and IISc, Funded by MHRD

NPTEL is India's largest technical dissemination programme in the higher education sector implemented using information and communication technology (ICT). The broad objective of the NPTEL project is to facilitate Indian industry to be competitive in global markets by improving the quality and reach of engineering education. The operational objective of NPTEL is to make high-quality learning material available to students of engineering institutions across the country by exploiting the advances in ICT, improving the way students learn concepts and reducing the tedious and mechanical aspects of some of the current learning methods. To realise these objectives, seven IITs (Bombay, Delhi, Guwahati, Kanpur, Kharagpur, Madras and Roorkee) and the Indian Institute of Science, Bangalore (IISc) have together developed Web- and video-based material for science and engineering courses. IIT Madras is the coordinating institute of this project.

In Phase 1 of NPTEL, which was from June 2003 to June 2007, 125 Web courses and 138 video courses were created successfully.

In NPTEL phases 2 and 3, which began in June 2009, 283 web courses and 328 video courses have been created, with the target being about 600.

The total number of courses now stands at 874 (408 Web courses and 466 video courses) on both the NPTEL website and YouTube, covering 24 disciplines, including engineering, management, basic sciences and humanities. Each Web course has textual content that can be used to support a 40-hour course, and a typical video course comprises about 40 video lectures of 1 hour's duration each.

#### Courses completed (discipline-wise; video and Web)

Discipline	Video	Web
Aerospace Engineering	19	13
Atmospheric Science	3	1
Basic courses(semesters 1 and 2)	21	17
Biotechnology	8	16
Chemical Engineering	28	34
Chemistry and Biochemistry	14	14
Civil Engineering	43	56
Computer Science and Engineering	51	32
Electrical Engineering	38	25
Electronics and Communication Engineering	41	24
Engineering Design	3	7
Environmental Science	0	3
General	2	0
Humanities and Social Sciences	23	22
Management	21	13
Mathematics	26	24
Mechanical Engineering	62	61
Metallurgy and Materials Science	17	13
Mining Engineering	1	1
Nanotechnology	3	3
Ocean Engineering	20	1
Physics	20	14
Textile Engineering	2	14
<b>Total</b>	<b>466</b>	<b>408</b>

#### Number of courses (video and Web) completed by each institute

Institute Name	Video	Web
IISc, Bangalore	41	37
IIT Bombay	44	40
IIT Delhi	38	38
IIT Guwahati	18	77
IIT Kanpur	81	74
IIT Kharagpur	106	43
IIT Madras	121	72
IIT Roorkee	17	27
Total	466	408

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>).

### **Accessing NPTEL courses**

All courses developed under NPTEL phases 1 and 2 and the list of courses (along with the syllabi) are available to everyone free of cost, without any formal registration. The videos are also available on YouTube. But for ease of use and to help institutes that do not have access to the Internet or do not enjoy high bandwidths, the content is distributed through these channels:

- Free downloads from the NPTEL website
- From the NPTEL office, Chennai, free of cost
- Video streams on demand through YouTube using any browser add-ons
- Video content in DVDs from Bodh Bridge Educational Services Private Limited, Chennai (for a fee)
- Compressed 'Tar' downloads (entire courses or multiple courses)

Free and easy downloads of Web- and video-based courses are available from the NPTEL website in three formats (MPEG4, FLV and 3GP) and are distributed to individuals/institutions free of cost. The media needed for copying the contents is to be provided by the individual or institution. DVDs of individual video courses are available for a fee that covers the cost of production and distribution. Institutions can use the government-subsidised VPN bandwidth available through NMEICT.

### **Text transcripts and MP3 versions of video lectures**

The edited transcripts (in the form of pdf files), the audio extracts of video lectures (in MP3 format) and the subtitled text (in the form of srt files) are all hosted at the ICT home page, the URL of which is <http://textofvideo.nptel.iitm.ac.in>. These may be downloaded by users free of charge.

All video lectures under NPTEL are transcribed and edited so that students can access the content in a video lecture as textual material. The process of verifying the text transcripts is ongoing. The same text is also used for subtitling the video lectures. The audio of all a video lecture is extracted as an MP3 file as such a file is small in size compared with the corresponding video lecture. This, coupled with the text transcript, serves as a good educational resource. So far, about 15,000 lectures have been transcribed through a manual transcription process, and about 9500 videos are available with subtitles in English. The availability of complete text material for technology courses will enable the lectures to be subtitled in Hindi and other regional languages. This will help non-native English speakers and students in rural colleges throughout India to learn the concept through a partial or complete translation of the spoken content in their first language. It is proposed to take up subtitling in regional languages in the future.

### **Statistics of NPTEL usage**

The Web-based NPTEL content is registered with Google Analytics, and the statistics provided by Google are being used to study the effectiveness of this programme. The data that have been collected to date show that the number of visitors to NPTEL has steadily increased over the years and that the NPTEL content is being used extensively by students, faculty members and working professionals.

NPTEL videos are also hosted on YouTube at <http://youtube.com/iit>. Statistics gathered from YouTube show that NPTEL is the educational channel most subscribed to (in YouTube) and that the number of upload views of the channel has crossed 137 million. The NPTEL site has had more than 237 million visits since its inception, in 2006.

### **NPTEL online courses**

Online learning has been going through a major revitalisation in the last few years, with major worldwide players such as Coursera ([www.coursera.org](http://www.coursera.org)) and edX ([www.edx.org](http://www.edx.org)) offering free education for interested learners. These courses have been named Massive Open Online Courses (MOOCs) and are quite popular today. NPTEL has recently embarked on a project of offering online courses through its new portal (<https://onlinecourses.nptel.ac.in/>). The portal is powered by Google India. This new effort has been termed NPTEL Online Certification, or NOC in short.

MOOC is essentially an asynchronous platform and a process for teaching using pre-recorded lectures, resource video materials, lecture notes, assignments and quizzes, which are usually online and provide self-assessment at regular intervals during learning. The learning happens in a fixed time duration and, therefore, the simultaneous participation of teachers and a large number of students may be termed synchronous. This learning is thus similar to that which takes place in a classroom although it is enabled by the Internet and the size of the class is much larger. The extended classrooms on the Internet facilitate the development of new methodologies and are well suited to the current mobile-Twitter-Facebook-YouTube generation of students. When offered through supplementary DVDs and mobile-delivered content, considering students in non-urban and rural areas, they enable quality and equitable access to a much larger population of students and can lead to a significant rise in the Gross Enrolment Ratio.

## NPTEL online certification

The objective of 'enabling students obtain certificates for courses' is to make students employable in industry or pursue a suitable higher education programme. Full-semester or 8–12 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. Enrolment 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. Three such online courses were completed as pilots in 2014.

## Methodology

The following are the features of a typical online course:

1. Clear assumptions about prerequisites
2. Clear learning outcomes
3. Duration of 8–12 weeks (20–25 hours) or a full semester (40 hours)
4. 2–4 hours of lecture every week
  - The lectures are broken up into short modules.
  - Each module has a clear description of its contents and expected learning outcomes.
5. Objective/subjective/programming assessments every week as decided by the faculty member.
6. A discussion forum where students can raise questions and get their doubts answered.
7. An announcements section where announcements are posted
8. A progress page where a student can view his or her scores and an analytics page for the course instructor that provides an overview of a student's performance and interest in the course

The content of online courses will be peer reviewed to assess if it meets all the requirements.

## Certification process

NPTEL began the initiative of offering certification to students for courses in March 2014. The process of certification is as follows.

1. Subject Matter Experts (SMEs, faculty members of IITs or partner institutes, with input from industry) create new content in the MOOCs format or use course content that has already been created for NPTEL and offer the entire course for certification or slice up the content and use parts of it to make a 20-hour course.
2. The course is uploaded on the portal and opened for enrolment, which is free.
3. Every week, about 2–3 hours of video content is released, along with an assignment based on this, which is evaluated and provides the student with a score.
4. Teaching Assistants (TAs) and faculty members support the discussion forum, answering questions and clearing doubts.
5. Registration for the online proctored certification exam is opened (which is optional), in collaboration with an exam partner, and nominal fees of ₹1000 and ₹1250 are charged for non-programming and programming courses, respectively. About 100 exam centres are opened in cities all over India.
6. The certification exam is conducted after the course run of 8 weeks, on two consecutive Sundays, giving the student flexibility in terms of the date of the exam.
7. Certificates (hard copies, e-verifiable on a website) are issued. The scores on the certificates are combinations of scores for assignments and final scores. These certificates are issued by the CCEs of IITs (in partnership with industry bodies, if applicable).
8. It is envisioned that the certificates will be used in credit transfer to universities, for making the student more employable or for enhancing her or his growth in the current place of work.

## Certification completed

Certification for the following courses was successfully completed during January–December 2014.

Time	Title	Institute	No. Enrolled	No. Certified
March–June 2014	Programming, Data Structures and Algorithms	IIT Madras	53,807	1182
September–December 2014	Introduction to Programming in C	IIT Kanpur	39,350	1276
September–December 2014	Basic Electrical Circuits	IIT Madras	19,597	273



### Courses based on the MOOCs model being offered currently

Number of online certification courses being offered currently: 14

Course duration: 5 January to 27 February 2015

Certification exam: 22–29 March 2015 (2262 registrations)

Sl. No.	Discipline	Name of Course	Institute	No. Enrolled	No. Registered for Exam
1	Computer Science and Engineering	Design and Analysis of Algorithms*	CMI	11064	221
2		Introduction to Information Security–I*	IIT Madras	7720	412
3		Programming and Data Structures*	IIT Madras	20052	402
4	Electrical Engineering	Digital Circuits and Systems	IIT Madras	9622	532
5	Mechanical Engineering	BioMEMS and Microsystems	IIT Kanpur	2157	31
6		Engineering Mechanics—Statics and Dynamics	IIT Madras	6192	213
7	Physics	Introduction to Electromagnetism	IIT Kanpur	5670	112
8	Chemical Engineering	Introduction to Time-Frequency Analysis and Wavelet Transforms	IIT Madras	2360	45
9	Management Studies	Strategy: An Introduction to game Theory	IIT Kanpur	5057	123
10		Introduction to Operations Research	IIT Madras	3988	132
11	Humanities and Social Sciences	Literary Theory and Literary Criticism	IIT Madras	1552	28
12		Language and Mind	IIT Madras	3477	64
<b>Total</b>				<b>84,157</b>	<b>2262</b>

### Certification for 15 full-semester (40 hour) courses using existing NPTEL course content

Proctored certification exam dates: 10 and 17 May 2015

Sl. No.	Discipline	Name of Course	No. Enrolled	Exam Registrations
1	Computer Science and Engineering	Database Design	6025	336
2		VLSI Technology	4041	251
3		Numerical Methods and Programming	2235	70
4	Chemical Engineering	Computational Techniques	1055	44
5		Computational Fluid Dynamics	1692	157
6		Particle Characterisation (PG)	591	27
7	Mechanical Engineering	Design and Optimisation of Energy systems	1452	64
8	Metallurgical and Materials Science	Advanced Metallurgical Thermodynamics	931	49
9	Humanities	Indian Philosophy	1093	33
10		History of Economic Theory	664	28
11	Ocean Engineering	Dynamics of Ocean Structures	1944	41
12		Health, Safety and Environmental Management in Offshore and Petroleum Engineering	3302	137
13	Physics	Special Topics in Classical Mechanics	592	11
14		Special Topics in Atomic Physics	531	5
15		Quantum Physics	1232	45
16		Classical Physics	825	14
17		Selected Topics in Mathematical Physics	868	19
<b>Total</b>			<b>23,827</b>	<b>1341</b>

The proctored exam provides a good model for creation of new course content and exploiting existing content. Finally, the proctored exam provides a viable means of delivering authentic certification after online education.

Sixteen existing 40-hour courses and five short-term courses are opening on 1 May 2015, for which exams will be conducted in July.

### **Role of CCE of IIT in NOC**

The online courses 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 CCE and NPTEL jointly.

### **Online courses for companies**

As a pilot project, NPTEL is partnering with a company called Aricent to offer the Programming, Data Structures and Algorithms course for fourth-year college students whom Aricent have recruited from campuses. This course is like a post-placement training programme that will reduce the time required to bring the students up to speed and once they join Aricent.

### **Use of NPTEL video and Web material as GATE preparation aids**

NPTEL has taken up the task of mapping every question in the GATE question papers (from 2011 to 2013) to NPTEL reference material, readily available within existing NPTEL courses.

Question papers in five disciplines have been mapped so far with the help of PG student volunteers, and the answers have been further validated by faculty members specialising in the same area. Both the students and the faculty members have been paid honoraria.

### **NPTEL study centres**

NPTEL wishes to start study centres in colleges. These centres will provide a platform for continuous engagement with the colleges involved and serve as direct points of contact that will act as champions of NPTEL in these colleges. The idea is being tried as a pilot project in selected colleges in Tamilnadu. On the basis of feedback received and the effectiveness of the centres, the scheme can be extended to colleges in other states. This will also help 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.

### **Feedback about NPTEL**

Feedback from many students, teachers and other users is being collected regularly over the last 2 years. Several feedback forms have been designed for this purpose, with varying degrees of detail. The Office of the Director of Technical Education, Gujarat, headed by Dr. Jayanti Ravi, IAS, who herself obtained her Ph.D. degree through a dissertation that contained an analysis of NPTEL feedback from Gujarat, is coordinating the Technical Education Directorates of other states and Vice Chancellors of affiliating Technical Universities in India in obtaining massive online feedback.

### **Recording of special and topical lectures in many different areas**

NPTEL has officially approved and recorded lectures on various special topics—History of Mathematics in India Since First Century A.D., Ayurvedic Medicine, Temple Arts and Paleontology, to name a few. These lectures will be supplemented by many more, which will form part of electives and master's-level courses.

### **Workshops**

Workshops are routinely conducted for students and faculty of other institutes to create awareness about NPTEL. Three types of workshops are conducted by NPTEL:

- NPTEL awareness workshops for students
- NPTEL awareness workshops for faculty members
- NPTEL course-specific workshops for faculty members

The participants at these workshops are from various institutes, and so the information reaches a large number of colleges. Typically, these issues are addressed: what NPTEL is, how to procure the content, how the content may be used by students and faculty members, special features of NPTEL. Suggestions are invited from the participants for improvements to enhance the learning experience. More than 730 workshops have been conducted by NPTEL so far.

Previously, NPTEL had conducted about 600 workshops in different parts of India with the help of a private partner (Classle Inc.). The workshops were held with the idea of improving awareness among students and

helping students with making better career choices. Teachers were informed how to adopt the contents for their classes. More than 70,000 teachers and students have attended these workshops.

### New NPTEL websites

A company called 34 Cross has been developing a new website for NPTEL over the last year. This site should go live soon. It is in the feature-testing stage, and bugs are being fixed.

A new website designed in-house for spreading information about the online certification courses is at [nptel.ac.in/noc](http://nptel.ac.in/noc).

### NPTEL has new Facebook and Twitter accounts as well:

- <https://www.facebook.com/pages/Nptel-India/1413735098927291>
- <https://twitter.com/nptelindia>

### Change in licence of NPTEL content

NPTEL content was distributed under the license CC-by-NC-SA (Creative Commons-by-Non Commercial-Share Alike) till July 2014.

Since August 2014, all the content hosted under the NPTEL umbrella is distributed under the license CC-by-SA (Creative Commons-by-Share Alike).

## 6.1.9. Educational Technology Cell

### CCE TV studios

Two broadcast-quality digital TV studios equipped with state-of-the-art equipment such as digital video cameras, vision mixers/special effects generators, audio mixers and presentation computers connected through VAG-to-PAL converters are available in a classroom atmosphere with Cine-cool illumination. All video courses created by faculty members are recorded in the studios.

A 3-CCD portable video camcorder unit for outdoor video coverage and digital non-linear editing machines are available for video production. Institute functions, conferences, seminars, etc. are covered using this unit.

This unit provides assistance to the students, research scholars and faculty members of all the departments and centres with technical videography, videos for presentation at conferences, etc.

A facility with three remote-controlled video cameras and a remote control room in the IC&SR Auditorium for video recording and video streaming are maintained by CCE. Institute functions, conferences, seminars, etc. conducted here are covered by this unit.

### 6.1.10. Central Photographic Section

The Central Photographic Section caters to the photographic needs of the departments and centres of the institute. The jobs include photographic coverage of most of the important functions such as convocations, farewell functions and Independence Day and Republic Day celebrations held at the institute. The section also renders assistance with technical photography, etc. to the students, research scholars and faculty members of all the departments and centres. Recently the section was modernised, and it meets all the digital high-resolution photography needs of the institute. The Central Photographic Section has contributed a large percentage of the photographs at the Heritage Centre.

### 6.1.11. Conference registration for 2014-15

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, etc. organised by them to register these with CCE. The following programmes were registered with CCE in 2014–2015.

Sl. No.	Departments	Coordinators	Title of the Conference	Dates	No. of Participants
1	Management Studies	L.S. Ganesh, P. Krishna Kumar	National Seminar on Piloting Corporate Governance	21 April 2014	150
2	Chemistry	U.V. Varadaraju	National Conference on Recent Trends in Spectroscopy—2014 (RTS—2014)	20–21 June 2014	200

Sl. No.	Departments	Coordinators	Title of the Conference	Dates	No. of Participants
3	Physics, Biotechnology	P.B. Sunil Kumar, Sanjib Senapati	National Workshop on CUDA, GPU and Parallel Programming	17–19 July 2014	155
4	Humanities and Social Sciences	Aysha Iqbal	International Workshop on Imaging Cinema	7–14 June 2014	203
5	Mathematics	S. Sundar	Second International Conference of Indian Academy of Mathematical Modeling and Simulation	8–10 December 2104	75
6	Metallurgical and Materials Engineering	N.V. Ravi Kumar, G. Sundararajan	International Workshop on the Stress-Assisted Environmental Damage in Structural Materials (EDSA 2015)	27 February to 2 March 2015	100
7	Ocean Engineering	R. Sundaravadivelu, V. Anantha Subramanian, P. Shanmugam, Rajiv Sharma	International Conference on Petroleum Science and Technology 2014	3–5 December 2014	120
8	Chemistry	T. Pradeep	Second International Conference on Emerging Technologies for Clean Water	23–24 October 2014	60
9	Mathematics	Sounaka Mishra, N. Narayanan	Fourth India–Taiwan Conference in Discrete	15–18 July 2015	60
10	Chemical Engineering	Basavaraj M. Gurappa, Ethayaraja Mani	Second Soft Matter Young Investigators Meeting	18–20 December 2014	80
11	Physics, Biotechnology	P.B. Sunil Kumar, Sanjib Senapati	Intel Phi Workshop	5–6 December 2014	100
12	Mechanical Engineering	Arvind Pattamath, Peter Stephan	Indo-German Workshop on Modelling and Measurement	23–25 February 2015	54
13	Mathematics	A.V. Jayanthan, T.E. Venkata Balaji	Advanced Foundational School—I	1 December 2014 to 27 January 2015	34
14	Electrical Engineering	Krishna Vasudevan	Improving Energy Sustainability	4–5 December 2015	70
15	Electrical Engineering	Radha Krishna Ganti, Gaurav Raina, Krishna Jagannathan	13th International Symposium on Modelling and Optimisation in Mobile, Ad Hoc and Wireless Networks	25–29 May 2015	200
16	Engineering Design	Sankara J. Subramanian	The Virtual Fields Method	23–25 February 2015	41
17	Engineering Design	Venkatesh Balasubramanian	Recent Advances in Transportation Human Factors: Driver Performance Monitoring (RATH)	1–29 January 2015	50
18	Civil Engineering	K.P. Sudheer	Australia–India Workshop on Green Cities	24–25 February 2015	20
19	Chemistry	Kothandaraman R., P. Anbarasan	Chemistry In-House Symposium (CiHs-2015)	12 August 2015	20
20	Computer Sciences and Engineering	B. Ravindran	Recent Advances in Reinforcement Learning	23 March to 28 January 2015	50
21	Management Studies	T.J.K. Kamalanabhan, Lata Dyaram	Excellence in School Education: High-Achieving Schools	15–16 May 2015	160
22	Physics	James Libby	Belle Analysis Workshop 2015	15–16 May 2015	12
23	Engineering Design, Electrical Engineering	Nilesh Jayantilal Vasa, R. Sarathi	Asian Conference on Electrical Discharges 2016 (ACED-2016)	8–10 December 2016	200

Sl. No.	Departments	Coordinators	Title of the Conference	Dates	No. of Participants
24	Ocean Engineering	R. Sundaravadivelu, P. Shanmugam	Coastal Zone Management	18 April 2015	40
25	Aerospace Engineering	R.I. Sujith	Complex Systems Approach to Self-organisation	1-4 February 2016	80
<b>Total</b>					<b>2334</b>

### ISBN Number Allotment

Allotment of ISBN numbers is also a part of the CCE's activities, and this year, three ISBN numbers have been allotted:

Sl. No.	Department	Authors	Title	ISBN Number
1	Ocean Engineering	Srinivasan Chandrasekaran	<i>Dynamic Analysis and Design of Offshore Structures</i>	978-93-80689-20-3
2	Ocean Engineering	Rajiv Sharma, R. Sundaravadivelu, P. Shanmugam, Jitendra S. Sangwai, Abdus Samad	<i>Advances in Petroleum Science and Technology: Proceedings of ICPST 2014</i>	978-93-80689-21-0
3	Ocean Engineering	Rajiv Sharma, P. Krishnankutty, V. Anantha Subramanian, S.K. Bhattacharya	<i>Advances in Computational and Experimental Marine Hydrodynamics 2014 (ACEMH 2014)</i>	978-93-80689-22-7

## 6.2. CENTRE FOR INDUSTRIAL CONSULTANCY AND SPONSORED RESEARCH

### 6.2.1. Introduction

The Centre for Industrial Consultancy and Sponsored Research (IC&SR) was set up in 1973 to foster and promote sponsored research activities as well as relationships with industries. It facilitates the active participation of faculty members in various interactive programmes organised for the benefit of industries and the institute. The centre also plays a proactive role in managing the intellectual property generated at IIT Madras and its commercialization by the institute. In addition, the centre provides administrative support for executing consultancy and sponsored research projects, particularly recruitment of project staff, maintenance of accounts and purchase of equipment and materials.

The following are some of the major activities that the centre is involved in:

- Sponsored research programmes
- Consultancy projects: research-based/retainer/institutional
- Collaborative projects with organisations and industries in foreign countries
- Industrial Associateship Scheme
- ISRO–IIT Madras Space Technology Cell joint projects
- IGCAR–IITM Cell joint projects
- NIOT–IITM Ocean Technology Cell
- Patenting and technology transfers
- Faculty and student entrepreneurship and incubation
- Positive Messaging and Outreach Programme

**Dean:** Krishnan Balasubramanian

#### Staff

R. Sundaram	Chief Techno Economic Officer
V. Suresh	Senior Techno Economic Officer
B. Nagarajan	Deputy Registrar
V. Rajendran	Assistant Registrar

- Mr. M.S. Srinivasan has joined IC&SR as a Senior Industry Relations Advisor.
- Dr D.R. Prasada Raju, Retired Scientist–G/Advisor, Department of Science and Technology, has joined as Research Development Advisor.

### 6.2.2. Sponsored Research

A total of 133 projects (listed in the following table), with a value of ₹6657 lakhs, were taken up by the institute during 2014–2015.

Sl. No.	Agency	No. of Projects	Value (lakhs of ₹)
1	Advanced Research Centre for Powder Metallurgy and Materials, International	1	5.90
2	Aeronautics Research and Development Board	3	86.17
3	Armament Research Board	1	12.57
4	Biotechnology Industry Research Assistance Council	1	47.20
5	Board of Research in Nuclear Sciences	7	148.59
6	Central Palmgur and Palm Products Institute	1	8.95
7	Central Power Research Institute	2	65.20
8	Centre for Development of Advance Computing	1	33.07
9	Chevron Products Corporation	1	15.00
10	Council of Scientific and Industrial Research	8	87.26
11	Defence Research and Development Organisation	3	80.20



Sl. No.	Agency	No. of Projects	Value (lakhs of ₹)
12	Department of Biotechnology	9	465.34
13	Department of Electronics and Information Technology	3	319.81
14	Department of Information Technology	1	315.55
15	Department of Science and Technology	43	2980.81
16	Gas Turbine Research Establishment	2	38.00
17	IBM Corporation, USA	1	6.92
18	Indian Council of Social Science and Research	3	31.00
19	Indian National Science Academy	2	16.13
20	Indian Space Research Organisation	11	304.79
21	Indo-French Centre for the Promotion of Advanced Research	5	199.23
22	Indo-German Science and Technology Centre	2	309.90
23	Intel Corporation	1	12.04
24	Media Lab Asia	1	248.76
25	Ministry of Earth Sciences, New Delhi	3	201.60
26	Ministry of Human Resource and Development	2	131.49
27	Ministry of Labour and Employment	1	250.00
28	National Institute of Ocean Technology	1	29.78
29	Naval Research Board	4	76.87
30	Nissan Research Support Program	4	36.68
31	Office of Naval Research Global	1	72.26
32	Shastri Indo-Canadian Institute	1	5.63
33	University Grants Commission	3	14.33
	<b>Total</b>	<b>133</b>	<b>6657.02</b>

This includes international collaborative and industry-sponsored projects. About 160 faculty members served as coordinators for projects sanctioned in 2014–2015. The value of the ongoing sponsored projects (2014–2015) was ₹71,846 lakhs. About 240 faculty members were actively involved in these ongoing sponsored research projects.

### 6.2.3. Consultancy Programmes

A total of 482 consultancy assignments amounting to ₹6415 lakhs were taken up during 2014–2015.

Sl. No.	Type of Consultancy	No. of Jobs	Value (lakhs of ₹)
1	Research-based industrial consultancy	127	2808
2	Institutional consultancy	332	2712
3	Retainer consultancy	13	103
4	Testing (ET&IT)	10	81
	Additional value		711
	<b>Total</b>	<b>482</b>	<b>6415</b>

A total of 145 faculty members were actively involved in the consultancy projects. The total value of the ongoing consultancy projects (2014–2015) was ₹10,284 lakhs.

### 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 will also help them get sponsored research grants to continue and establish their research activities at the institute. This scheme is operated as a project under the Centre for IC&SR. Proposals for projects of value up to ₹5.00 lakhs are recommended by the Dean, IC&SR to the Director for approval. In the case of proposals where there is experimental activity requiring special equipment, the institute supports to the project to an extent of ₹20.00 lakhs.

During the year, 15 proposals (total amount ₹324 lakhs), were approved for funding under the New Faculty Scheme.

### 6.2.5. Industrial Associateship Scheme

A total of 156 industries were members of this scheme (large-scale industries, 28; medium-scale industries, 87; small-scale industries, 41) in 2014.

### 6.2.6. Technology Appreciation Programme

Sl. No.	Title of the Programme	Coordinator
1	Solar Absorption Refrigeration Systems Operating with Ionic Liquids	S. Srinivasa Murthy, Department of Mechanical Engineering
2	Composite Design and Analysis and Manufacturing	N. Sivaprasad, Department of Mechanical Engineering R. Velmurugan, Department of Aerospace Engineering

### 6.2.7. Other Programmes

#### ISRO–IITM Space Technology Cell joint projects

ISRO sponsors research projects of interest to ISRO at IIT Madras. A total of 26 ongoing projects, with a value of ₹691 lakhs, were continued, and 11 new projects, with a value of ₹305 lakhs, were taken up during the year 2014–2015.

#### IGCAR–IITM Cell

Four new projects, with a total value of ₹113 lakhs, were initiated during 2014–2015.

#### NIOT–IITM Cell

The NIOT–IITM Cell was set up in IIT Madras during 2010–2011 to initiate NIOT-sponsored research activities at the institute. Four ongoing projects, with a total value of ₹164 lakhs, were continued during 2013–2014, and one new project, with a value of ₹30 lakhs, was sanctioned in 2014–2015.

