

IIT Madras



IITM – ANNUAL REPORT 2012–13



Annual Report
2012–13



INDIAN INSTITUTE OF TECHNOLOGY MADRAS

Annual Report 2012-2013



**INDIAN INSTITUTE OF TECHNOLOGY MADRAS
CHENNAI – 600 036**

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1. DIRECTOR'S REPORT

The Indian Institute of Technology Madras (IITM) was established in 1959 and declared an institute of national importance by an Act of Parliament in 1961. In the forty-ninth convocation, there were a total of 1464 graduands—141 Ph.D., 127 M.S., 468 M.Tech., 69 M.B.A., 29 M.A., 123 M.Sc., 225 Dual Degree (B.Tech. and M.Tech.) and 273 B.Tech., and the first batch of 9 of the PG Diploma in Metro Rail Technology and Management. These degrees cover a wide range of disciplines and specializations offered by the eleven engineering departments, three science departments, the Department of Management Studies and the Department of Humanities and Social Sciences.

The faculty and students undertake basic and applied research across a wide swathe of areas. The institute attracts research funding from science ministries as well as a wide spectrum of industries and collaborates extensively with the space, nuclear and defence research organizations. The IIT Madras Research Park is a first-of-its-kind university-based research park in the country and is growing from strength to strength. IIT Madras has active linkages with more than 150 leading universities world-wide, resulting in a substantial two-way flow of students and faculty.

IIT Madras has been recruiting world-class faculty members in emerging areas for several years now. In 2012-2013, the institute added 37 new faculty members (of whom 3 are women), taking the total number to 526. We bade farewell to 11 faculty members and 29 staff members who retired after a lifetime of dedicated service to the institute.

This report provides a summary of our activities, achievements and accomplishments during the year 2012-2013.

1.1. Course-Based Programmes

In addition to the slew of undergraduate and postgraduate degrees offered by the sixteen departments, the institute offers several specialized degrees as well. These include a unique Clinical Engineering Programme, offered jointly with the Christian Medical College, Vellore and Sree Chitra Tirunal Institute for Medical Science and Technology, Tiruvananthapuram; a Visionary Leaders in Manufacturing PG diploma programme offered jointly with IIT Kanpur and IIM Kolkata; a PG diploma programme in metro rail technology and management; and interdisciplinary PG programmes in catalysis technology, petroleum engineering and nuclear engineering. The institute also offers specialized PG programmes for specific industries in civil, mechanical and ocean engineering.

In an effort to broaden the palette for UG students, two minor streams have been introduced: Sustainable Infrastructure & Environment Management, and Structural Mechanics. More such minor streams are on the anvil as the curriculum moves decisively towards increasing inter-disciplinarity.

IIT Madras has a Joint Doctoral Degree Programme with the National University of Singapore, and more such programmes are expected in the coming years as our trans-national research collaborations intensify and fructify.

1.2. Academic Research

Research at IIT Madras continued to flourish during the year under review. Around 360 new Ph.D. students enrolled in 2012-2013, in keeping with the national goal of increasing the availability of the highest-quality researchers and teachers to industry and academia. In 2012-2013, our faculty and research scholars published 1014 papers in refereed international journals and 54 in refereed national journals. They also presented 371 research papers in international conferences and 80 in national conferences. IIT Madras is thus a significant contributor to the national research output.

1.2.1. Snapshots of Research in 2012–2013

Around 250 research scholars, assisted by their faculty supervisors, submitted theses and papers that have been published this year. I shall now give you a glimpse of the research work carried out in various departments by describing one interesting piece of work from each department. I do this to expose the breadth and scope of research at IIT Madras and thereby hope to attract more of our bright young minds to the fascinating world of research.

Mr. Sumit Verma, from Aerospace Engineering, suggested new techniques to enhance the burn rate of an aluminized composite solid propellant.

Mr. B.S. Suresh Anand, of Applied Mechanics, investigated factors affecting quantification of biomarkers using optical spectroscopy of turbid media.

Ms. P. Vidya, Department of Biotechnology, studied biotransformation with ionic liquids as reaction media.

Ms. R. Anandalakshmi, of Chemical Engineering, investigated natural convection in rhombic enclosures using heat-line and entropy generation.

Mr. K. Kumar, from the Department of Chemistry, synthesized various metal—boron cluster compounds and studied their properties that are specifically relevant to electronics, ceramic materials and boron—neutron-capture therapy.

- Mr. P. Balasubramanian, of Civil Engineering, has proposed the treatment of volatile organic compounds using biotrickling filters.
- Mr. R. Padmanabhan, Department of Computer Science and Engineering, carried out investigations on voice activity detection and feature diversity for speaker recognition.
- Mr. Sivakumar Ganjikunta, from Electrical Engineering, has shown a strategy to mitigate voltage sags with phase jumps using custom power devices.
- Mr. S. Saravana Kumar, Department of Engineering Design, investigated obstacle avoidance and dynamic path planning of an autonomous underwater vehicle in 3D space.
- Ms. Shweta Kushal, from the Humanities and Social Sciences Department, studied women's narratives of the Punjabi diaspora and concluded that female protagonists construct their selves irrespective of the social construction of womanhood and that in doing so they debunk the meta-narratives of femininity, ethnicity, sexuality, race and gender by means of which they may be controlled.
- Mr. P.A. Job, of Management Studies, studied organizational design for excellence in the backdrop of Indian organizations.
- Mr. G. Krishna Kumar, Department of Mathematics, studied the pseudo spectrum and condition spectrum of an element in a Banach algebra.
- Mr. K. Ravi Kumar, of Mechanical Engineering, investigated energy-efficient receivers for line-focus-concentrating solar power systems.
- Mr. Puli Ramesh, from the Department of Metallurgical and Materials Engineering, studied microstructures and properties of friction-surfaced stainless steel coatings.
- Mr. Harender, of Ocean Engineering, presented a design for harnessing wave energy by converting the linear heave oscillation of a buoy to rotary motion and generating power with an electric generator. He also presented a failure-and-risk analysis for this power-generating system.
- Mr. B.P. Vinayan, from the Department of Physics, studied chemically modified carbon nanostructures for hydrogen storage, fuel cell and lithium-ion battery applications.

1.2.2. New Research Centres

Several new research centres have been created in 2012–2013 with multi-disciplinary research programmes of great national importance.

In recognition of the importance of the work initiated at IIT Madras on decentralized solar photovoltaic power systems, the Centre of Excellence for Decentralized Power Systems has been sanctioned by MHRD with an initial funding of Rs.20 crores. The centre will develop systems with smart DC microgrids for deployment at homes, farms, offices, schools and commercial and industrial buildings. The goal is to develop affordable and viable solutions to ameliorate India's energy shortage and at the same time improve sustainability and increase the use of renewable energy.

IIT Madras has been an important resource to the Archeological Survey of India (ASI) in the restoration of heritage structures. Most notable among the contributions of our faculty is the complete reconstruction of the Ta Prohm temple of the Angkor Wat group of