#### HAL–IITM Centre for Aerospace Transmission Systems (CATS)

HAL is interested in supporting R&D projects in the area of aerospace transmission systems at IIT Madras through the formation of the CATS.

#### Nissan-supported research projects

Renault Nissan Technology and Business Centre India Private Limited (RNTBCI) and IIT Madras have a MoU under which RNTBCI wishes to initiate a research support programme at the institute. Thirteen projects, with a total value of ₹129 lakhs, were continued, and four new projects, with a value of ₹37 lakhs, were taken up during the year 2014–2015.

#### Technologies for social development

IIT Madras initiated activities for transfer of technologies that are of immediate relevance to society. For this purpose, the following three projects were taken up.

- (1) Socially Relevant Projects
- (2) Rural Technology Action Group (funded by Planning Commission)
- (3) Centre for Social Innovation and Entrepreneurship (CSIE)

A description of the activities of these projects is provided in Annexure 1.

### 6.2.8. Distinguished Visitors to the Centre

Delegations from the following organisations visited IIT Madras for discussions about possible collaborative research work.

- Lam Research
- Caterpillar Engineering Design Centre

- Ordnance Development Centre
- Murata Manufacturing
- DORMA India Private Limited
- SKF Technologies India Private Limited, Bangalore
- ExxonMobil Lubricants Private Limited
- Southern Railways
- Samsung Electronics
- SKF Technologies India Private Limited
- GE Research Centre
- Sanofi India
- Airbus
- Atul Limited

### **MoUs/agreements signed**

Seventy-four new MoUs/agreements were signed by IIT Madras with the following organisations/institutions during 2014–2015.

- Forbes Marshall Private Limited
- Sunil Sundar Design
- DRDO
- JSW Steel Limited
- GE-India Technology Centre Private Limited
- Neyveli Lignite Corporation
- Premier Explosives Limited
- IIT Bombay
- GE ITC Private Limited
- Tata Steel Limited, Jamshedpur
- OptiRisk Learning Systems Private Limited
- BEML Limited, Bangalore
- Thermax Limited
- Hindustan Petroleum Corporation Limited
- Sudhin Biopharma Company
- Diponed Biointelligence LLP
- MaxVal-IP Venture India Private Limited
- Shell India Markets Private Limited
- Technip India Limited
- Veermata Jijabai Technological Institute
- JICA Indian Office
- Exicom Tele-Systems Limited
- Renault Nissan Technology & Business Centre India Private Limited
- Saint-Gobain Research India Limited
- Eaton Technologies Private Limited
- Lucas–TVS Limited
- Saint-Gobain Research India Private Limited
- Shell India Markets Private Limited
- ISRO, Bangalore
- NXP Semiconductor
- LG Soft India Private Limited
- Eaton Technologies Private Limited
- Total Marketing Services
- Caterpillar India Private Limited
- Satvat Infosol Private Limited
- Diego Zamgrillo (the researcher)
- Mazagon Docks Limited
- Biotech Consortium India Limited
- Dow Chemical International Private Limited
- Unilever Industries Private Limited
- VTT
- The Tata Power Company Limited

- Hitachi Limited
- Hitachi India Private Limited
- Saint-Gobain Research India Limited
- University of Texas Health Science Centre at Houston (UTHealth)
- Oil India Limited
- Cairn India Limited
- Oil and Natural Gas Corporation
- Dow Chemical International Private Limited
- Perfint Healthcare Private Limited
- Agni Bio-power Energy Private Limited
- Titan Company Limited
- Phoenix Medical Systems
- Institute of Biomedical Research
- Hindustan Petroleum Corporation Limited (HPCL)
- Pfizer, USA
- Ports (Dhamara, Badrak)
- Indian Oil Corporation Limited (IOCL)
- Mobility India
- Quantum Ventura Inc.
- Centre for Development of Advanced Computing
- Bharat Heavy Electricals Limited
- Manipal University
- NanoHoldings LLC
- InnoNano Research Private Limited
- LLC DBA Metrix Knowledge Services
- University of Warwick
- Sree Chitra Thirunal Institute for Medical Sciences and Technology
- Fidelity Business Services India Private Limited
- Steel Authority of India Limited

#### 6.2.9. IP Cell: Patents

A brief description of the activities of the IPM Cell activities is provided in Annexure 2

**The following patent applications were filed during the year 2014–2015:**

Sl. No.	Title	Inventor	Department
1	Non-linear, Tunable Mechanism for Simulating Chest Stiffness in Hi-Fidelity Mannequins	Manivannan Muniyandi, Kanakapriya K.S.	APM
2	System and Method for Early Detection of Onset of Instabilities in Combustion or Aero-mechanical or Aero-elastic Systems by Constructing Complex Networks	Sujith R.I., Meenatchidevi Murugesan, Vineeth Nair	ASE
3	A Novel Technique to Coat Burn Rate Modifiers Over Ammonium Perchlorate	Ramakrishna P.A.	ASE
4	System and Methodology for Early Detection of Aero-elastic Instabilities	Sujith R.I., Sunetra Sarkar, Sayan Gupta, Vineeth Nair	ASE
5	Improving the Mechanical Properties of Paraffin Wax	Ramakrishna P.A.	ASE
6	System and Method for Early Prediction of an Impending Blowout in Combustion Systems Using Complex Networks	Sujith R.I., Meenatchidevi Murugesan, Vishnu R. Unni	ASE
7	A Swirl Mesh Lean Direct Injection Concept for Distributed Flame Holding for Low Pollutant Emissions and Mitigation of Combustion Instability	Muruganandam T.M., Chakravarthy S.R., Preethi R.S.	ASE
8	Novel System for Measuring Permeability of Drugs/ Toxic Chemicals/Pesticides/Carcinogens/Plasma Protein Binding/ADME Properties Through Lipid Layer to Predict Oral Ingestion of These Compounds Into the Blood Stream	Mukesh Doble, S. Harshal	BIO
9	A Handheld Portable Device for Coating Electrospun Polymer Nanofibres on Non-conductive Surfaces	Chandra T.S., Natarajan T.S., Anant Sham Raheja	BIO

Sl. No.	Title	Inventor	Department
10	Development and Characterisation of Cardiac Nanomatrix: A Bioscaffold for Cardiac Regeneration	Rama S. Verma, Rajalakshmi Santhakumar	BIO
11	Synergistic Herbal Formulation for Treatment of Skin Cancer	Rama S. Verma, Pavithra P.S., Sreevidya, Alka Mehta	BIO
12	Cancer Chemopreventive Formulation of PM 002/Broad-Spectrum Anti-cancer Formulation of PM 002	Rama S. Verma, Pavithra P.S., Sreevidya, Alka Mehta	BIO
13	Mannosylerythritol Lipids and Related Glycolipids as Cloud Point, Cold Filter Plugging Point (CFPP), Pour Point Depressant and Wax Dispersant of Hydrocarbon Fuels and Other Oils	Mukesh Doble, Chandraprasad M.S., S. Harshal	BIO
14	Auto-thermal, Dual Reformer Concept for Efficient Generation of Hydrogen Generation for High-Temperature PEM Fuel Cells	Sreenivas Jayanti, Purnima Gowder	CHE
15	Biopolymer-Based, Biodegradable, Super Water-Absorbing Polymers (SWAP) and Processes for the Preparation of the Same	Dhamodharan R., Narayanan A.	CHY
16	Method and Systems for Three-Dimensional Spatio-temporal Mapping of Nanoparticles with Optical Microspectroscopy	Pradeep T.	CHY
17	Development of $\gamma$ -Alumina with High Surface Area, Narrow and Wider Pores	Selvam P., Viswanathan B., Nithya T., Raju K.P., Mahendran S.	CHY
18	Design and Synthesis of Purine–Quinolone Hybrids for Targeting Kinases	Muraleedharan K.M., Devarasu Prabakaran, Napoleon Hohn Victor	CHY
19	A Chromatographic Method for Separation of $\ddot{A}$ -Dibromo-and Tribromo-meso-tetraphenylporphyrins	Bhyrappa P., Velkannan V.	CHY
20	Vertical Growth of Nano Particles Leading to Micrometre-Long Brushes by Ambient Electrolytic Spray Deposition	Pradeep T., Depanjan Sarkar, Mahitha M.K., Anirban Som, Graham Cooks R., Anyin L.I.	CHY
21	Method for Accumulation of Silver by Rice and Possible Metal Extraction by Agriculture	Pradeep T., Soujit Sen Gupta, Ananya Baksi, Debal Deb	CHY
22	Method of Extraction of Silver by Glucose	Pradeep T., Ananya Baksi, Mounika Gandhi, Swathi Chaudhari, Soujit Sen Gupta, Soumabha Bag	CHY
23	Dynamic Vehicle Operation, Management and Control System	Lelitha Devi V., Shankar Ram C.S., Akhilesh Koppineni, Krishna Chaithanya, Siddharth Krishnaswamy	CIE EDD
24	A Light that Reduces the Transmission of Infra-red Radiation Through Multiple Reflections	Benny Raphael	CIE
25	AIYYA DAND—Economical and Durable Pallets to Transport Steel Coils or Similar Goods	Arul Jayachandran S., V. Chandrasekaran, E. Suresh Raj	CIE
26	Reducing Power Consumption by Using a Low-Power Electronic Circuit in Optical Network Units and by Virtualising Optical Terminals in a Passive Optical Network	Krishnamoorthy S., Ganesh Chennimalai Sankaran	CSE
27	A Method and Apparatus to Certify and Verify Android Applications	Krishna Nandivada, Raja Subramaniam Thangaraj	CSE
28	Method of Retrofitting and Actuating Variable Profile Cam for Controlling Lift and Timing of Engine Valves	Srikanth Vedantam, Anand T.N.C. Pratyush Garg	EDD, MEE
29	Method for Controlling Lift and Timing of Engine Valves using a Sliding Rocker Arm With an Inclined Profile	Srikanth Vedantam, Anand T.N.C., Pratyush Garg	EDD, MEE
30	Dual-Mode Planetary Continuously Variable Transmission	Gaurav Jain, Shakeel Abdulla, Anant Jain	EDD
31	Blood Haemoglobin Content Analyser Device Using Image Processing	Sandipan Bandyopadhyay, Sai Gole, Yash Murthy, D.B.P. Srikanth	EDD, ASE, CSE

Sl. No.	Title	Inventor	Department
32	Alternate Time-Changing Mechanism for a Wristwatch	Palaniappan Ramu, Matha Sai Akhil, Sandeep Rajkumar, Sai Saketh Chennamsetty, Vamshi Pavan K., Sai Sri Harsha G.	EDD
33	Joint Mechanism for Modular Jewellery	Palaniappan Ramu, Aditi Malpani, Nivea Valsaraj, Rajeevi Rathod, Munagala Prathyusha, Varri Naga Sowjanya	EDD
34	Integrated Watch Crown Battery: Battery Placed Inside Crown of the Watch	Palaniappan Ramu, Mohammed Safwan K.P., Muhammed Shahidh K., Derek D. Kuttikad, Aswin R. Bharath Kumar	EDD
35	Loop-Based Adjustable Metal Strap	Palaniappan Ramu, Vamsi Krishna G., N. Nelson Singh, Sagar Sathrasala, Mohit Kumar Meena	EDD
36	Variable Length of Metal Strap Design: Screw Design	Palaniappan Ramu, Aayush Maloo, Anant Gupta, Anupam Chandra, Dheepika Selvaraj, Sujata Khandare	EDD
37	Variable Speed Mechanism to Eliminate Chain Shifting in Bicycles	Palaniappan Ramu, Joshi Suhas Sagar, Neeraj Atul Gadkari, Rakesh N. Rao	EDD
38	Automatic Gear Transmission Mechanism for Bicycles Using Continuous Variable Transmission Gears	Palaniappan Ramu, Nandan N. Pitre, Pranav Mupirishetty, Rishii Nandan, Shrey Vakharia, Tejasvin S.	EDD
39	A Minimally Invasive Surgical Tool for Robotic Surgery With Disengaged Degrees of Freedom	Asokan T., Karthick Chandrasekaran, Ramalingam M.	EDD, PSG Institute
40	Vertically Offset Overlapping Propulsion System (VOOPS): A Novel Quadrotor Configuration for Increased Payload and Endurance	Asokan T., Ganeshram Nandakumar, Thiyagarajan Ranganathan	EDD
41	Design of Alternate Water Extraction Mechanism in a Vertical-Axis Washing Machine by the Use of Super-absorbent Polymers	Palaniappan Ramu, Abhishek K., Arun Raghupathy, Athul Vijayan, Maharishi R.B.	EDD
42	Vacuum Drying: An Alternate Drying Mechanism in Vertical-Axis Washing Machines	Palaniappan Ramu, Sachin K. Sunny, Siddharth Dash Rohit Janagal, Ghanshyam Karol	EDD
43	Measurement of Pressure on the Wall of a Rotating Drum	Palaniappan Ramu, Edward Jero, Murali K. Karnam, Saurav Agarwal, Shivashankar	EDD
44	An Expanding Air Bag Concept for Drying in Washing Machine	Palaniappan Ramu, Rohan Chavan, Aneesh Bhir, Harshap P. Dahae, Dhruvesh Patel, Raturaj Bargal	EDD
45	An Epicyclic Gear Mechanism to Increase RPM and Hence Drying Rates in Washing Machines	Palaniappan Ramu, Kotha Bharat, Kumar Reddy, G Balaji Krishna Prasad, Kiran Vaidhya, K.S. Rakesh	EDD
46	A Frequency Up-conversion Mixer With Improved Linearity and Back-off Efficiency Using Negative Feedback	Nagendra Krishnapura, Madhukar Vallabhaneni	ELE
47	Downlink Synchronisation in Heterogeneous Cellular Networks	Arun Pachaikannu, Neelakandan Rajamohan, Niranjana M. Gowda	ELE, Lekha Wireless



Sl. No.	Title	Inventor	Department
48	Prediction of Modality of Interaction With an Electronic Device Based on User Impairment	Ashok Jhunjhunwala, Pradipta Biswas	ELE, University of Cambridge
49	User Perception-Based Prediction of Graphical User Interface	Ashok Jhunjhunwala, Pradipta Biswas	ELE, University of Cambridge
50	Method and Apparatus for Self-interference Cancellation in Full-Duplex Wireless Systems	Radhakrishna Ganti, Aniruddhan	ELE
51	Wavelength-Stabilised Active Mode-Locked Fibre Laser	Anil Prabhakar, Satyajit Mayor	ELE, Tata Institute
52	A Method and System of Computing Average Value for CQL Computation	Sheetal Kalyani, Navinnath Palanisamy	ELE CEWIT
53	Method to Monitor Surface Temperature of a Passive Direct Methanol Fuel Cell	Ajit Kumar Kolar, Vasanth P.	MEE
54	A New Methodology to Estimate Heat Loss of a Passive Direct Methanol Fuel Cell	Ajit Kumar Kolar, Vasanth P.	MEE
55	Confined Guided Ultrasonic Waves for Inspection of Joints Composite Structures	Krishnan Balasubramaniam, Prabhu Rajagopal	MEE
56	A Novel Approach for Generation of Nanoparticles Using Mechanical Micro-machining Technique: Micro-electrical Discharge Machining	Somashekhar S. Hiremath, Ranjeet Kumar Sahu	MEE
57	Twin-Injector System for Direct Cylinder Barrel Injection of Gaseous Fuels with Electronic Control in Two-Stroke Spark-Ignition Engines	Ramesh A.	MEE
58	Design of an Underwater Remote Operated Vehicle Capable of Performing Ultrasonic NDE of Submerged Sub-sea Pipeline Structures	Prabhu Rajagopal	MEE
59	Prosthetic Knee for Uneven Terrain	Sujatha Srinivasan, Anand T.S.	MEE
60	Novel Hybrid Wind-Hydrokinetic Turbine With Closable Bucket Savonius Rotor and H-Darrieus Assembly	Dhiman Chatterjee, Joe Jacob	MEE
61	Mixture Preparation Unit for Port Fuel-Injected Engines	Anand T.N.C., Saransh Jain	MEE
62	Capillary-Driven Flow Enhancement in Polymer Microchannels Having Flexible Wall(s)	Ashis Kumar Sen, Anoop R.	MEE
63	A System to Acquire and Analyse Images of Specimen Under a Microscope	Niranjana Prasad M., Sandhya I., Keerthana Prasad	MEE, Manipal University
64	Hybrid Manual-Electric Wheelchair	Sujatha Srinivasan, Vivek Sarda	MEE
65	Grain-Refined Magnesium Alloy with Controlled Degradation as a Temporary Orthopaedic Implant	Sampath Kumar T.S., Uday Chakkingal, B. Ratna Sunil	MET
66	Mineral-Releasing Bioreactive Tetracalcium Phosphate Cements from Egg Shells Waste	Sampath Kumar T.S., R. Jayasree, K. Pavani Siva Kavaya	MET
67	Footwear-Based Device for Gait Analysis by Timed Mapping of Foot Contact Points	Prathap Haridoss, Varun Nalam, Lakshmi Naga Shiva Sai Allu, Abhijit Lale	MET MEE MET MET
68	A Model to Improve Oil Recovery From Mature Reservoir	Jitendra S. Sangwai	OEC
69	A Method to Recover Natural Gas from Natural Gas Hydrate Reservoirs	Jitendra S. Sangwai, Deepjyoti Mech	OEC
70	The Device for Lab Gas Hydrate Production	Rajesh R. Nair, Manjunath G.L., Anatoliy O. Vasylenko	OEC, Ukrainian Scientific
71	Method of Plastic Packer Setting in Borehole Annulus	Rajesh R. Nair, Manjunath G.L., Anatoliy O. Vasylenko	OEC, Ukrainian Scientific
72	Method for Continuous Underground Coal Gasification	Rajesh R. Nair, Manjunath G.L., Anatoliy O. Vasylenko	OEC, Ukrainian Scientific

Sl. No.	Title	Inventor	Department
73	Method for Industrial Gas Hydrates Production	Rajesh R. Nair, Manjunath G.L., Anatoliy O. VasyLchenko	OEC, Ukrainian Scientific
74	Method of Enhanced Oil and Gas Recovery	Rajesh R. Nair, Manjunath G.L., Anatoliy O. VasyLchenko	OEC, Ukrainian Scientific
75	Drilling Fluid and Method Useful in Drilling Boreholes in Water-Sensitive Formations	Rajesh R. Nair, Manjunath G.L., Anatoliy O. VasyLchenko	OEC, Ukrainian Scientific
76	Method of Versa Fracking for Enhancing Oil and Gas Recovery	Rajesh R. Nair, Manjunath G.L., Anatoliy O. VasyLchenko	OEC, Ukrainian Scientific
77	A Novel Green Surfactant Formulation for Enhanced Oil Recovery Applications Suitable for High-Temperature and High-Saline Conventional Crude Oil Reservoirs	Jitendra S. Sangwai, Ramesh Gardas, Sivabalan Sakthivel, Pratap K. Chhotaray, Sugirtha Velusamy	OEC CHY OEC CHY OEC
78	Novel Diatoms (Frustrule)-Based Composites for Hydrogen Storage	Ramaprabhu S.	PHY
79	Novel Synthesis of Nanostructured Gypsum (CaSO <sub>4</sub> .2H <sub>2</sub> O)	Ramachandra Rao M.S., Kapil Gupta	PHY
80	Magnetism in Atomic Hydrogenated Nanomaterials	Ramaprabhu S.	PHY

Details of patent applications granted during the year 2014–2015 are provided in the following table:

Sl. No.	Title	Inventor	Department
1	A Method for Synthesis of Polymers and Copolymers	Debashis Chakraborty, Ravikumar Gowda	CHY
2	A Hands-Free Device for Enabling the Disabled to Turn the Pages of a Book While Reading	Sandian Bandyopadhyay	EDD
3	An Analogue Digital Alternative and Augmentative Communication Device Useful for Individuals with Multiple Disabilities	Anil Prabhakar, Kalpana Rao, Namita Jacob	ELE
4	A Device for Online Measurement of Partial Discharge in an Electric Winding	Jayashankar V., Palani A.	ELE
5	A Linear Variable Capacitive Transducer for Sensing Planer Angles	Jagadeesh Kumar V., Bobby George	ELE
6	Magnetic Nanofluid and a Process for the Manufacture Thereof	Ramaprabhu S., Neetu Jha, Leela Mohana Reddy A.	PHY
7	Spacerless Carbon Nanotubes for Cancer Treatment and Drug Delivery	Ramaprabhu S., Arokiadoss T.	PHY
8	Electrochromic Mm <sub>0.2</sub> Tb <sub>0.8</sub> CO <sub>2</sub> Thin Film as Electrochemical Optical Switch	Ramaprabhu S., Krishna Kumar M.	PHY

#### Technology transfer/royalty

Sl. No.	Inventor	Name of the Invention	Company	Value (lakhs of ₹)
1	Michael Gromiha M.	Tool for Protein Aggregation Prediction	Pfizer Inc.	6.30
2	Pradeep T.	Pesticide Removal Attachment Based on Nano Technology	Aquamall Water Solutions Limited	4.65
3	Pradeep T.	Water Purifiers: Licensing of Patents to Nano Holdings	Nanoholdings LLC	85.39
4	Jitendra S. Sangwai	A Method to Recover Natural Gas from Natural Gas Hydrate Reservoirs	Intellectual Ventures Asia Private Limited	0.58
<b>Total</b>				<b>96.92</b>

An amount of ₹96.92 lakhs was received for transfer of technology during this year.

## 6.2.10. Publications

IC&SR brought out the IIT Madras Calendar, IIT Madras New Year Greeting Card and the IIT Madras Diary for 2015.

## 6.2.11. Research Fund

An amount of ₹50 crores has been earmarked for the Research Fund Corpus from the IC&SR overheads. The interest on the fund (approximately ₹5–6 crores) is proposed to be used for various research-related expenses. The broad allocation for expenses for this financial year (2014–2015) is as given in the following:

1. R&D Award: 50% from the Institute Fund and 50% from the Research Fund. Approximate budget, ₹100 lakhs.  
*Status:* Seven awards with a total value of ₹190 lakhs.
2. Research Scholar Innovation Projects: Up to ₹25 lakhs from the Research Fund  
*Status:* Five projects with a total value of ₹25 lakhs
3. Exploratory Research Projects: To support projects from any faculty member who has a 'breakthrough' idea and wishes to initiate work without waiting for his or her proposal to be sanctioned by the funding agency. Maximum of ₹10 lakhs with a duration of 12 months. Approximately ₹100 lakhs.  
*Status:* Twenty-two projects with a total value of ₹200 lakhs
4. New Faculty Initiation Grant: Add-on grant up to maximum of ₹5 lakhs. National and international travel will be permitted. The total outlay is estimated to be around ₹100 lakhs.  
*Status:* Twenty-one projects with a total value of ₹105 lakhs.
5. One team project of significance that, with demonstrated proof of concept, will be eligible for funding for a period of 2 years with an initial maximum budget of ₹200 lakhs. The project will be selected through peer review members.  
*Status:* Two projects for a total value of ₹398 lakhs.
6. Patenting and commercialisation activities by IP Cell: A maximum amount of ₹50 lakhs was earmarked.  
*Status:* Action taken
7. Maintenance of capital equipment and operation of these facilities: This will be supported by IC&SR initially for a value of ₹25 lakhs. The amount will be used for hiring 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 in the near future.  
*Status:* Twenty-three projects with a total value of ₹113 lakhs

### R&D awards

Sl. No.	Principal Investigator	Title	Value (lakhs of ₹)
1	Arockiarajan A.	Institute Research and Development Junior-Level Award	20.00
2	Arun K. Tangirala	Institute Research and Development Junior-Level Award	20.00
3	Madhulika Dixit	Institute Research and Development Junior-Level Award	20.00
4	Rajagopalan A.N.	Institute Research and Development Mid Career-Level Award	30.00
5	Sujith R.I.	Institute Research and Development Mid Career-Level Award	30.00
6	Sundargopal Ghosh	Institute Research and Development Mid Career-Level Award	30.00
7	Ashok Jhunjhunwala	Institute Research and Development Senior-Level Award	40.00

### Research scholar innovation projects

Sl. No.	Mentor	Students	Title	Value (lakhs of ₹)
1	Madhulika Dixit	Rathnakumar K.	Lease of Life From Leftovers	5.20
2	Sanjib Senapati	Debostuti Ghosh Dastidar, Akhil Pratap Singh Chauhan, Md. Homaidur Rahman, Dibbendu Ghosh	A New-Generation Nucleic Acid Storage Medium Based on Hydrated Ionic Liquids	3.00
3	Kavitha Arunachalam	Pragyan P. Patnaik, Nivitha M.R., John Abraham	Non-destructive Testing of Bituminous Pavements Using Electromagnetic Techniques	5.00
4	Anil Prabhakar	Guru Venkat	Synchronised Pump-Probe Generation from Wavelength-Stabilised Mode-Locked Fibre Lasers	8.50
5	Sujatha Srinivasan	Ganesh Bapat, Nitin Kamble, Akshay Baviskar	Exercise Machine for Users with Lower Limb Disabilities	3.30

## Exploratory research projects

Sl. No.	Principal Investigator	Title	Value (lakhs of ₹)
1	Ramakrishna P.A.	Development of a Backpack Rocket Motor	10.00
2	Rayala Suresh Kumar	Exploring the Therapeutic Potential of RUNX3 Peptide Conjugate in In Vitro, In Vivo and Pre-clinical Models of Human Cancers	10.00
3	Athi Narayanan N.	Qualifying the Dynamic, Thermodynamic and Functional Effects of Surface Electrostatics in the Folding of a Mini Protein	10.00
4	Anju Chadha	Probing Inhibitors of <i>Candida</i> Species: Studies on Some Fused Heterocyclic Compounds	7.50
5	Raghunathan Rengaswamy	Next-Generation Green Energy Conversion Devices	10.00
6	Muraleedharan K.M.	Platinum-Loaded Foldamers as New-Generation Cancer Chemotherapeutic Agents	10.00
7	Edamana Prasad	Can Self-assembled Lower-Generation Dendritic Gels Act as a Drug Carrier?	10.00
8	Ravindra Gettu	Study of the Long-Term Behaviour of Fibre-Reinforced Concretes for Tunnel Linings and On-Grade Applications	10.00
9	John Ebenezer Augustine	Exploring the Foundations of Inexact Computing	7.50
10	Shankar Ram C.S.	A Collision Avoidance System for Heavy Commercial Road Vehicles	7.00
11	Anil Prabhakar	MyDrive: A Wheelchair-Accessible Electric Vehicle	10.00
12	Santhosh Abraham	The Making of Psychiatric Institutions in British Colonial South India	7.00
13	Jayanthan	Exploring Graph Products Via Commutative Algebra	9.00
14	Dhiman Chatterjee	Experimental and Numerical Investigation of Ultrasonically Excited Encapsulated Microbubbles Inside Flexible Tubing	10.00
15	Amitava Ghosh	Ultrasonic-Assisted Finish Grinding of Ceramic Under Nano-SQCL Environment	10.00
16	Varunkumar S.	Development of a Stirling Engine: First Step for Micro CCHP Systems Using Biomass and Solar Energy	10.00
17	G. Arun Kumar	Social Return on Investments (SROI) for SHG-Linked Microfinance Initiatives	10.00
18	Vijayalakshmi V.	Integral Education: Towards a Holistic Perspective of Teaching, Learning and Education at IIT Madras	3.50
19	Birabar Ranjit Kumar Nanda	Long-Range Magnetic Ordering in Graphene	8.50
20	Sivarama Krishnan	Realising a Petahertz (PHz) Signal Scheme and Metric: At the Ultimate Optical Signalling Limit	10.00
21	Santhosh P. Nagappan Nair	Novel Ferroelectrics in Rudlesden-Popper Structures: Rotation-Driven Ferroelectricity	10.00
22	Jayeeta Bhattacharyya	THz Spectroscopic Studies of Organic Semiconductors	10.00

## New Faculty Initiation Grant

Sl. No.	Principal Investigator	Title	Value (lakhs of ₹)
1	Arun K. Thittai	Biomedical Ultrasound Imaging	5.00
2	Saumendra K. Bajpai	Cell Mechano-sensing in Engineered 3D Collagen Matrices	5.00
3	Shantanu Shashikant Mulay	Multi-scale Modelling of Granular Materials	5.00
4	Niket S. Kaisare	Multi-scale Modelling Analysis and Control of Reacting Systems for Energy Applications	5.00
5	Mathava Kumar S.	Environmental Engineering/Biotoxic-Emerging Contaminants Removal	5.00
6	Sayan Ranu	Knowledge Discovery and Data Mining	5.00
7	Meghana Nasre	Algorithms and Graph Theory	5.00
8	Rajsekar Manokaran	Cloud Security and Machine Learning	5.00

Sl. No.	Principal Investigator	Title	Value (lakhs of ₹)
9	Chester Dominic Rebeiro	Side Channel Attack-Resistant Systems for Cloud Computing Frameworks	5.00
10	Anil Kumar Meena	Lightweight Alloys for Automotive Applications	5.00
11	Sundararajan Natarajan	Computational Modelling of Crack Propagation in Coupled Thermo-Hydro-Mechanical Problems	5.00
12	Sathyan Subbiah	Glancing Angle Vibrations to Improve Surface Finish in Single-Point Diamond Turning	5.00
13	Sourav Rakshit	Analysis of Human Motions Based on Multibody Mechanics and Trajectory Optimisation	5.00
14	Mayank Mittal	Performance and Combustion Characteristics of an Internal Combustion Engine with Different Fuels	5.00
15	Tiju Thomas	Complex Oxides and Oxynitrides	5.00
16	Geetha M.	Research on Consumer Behaviour, Retailing and Social Marketing	5.00
17	Varisha Rehman	Role of CSR in Influencing Food Choice in India	5.00
18	Tarun K. Chandrayadula	Ocean Acoustics, Propagation Modelling, Signal Processing	5.00
19	Jayeeta Bhattacharyya	Ultrafast Spectroscopy, Semiconductors, THz	5.00
20	Prabha Mandayam	Quantum Information and Quantum Computing	5.00
21	Sivarama Krishnan	Attosecond and Femtosecond Dynamics: Nanoscale Physics	5.00

#### One team project of significance

Sl. No.	Principal Investigator	Title	Value (lakhs of ₹)
1	Basavaraja Madivala Gurappa	Centre for Research on Soft Matter	200.00
2	Ravindran B.	Interdisciplinary Laboratory for Data Sciences	198.00

#### Maintenance of capital equipment and operation of these facilities

Sl. No.	Principal Investigator	Title	Value (lakhs of ₹)
1	Lakshmana Rao C.	Bi-axial (Dynamic) Test System	2.50
2	Velmurugan R.	Four Universal Testing Machines (UTMs)	2.00
3	Gopalakrishna A.	Fluorescence Spectrometer, FPLC and UV Spectrometer	6.32
4	Baskar R.	Nikon Microscope, Leica Microscope and Optika Microscope	1.10
5	Anju Chadha	GCMS-QP2010 Ultra	3.00
6	Rayala Suresh Kumar	qPCR Machine (ABI 7500) from Applied Biosystems	3.88
7	Baskar R.	Convion Chambers, Three Percival Chambers, etc.	2.50
8	Ramanathan S.	Water Purification Facility (MilliQ Integral)	1.30
9	Ravikrishna R.	Gas Chromatography–Mass Spectrometry (GC-MS)2	1.15
10	Raghuram Chetty	High-Resolution Scanning Electron Microscope (HR-SEM)	5.16
11	Vinu R.	2D-Gas Chromatograph–Mass Spectrometer (2D-GC/MS)	1.70
12	Shiva Nagendra S.M.	Air Quality Monitoring Equipment	5.00
13	Radhakrishna G. Pillai	Technician for IIT Madras—Lafarage Laboratory	3.40
14	Balaji Srinivasan	Excimer Laser	2.00
15	Shunmugam M.S.	Five-Axis CNC Ultra Precision Machining Centre (Kern EVO, German make)	2.00
16	Ramesh Babu N.	CNC Abrasive Water Jet Cutting Machine, CNC Laser Cutting Machine, CNC Press Brake Machine	2.50
17	Krishnan Balasubramaniam	X-Ray Computed Tomography System	2.64
18	Srinivasa Rao Bakshi	AMC for SPS, XRD and NI	10.00
19	Bhattacharya S.S.	X-Ray Photoemission Spectroscopy (XPS)	17.50
20	Ramachandra Rao M.S.	Spares, TEM Tip and Computer Systems	15.38

Sl. No.	Principal Investigator	Title	Value (lakhs of ₹)
21	Dillip Kumar Satapathy	Maintenance and Smooth Operation of Two X-Ray Diffractometers	5.50
22	Ramaprabhu S.	BET, Zeta Potential Analyser, etc.	11.00
23	Sankaranarayanan V.	Low-Temperature Physics Lab	5.40

### Completed Research Fund projects

#### Maintenance of capital equipment and operation of these facilities

Sl. No.	Principal Investigator	Title	Value(lakhs of ₹)
1	Ravikrishna R.	HRSEM	5.66
2	Karunakaran D.	Cell Lab Quanta SC MPL System	1.84
3	Sankaranarayanan V.	Project Technician for Maintenance of Equipment in Low-Temperature Lab	3.60
4	Bhattacharya S.S.	X-Ray Photoelectron Spectrometer (XPS), High-Resolution TEM, High-Resolution SEM; Atomic Force Microscope at NFMTC	12.89
5	Shiva Nagendra S.M.	Specimen Samplers, Meteorological Station, Dust Monitor	3.00
6	Sudakar Chandran	Inert Glove Box	2.20
7	Aravind G.	Turbo Molecular Pump	3.80

### Exploratory research projects

Sl. No.	Principal Investigator	Title	Value (lakhs of ₹)
1	Karunakaran D.	Identification of miRNAs Targeting HMG Proteins for Cervical Cancer Therapy	10.00
2	Karthik Raman	Engineering a Consortium of Microbes for Production of Bio-ethanol	5.00
3	Nitish Ranjan Mahapatra	Generation of Novel Bioactive Peptides	5.00
4	Vignesh Muthuvijayan	Cloning and Transfection of an Endothelial Cell-Specific Construct to Enhance Hypoxia-Regulated Overexpression of Angiogenic Factors	5.00
5	Gopalakrishna A.	Mechanism of Activation and Signal Transduction of APJ Receptor, a Cardiac G Protein Coupled	5.00
6	Ravikrishna R.	Investigation of Surface Mechanism Influencing the Release and Deposition of Bioaerosols from Solid Surfaces	10.00
7	Ashis Kumar Sen	Investigation of Fluid–Structure Interaction Through Deformable Microchannels	5.00
8	Seshadri Sekhar A.	Development of Journal Bearings with Smart Fluids	7.00
9	Amal Kanti Bera	Targeting Mitochondrial Voltage-Dependent Anion Channel (VDAC) for Cancer Therapy	8.00
10	Kavitha Arunachalam	Can Microwave Radiometry be Used for Breast Cancer Imaging?	10.60
11	Sandipan Bandyopadhyay	A Study of the Mechanics of the Sitar String	9.55
12	Sankara J. Subramanian	Digital Image Correlation Studies at High Magnification: An Exploratory Research	8.90
13	Varisha Rehman	The Need for Entertainment Marketing and Its Impact on Consumer Behaviour	3.50
14	Nirmala R.	Electrical Transport Studies of Novel, Bulk and Thin Films of Colossal-Dielectric Constant Oxides	9.75

### 6.2.12. Innovative Student Projects

Sl. No.	Mentor	Student	Title	Value (lakhs of ₹)
1	Prabhu Rajagopal, MEE	S. Pavan Santhosh Kumar, Shagun Agarwal, Sunil Sulania	Control and Tethered Navigation for Submersible ROV	1.5
2	Prabhu Rajagopal, MEE	S. Shiva Saketh, Sibi George, Anupam Chandra	Design of Thrusters for Submersible ROV	2.00



Sl. No.	Mentor	Student	Title	Value (lakhs of ₹)
3	Anatha Krishnan, ELE	Pratapa V.S. Sasanka	A Low-Cost Maskless Projection Photo Lithography System for Micron-Scale Fabrication	1.90
4	S. Soundarapandian, MEE	Sidharth Ganesh	Designing a Cost-Effective Point-by-Point 3D Printer for Fabrication of Magnesium-Based Porous Custom Orthopaedic Implants	1.00
5	Christoph Woiwode, HSS (IGCS)	Sai Tejo Kiran, Rachit Kumar	City Alert	0.50
6	Ranjith Mohan, ASE	Prithish Seth	Rotary-Baffled Synchronous Engine	0.90
7	A. Gopala Krishna, BIO	H.S. Harisankar	Human Recombinant Cripto as a Therapeutic Protein for Cancer	1.0
8	R. Baskar, BIO	Varsha Venkatarangan	Using Dictyostelium as a Model to Know How Adenosine and its Antagonist Caffeine Alter the Cell Cycle Phases: Relevance in Cancer Treatment	1.0
9	M. Joel George, ASE	Aditya Malpani, Siddharth Ahuja, Abhishek Shandilya	Autonomous Path-Planning Multicopter with Obstacle-Avoidance	1.50
10	Sujatha Srinivasan, MEE	Mudium Vidyadhar, Maduri Vydhehi	Mobility Device for Children with Cerebral Palsy (Saathi Walker)	0.50
11	Sujatha Srinivasan, MEE	S.D. Karthikeyan, Sripriya Kalidoss, S. Sunil Henry Roger	Affordable Motorised Wheelchair	0.75
12	G. Aravind, PHY, P.C. Deshmukh, PHY	Vinayak Vinod, Ankur Mandal	Stern-Gerlach Experiment: Realisation of Space Quantisation, Spin and Validation of the Quantum Entanglement	1.63
13	M.M. Mayuram, MEE	Sanket Tilekar, Pritam Garud, Anand G. Deshmane	Coconut Plucker	0.20
14	P. Sriram, ASE	Ratnakar Alkanti, Anup Borade, Sunil Simha	Autonomous Observatory at IIT Madras**	0.90
15	Sathyanarayanan N. Gummadi, BIO	Akshit Salecha	Development of Caffeine Sensors	1.0
16	Nitin Chandrachoodan, ELE	Arvind Narayanan, Gagan Khandate, Akhil L.B., Saathvik D.P.K.S., Sripriya Kalidoss, Ashish Mohan Sharma, Aditi Singh, Manudeep Chowdhary, Suraj Kashyap, Vishwa Sai Prathyusha, Ahmed Ansari, Vinay Kale, Ekansh Verma, Surya Pavan Pynda	Intelligent Ground Vehicle (IGV)	2.65
17	Sandipan Bandyopadhyay, EDD	Amey Pednekar, Mohsin Vindhani	Refreshable Braille Display Device	1.00
18	Lakshminarasamma, ELE	A.C.V. Ramana Reddy	Solar Interface for Low-Voltage and High-Voltage DC Loads	0.90
19	Anil Prabhakar, ELE	M. Sailendra, Rohit Dharavath, S. Sai Surya Teja	Smart Home Controller	0.80
<b>Grand Total</b>				<b>21.63</b>

### 6.2.13. Positive Messaging and Outreach Programme

A new initiative of positive messaging from IIT Madras was initiated. A startup company, Y'rs Intuitions, has been requested to coordinate the creation of different Net-based avenues for 'ReachIITM' and reaching out to the various stakeholders of IIT Madras. A monthly e-newsletter campaign has been initiated. In this effort the following sites have been created and managed:

- Facebook ([www.facebook.com\reachIITM](http://www.facebook.com/reachIITM))
- Twitter ([www.twitter.com\reachIITM](http://www.twitter.com/reachIITM))
- YouTube ([www.YouTube.com\reachIITM](http://www.YouTube.com/reachIITM))

IIT Madras participated in the India-US Technology Summit and Exhibition Knowledge Expo 2014 (18–22 November 2014) at India Expo Mart, Greater Noida, Delhi, jointly organised by CII and DST.

IIT Madras participated in the Seventh Bangalore INDIA NANO 2014, at Bangalore, and won the Best Exhibitor Award for Innovative Display.

#### **6.2.14. Other Information**

1. An expert committee chaired by Dr. Anil Kakodkar visited IIT Madras on 15 April 2014 for a review of the proposal titled 'Advanced Manufacturing Research Centre'.
2. A meeting of the ISRO–IIT Madras Space Technology Cell was held on 12 August 2014.
3. A meeting was held on 19 August 2014 with the Centre for Fire, Explosive & Environment Safety, DRDO, Ministry of Defence, Delhi to discuss the 'Design and Development of Active Barriers for Hardened Structures'.

## Annexure 1

### SOCIALLY RELEVANT PROJECTS (SRP) PROGRAMME

The Socially Relevant Projects (SRP) Programme, which was started in 2003, with an initial grant of ₹10.0 lakhs from IIT Madras, is over the years being supported by funds received from IIT Madras alumni. In 2011, in honour of Prof. M.S. Ananth who was retiring as Director that year, the alumni of IIT Madras established the M.S. Ananth Endowment Fund. The interest from this fund, along with other contributions from alumni, is now used to fund projects under the SRP scheme. In 2014, five new projects were funded under this scheme for a period of 1 year. The following is a summary of the ongoing and recently completed projects.

A project titled 'Engineering Can Be Fun: A Workshop to Impart an Engineering Understanding to School Children' was proposed by Dr. M.S. Sivakumar (Applied Mechanics) and Dr. G. Balaganesan (Central Workshop). The project's aim is to create interest in engineering, with an emphasis on suburban and rural school children. During the last year, six 4-day workshops were conducted for a total of 185 students. The children (13–15 year olds) were exposed to a concept or hands-on training on certain tools. They were then allotted to groups, with three or four students per group, to come up with simple ideas using either the concept they had learned or the tool they had learned to use. The activities involved woodworking, electrical circuits for games, pneumatics, etc. The workshops provide the children an opportunity to get hands-on skills, and at the same time they create an interest in studying engineering.

A project proposed by Dr. Basavaraja and Dr. Sridharakumar Narasimhan (Chemical Engineering) targets community health through a women's cancer screening programme. The main objectives that will be implemented through this proposal are the development of advanced image processing techniques for rapid diagnosis, use of mobile devices by health workers for cytoscreening (pap smears) and development of cloud-based solutions for rapid and low-cost diagnosis. Towards this end, MATLAB-based algorithms have been developed for ellipse detection, and proof-of-concept testing has been done. Various machine learning techniques are being used for classification and recognising features of cervical cells to support screening and diagnosis, and a rudimentary Web platform has been developed for uploading and curating images for cloud-based diagnosis.

Dr. Srinivasa Chakravarthy (Biotechnology) proposed a project to publish science books at the high-school level in regional languages (Telugu and Tamil) and donate them to village school libraries. Six books were proposed, on topics such as exploration of space and the human body. All six have been translated into Telugu, and four of them have been printed. Drafts of the Tamil translations are expected to be ready in a month's time. Dr. Chakravarthy's work was featured in the Tamil newspaper *Dinakaran* on 24 May 2015.

A project titled 'Tactograph' was proposed by Dr. Anil Prabhakar (Electrical Engineering). Its objective is to develop and refine a fully functional low-cost portable device that can dynamically and easily create tactile images from computer graphics for children with visual impairments. A new prototype has been created, and feedback on its output has been obtained through surveys conducted in some schools for the visually impaired. A second prototype is ready, and tooling has been completed for production. The project is on target to produce the Tactograph and distribute it at affordable prices to organisations with a significant number of persons with visual impairment.

A project titled 'Public Participatory Irrigation Water Management' is being investigated by Dr. Palaniappan Ramu (Engineering Design) and Dr. K.P. Sudheer (Civil Engineering). The project aims to develop a GIS-based platform for collecting water-related information and developing a database. So far, samples from a test area in Thenur have been obtained and tested for water infiltration, clay content, etc. The Aquacrop crop simulator software package and meteorological data are being used to simulate crop patterns.

A review of the projects funded in 2013 was conducted in July 2014. Some had been completed, and some were granted extensions of 6–12 months. 'HuMotor: A Humane Way to Utilise Human Efforts at a Workplace' is one project that has been completed. It was proposed by Dr. Sandipan Bandyopadhyay, Dr. G. Saravana Kumar and Dr. Palaniappan Ramu, of the Department of Engineering Design. The HuMotor (acronym for 'Human-Powered Motor') is a device that essentially converts human effort, harnessed in the form of stair-climbing motion of the legs, into unidirectional rotation of a pulley, from which power can be tapped to perform tasks such as lifting of materials. The third prototype of the HuMotor was designed and built as part of this project, and some studies were conducted on its.

A project titled 'Improving Supply Chain Efficiency for Food Security' was also completed last year. The project investigators were Dr. Usha Mohan and Dr. R.K. Amit, from the Department of Management Studies, IIT Madras. The project studied different supply chain formats for fruits and vegetables in Chennai and attempted to gain a better understanding of price variations and their relationship to wastage.

Dr. Pijush Ghosh (Applied Mechanics) completed a project titled 'A Student in Teacher's Role in Rural Schools: A Pilot Study of the (C-minus-4) Model'. As part of this project, a 4-day workshop was conducted at IIT Madras and 18 students were trained so that they (the C students) could teach classes for students four years junior to them (the 'C-minus-4' students). The post-workshop progress was monitored using surveys for the C and C-minus-4 students, and their parents. The C students mentioned that this additional teaching responsibility helped them in many ways, including improving their communication skills. Most of the C-minus-4 students reported that the C students were friendly and taught in a nice and systematic way. The parents of the C students mentioned that they found a very positive change in their kids since they started teaching, and they wished that this project would continue. This project was a good pilot study and helped understand the strengths and limitations of the model.

The project titled 'Development of an Exoskeleton to Enable Enhanced Mobility for a Differently-Abled Person', proposed by Dr. Prathap Haridoss (Metallurgical and Materials Engineering) was extended for a year and is going on. Some initial designs were analysed, and it was found that they restrict the gait of a user. A new mechanism has been identified and implemented that enables a user to use the natural swing of the upper arms to guide the legs during walking, and an additional control using the palm of the hand has been provided that enables bending of each knee independently, to the extent desired by the user. The new exoskeleton has been assembled partially and is expected to be completed shortly.

Some data collection has been done for the project titled 'Enhanced Agricultural Decision Support System Using GIS' by Dr. Palaniappan Ramu (Engineering Design) and Dr. M.S. Sivakumar (Applied Mechanics). This project was also extended by a year.

The project 'Development of a Standing Wheelchair', proposed by Dr. Sujatha Srinivasan (Mechanical Engineering), was extended by a year and will be completed shortly. Additional funding from the institute's Distinguished Alumnus Dr. Prakash Keshavaiah enabled Vivek Sarda (ME DD graduate) to stay back after graduation to work on this project full-time. Vivek's work resulted in a new robust prototype that has so far been tested with about 40 users with spinal cord injuries. The feedback received is very positive. Significant funding has now been secured from an overseas organisation, on the basis of the initial work, to work with an industrial partner towards commercialising an affordable standing wheelchair.

Another project, 'Mobile Eye Surgical Units', initiated in 2011 is continuing. The project investigators are Dr. Mohanasankara Sivaprakasam, Dr. V. Jagadeesh Kumar and Dr. V. Jayashankar (Electrical Engineering). The project has been a grand success with the pilot phase (~500 surgeries in rural areas), the first of its kind in India, and has garnered a great amount of goodwill amongst several sections, including our alumni. Surgeries are being conducted in the mobile unit and will continue for a few years.

## Annexure 2

### RURAL TECHNOLOGY ACTION GROUP (RUTAG), IIT MADRAS

RUTAG completed a number of projects in the reporting period:

#### 1. Improvement of the crack resistance of Athangudi tiles

Athangudi tiles are exclusive and artistic tiles made by hand near Madurai. The tiles used to crack frequently. The cracking problem has been addressed by suggesting improvements to be implemented in the technology.

#### 2. Making microwave oven-compatible red clay products

Red clay pots are made by village artisans. As a value addition proposal, development of microwavable pottery was taken up with the help of CGCRI, Kolkata. A pilot plant is expected to come up near Nagercoil.

#### 3. Grey water treatment plants and monitoring water quality for small- and medium-scale units

A pilot project for treatment of grey water using the phytoremediation technique was developed and commissioned at Vivekananda Kendra. The findings were demonstrated at their premises, and data are being collected. The project has potential for multiplication in places where there is no underground sewage system.

#### 4. Pedal-operated loom

A pedal-operated loom of improved efficiency was developed for the Khadi and Village Industries Board (KVIB), Kerala. KVIB is expected to place an order for 100+ looms in the coming financial year.

#### 5. Palm tree climber (manual)

A well-designed, light and safe palm tree climber has been developed. Work on multiplication is going on. In addition, RUTAG has been working on a number of projects:

##### (1) Charcoal from velikatan (*Prosopis juliflora*)

*Prosopis juliflora* grows abundantly in southern Tamil Nadu. An efficient pyrolysis process has been developed at IIT Madras. This process is expected to improve the yield and reduce pollution. It is also safer.

##### (2) Manual water filtration

A reverse osmosis water filter system using a stationary tricycle has been developed. This is expected to remove dissolved solids, bacteria and colour.

##### (3) Development of loom for Pathamadai mats

A special handloom has been developed to reduce drudgery and improve the productivity of the women weavers of Pattamdai. The loom is being tried out.

##### (4) Palm tree climber (mechanised)

This project was taken up at the request of the Commissioner for Khadi and Village Industries (CKVI) to help tree climbers cover a greater number of trees and bigger farms.

##### (5) Pedal-operated *charkha*

This project was undertaken at the request of the KVIB to help women spinners spin yarn and to improve their productivity.

##### (6) Procedure for closure of abandoned borewells

This was taken up at the request of the Tamil Nadu Fire and Rescue Service Department to develop a procedure for closing abandoned borewells. This procedure will minimise accidents.



**Project Report: April 2013 to March 2014**  
**Centre for Social Innovation and Entrepreneurship (CSIE)**

**Indian Institute of Technology Madras**



**IIT Madras - CSIE**  
(Center for Social Innovation & Entrepreneurship)

Sponsored by alumni of the 1982, 1984 and 1986 batches



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## 1. Introduction

The Centre for Social Innovation and Entrepreneurship (CSIE) at IIT Madras was founded in August 2010 with a focus on teaching and research related to social enterprise in India. It aims to bring together the innovation and entrepreneurship aspects of IIT Madras by creating knowledge and understanding that will be relevant to the problems that the poor in India face.

### 1.1. Mission

To build an environment that will facilitate the creation of social enterprise knowledge through research and empower students to apply their entrepreneurship abilities to developing solutions for greater social impact through academia

This is achieved by:

- *Education.* Offering academic programmes on social innovation and entrepreneurship for students across disciplines and degrees at IIT Madras
- *Research.* Providing an enabling environment for both student and faculty researchers interested in social enterprise research within the IIT campus
- *Catalysing innovation.* Encouraging young innovators and entrepreneurs by assisting with the development of socially beneficial products and ideas
- *Collaboration.* Creating an ecosystem that extends to other technological institutions including IITs

### 1.2. CSIE seeks to distinguish itself through

- Its focus on delivering social enterprise knowledge, primarily to engineering students, with the aim of developing their ability to develop and deliver technology solutions that create social impact; and
- Its focus on academic research that will seek to address problems exclusively within the Indian context.

The Centre for Social Innovation and Entrepreneurship (CSIE) focuses on two fronts:

- (a). *Education about social enterprises.* It is widely recognised that if the poor are to pay for innovative products and services being developed by social enterprises, these products and services need to be designed for affordability. Academic institutions have a strong role to play in educating the scientists of tomorrow with the knowledge and skill needed to design and innovate for affordability.
- (b). *Contributing to existing literature about social enterprise.* The social enterprise sector is still relatively new. There is little common understanding on what constitutes a social enterprise. There is also little information available on what the best ways are to help the sector grow. Academic interest in this sector within India has been limited. Consequently, literature is also hard to come by. It is estimated that in the whole of Asia there are just 25 universities that conduct research on social enterprises. Academic institutions such as IIT Madras have a strong role to play in contributing to the existing literature on the sector, through primary and secondary research methods.

## 2. Governance Structure

The Governance Committee (GC) consists of representatives from the sponsors (the 1984 batch), faculty members of IIT Madras and the partnering agency (Villgro). The members of the GC are:

- R. Nagarajan, Project Coordinator, CSIE, Dean, International and Alumni Relations, and Professor, Chemical Engineering
- Ashwin Mahalingam, Assistant Professor, Civil Engineering
- B.S. Murty, Professor, Civil Engineering
- Devendra Jalihal, Professor, Electrical Engineering
- John Bosco Lourdusamy, Associate Professor, Humanities and Social Sciences
- K.N. Satyanarayana, Professor, Civil Engineering
- L. Prakash Sai, Professor, Management Studies
- L.S. Ganesh, Dean of Students and Professor, Management Studies
- Sandipan Bandyopadhyay, Assistant Professor, Engineering Design
- Sudhir Chella Rajan, Professor, Humanities and Social Sciences
- V.R. Muraleedharan, Professor, Humanities and Social Sciences
- Paul Basil, Founder and CEO, Villgro
- Anand Krishnaswamy, Consultant, The Lemelson Foundation

## 2.1. Staff

- Joseph Thomas, Project Consultant
- James Rajanayagam, Project Consultant
- K. Vijayalakshmi, Project Officer
- Vidhiya Saravanan, Project Associate

## 3. Education

### 3.1. Minor courses in innovation and social entrepreneurship

#### Description

Minor specialisation is an integrated three-semester stream, consisting of four courses (with a choice of two courses), available as electives to students of the B.Tech. and M.A. (Development Studies/English) programmes in their third and fourth years. Students from other degree programmes may also take the courses as electives. The maximum number of enrolments allowed is 40, and the minor is fully subscribed. The minor is a 10-credit programme.

The minor is multidisciplinary, with faculty members from various departments, including the Department of Management Studies, the Department of Humanities and Social Sciences and the engineering departments. Practicing social entrepreneurs and domain experts deliver guest lectures.

The course emphasises two aspects:

1. A theoretical understanding of the business of enterprise and innovation, in particular focusing on its relevance for India's marginalised communities
2. A practical understanding of the establishment and running of an enterprise, including developing appropriate technology, products and business development

Course	Coverage	Output from Students
Social Enterprises in India	<ul style="list-style-type: none"><li>• Theory</li><li>• Case studies</li><li>• Guest lectures by practitioners</li><li>• Rural field visit/visit to SE</li></ul>	Case studies
Product Design and Business Models	<ul style="list-style-type: none"><li>• Problem definition</li><li>• Creative problem solving (TRIZ techniques)</li><li>• Engineering design and prototyping</li><li>• Business models and strategy</li><li>• Entrepreneurship and finance</li></ul>	Business plans
Laboratory (at Centre for Innovation, CFI)	Prototyping Lab	Prototypes
Rural Field Study	Rural visits	Business plans

#### Statistics of the minor courses

Batch	2009–2010	2010–2011	2011–2012	2012–2013	2013–2014	2014–2015
Average student enrolment per course	34	36	40	40	35	40
Student projects						
Course 1	11	14	15	10	12	—
Course 2	7	10	12	9	11	10
Course 3	2	4	7	4	4	—
Course 4	4	3	5	5	3	—
Number of guest lecturers invited for the four courses	20	20	21	24	18	21
Field visits in Courses 1–4	Two visits by the entire class	Two visits by the entire class	Two visits by the entire class	Three visits by the entire class	Three visits by the entire class	One visit by the entire class (to date)

Students of the laboratory course at the CFI Lab worked on projects and developed prototypes such as a bio-sand filter, milk adulteration test kit, haemo-analyser and automatic waste segregation unit. Students of the rural field study course prepared business plans after visits to villages (handmade products, community centres and oyster mushroom cultivation). The students gain information through interaction with various stakeholders in villages and social enterprises.

The output of the course 'Product Design and Business Model' consists of a proof of concept (PoC) and a business plan of 10 projects, including Trauma Care, Universal Toilet Coverage, Ergonomic Chair and Scientific Farming.

## 4. Activities

### 4.1. Events

#### 4.1.1. *Camp on social innovation through technology for school students*

CSIE conducted two 'Social Innovation through Technology' camps for school students, one in summer and one in the winter. The 5-day summer camp was conducted from 12 to 16 May 2014 in association with T.V.S. Srinivasan Services Trust, and the 3-day winter camp was held from 14 to 16 January 2015 at IIT Madras. The camps were designed to create awareness about the role of technology and entrepreneurship in solving socially relevant issues. About 140 students from private and government schools in Tamil Nadu participated.

Prof R. Nagarajan, Dean I&AR inaugurated the programmes and dwelt on the objectives and nature of the camps. Faculty members from IIT Madras and social entrepreneurs gave talks on topics such as social issues, innovation and technology, nurturing creativity, entrepreneurship and engineering in everyday life. On the final days of the valedictory programmes, certificates were given to all the students by Prof. R. Nagarajan. At the end, students presented what they had learned, feedback about the programme and ideas about their future courses of action.

#### 4.1.2. *Faculty Development Programme on creative pedagogy*

CSIE and Tagore Engineering College organised a Faculty Development Programme, 'Creative Pedagogy: Fostering Student Creativity and Innovation', at IIT Madras on 28 November 2014. Fifty-five faculty members from 19 colleges participated. The programme was inaugurated by Prof. R. Nagarajan, Dean I&AR, IIT Madras. The morning session was covered by Prof. L.S. Ganesh and Prof. Mahesh Panchagnula, from IIT Madras, who gave talks titled 'Understanding technological innovation and creativity' and 'My experiences with student innovations', respectively. In the afternoon, the Workshop on Nurturing Creativity was conducted by Mr. Sivasubramanian, Founder, Paperclip. This was followed by a visit to the Centre for Innovation (CFI) lab at IIT Madras. Dr. P. Kasinatha Pandian, Principal, Tagore Engineering College, presided over the valedictory function. Finally, certificates were issued to the participants.

#### 4.1.3. *Idea Spark: Grand Finale*

CSIE conducted the Grand Finale of Idea Spark 2014 on 10 January 2015 at IIT Madras. Twenty-two teams from seven engineering colleges in Tamil Nadu, including IIT Madras, participated. In the morning session, Prof. Ashwin Mahalingam gave a talk titled 'How to identify an entrepreneurial opportunity'. In the afternoon, 22 teams presented their ideas before the jury panel, which included Mr. L. Kannan, Founder and CTO of Vortex Engineering Private Limited, Prof. Devendra Jalihal, from IIT Madras, and Mr. Joseph Thomas, VP, International Development Office, IIT Madras. The top three ideas were selected. Prof. R. Nagarajan, Dean I&AR, gave the valedictory speech and distributed certificates and cash prizes.

#### 4.1.4. *Talk on art of business-building*

CSIE, in association with Shaastra 2015 (annual technical festival of IIT Madras), organised a talk titled 'Art of business-building' on 4 January 2015 at IIT Madras. Mr. Arul Dev, Founder, People First, delivered the keynote address, 'Role of entrepreneur in building thriving organisations', and Mr. Kedar Kulkarni, Founder, Hyperverge, spoke about his entrepreneurial journey. About 50 people participated and interacted with the speakers.

#### 4.1.5. *CSIE and National Association of Social Enterprises (NASE): Impact metrics*

CSIE, in partnership with the National Association of Social Enterprises (NASE) conducted a workshop to understand how companies capture and track the change that is occurring or has occurred as a result of their work. As a

first step, social entrepreneurs were invited to answer a short questionnaire. The findings were shared at a round table featuring academics, investors and social enterprises on 1 December 2014 at Ashoka Office, Bangalore. Mr. Joseph Thomas was a facilitator for the session 'Impact Metrics: View from the Ground', in which the focus was on the challenges faced and the future course of action. Ms K. Vijayalakshmi and Ms Vidhya Saravanan from CSIE attended the conference.

#### 4.1.6. *Brainstorming session between Tamil Nadu State Rural Livelihood Mission (TNSRLM) and Rural Technology and Business Incubator (RTBI)*

CSIE organised a brainstorming session for the companies incubated under RTBI with TNSRLM on 18 July 2014. Ms Mythili K. Rajendran, IAS, Managing Director, TNSRLM, presided over the meeting. The programme was organised to improve the understanding about the activities undertaken by TNSRLM and the incubated companies of RTBI in the non-farm products domain and to explore opportunities for collaboration. The incubated companies described the uniqueness of their products and services and the benefits they gave rural communities. The meeting ended with Mr. Joseph Thomas, Project Consultant, CSIE, delivering the valedictory address and a commitment by TNSRLM and RTBI to meet again for more detailed discussions in September 2014.

#### 4.1.7. *Seminar on innovation and entrepreneurship*

In association with CSIE and Deshpande Foundation, the Centre for Entrepreneurship Development from Karnataka Law Society's Institute of Management Education and Research (KLSIMER) conducted a seminar, 'Innovation and Entrepreneurship', along with a business plan competition. About 200 students attended the seminar, and CSIE played the role of the knowledge partner. The event was organised over 2 days (8 and 9 May 2014) at KLSIMER, Belgaum. Prof. L.S. Ganesh, IIT Madras, delivered the keynote address, 'Basic concepts of social entrepreneurship', and Ashwin Mahalingam, Assistant Professor, IIT Madras, gave a speech, 'Business plan writing'.

#### 4.1.8. *Workshop on corporate social responsibility*

CSIE and KLSIMER, in association with TiE, Hubli, conducted a workshop, 'Corporate Social Responsibility', for entrepreneurs, teachers and students on 27 September 2014 at KLSIMER, Belgaum. Around 100 entrepreneurs from north Karnataka participated. The workshop aimed at helping the companies recognise CSR and introduce it in their core business objectives. Mr. R.S. Balasubramanyam, Head, CSR, Aditya Birla Nuvo Limited, inaugurated the workshop. Dr. M.P. Ganesh, Professor, IIT Madras, spoke on the topic 'CSR as stakeholder management'. Mr. Joseph Thomas, CSIE, gave a presentation titled 'Role of academic institutions in supporting CSR initiatives'.

## 4.2. *Networking and Collaboration*

- Universities and Councils Network on Innovation for Inclusive Development in Southeast Asia (UNIID-SEA) Project Advisory Committee Meeting, 25–26 July 2014, Manila, The Philippines, and 7 November 2014, Jakarta, Indonesia.
- UNIID-SEA launched the IID Fellows Programme on 27 July 2014, in which Mr. Joseph Thomas was selected as an IID module/course reviewer for the programme.
- Participated in Artha Venture Challenge 2014 as a jury member on one of the panels
- Participated in the conference 'Assistive and Rehabilitation Technologies', with the theme of inclusive technologies for an improved quality of life, organised by Tamil Nadu Technology Development and Promotion Centre of Confederation of Indian Industry (CII) on 22 August 2014 in Chennai.
- Participated as a social coach for the 'eBay Inc. Opportunity Hack' event, conducted by Paypal in Chennai on 11 October 2014
- Participated in the Rural Technology Action Group (RuTAG) Advisory Committee Meeting on 18 November 2014 as external consultant at IIT Madras
- Participated in UK–India University Dialogue on Social Enterprise, as a panellist and speaker in the session 'Learning Approaches: In and Outside Classroom Leading to Innovation and Stronger Social Economy', 25–26 September 2014, at New Delhi
- Participated in the global conference 'Securing Food for All: Critical Need for Coherence in Policies and Action' organised at New Delhi by the Club of Rome, India, 30–31 October 2014 (CSIE was one of the knowledge partners)
- Participated in 2014 Southeast Asia Conference 'Innovation for Inclusive Development (IID)', Jakarta, Indonesia, 5–6 November 2014. Mr. Joseph Thomas chaired two sessions, 'Open Education and Open



Access as Pathways to Inclusive Development’ and ‘IID Teaching and Learning Packages: Water, Sanitation and Health’. He was also a panellist in the session ‘What Next: UNIID-SEA Project Advisory Committee Perspectives’.

- Participated as a member of the interview panel for recruiting Junior and Senior Research Fellows (JRF/SRF) for the project titled ‘Development of Healthy Villages Using Eco-WASH Initiatives’, which was sanctioned by the Department of Science and Technology—NCSTC on 9 December 2014.
- Participated in the networking reception organised by the British Council on 6 February 2015 in Chennai
- Participated in the networking dinner organised by Ashoka on 7 February 2015 in Chennai, where they shared their ideas and work towards creating a common space for learning and growth in Chennai
- Participated in the ‘UK–India University Dialogue on Social Enterprises’, organised by the British Council from 10 to 14 February 2015 in London

#### Other meetings

- Mr. Nigel Majakari, CEO, Chilasa Venture Philanthropy Limited met Prof. R. Nagarajan at Geneva on 6 September 2014
- Participated in the international conference ‘Social Entrepreneurship and Sustainable Development’, organised by the Centre for Social Entrepreneurship, School of Management and Labour Studies, Tata Institute of Social Sciences, between 4 and 7 February 2015 in Mumbai
- Participated in the launch of IvyCamp, an entrepreneurship development platform connecting institutes and alumni of premier institutes on 13 February 2015 at Mumbai
- Technology Business Incubator (TBI) of Vellore Institute of Technology, Vellore conducted a technology-based entrepreneurship development programme on food processing. Mr. James Rajanayagam, from CSIE, was invited to handle a session, ‘Opportunities and Challenges in the Food Processing Sector’, on 19 February 2015.

#### 4.3. Research Papers

1. J. Thomas, G. Melles, B. Kuys and C. Ranscombe. 2014. Social entrepreneurship with design in southern India: Lesson for Australia. *Indo-Dutch International Conference on Design*, Indian Institute of Science (IISc), Bangalore, July.
2. J. Thomas and G. Melles. Taking appropriate technology to the market: Stories of social enterprises. *Sixth International Conference on Appropriate Technology (Sixth ICAT)*, Kenya. (Green Economy and Innovation category; selected the best paper)

#### 4.4. Proposals and MoUs

- Tagore Engineering College, Chennai, August 2014
- Swinburne University, Australia, September 2014
- KLSIMER, Belgaum, February 2015
- Vels University, Chennai, March 2015
- Prof. Sujatha Srinivasan (in collaboration with Mr. Joseph Thomas, CSIE) submitted a proposal titled ‘Affordable Standing Wheelchair’ under ‘Affordable Healthcare’, a Wellcome Trust scheme to support R&D in India. The project was approved for a grant of ₹3.08 crores over a 3-year period in November 2014.
- Capacity Building of Producer Companies: Proposal submitted on December 2014
- Entrepreneur Promotion in Engineering Colleges: Proposal submitted on December 2014

### 5. Visitors

#### 5.1. NYU Stern Business School

Through the initiative of Prof Venkat Srivatsan from New York University’s Stern School of Business, CSIE organised a visit to RTBI for his students on 8 January 2015. The incubatees of RTBI–Edsix and Hyperverge had an interactive session with 24 students from NYU. The students also visited CFI at IIT Madras and interacted with team heads of CFI clubs.

#### 5.2. Swinburne University, Australia

Students from the University of Swinburne, led by Prof. Gavin Melles, had a meeting with CSIE to explore possibilities of student teams working on the design challenges faced by social enterprises. The meeting was held on



27 January 2015 at IIT Madras. As a result of the meeting, CSIE has enabled collaboration with a social enterprise for the students to work with in their next term.

### 5.3. Ms Nickala Torkington, UnLtd, UK

CSIE coordinated a visit for Ms Nickala Torkington, UnLtd., UK, and Mr. Jayasingh Solomon, British Council, to RTBI, at IIT Madras Research Park, on 24 September 2014. Ms Suma Prashant, Director of RTBI, welcomed the visitors and highlighted the initiatives at RTBI for rural development over the years. She explained RTBI's mission, activities and achievements. Incubated companies such as Desicrew, Skillveri, Edsix Brain Lab and Guvi presented the work being done by their organisations.

## 6. Management Activities

### 6.1. GC meeting

Regular meetings are being held to monitor the progress and to plan further activities. Minutes of meetings are circulated among the GC members.

### 6.2. Internal documentation

The planning and informational documents on all activities within the centre are maintained and updated regularly. These include documentation of the minor courses, research proposals and events and reporting. *CSIE Newsletter* was started and circulated among various stakeholders.

## 7. Photographs



*Speakers and participants of Faculty Development Programme on Creative Pedagogy*



*Winter camp for school students*



*Idea Spark 2014: Prof. Nagarajan distributing cheques to students from Bannari Amman Institute of Technology who secured the first place*





*MoU exchanged by Prof. R. Nagarajan and Dr. B. Krishnamoorthy, Vels University*



*Prof. Gavin Melles interacting with students during the Product Design and Business Models class*



*UNIID-SEA's Project Advisory Committee (PAC) meeting at Jakarta, Indonesia*

## **A. Programme Initiatives**

### **1. Monthly Open Forum**

After considerable publicity, this programme was conducted on one day each month, generally when students and faculty members are relatively free and there are no other pressing activities, either curricular or extra-curricular. This is open for all students and faculty members. A total of five such programmes were conducted during the period, and the response was very good and encouraging.

### **2. Guest programmes**

Eminent guest speakers in IP are invited to give talks to the faculty and students on various aspects of IP. Each talk is followed by a question-and-answer session. Two guest speakers were invited during this period. The Deputy Controller of Patents was one of the eminent speakers invited. The participation in these two programmes was highly encouraging. A total of 199 students and faculty members attended.

### **3. MS–Ph.D. (orientation programme)**

This was started 2 years back and continues to be a regular feature, conducted twice a year, as and when there is a fresh intake of research scholars. The IPM Cell participated in both the orientation programmes conducted this year, making presentations on patenting possibilities as outcomes of research effort and on the prerequisites for an invention to be fit to be patented. There were a total of 950 participants in the two programmes.

### **4. Workshops (ID6020 and ED1500)**

Workshops are the follow-up action after an orientation programme. The requirements for any invention to be considered for a patent are discussed in detail, including the legal aspects. The participants are also introduced to the 'search' and 'prior art' concepts. A total of four such programmes were conducted, and 850 research scholars participated.

### **5. MS–Ph.D. (comprehensive exam: One to one)**

At the comprehensive stage, one-to-one interactions are held with the research scholars to assess the suitability of inventions for filing patents. Both the general possibility and legal aspects are discussed. Three such programmes were conducted, and nine scholars participated.

### **6. Department interactions about IP**

All the HODs have been informed that the IPM Cell personnel will be happy to visit the departments and have interactions at their premises on any aspect of IP. One such programme was conducted at the Aero Department. The main query from the HOD and scholars was, 'What can we patent and can we not?' The interaction was very cerebral and interesting, and seven scholars and HODs participated in the programme.

### **7. Search ED Department, PD Lab**

A specific request was made by the ED department to conduct 'search' programmes for their PD Lab students. One such programme was held with 50 participants. Conducting a 'search' on the Advanced platform of Google to check for 'Prior Art' was the main issue discussed.

### **8. Interaction at IPM Cell office**

During the foregoing programmes, all the participants were informed that for any query they can come to the IPM Cell for solving their issues. More than 75 participants visited the cell office. Inventors with initial queries, urgent patent filing requirements, Thompson search requirements, claims to be included, etc. came to the office and were fully guided in all matters.

## **B. IP Management**

### **1. Applications cleared**

All applications for patents filed up to 2007 have been cleared by the Office of the Controller of Patents.

### **2. Patents filed**

A total 82 of Indian and 35 international patent applications have been filed.

### **3. Copyright**

One application for copyright has been filed.

### **4. Commercialisation effort through mail**

About 150 letters have been sent to different potential companies for various patents so far. The IPM Cell received replies from some, and follow-up action (mainly providing clarifications) has been taken.

### **5. Visit to the campus by different companies**

Officials from the following companies visited our campus in connection with a few patents in which they were interested and discussions were held between the IPM Cell and the inventors:

(1) Hindustan Motors, (2) Oil India, (3) Caterpillar, (4) Yamaha, (4) Air Asia and (6) IHC Merwede.

### **6. IP technology transfer to Nano Holding**

A total of 13 patents were licensed out last year (realisation value \$1,36,541).

### **7. Licensing agreements with incubation companies**

The following incubation companies have entered tie-up agreements:

(1) Gyan, (2) Merkel, (3) Vital Bio Science and (d) Purius Nano System.

## 6.3. CENTRAL ELECTRONICS CENTRE

### 6.3.1. About the centre

The Central Electronics Centre (CEC) was established in 1971 with the main objective of servicing and maintaining 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 provides a dust-free environment. The CEC 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 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. There is a great demand for trained personnel both within the institute and outside, and thus 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/instruments
- Training programmes for manpower development
- Calibration of electronic test and measuring instruments
- Testing of electronic products
- Development of custom-built equipment
- Consultancy services in the aforementioned areas for industries
- 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/organisations in India and abroad.

The CEC has been playing a key role in the area of renewable energy by conducting training programmes related to solar photo-voltaics (SPV). Forty SPV training programmes have been conducted, and more than 860 persons have been trained. The SPV project was sponsored by the Indian Renewable Energy Development Agency (IREDA), New Delhi. SPV laboratory (indoor and outdoor) facilities have been established to promote developmental activities. The CEC is active in diverse projects involving SPV technology.

Four special (customised) 12-week training programmes were organised for radio officers of the merchant navy so that they could become Electro-Technical Officers. The project was sponsored by AMET (Academy of Maritime Education and Training), Chennai.

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 from RWTÜV, Germany, for having established quality systems in its services. Also, the centre received NABL accreditation in 2004 for testing and calibration laboratories in accordance with the ISO/IEC 17025 standards. Both the ISO and NABL accreditation of the CEC have been actively maintained through adherence to the specified processes and procedures.

### Activities

#### 1. Technician Training Programme

Preparations are under way for admitting the 30th batch of the Technician Training Programme (2 years' duration). The total number of candidates to be admitted is 12. The previous batch comprises eight trainees.

#### 2. Workshop sessions for B.Tech. students

The CEC conducts the electronics workshop/laboratory sessions for B.Tech. Year I students (part of WS1020).

#### 3. New facilities

- PCB prototype fabrication facility
- Integrating sphere measurement system for photometric measurements



#### 4. Sponsored research and consultancy projects

##### (i) Sponsored research projects

Sl. No.	Coordinator	Period	Title of Project	Name of Organisation	Total Value of the Project (₹)
1	The Head, CEC	18 December 2014 to 17 December 2016	Scheme for Setting Up/ Upgrading Electronic Product Testing Quality Control Laboratories	Government of India, Ministry of Communication and Information Technology, Department of Electronics and Information Technology (DeitY), New Delhi	1,40,00,000

##### (ii) Consultancy projects

Sl. No.	Coordinator	Title of Project	Organisation	No. of Assignments	Amount (in ₹)
1	The Head, CEC	Calibration of Decade Resistance Box	MTL Instruments Private Limited, Chennai	1	2,022
2	The Head, CEC	Calibration of 1. Oscilloscope 2. Digital Multimeter	Pulsars, Chennai	1 1	5,618 2,247
3	The Head, CEC	Calibration of AC/DC Clamp Meter	Siemens Limited, Chennai	3	8,427
4	The Head, CEC	Calibration of Dual-Display Multimeter	SAMEER, Chennai	1	3,933
5	The Head, CEC	Calibration of DC Programmable Electronic Load	Ingsman Energy and Fuel Cell Research Organisation Private Limited, Chennai	2	20,225
6	The Head, CEC	Calibration of Regulated DC Power Supply	Keith Electronics Private Limited, Chennai	2	4,494
7	The Head, CEC	Servicing of 1. Documentary Processes 2. Digital Pressure Indicator	Central Scientific Instruments Organisation CSIR-CSIO, Chennai	1 1	5,618 8,989
8	The Head, CEC	Servicing of 1. Oscilloscope 2. Spectrum Analyser	Elmak Engineering Services, Chennai	1 1	13,483 31,460
9	The Head, CEC	Servicing of Power Supply Card PCB	Indian Oil Petronas Pvt. Limited, Chennai	2	11,236
10	The Head, CEC	Servicing of Shrink Fit Induction Heater	Naritaa Tooling Private Limited, Coimbatore	1	39,326
11	The Head, CEC	Testing of 36 W and 40 W LED Light	Baliga Lighting Equipments Private Limited, Chennai	2	20,225
12	The Head, CEC	Testing of PZTA92 Transistor	Caterpillar India Private Limited, Thiruvallur	1	16,854
13	The Head, CEC	Testing of 6 KVA UPS	Emerson Network Power (India)	1	32,584
14	The Head, CEC	Testing of Distribution Amplifier	Elixer Electronics, Chennai	1	16,854
15	The Head, CEC	Testing of 90 W LED Lamp	K-Lite Industries, Chennai	1	12,135
16	The Head, CEC	Servicing of Power Supply Card for PAGA System	Indian Oil Petronas Private Limited, Chennai	2	11,236
17	The Head, CEC	Testing of SMF Batteries	Nisaki Technology Service, Bangalore	1	3,371
18	The Head, CEC	Testing of Stationary Batteries (2 V, 300 AH)	Sankalp India Solutions, Private Limited, Bangalore	1	31,461

Sl. No.	Coordinator	Title of Project	Organisation	No. of Assignments	Amount (in ₹)
19	The Head, CEC	Testing of Tubular Stationary Batteries a. 2 V, 60 AH; 2 V, 120 AH; 2 V 300 AH b. 2 V, 65 AH c. 2 V 120 AH	Sharana Industries, Chennai	3 1 1	31,461 24,719 26,966
20	The Head, CEC	Rectification of Allen Bradley Variable Frequency Drive	Suryadev Alloys and Power Private Limited, Gummidipoondi	1	67,416
21	The Head, CEC, and C.R. Jeevandoss	Design and Development of Shrink Fit Induction Heater (Developing Working Model (Prototype) of 10 KW Power Electronic Controller for Shrink Fit Induction Heating Application	Naritaa Tooling Private Limited, Coimbatore	1	5,63,000 (Including service tax)

Total number of consultancy projects: 36

Total value of projects: ₹10.1536 lakhs

#### 5. Presentations at conferences

- S. Veeraraghavan attended the 40th IEEE International Conference and Photo Voltaic Specialists Conference (PVSC) between 10 and 14 June 2014 and gave an oral presentation.

#### 6. Training programmes attended by staff members

- N. Karthiyayini attended the 'Learn Six Sigma for Testing and Calibration Laboratories' programme conducted by CETE, Bangalore between 19 and 21 May 2014.

#### 7. Development work completed

- Development of 325 V power supply and control circuit for droplet generator for Ph.D. student from Department of Mechanical Engineering
- Design and fabrication of 16-channel data acquisition system for pressure transducers with signal conditioner for Ph.D. student from Department of Applied Mechanics
- Development of speed measurement system for Ph.D. student from Department of Biotechnology
- Development of 32-channel data acquisition system for audio pickup for M.Tech. student from Department of Mechanical Engineering
- Laser current transconductance amplifier (1 MHz) for M.Tech. student from Department of Electrical Engineering

#### 8. Staff strength

The centre has 10 technical and two administrative staff members assisted by 12 technicians employed in project mode.

## 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 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 the IIT Madras community have changed. The Computer Centre's organisation has also evolved with these changing requirements. In 2007, the infrastructure of the centre was significantly upgraded through an endowment given by Mr. S. Gopalakrishnan in the name of Mr. P.G. Senapathy.

In 2014–2015, the activities of the centre were organised under five verticals: High-Performance Computing Environment (HPCE), Networks, E-Services, Data Centre and Workflow.



Each vertical is focused on continually improving its services to meet the needs of the IIT Madras community. The Computer Centre has been ISO 9000 certified since 1999. Currently, it maintains all its processes in conformance with the ISO 9001:2008 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.

The Virgo super-cluster, with 292 nodes and two iDataPlex dx360 M4 master nodes, with FDR 10 InfiniBand connectivity, is already in use. These nodes have  $2 \times$  Intel E5-2670 eight-core, 2.6 GHz processors, with 4 GB of memory per core. This machine caters to the needs of the research community, which mostly uses parallel programming.



*Virgo cluster*

In terms of speed, this machine, when commissioned, was rated 224 in the world and is the fastest in educational institutes across India. With an energy efficiency of 932 MFlop/watt, this machine has set new benchmarks. It is the most energy-efficient super-computer in India and was ranked fifth worldwide.

The Virgo system has a storage capacity of two 80 TB General Parallel File systems and a 50 TB NAS file system for backup. Suselinux 11.2 has been installed on all nodes, with Xcat as the clustering software. LoadLeveler has been installed for scheduling jobs.

The following are some active research areas that use the Virgo cluster: aerospace engineering; atmospheric and ocean modelling; analysis of large structures; flows and combustion modelling; material sciences; social, ecological and physical network modelling; numerical weather prediction and data assimilation; molecular modelling; spectroscopy; and VLSI.

The Computer Centre also houses a GPU cluster—Libra—with one head node with HP Proliant DL380 G7 servers with dual processors and six-core Intel Xeon 5670 series processors with 24 GB RAM and 146 GB SAS hard disks. It has eight compute nodes based on HP Proliant SL390s servers with dual processors, six-core Intel Xeon X5675 processors with three Telsa M2070 GPU cards and 146 GB SAS hard disks in each node.

The Computer Centre has added a cluster for B.Tech. users called GNR, named after the great scientist Prof. G.N. Ramachandran, with one head node from Supermicro, with Intel Xeon CPUs with a memory of 32 GB and 500 GB hard disks and 16 compute nodes of the same configuration. This cluster has a file system of 14 TB, and PBSPro is the job scheduler. Eight compute nodes have been provided by the Biotechnology Department, and eight nodes are from an institute grant. Eight nodes of this cluster are populated with 16 Intel Xeon PHI cards (two PHI cards per node) obtained from Intel, free of cost.

The GNR cluster has 16 compute nodes with dual processors, eight-core Intel Xeon Ivy Bridge E5-2650v2 series processors with 4 × 8 GB RAM and a 500 GB SATA hard disk in each node and a head node with a Super Micro server with dual processors, eight-Core Intel Xeon Ivy Bridge E5-2650v2 series processors with 4 × 8 GB RAM and a 500 GB SATA hard disk with 14 TB of shared storage.

The HPCE group also maintains project machines at various departments and centres that are for sponsored research and programmes. This group also supports users in improving code and organises training programmes related to effective use of HPCE hardware and related software. Detailed information about HPCE, including the latest usage statistics and the software available, is posted at the website [www.cc.iitm.ac.in](http://www.cc.iitm.ac.in).

### 6.4.3. Networks

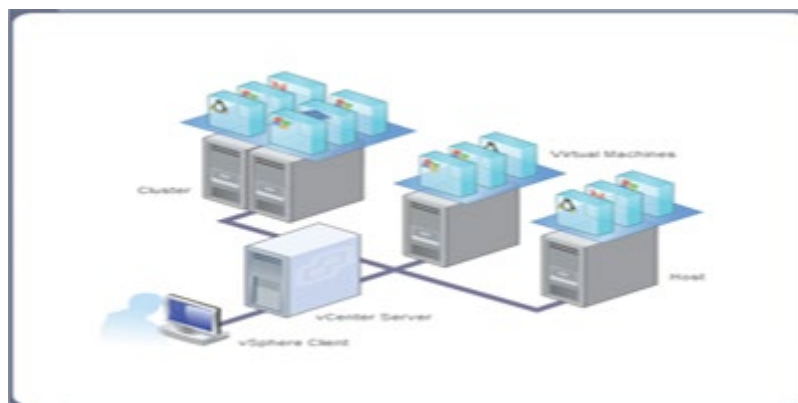
The campus computer network was established in 1994, connecting about 18 buildings in the Academic Zone, using telephone cables. The initial bandwidth was 64 kbps. Today, with a fibre-backbone high-speed network, there is connectivity for all the buildings in the Academic Zone. In addition, a backbone inter-connecting the three zones (Academic Zone, Hostel Zone, Residential Zone) is also operational. The total number of nodes in the campus is approximately 18,000. 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 fibre connectivity. Facilitation for video conferencing is 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. Supported Wi-Fi connectivity in Classroom Complex for online test of Placement Cell. Enabled the cell to conduct tests for more than 500 candidates simultaneously in one building.
2. Designed and implemented network connectivity for Sabarmati Hostel, having 556 rooms in the ground floor and six floors.
3. Provided network connectivity to Open Air Theatre.
4. Implemented 2000 Mbps 1:1 Internet bandwidth from NKN and 200 Mbps 1:1 Internet bandwidth from Tata Communications.
5. Assigning I/O box number to each network point (contains building name, room no., point no., switch port no., switch host name, IP address) in the Academic Zone is in process. The process has been completed in a few buildings.
6. Proxy-less access with LDAP authentication has been implemented for the Academic, Hostel and Residential zones.
7. Network service support is provided 24 × 7, including weekends.

#### 6.4.4. E-Services

The E-Services vertical focuses on services such as Web system configurations, e-mail, Web access, Web security, storage solutions, virtualisation, Web services, etc. Several new services were enhanced and added by the E-Service group. The services maintained and initiated by the group are listed here:

<p><b>Mail services</b></p> <ol style="list-style-type: none"> <li>1 IIT Madras (email.iitm.ac.in)</li> <li>2 Students (smai.iitm.ac.in)</li> <li>3 Alumni (alumni.iitm.ac.in)</li> <li>4 Retirees (retiree.iitm.ac.in)</li> <li>5 Conferences (wmail.iitm.ac.in)</li> <li>6 Projects (imail.iitm.ac.in)</li> </ol> <p><b>Web services</b></p> <ol style="list-style-type: none"> <li>1 Virtual hosting</li> <li>2 Mailing list maintenance</li> <li>3 Employee user Web portal</li> <li>4 Websites</li> </ol> <p><b>Security and monitoring services</b></p> <ol style="list-style-type: none"> <li>1 Firewall tuning</li> <li>2 Hack solution</li> <li>3 Security gateway (spam appliances)</li> <li>4 Log analytics</li> <li>5 SSL certificate</li> </ol> <p><b>Storage solution</b></p> <ol style="list-style-type: none"> <li>1 Backup and restore process</li> <li>2 Disaster recovery</li> <li>3 Server and desktop consolidation by virtualization (VMWARE)</li> </ol> <p><b>User management services</b></p> <ol style="list-style-type: none"> <li>1 Active Directory Service (ADS)</li> <li>2 Lightweight Directory Access Protocol (LDAP)</li> </ol>	<p><b>Development and deployment services</b></p> <ol style="list-style-type: none"> <li>1 Convocations</li> <li>2 Distinguished Alumnus Awards</li> <li>3 User registration for IC&amp;SR</li> <li>4 HPCE Web-based user management</li> <li>5 Faculty and staff portal</li> <li>6 Web-based training</li> <li>7 VTLS support (Library)</li> <li>8 Support to students' elections</li> <li>9 Support to JEE</li> <li>10 Support to HSEE</li> <li>11 Support to departments with Web services</li> <li>12 Support to Office of Alumni Affairs</li> <li>13 Support to Placement Office</li> <li>14 Support for conferences</li> </ol> <p><b>Other services</b></p> <ol style="list-style-type: none"> <li>1 SMS gateway</li> <li>2 Google API services</li> <li>3 Intranet services</li> <li>4 Project management support</li> <li>5 Online ticketing system</li> <li>6 Home portal for staff/faculty</li> <li>7 Cloud services (own cloud)</li> <li>8 Authenticated mail service</li> <li>9 Local/global FTP</li> <li>10 VDI (Virtual Desktop Infrastructure)</li> <li>11 Equipment booking system</li> <li>12 Microsoft licensing</li> </ol>
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*Virtualisation*

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.





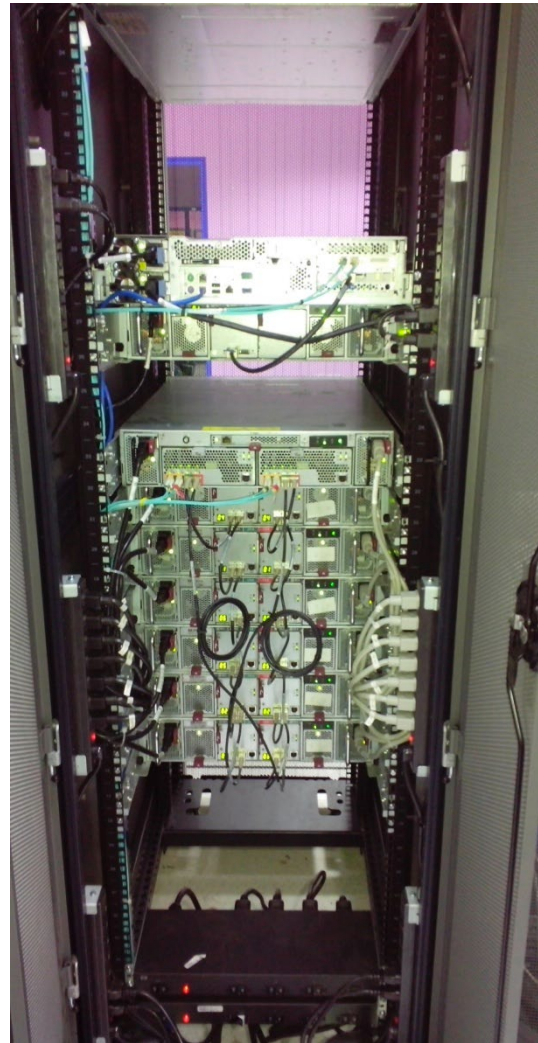
*VMWARE server: Before virtualisation*



*After virtualisation*



*Exchange server: Front view*



*Exchange server: Rear view*





## E-Services portfolio

For services offered by E-Services and help, visit: <https://eservices.iitm.ac.in>.

### 6.4.5. Data Centre

The function of the Data Centre is to ensure appropriate management of facilities so that all the verticals of the Computer Centre function efficiently. These facilities include the uninterrupted power supply, backup power supply (DG set), CCTV, climate control, access control, water leakage system, fire protection 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	1000 kVA	1 no.
3	UPS (DB) with 12 V/200 AH (Rocket)—120 nos. and 12 V/120 AH (Rocket)—192 nos.	160 kVA	4 nos.
4	UPS (MGE) with 12 V/150 AH (Rocket) —32 nos.	80 kVA	1no.
5	UPS (SOCOME) with 12 V/150 AH (Rocket) —32 nos.	80 kVA	1 no.
6	UPS (Emerson) with 12 V/42 AH (Rocket) —68 nos.	30 kVA	2 nos.
7	UPS (DB) with 12 V/65 AH (Rocket)—25 nos.	20 kVA	1 no.
8	PRAC AC (Blue Star)	17 TR (60 kW)	10 nos.
9	PRAC AC (Blue Star)	13.5 TR (48 kW)	2 nos.
10	PAK AC (Blue Star)	11 TR	4 nos.

Sl. No.	Description of Equipment	Capacity	Quantity
11	PAK AC (Blue Star)	5.5 TR	2 nos.
12	Ductable split AC (Blue Star)	8.75 TR	2 nos.
13	Ductable split AC (Blue Star)	5.5 TR	6 nos.
14	RO plant (EXEL)	250 LPH	1 no.

The Data Centre has upgraded the Building Management Systems with the latest technology. The following were installed:

#### Details of New Building Management Systems

##### 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.)

##### Security system

- 4 CCTV Camera IP-based IR indoor/outdoor (Capture)—27 nos.  
Sixteen-channel encoder—2 nos.

##### Fire system

- 5 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.
- 6 Fire fighting Gas release panel (Ravel) —2 nos.

##### Door access system

- 7 Access control TEMA server—1 no.  
Biometric card reader—4 nos.  
Emergency push switch—13 nos.

##### PA system

- 8 Plena 480 W amplifier (Bosch)
- 9 Battery monitoring system for all UPS

#### 6.4.6. Workflow

The implementation of enterprise resource planning (ERP) software, or what is internally referred to as a Workflow, has extended services to various Academics, Administration, Accounts, IC&SR and Stores and Purchase sections.

The Workflow group at the Computer Centre 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.

The Workflow team has worked with different users from various sections to re-engineer selected processes to streamline operations. Reports from Workflow have been widely used in Administration, Accounts and Academics sections to manage day-to-day operations easily.

Workflow submissions that were enforced in a few processes (leave, LTC, faculty visits, festival advances, children's education allowance, purchase order creation, imprest claims, SRB, student course registrations, student travel approval, student work-log approvals, grade approvals, etc.) in the previous financial year are running successfully. Requests for change are raised on the basis of user feedback to implement modifications in these processes.

In the financial year 2014–2015, the data extracted from Workflow were analysed and utilised by the ISO internal audit team to improve the performance of the administrative staff and to align our internal processes better to support our vision for IIT Madras.

### 6.4.7. Training and Professional Activities

Staff members of the Computer Centre participated in the following training activities this year:

- V. Selvaraju attended 'A True Perimeter Security Awareness Programme', at Digital Track, Nandanam, Chennai, on 25 July 2014.
- S. Anand Kumar attended the 'HP Converged Systems and HP Networking Seminar', at the Park Sheraton Hotel, Chennai, on 31 July 2014.
- V. Selvaraju attended the 'HP SDN Summit 2014 (A New Era of Network Innovation)', at Bangalore, on 9 and 10 October 2014.
- V. Selvaraju attended the 'Cisco Technology Workshop on Security', at Global Knowledge Network (India) Private Limited, at Chennai on 20 and 22 January 2015.
- R. Thiruneelagandan, P. Mahesh Mithreeven and R. Jayaganesh attended the 'RF and Microwave Communication Seminar 2015', at Hotel Radisson Blu, Chennai, on 17 March 2015.
- The HPCE Group of the Computer Centre conducted a national-level workshop, 'GPU Programming and Application (GPA2-2014)' from 17 to 19 July 2014. About 100 students and faculty and staff members from various engineering colleges and industries from all over India attended this workshop.

### Publications

S. Anandkumar. February 2015. Cuckoo hashing with Dijkstra for defending security breach in MANET. *International Journal of Research in Computer Applications and Robotics* 3(2): 66–70 (ISSN 2320-7345).

### Conferences

S. Anandkumar. 2015. Two steps defending security of unauthorised access in MANET. *IEEE Second International Conference on Knowledge Collaboration in Engineering (ICKCE-2015)*, Kathir Engineering College, Coimbatore from 27–28 March 2015.

### Staff Members and Areas of Work

Sl. No.	Name	Designation	Area of Focus
1	C. Balaji	Chairman	Overall coordination and planning
2	Sanjib Senapathi	Faculty-in-Charge	High-Performance Computing Environment
3	NitinChandrachoodan	Faculty-in-Charge	Networks
4	G. Phanikumar	Faculty-in-Charge	E-Services
5	Anil Prabhakar	Faculty-in-Charge	Workflow
6	C.S. Sourirajan	Systems Officer Grade I	Data Centre, Workflow, application software development for TCF of Academic Section, Digilocker systems, MDS billing for Staff Club, estate recoveries
7	V. Ravichandran	Deputy Systems Engineer	High-performance computing, application programming, system programming and administration, user education and planning
8	C.N. Vijayaragavan	Deputy Systems Engineer	Centre representative for ISO-9000, In-Charge Data Centre
9	Banavath Baman	Assistant Systems Engineer	Training
10	S. Anand Kumar	Assistant Systems Engineer	Mail domains, mail gateways, server hardware, VMWARE, Web services, virtualization, support services
11	V. Selvaraju	Assistant Systems Engineer	Network design, servers, switches, campus network maintenance and administration, PC hardware and software
12	S. Priya	Assistant Systems Engineer (contract)	Workflow, software development
13	D. Hariharan	Senior Superintendent	Antivirus maintenance
14	T.V. Subba Rao	Technical Superintendent	Workflow—Administration Module
15	R. Thiruneelagandan	Junior Technical Superintendent	Data Centre

Sl. No.	Name	Designation	Area of Focus
16	P. Gayathiri	Junior Systems Engineer	High-performance computing, system software, installation of open source applications and commercial applications, user education development
17	M. Jeevanandam	Junior Technician	Computer networks
18	M. Irudayaraj	Junior Technician	Web programming, Linux, E-Services
19	R. Jayaganesh	Junior Technician	E-Services
20	P. Mahesh Mithreevan	Junior Technician	Computer networks
21	J. Nandagopal	Attendant	Office

Apart from the permanent staff listed in the foregoing, there are Senior Project Officers Project Associates/ Technicians assigned to each vertical in the Computer Centre to support the various activities of the centre.

## 7. CENTRAL FACILITIES

### 7.1. Central Workshop Facilities

The Central Workshop was established in 1959. Initially it consisted of shops associated with three major manufacturing processes, namely metal cutting, metal joining and metal forming. Later on, sections related to other modern manufacturing processes and control systems were introduced in the workshop training programme.

Presently the Central Workshop has various shops and sections with different facilities. A list of the shops and sections with their facilities is provided here.

Sl. No.	Shop	Facilities
<b>Shops</b>		
1	Carpentry	Planing, turning, reducing thickness, circular-saw cutting, polishing, power-operated hand tools
2	Fitting and Tool Room	Filing, drilling, tapping, jig boring, tool milling, engraving, marking, slotting, grinding, cutting, power tools
3	Machine Shop	Horizontal and vertical milling machines, lathes, planing machine, radial drilling machine, tool and cutter grinder, CNC lathes, CNC milling machines, vertical and universal milling machines, computer-aided manufacturing (CAM) software
4	Gear Shop	Spur, helical and bevel gear cutting, gear inspection
5	Electrical Shop	Trainers for single-phase electrical circuits, three-phase direct-on-line and star-delta starter trainers
6	Instrument Shop	Calibration of pressure gauges (up to 1000 bar) and precision machines, rapid prototyping machine (3D printer)
7	Welding Shop	Arc welding, gas welding, brazing, TIG welding, plasma arc cutting
8	Foundry Shop	Sand moulding, melting, die casting machines
9	Smithy Shop	Open hearth furnace
<b>Sections</b>		
10	Pneumatics and Hydraulics	Basic and advanced pneumatics trainers, electro-pneumatic trainer, PLC for pneumatics trainer, basic and advanced hydraulic trainers
11	FRP	Hand lay-up of polymer-reinforced composites
12	Plastics	Introduction to plastics: production using hand-operated, semi-automatic injection moulding and compression moulding processes
13	Instrumentation and Communication Laboratory	Introduction to basic communication systems: exercises in optical fibre communication, various kinds of transducers, microprocessor-based control applications, examples of stepper motor control, traffic light controllers, PLCs

The Central Workshop operates the institute buses and maintains IIT Madras's vehicles (light and heavy).

The Central Workshop conducts the course WS 1010 (four credits) and the course WS 1020 (two credits) for B.Tech/Dual Degree (Year I) students and the course WS 1030 (two2 credits) for students of the Engineering Design Department (Semester I).

Details of the students and training modules follow.

Department	No. of Students
Electrical Engineering	118
Engineering Physics	30
Mechanical Engineering	148
Metallurgical and Materials Engineering	49
Aerospace Engineering	58
Chemical Engineering	91

Department	No. of Students
Naval Architecture and Ocean Engineering	55
Civil Engineering	97
Biotechnology	65
Computer Science	55
Physics (Dual Degree)	11
Engineering Design	56
<b>Total</b>	<b>833</b>

### Training modules

1. Power Tools
2. Machining Process: Turning
3. Machining Process: Milling
4. Foundry and Smithy
5. Plastics and FRP
6. Welding
7. Electrical
8. Electronics
9. Pneumatics and Hydraulics
10. Instrumentation and Communication

The Central Workshop fabricates test set-ups and associated accessories for Ph.D., post-graduate and undergraduate projects. A total of 1118 work orders were executed during the year 2013–2014.

Facilities for students training were enhanced in various modules and training facilities modernised during the year. A CAM software package (single-network license) and a rapid prototyping machine (3D printer) were procured. These are used for fabrication work and for training students.

### 7.2. Central Gas Supplies Unit

The Central Gas Supplies Unit procures industrial gases and special gases from various manufacturers/suppliers and supplies them to various departments/labs and sections of the institute for research and practical classes.

### 7.3. Central Glass Blowing Section

The Central Glass Blowing Section has been one of the important facilities of the institute since 1972. Being a central facility, this section undertakes design and fabrication of sophisticated glass apparatus for research and development in various departments.

This section has a range of modern glass working equipment, largely procured from Germany through the collaborative programme, including a horizontal-cum-vertical lathe, universal lathe, forming lathe and high-vacuum system. The section is also equipped with a number of sophisticated burners, a drilling-and-cutting machine, grinding and polishing equipment and such other tools as are necessary for fashioning glass apparatus. The section is well equipped for quartz working and has developed considerable expertise in this area.

Among the sophisticated devices fabricated are cryostat, spherical and cylindrical Dewar flasks, a lugging probe, a laser housing tube with a water jacket, a reactor tube, a vacuum tube collector for solar energy applications and quartz ware.



## 8. CENTRAL LIBRARY

The Central Library is equipped with all modern facilities and has a rich collection of information resources in the form of CD-ROMs, online databases, e-journals, e-books, e-standards, e-patents and printed material related to applied science, engineering, technology, humanities, management, social science and emerging subjects. The Central Library holds 4,40,770 items, including 737 current journals, catering to the information needs of 13,315 members, providing various value-added services with the help of modern information-handling tools and techniques. The major activities of the Central Library between April 2014 and March 2015 are described here.

### 8.1. Library Information Services: Statistics

Item	2013-2014	2014-2015
<b>Collections</b>		
Books (general)	2,29,546	2,30,335
Books (gratis)	—	506
Books (Hindi)	—	50
Books (project)	—	601
Theses	6216	6881
Book Bank	17,807	17,881
Current periodicals by subscription	719	737
Back volumes of periodicals	1,13,173	1,13,919
Patents and specifications	20,418	20,422
German collection	44,280	44,280
CD-ROMs	1489	1499
Audio/video cassettes	448	448
e-Books	916	3,214
<b>Total</b>	<b>4,35,012</b>	<b>4,40,770</b>
<b>Membership</b>		
Staff	888	913
Faculty members (VF, ADF, RF)	650	667
Students	11,056	11,162
Alumni members	351	357
Corporate members	11	35
Special members	58	58
IAS members	156	126
Project coordinators	70	57
<b>Total</b>	<b>13,421</b>	<b>13,315</b>
<b>Services: Circulation</b>		
Number of books/journals issued	77,063	66,340
Number of books issued Book Bank (GS)	3930	3328
Number of books issued Book Bank (WS)	2673	2350
Overdue and other charges collected (₹)	4,70,950	4,21,153
Photocopy charges collected (₹)	5,130	883

Item	2013–2014	2014–2015
<b>Project loans to departments/centres</b>		
Books issued	257	1038
<b>Inter-library loan transactions</b>		
Borrowed from other libraries	7	10
Loaned to other libraries	5	9
<b>Reprint service</b>		
Reprints received from other institutions (pages)	90	106
Reprints supplied to other institutions (pages)	600	605
<b>Smart Cards</b>		
Cards generated/issued	4612	2605
<b>Expenditure (lakhs of ₹)</b>		
1. Purchase of books	142.96	143.72
2. Subscriptions of journals and databases	1295.52	1490.76
<b>New journals/databases added</b>	41	42

## 8.2. ISO 9001:2008 Activities

The Central Library actively participated in ISO-9001: 2008 activities and maintained quality-based library system services and procedures. The major activities related to ISO 9001:2008 are listed here:

1. An ISO internal audit was conducted on 30 April 2014.
2. An ISO management review meeting (QSM-I and QSM-II) was held on 19 May 2014.
3. A TUV audit for ISO recertification for QSM-I was conducted on 26 May 2014.
4. The Central Library was awarded ISO 9001:2008 recertification on 9 June 2014.
5. An ISO internal audit was conducted on 20 November 2014.
6. An ISO management review meeting (QSM-I and QSM-II) was held on 10 December 2014.
7. The Central Library conducted meetings (Chairman LAC, Deputy Librarian and section-in-charges) to review the functioning of the library. Between April 2014 and March 2015, one review meetings, two LAC meetings and two staff meetings were organised.

## 8.3. Major Initiatives

The Central Library has taken various initiatives to improve the existing infrastructure, facilities, services and collections to provide strong 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. Equipment added

One Eureka Forbes vacuum cleaner was procured in 2014.

### 8.3.2. Online resources (e-journals, e-databases and e-books)

1. Online access to three databases/packages was added on the basis of recommendations of the faculty: ABI Inform, SRMO and EBSCO.
2. Access to the e-databases and e-journals of various publishers, including the following, were renewed: American Chemical Society, AGU, AIAA, AIP, American Mathematical Society, Blackwell, BMJ, Elsevier, ICE, Indian Economy Database, IOP, ISI—Emerging Market, JSTOR, Journal Citations Report (JCR), MANEY, MathSciNet, Mendeley Institution Edition, NPG, One Petro, Oxford University Press, ProQuest: Dissertations and Theses (PQDT), PsyArticle, RSC-Gold, Sage, SIAM, SciFinder Scholar, Science (online subscription), Scopus, Syndetic, Taylor & Francis, Thomson Core Patents, Thomas Telford, Turnitin, UptoDate, Web of Science, Wiley.
3. e-Books from AMS, McGraw-Hill, Pearson, Springer Engineering (2014 collection), RSC (2013 and 2014 collections), Trans Tech Publications, Oxford University Press, Cambridge University Press, World Scientific and ProQuest Ebrary were purchased with perpetual access rights.

### 8.3.3. Extended working hours on Saturday and Sundays

The working hours of the Central Library have been extended up to midnight on Saturdays and Sundays during quiz and end-semester and make-up exams for the benefit of students.

### 8.3.4. Systematic re-shelving of books

Two groups consisting of 16 members each have been formed that devotes one hour daily in the morning/afternoon in the stack areas to facilitate easy retrieval of books. The first phase of reshelving of books has been completed, and the second phase is in progress. This initiative has produced considerable satisfaction among users.

### 8.3.5. 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.

### 8.3.6. Major reorganisation of library book in stacks

Back volumes were shifted from the basement to the second floor to create more reading space for the users. Tables and chairs were provided near the book stacks in all the floors.

## 8.4. Retirement of Staff Members

Mr. K. Kamaraj, Senior Librarian and Information Officer, retired from service on 31 May 2014.

## 8.5. Automation

1. The e-books have been catalogued in the i-portal Chamo (<http://iportal.cenlib.iitm.ac.in:8080/>.)
2. The VTLS server and client have been upgraded to version 2014.3. version, and they have migrated to the VM-WARE server.
3. The Deputy Librarian backs up the VTLS database in the Computer Centre incrementally.
4. Data relating to 2550 patrons' (students, faculty and staff members, alumni, IAS members) records were added to the Virtua-VTLS database.

## 8.6. Faculty and Their Activities

Faculty Member	Qualifications	Major Areas of Specialisation
Mahendra N. Jadhav, Deputy Librarian	M.Sc., M.L.I.Sc., M.Phil., Ph.D.	Library administration, library automation, digital libraries, open source software, library portals, RFID

## 8.7. Short-Term Courses/Workshops/Seminars/Symposia/Conferences/Meetings/Training Programmes Attended by Faculty and Staff Members at Recognised Academic Institutions

Sl. No.	Faculty/Staff Member	Title	Institution	Dates
1	Mahendra N. Jadhav	PFC, INDEST Consortia Meeting	IIT Delhi	1–2 December 2014
2	Mahendra N. Jadhav	Tenth INDEST–AICTE Consortia Annual Meet	NIT Silchar	5–6 May 2014

## 8.8. Special Lectures Delivered by Faculty Members at Other Institutions

Sl. No.	Faculty Member	Topic of Lecture	Venue and Date
1	Mahendra N. Jadhav	Web-Scale Discovery Service: An experience at IIT Madras	Tenth INDEST-AICTE Consortia Annual Meet and Workshop, NIT Silchar, 5 May 2014
2	Mahendra N. Jadhav	e-Resources management: An experience of IIT Madras	NITTTR–Advanced Certificate Course on Modern Library Practices, Chennai, 10–12 September 2014

Sl. No.	Faculty Member	Topic of Lecture	Venue and Date
3	Mahendra N. Jadhav	Library automation best practices and Web-Scale Discovery Service	KBP College, Vashi, Navi Mumbai, 3 December 2014
4	Mahendra N. Jadhav	An overview of best practices, e-resources and processes	UGC-sponsored national seminar, Recent Trends in Library and Information Services (RTLIS-2015), DRBCCC Hindu Colleges, Pattabiram, Chennai, 7 March 2015

### 8.9. Distinguished Visitors/Groups to the Library

Sl. No.	Name of the Visitor and Designation	Date	Purpose of Visit
1	Twenty-three participants (from thirteen countries) of the NITTTR–Modern Library Practices Refresher Course	22 August 2014	Studying the functioning of the Central Library and the e-journal and RFID facilities
2	Professors and engineering students of Sacred Heart College	8 December 2014	Studying the facilities and functioning of the Central Library
3	Professors and students of the Department of Physics, Periyar Arts College, Cuddalore	5 February 2015	Studying the facilities and functioning of the Central Library
4	Lt. Cdr. Rahul T., Indian Naval Academy (INA), Ezhimala, Kannur District, Kerala	12 March 2015	Interactions and familiarisation with the procedures and best practices followed at the Central Library with regard to the procurement of books and other knowledge resources
5	Professors and 31 M.L.I.Sc. students from the Department of Library and Information Science, University of Calcutta	16 March 2015	Studying the facilities and functioning of the Central Library
6	Teachers and 35 gifted children of Class X under the Promotion of Excellence Among Gifted Students initiative of the Government of Kerala	25 March 2015	Studying the e-journal and RFID facilities and the functioning of the Central Library

### 8.10. e-Waste

The Central Library disposed of some obsolete items such as Duplo Mat photocopiers, monitors, servers, a cassette recorder, a typewriter, fans and furniture through an e-auction.

### 8.11. LED Lights

All the lamps of the left wing of the second floor of the library have been replaced with LED lights.

### 8.12. Future Plans

1. To create more reading space for users
2. To initiate the creation of a database of conference proceedings received from faculty members of IIT Madras
3. To initiate the creation of a database of bound volumes
4. To capture more ISBNs for updating the syndetic database
5. To organise professional development lectures and other professional events
6. To weed out and write off mutilated, very old, unused books and German books

## 9. STUDENTS AMENITIES AND ACTIVITIES

### 9.1. Hostels

IIT Madras, being a residential institute, requires students to reside in the hostels on campus. There are 15 men's hostels and three ladies' hostels for the students of the under-graduate and post-graduate programmes, research scholars and project staff. A total of 5665 single rooms, 88 double rooms, 241 triple rooms, three quadruple rooms and three pentuple rooms are available in the hostels. Research scholars and some students in the master's programmes who are married and who seek family accommodation on campus are housed in earmarked quarters. A few students, especially those from the armed forces, are provided accommodation in the MOH quarters. During the period under report, there were 7292 students residing in the hostels.

There are 11 dining halls (messes) that cater food to the students and project staff members in the hostels. One is run by staff members of the Office of the Hostel Management, and the other 10 (including two for lady students) are run by private contract caterers. The housekeeping services in the hostels are outsourced.

Each hostel is administered by a Warden (a faculty member), an Assistant Warden (a senior research scholar or project staff member) and a Hostel Council, consisting of student secretaries and the Assistant Warden, who assists the Warden with the day-to-day functioning of the hostel. Each hostel office is supported by the staff of the Office of the Hostel Management, which is a centrally administered body that has overall charge of the functioning of the hostels and the Central Supplies Unit. There are 89 employees, and they are accountable to the hostel management through the respective Wardens of the hostels. The Chairman, Council of Wardens is the Chairman of the Office of the Hostel Management. The Chairman is assisted by the supporting staff. During the period under report, the following Wardens were in position.

#### Chairman, Council of Wardens and Chairman, Hostel Management

##### K. Sethupathi

Professor, Department of Physics

Hostel/Unit	Warden
Alakananda	Somashekhar S. Hiremath, Associate Professor, Mechanical Engineering
Brahmaputra	Dillip Kumar Chand, Professor, Chemistry
Cauvery	Ranga Rao G., Professor, Chemistry
Central Supplies Unit	Sethupathi K., Professor, Physics
Ganga	Arul Prakash K., Associate Professor, Applied Mechanics
Godavari	Appa Rao G., Professor, Civil Engineering
Jamuna	Kesavan V., Associate Professor, Biotechnology
Krishna	Shiva Nagendra S.M., Associate Professor, Civil Engineering
Mahanadhi	Dhiman Chatterjee, Associate Professor, Mechanical Engineering
Mandakini	Satyanarayana M.V., Professor, Physics
Narmada	Prasad Patnaik B.S.V., Professor, Applied Mechanics
Pampa	Asokan T., Professor, Engineering Design
Saraswathi	Shaligram Tiwari, Professor, Mechanical Engineering
Sarayu	Madhumathi R., Professor, Management Studies
Sharavati	Usha Mohan, Assistant Professor, Management Studies
Sabarmati	Shanti Bhattacharya, Associate Professor, Electrical Engineering
Sindhu	Boby George, Associate Professor, Electrical Engineering
Tamiraparani	Nandan Kumar Sinha, Professor, Aerospace Engineering
Tapti	Prafulla Kumar Behera, Associate Professor, Physics

## 9.2. Medical Facilities

Medical facilities are provided to the students in the well-equipped Institute Hospital inside the campus, which is a Primary Health Centre. The hospital has facilities such as a clinical laboratory for most tests, an X-ray unit, an ultrasonograph, an ophthalmic unit, a newborn support care unit, a defibrillator and a dental unit. It also has a pharmacy, an operation theatre for minor surgeries and full-fledged wards, including a casualty ward, a post-operative ward and wards for patients' recovery. There is also a proposal to add a few new facilities. The facility is open 24×7 with about 6 OP hours every day. An ambulance facility is also available.

Clinical advice is provided by a team of in-house doctors for a wide range of general health problems faced by students and staff members of IIT Madras. The team is head by the Chief Medical Officer, who reports to the Dean, Administration.

Apart from the in-house doctors, there is a set of visiting specialist consultant doctors, including a general surgeon, ENT surgeons, ophthalmologists, orthopaedists, cardiologists, gynaecologists and psychiatrists. The hospital maintains a record of the condition of the students and staff members for whom the service is provided.

The students and staff members are also covered under medical insurance for a range fixed based on the statistics. This helps provide the students and staff members access to a huge list of general and specialty hospitals throughout the country.

The in-house team of doctors also conducts various check-ups and awareness camps from time to time. They also arrange talks by eminent doctors in the city on certain common medical conditions such as diabetes, cardiac problems and cancer.

## 9.3. Gymkhana

The Institute Gymkhana takes care of the general welfare of students and their sports, co-curricular and cultural activities. Sports activities play an important part in the overall development of personality and prepare students for overcoming challenges in their various walks of life after their graduation. Hence students are encouraged to participate in and organise a number of sports activities.

The following events were conducted during the year 2014–2015 by the Institute Gymkhana of IIT Madras:

- Freshie Tournament, for Year I B.Tech. students (all games)
- The inter-collegiate invitation tournament Sportfest-2014.
- NSO selection for Year I B.Tech. students (85% attendance compulsory)
- All-India Inter-collegiate Basketball Tournament for Men (Gerhard Fischer Cup) and for Women (Mrs. Kokila Rajaiah Trophy)—2014.
- All-India Inter-collegiate Invitation Volleyball Tournament for Jimmy George Cup (men and women)—2014
- IIT–Sanmar Inter-collegiate Invitation Cricket Tournament—2014.
- Inter-hostel tournament—Schroeter Trophy (Gymkhana Day)
- Inter-IIT Tournament 2014
- Non-media tournament—Dean (Students) Trophy
- Inter-IIT coaching camp (9 days, compulsory for Inter-IIT contingent)
- Inter-IIT Staff Meet selection and coaching
- Institute Annual Open Road Race
- Institute Annual Cycle Race
- Institute Open Chess Tournament
- Institute Open Bridge Tournament
- Institute Premier League
- Institute Open Best Physique competition

### Sportfest-2014

This inter-collegiate invitation tournament for men and women was conducted for city colleges, from 22 to 26 September 2014. A total of 32 colleges participated in this tournament, of which 12 were women's colleges. The tournament was conducted on a league-cum-knockout basis. Trophies were awarded to the winners of various games. This tournament helps finalise the Inter-IIT team probabilities. IIT Madras students took part enthusiastically in all the games and won a few events.

### Inter-IIT Aquatic Meet 2014

The Inter-IIT Aquatic Meet was held from 1 to 5 October 2014 at IIT Bombay. The IIT Madras contingent won the gold medal in aquatics and the bronze medal for water polo.



### **Inter-IIT Sports Meet 2014**

The 50th Inter-IIT Sports Meet was held between 12 and 19 December 2014 at IIT Bombay. The intense practice during the mini camps held in November and between 1 and 9 December 2014 improved our preparations quite a bit. IIT Madras won the second position in the men's section. IIT Madras won the gold in women's basketball. The IIT Madras women's section was placed third overall with a total of 22.80 points. In swimming, the IIT Madras women performed well. Most of our teams gave their best.

### **All-India Inter-collegiate Invitation Basketball (GF & KR) Tournament 2014**

This tournament was conducted between 2 and 7 March 2015 and attracted teams from south India. The matches returned to the revived basketball court of the IIT Gymkhana. The tournament has some attractive features: (1) There is prize money for both the men's and women's teams. (2) Special prizes are awarded for men's and women's teams. A large number of spectators attended this tournament and witnessed many exciting matches. There were excellent performances from many teams. The matches were conducted on a league-cum-knock out basis.

Hindustan University, Chennai, retained the Gerhard Fischer Trophy for Men, and M.O.P. Vaishnav College, Nungambakkam, Chennai, retained the Kokila Rajaiah Trophy for Women.

### **All-India Inter-collegiate Invitation Volleyball Tournament for Jimmy George Cup (Men & Women) 2014**

The second edition of All India Inter-Collegiate invitation volleyball tournament for Jimmy George cup (Men & Women) was conducted from 16–21 March 2015 and attracted teams from south India. With the action set to return the matches to our Institute Volleyball court. The attractive features of the tournament are: (1) There is prize money for both men's and women teams. 2) Special prizes are awarded for men's and women teams. A large number of spectators attended this tournament, witnessed many existing matches. There were excellent performance was displayed by many teams. The matches were conducted on a league-cum-super league basis.

Vels University, Chennai won the Jimmy George Trophy for Men and SRM university, Chennai retained the Jimmy George Trophy for Women.

### **IIT Madras–Sanmar Inter-collegiate Cricket Tournament**

The prestigious IIT-Sanmar Inter-Collegiate Cricket Tournament for city colleges sponsored by Sanmar Group was conducted from 25–31 March 2014. This year we restricted the entries, we invited only 6 teams and make them play league matches. All matches played by 25 overs and 50 overs for final match. A high level of competition was witnessed throughout the tournament. Vivekananda College won the coveted trophy and Gurunanak College entered the finals and was placed runner-up.

### **Inter-hostel Tournaments**

The Inter-hostel Tournaments were conducted in all the games/events over the academic year for the Schroeter Trophy (General Championship), following the Inter-IIT pattern of sports events. Tapti Hostel/Jamuna Hostel, at the first position, jointly won the Schroeter Trophy.

The following non-media tournaments were conducted for the students: (1) nine-a-side tennis ball cricket, (2) nine-a-side tennis ball cricket for freshers, (3) six-a-side football, (4) six-a-side hockey, (5) three-a-side basketball and (6) three-a-side volleyball. The institute open events, namely the road race, cycle race, triathlon and cycle race for freshers, were conducted. All these events encourage the participation of the students/campus community. These events were a grand success, attracting a large number of participants from both the staff and students and student spectators, who witnessed and encouraged their hostel teams.

All the Gymkhana clubs, such as the Fitness Club, which has newly added facilities, the Badminton Club, the Tennis Club and the Swimming Pool Club, functioned very well during the period. More than a few thousand students, staff members, faculty members and campus children benefited from these excellent facilities and coaching offered by the Institute Gymkhana.

The Fitness Club had a registered membership of 1272, the Tennis Club had 264 members, and the Badminton Club had 240 members. Excellent training and able guidance in yoga were provided for the students and the campus residents at the Fitness Club, bringing out the importance of maintaining a good physique and health.

The planning of the calendar of sports events in advance, including the fixtures for the Schroeter Trophy and the Dean's Trophy events, helped conduct the various sports events smoothly, satisfactorily and on time. Also, the new flood-lit facilities attracted many students to the basketball, volleyball and tennis courts. New international synthetic tennis courts were added the sports and games facilities at the campus.

The new Indoor Sports Complex was inaugurated last year for table tennis and weight lifting. The complex also has the Fitness Centre (with new equipment) and two squash courts. Two new squash courts are being readied to serve as additional sports and games facilities at the campus.

## National Sports Organisation

The National Sports Organisation (NSO) is functioning as per the GoI's decision to develop sports with special reference to maintaining the fitness of students. Our institute has been taking necessary steps to encourage students to participate in various games and sports events and in activities that will promote physical fitness.

In the academic year 2014–2015, nearly 382 Year I undergraduate students were registered under this scheme. Coaches/experts from various sports federations and the Sports Development Authority of Tamil Nadu (20 sports and games for men and women) were engaged for coaching our NSO students.

The noteworthy performances of a considerable number of Year I students at the various tournaments (Inter-IIT Sports Meet, Sportsfest and All-India Invitation Inter-collegiate Basketball Tournament) are partly due to the quality training given to the students and the hard efforts put in by the students during the NSO programme.

## Institute Premier League

New events have been started in a few games, namely hockey, football, basketball and volleyball.

## 50th Inter-IIT Sports Meet 2014

The 50th Inter IIT Sports Meet was held at IIT Bombay from 12 to 19 December 2014. All the 15 IITs participated in the sports meet. Students from various IITs participated in various events (13 events for men and six events for women) enthusiastically. Despite their busy academic schedule, the students had undergone very good training and practice to prepare for the events.

The IIT Madras team won the runner-up cup at the 50th meet in the men's category. They won the gold medals in table tennis, hockey, swimming, water polo and cricket and the bronze medal in weight lifting. The IIT Madras women's team also performed very well at the sports meet.

Overall, it was an eventful year for Gymkhana activities.

## 9.4. Advisor, Weaker Section

The institute has nominated one Advisor to take care of the welfare of the foreign national and weaker section students. The Advisor periodically meets these students and counsels them regarding various academic and non-academic requirements. During the period under report, a few students could not do well, and they were counselled. As a result of this counselling, they performed very well in their subsequent semesters.

In addition, the Advisor arranged for extra classes in physics and mathematics between August and October for the weaker section and foreign national students of the B.Tech. programme as they expressed difficulty in understanding during normal teaching hours. Also, drawing instruments were issued to needy Year I students belonging to the weaker section.

The mentor programme introduced the previous year was continued. In this programme each Year I student belonging to the weaker section is attached with a mentor (from senior students) for discussions and guidance relating to academic matters. The reports of the mentors are periodically reviewed and discussed with the Advisor.

## 9.5. International and Alumni Relations

### 9.5.1. Introduction

The Dean's Office for International and Alumni Relations (I&AR) was established in October 2012. This office strives to support the institute's drive towards global excellence in

- a. Education
- b. Research
- c. Relations with industry
- d. Innovation and entrepreneurship
- e. Sustainability and social impacts
- f. Internationalisation
- g. Physical infrastructure

### 9.5.2. Vision

The vision of the Office of I&AR is to enhance the global stature and impact of IIT Madras by leveraging alumni and international relations.

### 9.5.3. Mission

The mission of the Office of I&AR is to leverage the institute's excellent relationship with alumni to increase engagement with academia/research labs, industry/business, entrepreneurs and foundations to promote institute-external relations by building on alumni relations and to raise funds for the benefit of the institute and its stakeholders:

- Students
- Faculty and staff
- Society

### 9.5.4. Events

#### Institute Day and DA Forum

Institute Day was celebrated on 17 April 2014, when eight of 10 Distinguished Alumni (DAs) received their awards. Nearly 30 DAs and other friends of IIT Madras participated in a town-hall meeting held on 18 April, where the Director outlined Strategic Plan 2020.



#### Convocation and Alumni Day

The 'golden' Alumni Day, celebrated on 19 July at the IC&SR Auditorium, was indeed a memorable event, attended by more than 300 alumni and family members. The programme got off to an early start with the conferral of the Distinguished Alumnus Award on Anil Ananthaswamy (85-BTEE), science writer and consultant, *New Scientist*. The Director, Prof. Bhaskar Ramamurthi, conferred the award to him. Dr. Anant Agarwal (82-BTEE), 2014 DAA, visited the campus on 10 February 2015 to receive his award.



#### Chapter meetings

An alumni meeting of the IITM Delhi Chapter was held on 22 February 2015 at New Delhi. More than 60 Delhi-based alumni participated in this meeting.



## PAN IIT

A global community boasting 2,00,000 IIT alumni, PAN IIT holds its yearly conference in either India or the US. Prof. David Koilpillai, Dean—Planning, visited Toronto, Canada, from 1 to 5 June 2014 to attend a PAN IIT Alumni Meeting.

### Reunion Day

Three Reunion Days were celebrated in December 2014 and one in January 2015. Each was an exhilarating time on campus, as alumni and families gathered in large numbers.

- On 26 December, the Silver Reunion of '89 brought the largest contingent, nearly 120 alumni.



- On 27 December, the Ruby Reunion of the '74 batch took place. Nearly 70 batch mates were present. The '94 batch also had a small reunion on 27 December.



- On 28 December, the first-ever Golden Reunion, that of the '64 and '65 batches, took place.



- On 19 January 2015, the '70 batch celebrated the golden anniversary of their joining IIT Madras.



#### **Other events: IITMAANA reception dinner**

This dinner is organised for those students who are headed for higher studies or employment in North America. This dinner is sponsored by the IIT Madras Alumni Association of North America (IITMAANA). This year, nearly 75 students joined in the festivities.

#### **YaleGALE India—2015**

A group of alumni from the Yale University Graduate School visited Chennai, with families in tow, for a social interaction with IIT Madras alumni. This YaleGALE (Graduate Alumni Leadership Exchange) programme was held on campus on 10 and 11 January at the East Coast Highway farm-house of our Distinguished Alumnus D. Chandrasekhar (70-BTMT).





### 9.5.5. Distinguished Alumnus Awards

The Distinguished Alumnus Award (DAA) is the highest award given to its alumni by IIT Madras, in recognition of achievements of exceptional merit and excellence. The DAA is 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.

In 2015, the following 10 alumni were given the DAA:

1. Dr. Prakash Keshaviah, Director, Nephrology Unit, Himalayan Institute Hospital Trust, Dehra Dun [B.Tech. in Mechanical Engineering, 1967]
2. Mr. Lalit Mahajan, Chairman and Managing Director, J. Mitra & Co. Private Limited, New Delhi [B.Tech. in Chemical Engineering, 1968]
3. Dr. Krishna Chivukula, Chairman, Indo MIM Tec. Private Limited, Bangalore [M.Tech. in Aerospace Engineering, 1970]
4. Mr. S. Ramakrishnan, Distinguished Professor, Vikram Sarabhai Space Centre, Thiruvananthapuram [M.Tech. in Aerospace Engineering, 1972]
5. Mr. Sekhar Vasan, Managing Director, Sansera Engineering Private Limited, Bangalore [B.Tech. in Metallurgical and Materials Engineering, 1975]
6. Mr. Ajita Rajendra, President and COO, A.O. Smith Corporation, Milwaukee, Wisconsin, USA [B.Tech. in Chemical Engineering, 1976]
7. Dr. Arumugam Manthiram, Director, Texas Materials Research Institute, University of Texas at Austin, Texas, USA [Ph.D. in Chemistry, 1981]
8. Dr. Periannan Kuppusamy, Professor in the Department of Radiology and Medicine, Geisel School of Medicine at Dartmouth College, New Hampshire, USA [Ph.D. in Chemistry, 1985] (visited the campus in January 2015 to receive his award)
9. Dr. R. Srikant, Professor of Electrical and Computer Engineering, University of Illinois, Urbana-Champaign, Illinois, USA [B.Tech. in Electrical Engineering, 1985]
10. Dr. Krishna Bharat, Distinguished Scientist, Google, Inc., Mountain View, California, USA [B.Tech. in Computer Science and Engineering, 1991]





Dr. Prakash Keshaviah [1967/B.Tech./Mechanical Engineering], Director, Nephrology Unit, Himalayan Institute Hospital Trust, Dehra Dun



Mr. Lalit Mahajan [1968/B.Tech./Chemical Engineering], Chairman and Managing Director, J. Mitra & Co. Private Limited, New Delhi



Dr. Krishna Chivukula [1970/M.Tech./Aerospace Engineering], Chairman, Indo MIM Tec. Private Limited, Bangalore



Mr. S. Ramakrishnan [1972/M.Tech./Aerospace Engineering], Distinguished Professor, Vikram Sarabhai Space Centre, Thiruvananthapuram



Mr. Sekhar Vasani [1975/B.Tech./Metallurgical and Materials Engineering], Managing Director, Sansera Engineering Private Limited, Bangalore



Mr. Ajita Rajendra [1976/B.Tech./Chemical Engineering], President and COO, A.O. Smith Corporation, Milwaukee, Wisconsin, USA



Dr. Arumugam Manthiram, [1981/Ph.D./Chemistry], Director, Texas Materials Research Institute, University of Texas at Austin, Texas, USA



Dr. Periannan Kuppusamy [1985/Ph.D./Chemistry], Professor in the Department of Radiology and Medicine, Geisel School of Medicine at Dartmouth College, New Hampshire, USA (visited campus in January 2015 to receive his award)



Dr. R. Srikant [1985/B.Tech./Electrical Engineering], Professor of Electrical & Computer Engineering, University of Illinois, Urbana-Champaign, Illinois, USA



Dr. Krishna Bharat [1991/B.Tech./Computer Science and Engineering], Distinguished Scientist, Google, Inc., Mountain View, California, USA

### 9.5.6. Other Activities

#### Lecture Series

##### Leadership Lecture Series

Initiated in 2012 to create more avenues for alumni to interact and share their experiences with students and faculty members. We have about three or four lectures each month, more than 92 lectures so far, of which 27 lectures were held between April 2014 and March 2015. Please visit <http://alumni.iitm.ac.in/> for more details.

##### Institute Lecture Series

Sponsored by the 1985 Batch, Prof. Mostafa A. El-Sayed gave a talk titled 'Nanotechnology meets biology in the cancer cells' on 17 February 2015.

##### Other lectures

Prof. Graham Cooks (Purdue University) gave a talk titled 'Measuring molecules: Mass spectrometers in science, medicine and business' on 15 January 2015.

##### B.R. Sengupto Lecture

This year, the second lecture of the B.R. Sengupto Lecture Series was delivered by Mr. R.S. Thakur on 2 March 2015.

## Prof. Sampath Endowment Lecture Series

The first lecture of the Prof. Sampath Endowment Lecture Series was delivered by Dr. C. Sidney Burrus (Rice University) in April 2014.

### Travel grants

The IITMAANA Travel Grant was instituted 10 years ago. Its scope was enlarged in 2010 to support undergraduate travel also. Sponsored by IITMAANA, it reimburses half of the expenses incurred abroad by students and allows them to travel overseas for competitions, summits, workshops, conferences and internships. This grant transfers \$10,000 annually to IIT Madras for this purpose.

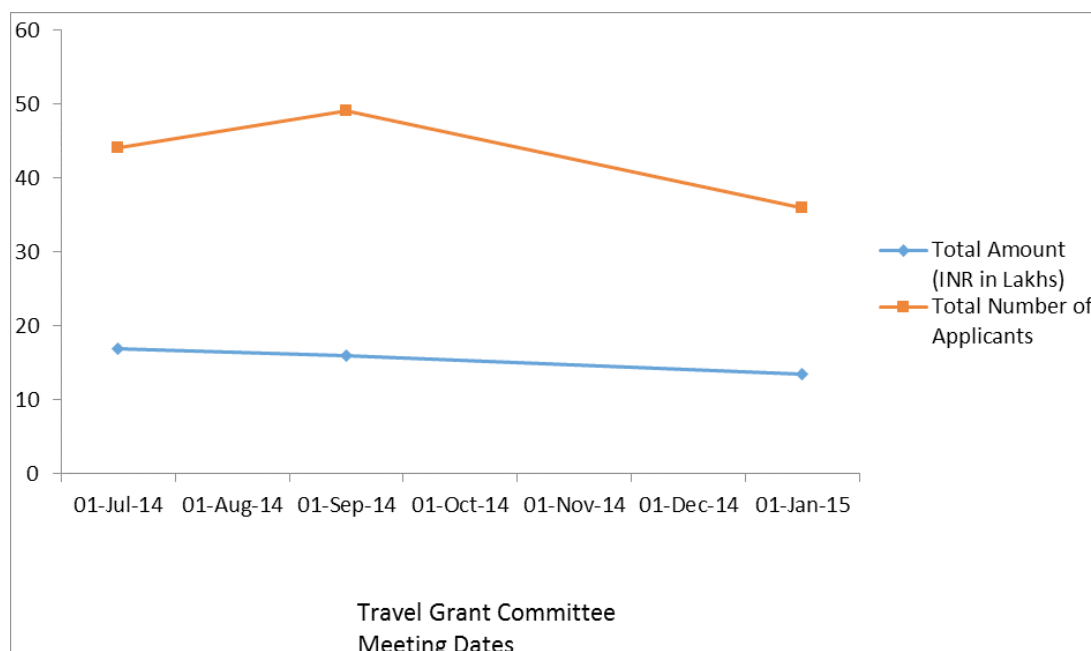
IITMAANA instituted the Travel Grant Endowment in 2011, aiming to make the Travel Grant a sustainable initiative while widening its reach. The Travel Grant is one of the most popular and successful alumni programmes.

In 2012, the Excellence-in-Research Travel Grant was instituted by the batch of 1980. It differs from the IITMAANA Travel Grant in one respect—the candidate should have demonstrated exceptional research aptitude—for example, through publication in a journal prior to a conference. The grant reimburses 80% of expenses incurred.

The Ram Sundaram [1988/BT/CE] Travel Grant also assists undergraduate and postgraduate students with travel abroad for various purposes. It reimburses 50% of the expenses incurred, up to ₹60,000.

In 2014–2015, about 10 faculty members were also given travel grants for travel related to research collaborations. The total amount granted towards faculty travel is about ₹6.5 lakhs.

Meeting Number	Date	Total Amount Given (lakhs of ₹)	Total No. of Applicants
27	2 July 2014	16.83	44
28	25 September 2014	15.9	49
29	27 January 2015	13.43	36
<b>Total</b>		<b>46.16</b>	<b>129</b>



### Funds received

Calendar Year	IITMACT (lakhs of ₹)	IITM (lakhs of ₹)	External Trusts	HTIC Activities	Total (lakhs of ₹)
2009	7.61	39.19	—	—	46.79
2010	63.22	272.11	—	—	335.34
2011	226.57	775.16	—	—	1001.73

Calendar Year	IITMACT (lakhs of ₹)	IITM (lakhs of ₹)	External Trusts	HTIC Activities	Total (lakhs of ₹)
2012	1105.22	118.52	—	—	1223.74
2013	503.03	275.51	403	—	1181.54
2014	407.22	1402.36	200	300	2309.58
2015 (till March)	73.63	285.44	—	—	359.07
<b>Total</b>	<b>2386.5</b>	<b>3168.3</b>	<b>603</b>	<b>300</b>	<b>6457.79</b>

#### 2009 to date

External Trusts/HTIC Activities	Amount (lakhs of ₹)	Purpose
Dr. Kamalesh Shyamdas Varayani Memorable Trust	100.00	To financially support travel of NA/OE students to UK to pursue M.S., Ph.D. and study-abroad programmes
SSAN Trust	503.00	Interest-free loan
Lalit Mahajan	300.00	HTIC activities

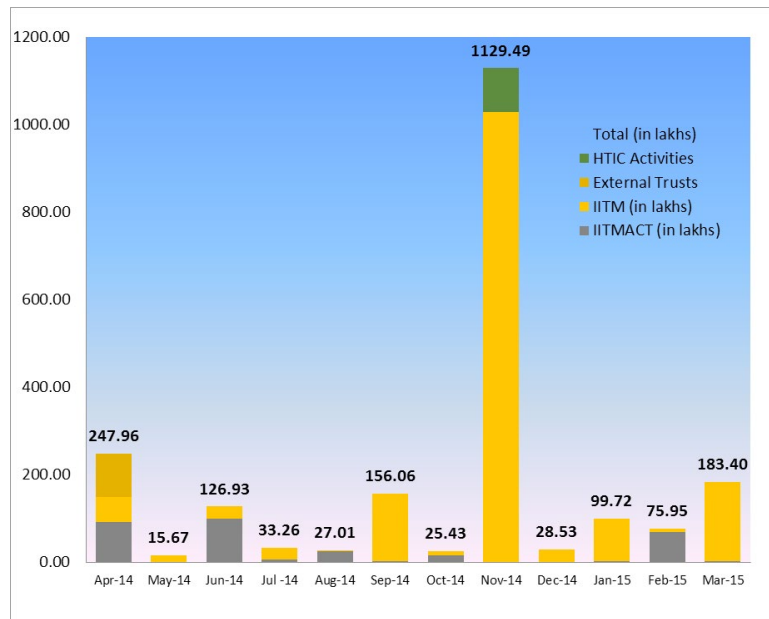
#### Funds received (financial year 2014–2015)

These include amounts received under the Give Every Month (GEM) project and major contributions.

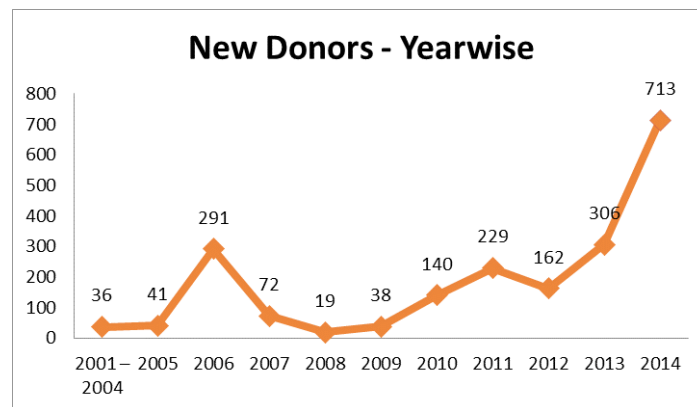
- A Distinguished Chair in the name of Prof. Mahabala (retired faculty member, CSE) was endowed in November 2014 with a contribution of ₹10 crores from Mr. Kris S. Gopalakrishnan [M.Sc. in Physics, 1977; M.Tech. in Computer Science, 1979]
- Hindustan Aeronautics Limited, Bangalore has funded ₹1.5 crores for a HAL Chair in the Department of Aerospace Engineering.
- Mr. Lalit Mahajan donated ₹100 lakhs directly to HTIC.
- Indo-US MIM Tec. Private Limited, as part of its corporate social responsibility programme, donated ₹60 lakhs towards the IIT Madras Satellite (IITMSAT) project.
- Dr. Prakash Keshaviah, IIT Madras, and Director, Nephrology Unit, Himalayan Institute Hospital Trust and Hon. Prof. Physiology, Dehra Dun, Uttaranchal, funded an Institute Chair at IIT Madras in the name of his Ph.D. advisor, Dr. Perry Blackshear. He also funded the Keshav–Rangnath Excellence in Research Award. [B.Tech. in Mechanical Engineering, 1967]
- Mr. Prasad Setty gave ₹61 lakhs for a student distress fund, an Institute Day prize, and a 6-month fellowship for Ph.D. students who submit their theses within 4 years. [B. Tech. in Chemistry, 1992]
- Mr. Vikram Rao created an endowment of ₹81,24,053 in the name of Ms Hattiangadi Manorama Bai Scholarship, to be given for the ‘most accomplished female student admitted to the B.Tech. programme’. [B. Tech. in Mechanical Engineering, 1965]

Month	IITMACT (lakhs of ₹)	IITM (lakhs of ₹)	External Trusts	HTIC Activities	Total (lakhs of ₹)
April 2014	92.43	55.53	100.00	—	247.96
May 2014	0.40	15.27	—	—	15.67
June 2014	99.69	27.24	—	—	126.93
July 2014	5.12	28.14	—	—	33.26
August 2014	25.75	1.26	—	—	27.01
September 2014	1.24	154.83	—	—	156.06
October 2014	15.94	9.49	—	—	25.43
November 2014	0.72	1028.78	—	100.00	1129.49
December 2014	0.17	28.37	—	—	28.53
January 2015	2.80	96.92	—	—	99.72
February 2015	69.45	6.50	—	—	75.95
March 2015	1.38	182.02	—	—	183.40
<b>Total</b>	<b>315.06</b>	<b>1634.36</b>	<b>100.00</b>	<b>100.00</b>	<b>2149.42</b>

## Funds received (lakhs of ₹)



## New donors—year-wise



## SSAN Ananya Educational Trust

SSAN Ananya is a trust set up with the noble intention of helping deserving students who require financial help during their education at IIT Madras and then inspiring them to be a part of a unique brand of citizens who believe in the importance of upholding the essence of 'paying forward' the interest-free loan. Mr. S. Swaminathan, Founder, SSAN Ananya Educational Trust during his visit to the campus on 5 July 2014, met student beneficiaries, had an interaction with them and handed over cheques.





## International relations: Major events

### Pennsylvania State University, USA, workshop (9–10 January 2014)

There was an MoU signing ceremony along with research collaborative meetings with the Sensor Monitoring Team, MEMS Group, Vibration Group and Data Analytics Group and some lab visits. They visited the Research Park as well.



### Lehigh University (LU), USA, research workshop (10 January 2014)

IIT Madras and LU conducted a collaborative research workshop on 10 January 2014. At the workshop were a group of researchers from the departments of Civil Engineering, Chemical Engineering, Electrical Engineering, Metallurgical and Materials Engineering, Mechanical Engineering, Physics, Chemistry, Humanities and Social Sciences, and Management Studies. The faculty members of all these departments participated in the initial meetings and presented their work. The LU delegates had a discussion with the Supply Chain Management Team, Management Studies Department. A visit was made to the Research Park.

### Deakin University, Australia, and IIT Madras in a new research partnership (27 January 2014)



Students undertaking higher degrees by research will collaborate on materials, engineering and manufacturing projects under an MoU signed by Deakin Vice-Chancellor Jane den Hollander and Prof. Bhaskar Ramamurthi, Director, IIT Madras, in Chennai.

Prof. Jane Hollander said Deakin and IIT Madras had established a framework in 2010 to foster understanding and cooperation in areas of shared interest and expertise.

Prof. Bhaskar Ramamurthi said, 'The Deakin University in Australia is our valued partner. IIT Madras looks forward to very productive collaboration between the faculties with a vibrant student exchange programme at all levels, particularly the research scholars'.

Under the MoU signed by Deakin and IIT Madras:

- Five students from each institution will be enrolled in the joint Ph.D. supervision programme.
- All 10 students will be largely based at IIT Madras.
- The Deakin-enrolled students are eligible for a 3-year fee waiver, the opportunity to study in Australia for 3–6 months and financial assistance with international conference presentations.
- The IIT Madras-enrolled students will receive scholarships and benefits, to be determined by the home institution.



### International Students Meet—January and August 2014

The Office of I&AR, IIT Madras, organises a formal meeting with the Director and the Deans at the beginning of every semester. All the international exchange students were invited for a gathering at IC&SR Conference Hall 1. The event kicked off with high tea, which enabled social networking, followed by a photo shoot. The international students were welcomed by Prof. Bhaskar B. Ramamurthi, Director of the institute, Prof. R. Nagarajan, the Dean of International and Alumni Relations, the Dean of Students and the International Peer Advising Leaders (iPALs).

During this session, the Indian and foreign students shared their views on academics and social life at IIT Madras and information about the administrative procedures. The Director and Dean—I&AR were present for an interactive session with the international exchange students. The foreign student community raised a few issues regarding hostel amenities and campus life, and these were addressed suitably.

The purpose of the meeting was to make the international exchange students comfortable with the new environment in the institute.



### University of Passau, Germany, and IIT Madras: Joint Doctoral Programme—MoU-signing ceremony (19 February 2014)

Management studies are all set to reach new heights as students at the doctoral level at IIT Madras will have an opportunity to pursue their research at an international level. From the new academic year, IIT Madras will offer a joint doctoral degree programme in collaboration with the University of Passau, Germany. The two institutions will jointly train doctoral researchers, who will be awarded one doctoral degree with two certificates: a Ph.D. from IIT Madras and a doctorate from the University of Passau.

Announcing the partnership, Prof Bhaskar Ramamurthi, Director, IIT Madras, said that the chances of this programme being successful are quite high. 'There will be enough productivity to result in research papers, and the research will provide institutional benefit as well,' said Prof. Ramamurthi.

Students initially admitted to the Ph.D. programme will have an opportunity to visit Germany twice for a 6-month period, while scholars from the University of Passau will have similar stints at IIT Madras. Faculty exchange will also be facilitated in this programme, which can admit up to 15 students in the first year.

Indian students will receive scholarships from DAAD (German Academic Exchange Service) that cover their travel and living expenses, including insurance. 'Students can even save up on their scholarships and visit the rest

of Europe with the money,' said Prof. Hans Zeigler, University of Passau. Incoming German students will, in turn, be supported by IIT Madras. The doctoral scholars will receive a tuition fee waiver.

Dr. Wolfgang Hau, Vice-President, University of Passau, and Prof. Ramamurthi signed an MoU. Julia Huthenrauch, representative of the Consul General of Germany, Delhi, and Franziska Lindhout, Director of DAAD Information Centre, were present during the signing.



#### **International Fair 2014 (14 March 2014)**

The International Fair 2014 was held on 14 March 2014 at the exhibition hall in IC&SR Building, IIT Madras. The event was aimed at creating awareness among students about the potential opportunities abroad. For this purpose, the Office of I&AR coordinated with all the partner universities and duly received printed material such as brochures, flyers and other printed material. Material from more than 15 countries (including Japan, Germany, Taiwan, Australia, The Netherlands, The United Kingdom, Belgium, Canada, France, Italy, Korea and Sweden) was put on display in stalls on the 14 March.

The assigned student volunteers from IIT Madras answered queries raised by people attending the fair. They included both students and faculty members. Assistance was also provided by international students, who represented their own universities/countries. Most of the queries pertained to scholarships and the type of agreement between IIT Madras and a university. Students who attended the International Fair were asked to register with their contact details.

Owing to the good response, the event was extended to the next day (15 March 2014).







#### **UNSW–IIT Madras collaborative research workshop (28–29 March 2014)**

The Office of I&AR organised a 2-day collaborative research workshop with faculty members from the areas of civil and environmental engineering, computer science and engineering, electrical engineering, mechanical engineering, telecommunications engineering and manufacturing engineering.

On the first day, faculty members from the various departments participated in the initial meetings and presented their work. By the end of the day, they could identify the common interests and the partners.

On the second day, the UNSW faculty members visited their partners' labs and identified a few projects to work together on.

#### **Deakin University workshop (1–3 April 2014)**

The Office of I&AR organised a 3-day collaborative research workshop with Deakin faculty members from the Institute for Frontier Materials. IIT Madras faculty members from the Mechanical Engineering and Metallurgical and Materials Engineering departments participated. The participating faculty members gave short presentations on their work and research areas on the first day.

On the second day, break-out groups discussed possible interest areas of research and finalised projects.

On the third day, visits to selected MME and ME labs were organised. As an outcome of this workshop, the faculty members could identify 12 collaborative projects. For the current year, eight students have been identified under the Joint Supervision Programme.

#### **Technical University of Munich—International Week 2014 (12–16 May 2014)**

Mr. Arvind Sivamani, Liaison officer for Outgoing Students, Office of I&AR, participated in International Week 2014 at TUM Munich. The visit was aimed at collating new ideas and sharing best practices with regards to mobility programmes in different universities. The task of each participant was to address the practices, challenges and issues and to attempt to create the ideal mobility programme.

#### **Australian Endeavour Scholarship promotion, 25 June 2014**

The Australian High Commission in India has been promoting the Australian Endeavour Scholarship at leading research institutes in India.

His Excellency, Mr. Sean Kelly, Australian Consul General for South India, graced the campus to promote the Endeavour Scholarships, the India Strategic Research Fund (AISRF) and Australia as a destination for quality education and living.

He also highlighted the Endeavour Scholarships and Fellowships as an internationally competitive, merit-based scholarship programme that provides opportunities for non-Australians to undertake study, research or professional development in Australia and for Australians to do the same overseas.



**Visit of Mr. Ziv Shalvi, Deputy Chief of Mission, Head of Administration and Consular, Consulate General of Israel, Bangalore, and Ms Liron Zaslansky, Head of Political Affairs Department, Embassy of New Delhi, on 22 July 2014**

Mr. Ziv Shalvi met Prof. Nagarajan, Dean—I&AR and interacted with SHAASTRA coordinators.

**University of Western Sydney and IIT Madras—MoU-signing ceremony (6 August 2014)**



A delegation from the University of Western Sydney (UWS), Australia, visited IIT Madras on 6 August to explore potential collaborative activities.

The delegation was led by the Vice-Chancellor, Prof. Barney Glover. Visits were made to the departments of Management Studies, Humanities and Social Sciences and Computer Science.

During this visit, an MoU was signed between UWS and IIT Madras.

**Study in Holland by NESO—21 August 2014**

Ms Sudha Sudeep, of the Netherlands Business Support Office, gave a presentation titled 'Study in Holland', emphasising study opportunities, application and admission procedures, scholarships, post-study and part-time work opportunities and the visa structure, jobs and careers in Holland. She concluded the talk with a 'Workshop on working and networking in Europe', where students were given an overview of the European work culture and how it differs from the Indian work culture.

**NUS Graduate Studies in Engineering, by Prof. Quek Ser-Tong—26 August 2014**

Prof. Quek Ser-Tong gave a short introduction to Singapore and to the National University of Singapore, after which he gave information about the Faculty of Engineering and its Master of Science, Master of Engineering and Doctor of Philosophy programmes, including the NUS–IIT Madras Joint Ph.D. Programme. Some descriptions of the research areas undertaken by the engineering departments, as well as application information for graduate



studies, were presented. An estimate of the cost of studying and living in Singapore, as well as information on the scholarships available, was presented to help interested applicants make an informed decision about whether to study at the National University of Singapore.

### International Day—30 October 2014

The Third International Day was celebrated on 30 October 2014 in and around the Central Lecture Theatre. The Office of I&AR and the iPALs organised several games for the campus community and exchange students to start off the evening. The international students on campus erected food stalls and cooked their native cuisines, including delicacies such as Japanese *miso* soup, German pancakes, *Kaiserschmarrn* and many more tasty dishes from Taiwan, Italy and France.

After the welcome address by the Dean—I&AR, Prof. R. Nagarajan, the event kicked off with a performance by the Japanese students, who sang and played the guitar. For promoting this day, the iPALs came up with the idea of a selfie contest, where the objective was to take funky pictures involving the international students. There was a prize distribution for this contest, which was followed by a performance from the German students, who played the ukulele.

The next performance was a Lavani dance, which is a traditional Marathi folk dance, which everyone enjoyed. There was also a fashion show, which was quite popular among the students. The international students dressed up in Indian costumes and showcased the different festivals of the country. The day ended with a Bollywood number from the students, which entertained the whole crowd.



### Internationalisation of IITs

'Internationalization of IITs' was the theme of a 2-day workshop (30–31 October 2014) initiated and organized by the Office of I&AR, IIT Madras. This workshop was intended for the deans and staff members involved with international collaborations/global affairs in all IITs. The sessions focused on strategising and structuring the Office of I&AR.

### The participants at this workshop were:

IIT Bombay  
IIT Guwahati  
IIT Kanpur  
IIT Bhubaneswar  
IIT BHU Varanasi  
IISER Pune (special guest)

The workshop also featured:

- Working methods of different IITs and other public institutes with regard to international relations and mobility
- Sharing of best practices to increase mobility

At the workshop, participants discussed difficulties faced by the international offices in implementing their respective strategies. They were briefed about the current programmes, methods and practices implemented by the Office of I&AR at IIT Madras to improve mobility.

During the inauguration, Prof. R. Nagarajan (Dean—I&AR, IIT Madras) welcomed the participants and briefed them on the importance of working together to improve the practices of international relations.



### Joint workshop on academic recognition and credit transfer at Siem Reap (14–15 November 2014), Cambodia, GATE (ERASMUS MUNDUS Program)

Ms Vadhana, Liaison Officer for Incoming Students, attended this workshop, which was organised by Johannes Kepler University, of Linz, Austria, in Cambodia. The objective of this conference was to analyse the recognition of study-abroad programmes and to strive to find best practices regarding tools, procedures and responsibilities. Higher education plays a crucial role in producing a high-quality workforce, and the Erasmus Mundus programme has led to innovation in core activity areas such as teaching and learning methods, support services for students, research activities and institutional management.

### IIT Madras admitted as partner in AOTULE Consortium (26–28 November)

IIT Madras was admitted as one of the partners of the AOTULE Consortium (Asia–Oceania Top University League on Engineering), opening up a plethora of opportunities for the faculty and students of IIT Madras to collaborate with counterparts in the consortium of 11 premier engineering universities in the Asia–Oceania region.

IIT Madras was invited to attend the Ninth AOTULE Meeting and Conference at the University of Melbourne in November 2014 as an observer and was unanimously offered membership in the consortium. At the 2-day event, deans of member institutions made brief presentations, generating discussions on issues such as student/faculty mobility and engineering curriculum compatibility. Parallel sessions were organised for the students from the member institutions to present their research work. A primary emphasis in this meeting was to formulate a collective response to the 'avalanche of change', perceived and real, in higher education.



The AOTULE Consortium promotes inter-institutional cooperation through joint programmes, including an annual dean's meeting, a student workshop and exchange of students and staff, in order to improve the quality of engineering education and research of the members. It aims to broaden participating students' perspectives through cross-cultural interactions. Consortium members include highly-ranked universities such as the University of Melbourne, Tsinghua University (China), Hong Kong University of Science and Technology, Nanyang Technical University (Singapore), KAIST (Korea) and Tokyo Institute of Technology.

IIT Madras was represented at the AOTULE Meeting by Prof. Sudarsan Padmanabhan (Advisor, Foreign Students) and Ms Kavitha, Manager, Office of I&AR. Prof. Nagarajan, Dean—I&AR, IIT Madras, expressed his delight at the membership and pointed out that 'this can greatly enhance research collaborations with faculty at these outstanding institutions, in addition to offering semester-abroad opportunities for students'.



Dr Sudarsan and Ms Kavitha, during their visit to Australia, visited University of Sydney, University of New South Wales, University of Western Sydney in Sydney and Deakin University, Swinburne University in Melbourne.

### **Purdue University, USA, and IIT Madras**

Purdue University, USA, is seeking to deepen its relationship with India by launching a number of new initiatives with institutions and corporates. As a first step, the university signed an MoU with IIT Madras. Purdue University is also creating a country-wide Purdue Alumni Network, where former students can share their experiences and knowledge.

In an interview to *The Hindu*, Mitchell E. Daniels Jr., President of Purdue University, said, 'The MoU is for joint research between the two universities, and will soon lead to a joint degree programme, where students can receive a degree from both Purdue and IIT Madras simultaneously'. He added that there was already a significant amount of collaborative work taking place between Purdue and IIT Madras in various fields.

'The two institutions are also exchanging notes on teaching methodologies to improve the quality of students across the board', he said.

'In future we are hoping that classroom sessions will be more targeted at the needs of the students', Mr. Daniels said. The university is also focusing on introducing all their students to research at an undergraduate level, he added. 'We are also hoping to share our expertise in dealing with corporates, which will help with future research at IIT Madras', Mr Daniels said.

According to Suresh V. Garimella, Executive Vice-President of Research and Partnerships at Purdue, close to 1500 students from India are studying at Purdue. 'India is therefore one of the countries with which Purdue is looking to build a deep relationship', he said.

Purdue is starting a Purdue-India lecture series in partnership with Purdue alumnus C.N.R. Rao, National Research Professor. 'The inaugural session will be held in Bangalore and Chennai on "Measuring Molecules: Mass Spectrometers in Science, Medicine and Business"', Dr. Garimella said.



## 9.6. Guidance and Counselling Unit—Renamed as Mentoring for Individual Transformation (MITr)

A campus information booklet, *IIT Life: A Glance*, was prepared for the fresh students, and copies were made available to all of them.

The Year I students and their parents or guardians were received by the student counsellors at the railway station and helped to settle down quickly at the institute. The counsellors solved the problems faced by students through individual attention.

The Year I B.Tech. students were distributed to various student counsellors and faculty counsellors for individual attention. The unit attended few emotional counseling since such problems are more during the first year.

The unit arranged, whenever possible, instruction classes for needy Year I students who wanted guidance in subjects such as mathematics, physics and chemistry. The classes were conducted by senior students.

## 9.7. National Cadet Corps

### 9.7.1. Enrolment

A total of 167 Senior Division (SD) Air Wing NCC cadets were enrolled during the year 2014–2015.

### 9.7.2. Training

Training was conducted as per the NCC syllabus.

### 9.7.3. Participation in Republic Day and Independence Day march past

A flight of SD cadets joined the march past conducted at the IIT Madras campus on Republic Day and Independence Day.

### 9.7.4. Social Service

A march past was conducted on the eve of Unity Day, on 31 October.

## 10. STUDENTS PLACEMENT

During the year 2014–2015, a total of 930 students/scholars were placed in various organisations. Details are presented here:

Branch	Degree								Total
	B.Tech.	Dual Degree	M.Tech.	M.B.A.	M.A.	M.Sc.	M.S.	Ph.D.	
Aerospace	13	17	3	—	—	—	2	—	35
Applied Mechanics	—	—	1	—	—	—	5	2	8
Biotechnology	15	14	6	—	—	—	1	—	36
Civil	34	33	23	—	—	—	5	—	95
Chemical	51	19	9	—	—	—	4	1	84
Chemistry	—	—	—	—	—	3	—	—	3
Computer Science	29	29	45	—	—	—	18	1	122
Electrical	38	58	33	—	—	—	24	1	154
Engineering Design	—	34	—	—	—	—	—	—	34
Engineering Physics	17	—	—	—	—	—	—	—	17
Humanities and Social Sciences	—	—	—	—	5	—	—	—	5
Management Studies	—	—	—	65	—	—	—	—	65
Mathematics/IMSC	—	—	2	—	—	1	—	—	3
Mechanical	51	62	52	—	—	—	20	2	187
Metallurgical	16	12	10	—	—	—	4	1	43
Ocean	21	13	7	—	—	—	4	1	46
Physics	—	4	1	—	—	—	—	1	6
<b>Total</b>	<b>285</b>	<b>295</b>	<b>192</b>	<b>65</b>	<b>5</b>	<b>4</b>	<b>87</b>	<b>10</b>	<b>943</b>

## 11. FINANCIAL ASSISTANCE TO STUDENTS

Financial assistance is given in the form of scholarships and fellowships to meritorious students who are pursuing engineering, technology and science education at IIT Madras. The details of the scholarships and fellowships sanctioned to students of the different programmes during 2014–2015 follow.

### 11.1. Assistance to B.Tech./Dual Degree students

*Merit-cum-means (MCM) scholarship.* Twenty-five percent of the students admitted to the B.Tech. and Dual Degree programmes and whose parental income is less than ₹4.5 lakhs were sanctioned MCM scholarships (exempted from payment of tuition fees of ₹45,000 per semester and given a pocket allowance of ₹1000 per month). During the period under report, 795 students benefited. Year-wise details of the number of students who benefited are given in Table 11.1(a).

**Table 11.1(a) Number of MCM and SC/ST scholarships**

Batch	MCM Scholarships	SC/ST Scholarships	Student Freeships
2014	182	60	—
2013	202	64	40
2012	210	88	61
2011	201	102	50
<b>Total</b>	<b>795</b>	<b>314</b>	<b>151</b>

SC/ST students admitted to the B.Tech. and Dual Degree programmes and whose parental income is less than ₹4.5 lakhs were sanctioned the concession of free messing as well as a pocket allowance of ₹250 per month and exemption from payment of tuition fees and the hostel seat rent as per the GoI post-matric scholarship rules. As on 31 March 2015, 314 students have benefited.

Free studentships/scholarships for the B.Tech. and Dual Degree programmes were sanctioned to the students, which comprise exemption from payment of tuition fees.

Batch-wise details of the number of students who benefited are provided in Table 11.1(b).

**Table 11.1(b)**

Sl. No.	Name of the Scholarship	No. of Students
1	GoI Ministry of Tribal Affairs SC/ST Scholarship	20
2	Ministry of Social Empowerment	46

In addition, the institute sanctioned a notional prize of ₹1000 for the 29 top-ranking B.Tech. students (in JEE (Adv.) 2014) whose parental income is more than ₹4.50 lakhs.

### 11.2. Other Scholarships

Scholarships were sanctioned by NCERT, the GoI and state governments to meritorious students pursuing the B.Tech. programme at the institute.

**No. of state government scholarships obtained by B.Tech. and Dual Degree students**

State	Batch (No. of Students)				Total
	2014	2013	2012	2011	
Maharashtra	—	—	—	2	2
<b>Total</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>2</b>	<b>2</b>

### 11.3. M.Tech.

Students who joined the M.Tech. programme through GATE were awarded Half-time Teaching Assistantships (HTTAs) at ₹8000 per month. From 1 December 2014, the HTTA amount has been revised to ₹12,400. During

the period under report, 334 fresh assistantships and 25 renewed assistantships were given. The discipline-wise details follow.

#### No. of HTTAs awarded

Sl. No.	Discipline	Fresh—2014 Batch		Renewal—2013 Batch
		Semester I	Non-HTTA Converted to HTTA	
1	Aerospace Engineering	10	2	0
2	Applied Mechanics	13	2	1
3	Biotechnology—Clinical Engineering	3	0	0
4	Chemical Engineering	34	4	1
5	Civil Engineering	42	6	2
6	Computer Science and Engineering	50	0	5
8	Electrical Engineering	47	0	4
9	Industrial Mathematics and Scientific Computing	11	3	2
10	Mechanical Engineering	62	9	3
11	Metallurgical and Materials Engineering	12	1	6
12	Ocean Engineering	16	1	0
13	Solid State Technology	6	0	1
	<b>Total</b>	<b>306</b>	<b>28</b>	<b>25</b>

#### 11.3.1. M.Tech. Dual Degree

Students of the 2010 batch who joined the M.Tech. (Dual Degree) programme were awarded HTTAs at ₹8000 per month up to 30 November 2014 and ₹12,400 per month from 1 December 2014 onwards on the basis of their obtaining valid GATE scores or scoring CGPAs of 8.0 or greater (CGPAs of 7.5 and greater for SC/ST students). During the period under review, 331 students were awarded fresh assistantships of ₹8000 per month from June 2014 to November 2014, revised to ₹12,400 per month from 1 December 2014 onwards, and 331 renewed assistantships in January 2015. The HTTAs of 310 of these students were renewed at a rate of ₹12,400 per month. The HTTAs of 20 students were renewed at a rate of ₹6950 per month since they had obtained CGPAs of less than 6.5 in the July–November 2014 semester. Department-wise details follow.

Sl. No.	Discipline	2010 Batch	
		Fresh (Semester IX)	Renewal (Semester X)
1	Aerospace Engineering	23	23
2	Biotechnology	17	17
3	Chemical Engineering	20	20
4	Civil Engineering	37	37
5	Computer Science and Engineering	25	25
6	Electrical Engineering	59	59
7	Engineering Design	45	45
8	Mechanical Engineering	75	75
9	Metallurgical and Materials Engineering	15	15
10	Naval Architecture and Ocean Engineering	13	13
11	Physics	2	2
	<b>Total</b>	<b>331</b>	<b>331</b>

#### 11.4. M.Sc.

Students admitted to M.Sc. programme were sanctioned merit scholarships (₹1000 per month) according to the rules. Exemption from payment of tuition fee was also extended to certain students. During the period under report, 136 students benefited. The department-wise details follow.

**No. of merit scholarships and freeships (tuition fee waivers) awarded**

Sl. No.	Course	Merit Scholarships		Freeships		Fifty-Percent Freeships (50% Tuition Fee Waivers)	
		Year I	Year II	Year I	Year II	Year I	Year II
1	Chemistry	14	12	7	5	12	11
2	Mathematics	12	11	5	4	3	9
3	Physics	11	10	4	4	—	2
	<b>Total</b>	<b>37</b>	<b>33</b>	<b>16</b>	<b>13</b>	<b>15</b>	<b>22</b>

**11.5. M.A.**

*Institute merit scholarships.* Twenty-five percent of the students admitted to the M.A. programme whose parental income is less than ₹4.5 lakhs were sanctioned merit scholarships (exempted from payment of tuition fees of ₹3000 per semester and given a pocket allowance of ₹1000 per month).

SC/ST students admitted to the M.A. programme whose parental income is less than ₹4.5 lakhs were sanctioned the concession of free messing as well as a pocket allowance of ₹250 p.m. and exemption from payment of tuition fees and the hostel seat rent as per the GoI post-matric scholarship rules.

Free studentship scholarships for the M.A. programme, which comprise exemption from payment of tuition fees, were sanctioned to students.

**Batch-wise details of the number of students who benefited follow.**

Batch	Merit Scholarships	SC/ST Scholarships
2014	3	0
2013	1	2
2012	6	1
2011	7	1
2010	8	3
2009	1	3
<b>Total</b>	<b>26</b>	<b>10</b>

**11.6. M.S.**

The scholars admitted to the M.S. programme through GATE are given half-time teaching research assistantships (HTRAs) of ₹8000 per month for 2 years, which may be extended to 3 years on the recommendation of the GTC. During the period under report, 794 scholars received these assistantships, including 278 fresh scholars. Department-wise details of the assistantships awarded and renewed follow.

**No. of HTRAs awarded**

Sl. No.	Discipline	Fresh	Renewal	Total
1	Aerospace Engineering	17	39	56
2	Applied Mechanics	19	31	50
3	Biotechnology	7	26	33
4	Chemical Engineering	16	21	37
5	Civil Engineering	24	43	67
6	Computer Science and Engineering	30	47	77
7	Engineering Design	7	17	24
8	Electrical Engineering	42	102	144
9	Management Studies	16	36	52
10	Mechanical Engineering	66	85	151
11	Metallurgical and Materials Engineering	7	30	37
12	Ocean Engineering	27	39	66
	<b>Total</b>	<b>278</b>	<b>516</b>	<b>794</b>



## 11.7. Ph.D.

Scholars admitted to the full-time Ph.D. programme in engineering are sanctioned HTRAs of ₹18,000 per month for the first 2 years and ₹20,000 per month for the next 3 years. Scholars admitted to the full-time Ph.D. programme in the science subjects through GATE or other equivalent exams are sanctioned ₹16,000 per month for the first 2 years and ₹18,000 per month for the next 3 years. During the period under report, 1443 scholars obtained assistantships, of whom 472 were fresh scholars. The HTRAs have been revised to ₹25,000 for the first 2 years and ₹28,000 for the next 3 years for all students. Department-wise details of the assistantships awarded and renewed follow.

### No. of HTRAs awarded

Sl. No.	Discipline	Fresh	Renewal	Total
1	Aerospace Engineering	22	41	63
2	Applied Mechanics	22	52	74
3	Biotechnology	30	79	109
4	Chemical Engineering	27	52	79
5	Chemistry	37	51	88
6	Civil Engineering	68	109	177
7	Computer Science and Engineering	10	36	46
8	Engineering Design	25	25	50
9	Electrical Engineering	38	103	141
10	Humanities and Social Sciences	18	23	41
11	Management Studies	8	36	44
12	Mathematics	10	24	34
13	Mechanical Engineering	81	111	192
14	Metallurgical and Materials Engineering	10	48	58
15	Ocean Engineering	32	60	92
16	Physics	34	121	155
	<b>Total</b>	<b>472</b>	<b>971</b>	<b>1443</b>

Ph.D. scholars of science departments who are able to submit their theses within 4.5 years and Ph.D. scholars of engineering departments who are able to submit their theses within 4 years from the date of admission are sanctioned pre-doctoral fellowships of ₹45,000 for 6 months. During the year under report, 35 Ph.D. scholars were sanctioned pre-doctoral fellowships.

## 11.8. Financial Assistance to Research Scholars/Students for Presentation of Papers Abroad

The institute encourages research scholars to present papers at international conferences, for which they are provided financial assistance. The financial assistance provided to M.S. and Ph.D. scholars is an ad hoc amount, including the registration fee, of ₹1,50,000.

## 11.9. National/international conferences in India

Research scholars and students of course programmes are given the following financial assistance for presentation of papers at national/international conferences in India:

Registration fees

National conferences : ₹2000

International conferences : ₹3000

Travel : Third Class AC train fare

Daily allowance : ₹200 per diem, subject to a maximum of 10 days

## 12. WEAKER SECTION AND FOREIGN NATIONAL STUDENTS

### 12.1. B.Tech. Programme

In accordance with the orders of the GoI, 27%, 15% and 7.5% of the seats are reserved for OBC, SC and ST students, respectively, in the B.Tech. programme. These students are admitted through the Joint Entrance Examination (JEE) with a relaxation. These students have to secure only 60% of the marks obtained by the last student of the general category to qualify for admission. During the counselling session, prior to admission, an adviser explains to each student the requirements of the different branches. This helps the students choose suitable branches on the basis of their capabilities and interests. If a student finds the chosen branch tough after admission, he or she is allowed to switch over to a branch with a lower JEE cut-off at the end of the first semester.

Details of the SC/ST students admitted to the B.Tech. programme through JEE and the preparatory course in July 2014 are provided here:

Total Intake	Sanctioned Intake		Programme	No. Joined Through JEE		No. Joined Through Preparatory Course	
	SC	ST		SC	ST	SC	PD
B.Tech., 446	67	34	B.Tech.	65	33	2	3
Dual Degree, 392	59	29	Dual Degree	55	26	—	—

SC/ST students admitted against reservation are given the following benefits:

- Travelling allowance (Second Class train fare/ordinary bus fare) from the place of residence to Chennai to join the B.Tech. programme
- Tuition fee waiver
- Free lodging and messing (basic menu only) and pocket allowance of ₹250 per month, provided their parents' net annual income is ₹4,50,000 or less.
- The Book Bank, a part of the Central Library, is maintained for the benefit of SC/ST students. The students are issued 12 tickets for borrowing books from the Book Bank. Books are issued for a semester.
- Drawing instrument (mini-drafter) free of cost
- 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 Programme

A preparatory course with a duration of one academic year was initiated by the Ministry of Human Resource Development, GoI, during the year 1983–1984, exclusively for SC/ST students. Selection for this course is from the JEE list of SC/ST students who did not qualify for admission. Upon successfully completing the preparatory course at IIT, they are eligible to join the B.Tech. programme, and they are not required to write JEE again. Details of the admissions made in July 2014 are provided in the following.

Offers Issued for Preparatory Course			No. Joined		
SC	ST	PD	ST	SC	GE
3	3	1	2 (PWD)	2 (PWD)	1 (PWD)

Eighteen candidates of the preparatory course of the 2013–2014 batch were offered admission to the B.Tech./Dual Degree programme in July 2014 as they had successfully completed the preparatory course.

### 12.3. M.Tech Programme

Seats are reserved for SC and ST candidates according to the orders of the GoI. Admissions are through GATE by a separate merit list. Details of the admissions made in July 2012 follow:

Offers Issued		No. Joined (HTTA)	
SC	ST	SC	ST
60	29	51	24

## 12.4. M.Sc Programme

Admissions were made to the M.Sc. programme through entrance examinations only. A total of 23 SC and 10 ST students were admitted to the M.Sc. programme. These students were given tuition fee waivers.

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 are requested to recruit SC and ST students. Other special steps are also taken to enhance the recruitment of this category of students.
- Scholarships are given to these students as per GoI norms.

## 12.5. Admission of Foreign Nationals and Indian Nationals Residing Abroad

In July 2014, one Ethiopian student joined the M.Tech. programme.

**At the end of March 2014, four foreign nationals were on the rolls of the institute.**

Country	Year I	Year II	Year III	Year IV	Year V	Total
<b>1. Foreign National Students</b>						
<b>M.Tech</b>						
Ethiopia	3	1	—	—	—	4

Foreign students are also permitted to use the Book Bank. Library tickets for the Book Bank are issued to each student. Books are issued for a semester.

In addition to the foregoing, IIT Madras Alumni Association provides financial assistance to students under the IITMAANA Travel Grant Programme to assist IIT Madras students with visiting the USA and present their papers at internationally recognised technical conferences. The grants cover airline ticket charges and visa fees but exclude conference registration fees.

## 13. CAMPUS AMENITIES

IIT Madras is a residential institution. It houses about 6810 students and 795 faculty/staff members on campus. It provides various amenities in the campus for students and staff.

### 13.1. Engineering Unit

The Engineering Unit, IIT Madras, is entrusted with the responsibility of construction and maintenance of buildings and maintenance services in the institute. The unit carried out works through contract by calling tenders and quotations in a transparent manner.

For maintaining outstanding quality in the construction of the buildings, the unit used the expertise of faculty members. The Engineering Unit holds review meetings periodically with the stakeholders to complete projects in time.

The Engineering Unit introduced new materials and technologies in the construction and maintenance activities. The status of works (completed, in progress and in the planning stage) follows:

#### Major works completed

Sl. No.	Work	Amount (in lakhs of ₹)
1	Construction of new girls' hostel with 558 rooms	3398
2	Construction of culverts at various places in the campus	34.84
3	Construction of boundary wall	190
4	Construction of building for Quark (canteen facility for students)	208

#### Major works in progress

Sl. No.	Work	Amount (in lakhs of ₹)
1	Construction of new boys' hostel block (ground + six floors) (EDC July 2015)	4958
2	Additional floors in the MSRC building (EDC July 2015)	200
3	Supply, design, construction, installation, testing and commissioning of 4 MLD sewage water plant	1040
4	Construction of new B Type quarters (96 flats, three blocks (ground + eight floors) with 32 flats each)	6700
5	Construction of Biotechnology and Centre for Sustainability building (ground + six floors)	2956
6	Construction of new dining facility at Krishna Hostel (ground + one floor)	1070
7	Construction of additional wing (ground + two floors) for Chemistry Department	1210
8	Construction of new canteen block (ground + one floor)	1400
9	Construction of Academic Complex (ground + six floors) replacing the dilapidated workshop and stores buildings	12,940
10	Construction of National Centre for Combustion R&D (NCCRD building)	1415
11	Provision of additional solar power of 1 MW	700
12	Design, construction, supply, installation, testing and commissioning of water treatment plant, providing supply mains to main pump from lake	245
13	Provision of 50 TR chiller plant and its associated downside work to second floor of IC&SR building	39.92
14	Supply and erection of fire escape staircase in existing hostel blocks (Godavari, Narmada, Saraswathi, etc.)	132.1
15	Revamping/upgrading old industrial-type MV panels in cubical panels in AZ and substation	60.44
16	Provision of ductable split air conditioners to Instructional Computer Lab at DoMs 403	45.97
17	Construction of building to accommodate substation after demolishing existing barracks near Krishna Hostel gate	33.95

Sl. No.	Work	Amount (in lakhs of ₹)
18	Re-carpeting minor roads and constructing new roads at various locations in the campus	391.88
19	Construction of eight-lane synthetic track at stadium	402.84
20	Supplying, laying, testing and commissioning treated sewage water pipe line and construction of underground sump in AZ & RZ	374.93
21	Renovation of sports fields for the Inter-IIT Sports Meet (tennis court, stadium)	111.74
22	Repair and rehabilitation of basketball court and supplying and fixing synthetic interlocking flooring for three courts	87.87
23	Construction of new compressor building for NCCRD	73.79
24	Proposed construction of additional rooms for doctors in ground floor and extension of in-patients ward at first floor adjacent to the existing in-patients wards at the Institute Hospital	40.6
25	Repair and rehabilitation of Sharavathy Hostel	490
26	Construction of 10 new culverts at various locations in the campus	108
27	Construction of boundary wall and laying of outer boundary roads for new IIT Madras campus at Thaiyur	1000
	<b>Total</b>	<b>38,228.03</b>

### Major works being planned

Sl. No.	Work	Amount (in lakhs of ₹)
1	Construction of two-lane over-bridge connecting the IIT Madras campus with IIT Madras Research Park	643
2	Construction of girls' hostel, replacing existing rear wing of Sarayu Hostel	2159
3	Construction of 64 flats (G1 Type quarters) for married research scholars	746
4	Construction of 48 flats (new D Type quarters, one block (ground + eight floors, with six flats in each floor))	1747
5	Construction of two new classroom complexes (2 Blocks—ground + 3 Floors), replacing the existing Chemistry Lecture Theatre and Physics Lecture Theatre	1310
6	Construction of additional rooms at Taramani Guest House	447
7	Supply, installation, testing and commissioning of 1 MW grid-connected solar PV cell installation	662.48

### 13.2. Housing Facilities

A total of 416 faculty quarters, 379 staff quarters and 158 students' quarters are available in the campus for accommodation. In addition, there are 167 servant quarters in the campus.

### 13.3. Horticulture

A separate horticulture unit is functioning under the Engineering Unit. A corridor has been formed near the proposed sports complex area for the movement of blackbucks from the Hostel Zone.

### 13.4. Telephone Facilities

A new telephone exchange was commissioned by BSNL, Chennai Telephones Division, in the campus. All the direct lines of this institute, which were linked from Raj Bhavan Telephone Exchange, have been linked to this exchange.

### 13.5. Central Supplies Unit

The Central Supplies Unit functions under the administration of a Warden. The unit procures milk from the Tamil Nadu Co-operative Milk Producers' Federation and distributes it to the student hostels.

The unit procures major items from wholesale suppliers through the Provision Selection Committee and Provision Purchase Committee and distributes them to hostels, thus economising the mess expenses.

The unit also procures branded cosmetics and eatables from wholesale dealers and distributes them to students through Students Amenities Centres at nominal prices, which are much less than the maximum retail prices (MRPs).

### 13.6. Guest Houses

There are two guest houses on campus, namely Main Guest House and Taramani Guest House, which have seven suites and 84 rooms, respectively.

### 13.7. Hospital

The Institute Hospital takes great pride in the medical supportive service it provides to the institute. It is the best of hospitals attached to teaching institutes.

The medical crew consists of Dr. Mahalakshmi M. Ravi, DGO, Chief Medical Officer-i/c and the following officers:

#### Medical crew of Institute Hospital, IIT Madras

Senior Medical Officers	Medical Officers	Senior/Junior Medical Officers (on Contract)
Dr. B. Rebecca Punithavalli, MD (O&G)	Dr. N. Porchelvi, MBBS	Dr. Shabanam B. Mulani, MD (General Medicine)
Dr. Sabitha Selvam, DMRD	Dr. V. Thenral, MBBS	Dr. H. Anand, MBBS
	Dr. D. Saraswathi, MBBS	Dr. J. Siva, MBBS
	Dr. R. Gowri Shanker, MBBS, DA	
	Dr. P. Kavitha, MBBS	

They are assisted by visiting consultants, paramedics and the supporting staff.

#### Academic Activities

The following 15 continuing medical education (CME) programmes were conducted last year.

#### CME programmes

Topic
Management of Hypertension
Role of Beta Blockers in Secondary Prevention
Insulin
Typhoid Conjugate Vaccine
Role of Beta Blockers in Management of Cad
Optimising Glycemic Control: Which Drug to Use After Metformin
Effects of ACEs and ARBs in DM Population (BMJ)
Acute Coronary Syndrome (ACS)
Infertility
HT/Dyslipidemic in JNC VIII Guidelines
Swine Flu in India: H1N1 Disease and Its Prevention
Advances in Breast Cancer
New Strategies to Minimise CV Risk in T2DM
Swine Flu
SGLT <sub>2</sub> Inhibitors

#### Conference and events

- BRIDGE 2014 was conducted on 28 and 29 June with the theme of 'Practical Pulmonology' for the benefit of our doctors and budding post-graduates.
- In view of Women's Day, a health camp was conducted over 4 days.
- World Nurses' Day was celebrated at the Institute Hospital.
- Doctors' Day was celebrated on 1 July 2014.

#### Surgeries

62 Major surgeries and 160 minor surgeries were performed, including emergency caesarean sections and laparoscopic appendicectomies.



### **Training programmes for hospital staff**

- As part of their in-service education, the staff nurses and other paramedics were sent for basic life support/ advanced cardiac life support training at the Academy of Clinical Training.
- Three teams of paramedics updated themselves on the following topics:
  1. Acute cardiac emergencies
  2. Acute respiratory emergencies
  3. Acute abdominal emergencies

### **Free medical check-up camps for institute employees and their dependents**

- A health check-up camp was conducted for KV students over 6 days.
- A health check-up camp was conducted for the staff of Owzone on 26 and 27 February 2015.

The number of out-patients at the hospital increased by 81,152 this year. This was understood to be due to an incidence of swine flu.

Total claim for in-patients admissions at the Institute Hospital through insurance companies: ₹1,23,71,444.

### **13.8. Bank**

The IIT branch of State Bank of India functions on campus. It has two ATMs. There is a branch of Canara Bank also on campus. ICICI Bank has installed an ATM in the Hostel Zone.

### **13.9. Post Office and Telecom Centre**

There is a post office on campus to cater to the needs of the staff, students and residents of the campus. A 24-hour telecom centre caters to the needs of the staff, students and residents of the campus.

### **13.10. Schools**

Vanavani 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 Standard XII, and the KV offers courses from Standard I to Standard XII.

### **13.11. Open Air Theatre**

The Open Air Theatre is used by the Film Club to screen films during weekends. The Open Air Theatre is also used for other functions of the institute and the schools.

### **13.12. 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.

### **13.13. Cafeteria**

There are two canteens, the IIT Staff Canteen and the IRTC Restaurant, on campus to cater to the needs of the staff and students.

### **13.14. Crèche**

A crèche is functioning in the campus for the benefit of the staff/working women. There were about 50 children in the crèche during the period under report.

### **13.15. Transport Services**

The institute has eight LYNX buses, which provide transport facilities for the staff, students and residents of the campus. Transport facilities are also available for official work.

### **13.16. Campus News**

*Campus News* is published every Friday, highlighting the important events of the institute.

## 14. FINANCE AND ACCOUNTS

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 the Principal Accountant General (Tamil Nadu & Pondicherry), Chennai on behalf of the Comptroller & Auditor General of India.

The 82nd Finance Committee of the Institute, in its meeting held on 18 November 2014, recommended non-plan revised estimates of ₹305.50 crores (gross) for the year 2014–2015 and budget estimates of ₹285.10 crores (gross) for the year 2015–2016. The committee also recommended a revised estimate of ₹157.67 crores for the year 2014–2015 and budget estimates of ₹300.00 crores under the plan head. The same was approved by the Board of Governors of the institute in its 223rd meeting, held on 28 November 2014.

The following is the summary of the revised estimates for 2014–2015 and budget estimates for 2015–2016 under the non-plan and plan heads as approved by the Board of Governors of the institute in its 223rd meeting, held on 28 November 2014 (figures in crores of ₹).

Item	B.E. 2014-2015	R.E. 2014-2015	B.E. 2015-2016
<b>Non-plan A/c</b>			
Opening balance	—	0.75	—
Institute income projected	55.05	52.36	55.10
Grant projected for salary	161.00	138.50	142.50
Grant for pension and retirement benefits	66.00	58.00	58.20
Grant for non-salary component	23.45	28.50	29.30
Total non-plan grant expected	250.45	225.00	230.00
<b>Total</b>	<b>305.50</b>	<b>278.38</b>	<b>285.10</b>
<b>Plan grant A/c</b>			
Grant expected from MHRD	244.50	157.67	300.00
Grant for scholarships—OH-31	36.50	51.00	42.00
Grant for asset creation—OH-35	208.00	106.67	258.00
<b>Total</b>	<b>244.50</b>	<b>157.67</b>	<b>300.00</b>

### Audit

The annual accounts of the institute for the year 2013–2014 were audited by the Principal Accountant General (Tamil Nadu & Pondicherry) during June–July 2014, and a certified copy of the annual accounts with the audit report was sent to MHRD after the annual accounts were duly adopted by the Board of Governors of this institute on November 2014 to enable MHRD to arrange for placing the same before both the Houses of Parliament during the winter session.

### Summary of grant utilisation under plan and non-plan for 2014–2015 (figures in crores of ₹)

Item	Amount
<b>Plan grant A/c</b>	
Opening balance	13.31
Plan grant received	123.87
<b>Total funds</b>	<b>137.18</b>
<b>Plan expenditure</b>	
Building and construction	38.87
Academic equipment	16.64
Equipment for specialised centre	6.09

Item	Amount
Infrastructure facilities (furniture/computers, etc.)	13.14
Periodicals/journals/books for library	16.34
Scholarship payments (HTTA/HTRA/PDF)	46.90
<b>Total plan expenditure</b>	<b>137.98</b>
<b>Non-plan account</b>	
Opening balance	0.75
Grant received during 2014–2015	215.75
<b>Total funds available</b>	<b>216.50</b>
<b>Non-plan expenditure</b>	
Salary and related items	—
Pension and other terminal benefits	—
Non-salary, non-pension items (other components)	—
<b>Total non-plan expenditure</b>	<b>—</b>

During the year 2014–2015 the Institute Corpus Fund went up from ₹163.98 crores to ₹178.00 crores (as on 31 March 2015). The Institute Endowment Account Balance went up from ₹39.98 crores to ₹51.55 crores as on 31 March 2015.

During the year, the Government of Tamil Nadu allotted 65.96.5 hectares (163 acres) of land in Kancheepuram District, Thiruporur Taluk, Thaiyur B Village for expansion (*vide* G.O. No. (Ms) 577 dated 29 December 2014, issued by Revenue Department (LD.4(1)). The approximate value of the land as indicated in the above order is ₹328,47,40,368.

## 1. THE SENATE

### Chairman

#### Prof. Bhaskar Ramamurthi

1	Prof. Amit Kumar	38	Prof. Panda T.
2	Prof. Bhaskar K.	39	Prof. Preeti Aghalayam
3	Prof. Chakravarthy S.R.	40	Prof. Pushpavanam S.
4	Prof. Luoyi Tao	41	Prof. Ragunathan Rengasamy
5	Prof. Murthy Haradanahalli S.N.	42	Prof. Ramanathan Srinivasan
6	Prof. Nandan Kumar Sinha	43	Prof. Ravi R.
7	Prof. Ramakrishna M.	44	Prof. Sai P.S.T.
8	Prof. Ramakrishna P.A.	45	Prof. Shankar Narasimhan S.
9	Prof. Sriram P.	46	Prof. Sreenivas Jayanti
10	Prof. Sujith R.I.	47	Prof. Susy Varughese
11	Prof. Velmurugan R.	48	Prof. Tanmay Basak
12	Prof. Lakshmana Rao C.	49	Prof. Upendra Natarajan
13	Prof. Mahesh Panchagnula	50	Prof. Archita Patnaik
14	Prof. Manivannan M.	51	Prof. Bhaskaran S.
15	Prof. Prasad Patnaik B.S.V.	52	Prof. Bhyrappa P.
16	Prof. Ramakrishnan Swaminathan	53	Prof. Chandrakumar N.
17	Prof. Ramasubba Reddy M.	54	Prof. Dhamodharan R.
18	Prof. Ramesh K.	55	Prof. Dillip Kumar Chand
19	Prof. Sivakumar M.S.	56	Prof. Govindasamy Sekar
20	Prof. Vengadesan S.	57	Prof. Indrapal Singh Aidhen
21	Prof. Anju Chadha	58	Prof. Mangala Sunder K.
22	Prof. Chandra T.S.	59	Prof. Mishra A.K.
23	Prof. Doble Mukesh	60	Prof. Narasimha Murthy N.
24	Prof. Guhan Jayaraman	61	Prof. Pradeep T.
25	Prof. Jayakrishnan A.	62	Prof. Ranga Rao G.
26	Prof. Karunagaran D.	63	Prof. Sangaranarayanan M.V.
27	Prof. Mahalingam S.	64	Prof. Sanjay Kumar
28	Prof. Rama Shankar Verma	65	Prof. Sankararaman S.
29	Prof. Sathyanarayana Naidu G.	66	Prof. Selvam P.
30	Prof. Srinivasa Chakravarthy V.	67	Prof. Sudheendra Rao M.N.
31	Prof. Subramaniam K.	68	Prof. Varadaraju U.V.
32	Prof. Suraishkumar G.K.	69	Prof. Vidyasagar K.
33	Prof. Abhijit P. Deshpande	70	Prof. Alagusundaramoorthy P.
34	Prof. Balakrishnan A.R.	71	Prof. Amlan Kumar Sengupta
35	Prof. Chidambaram M.	72	Prof. Ananthanarayanan K.
36	Prof. Kannan A.	73	Prof. Appa Rao G.
37	Prof. Nagarajan R.	74	Prof. Bhairavavajjula Nageswara Rao

75	Prof. Boominathan A.	119	Prof. Krishna Vasudevan
76	Prof. Devdas Menon	120	Prof. Mahesh Kumar
77	Prof. Dodagoudar G.R.	121	Prof. Nandita Dasgupta
78	Prof. Gandhi S.R.	122	Prof. Rajagopalan A.N.
79	Prof. Karthik K. Srinivasan	123	Prof. Ravinder David Koilpillai
80	Prof. Koshy Varghese	124	Prof. Sarathi R.
81	Prof. Ligy Philip	125	Prof. Shanthi Pavan Y.
82	Prof. Manu Santhanam	126	Prof. Shanthi Swarup K.
83	Prof. Meher Prasad A.	127	Prof. Sridharan K.
84	Prof. Mohan S.	128	Prof. Srinivasan Umesh
85	Prof. Murthy B.S.	129	Prof. Vinita Vasudevan
86	Prof. Murty C.V.R.	130	Prof. Asokan Thondiyath
87	Prof. Rajagopal K.	131	Prof. Nilesh J. Vasa
88	Prof. Ramamurthy K.	132	Prof. Krishnakumar R.
89	Prof. Ravindra Gettu	133	Prof. Srikanth Vedantam
90	Prof. Robinson R.G.	134	Prof. Venkatesh Balasubramanian
91	Prof. Sathish Kumar S.R.	135	Prof. Aysha Iqbal Viswamohan
92	Prof. Sathyanarayana K.N.	136	Prof. Devaki Reddy S.
93	Prof. Sivanandan R.	137	Prof. Evangeline Manickam
94	Prof. Sudheer K.P.	138	Prof. Malathy Duraisamy
95	Prof. Srinivasan K.	139	Prof. Muraleedharan V.R.
96	Prof. Veeraragavan A.	140	Prof. Senkamalam Periyasamy Dhanavel
97	Prof. Chandrasekhar C.	141	Prof. Srilata K.
98	Prof. Deepak Khemani	142	Prof. Sreekumar N.
99	Prof. Gonsalves T.A.	143	Prof. Sudhir Chella Rajan
100	Prof. Hema A. Murthy	144	Prof. Umakant Dash
101	Prof. Janakiram D.	145	Prof. Arun Kumar G.
102	Prof. Kamakoti V.	146	Prof. Ganesh L.S.
103	Prof. Krishna Moorthy Sivalingam	147	Prof. Kamalanabhan T.J.
104	Prof. Pandurangan C.	148	Prof. Madhumathi R.
105	Prof. Raghavan S.V.	149	Prof. Prakash Sai L.
106	Prof. Siva Ram Murthy C.	150	Prof. Rajendran C.
107	Prof. Srinivasa Kumar P.	151	Prof. Srinivasan G.
108	Prof. Sukhendu Das	152	Prof. Sundarraj R.P.
109	Prof. Amitava Dasgupta	153	Prof. Thenmozhi M.
110	Prof. Anil Prabhakar	154	Prof. Arindama Singh
111	Prof. Aravind R.	155	Prof. Kulkarni S.H.
112	Prof. Devendra Jalihal	156	Prof. Ponnusamy S.
113	Prof. Enakshi Bhattacharya	157	Prof. Radha R.
114	Prof. Giridhar K.	158	Prof. Rama R.
115	Prof. Harishankar Ramachandran	159	Prof. Sanyasiraju Y.V.S.S.
116	Prof. Jagadeesh Kumar V.	160	Prof. Satyajit Roy
117	Prof. Jhunjhunwala A.	161	Prof. Sivakumar K.C.
118	Prof. Karmalkar S.	162	Prof. Subrahmanyam P.V.

163 Prof. Sundar S.  
164 Prof. Thamban Nair M.  
165 Prof. Usha R.  
166 Prof. Veeramani P.  
167 Prof. Vetrivel V.  
168 Prof. Arunn Narasimhan  
169 Prof. Babu V.  
170 Prof. Balaji C.  
171 Prof. Chandramouli P.  
172 Prof. Gnanamoorthy R.  
173 Prof. Govardhan M.  
174 Prof. Krishnan Balasubramaniam  
175 Prof. Mani A.  
176 Prof. Mayuram M.M.  
177 Prof. Mehta P.S.  
178 Prof. Prakash Maiya M.  
179 Prof. Prasad B.V.S.S.S.  
180 Prof. Raghu Prakash V.  
181 Prof. Raju Sethuraman  
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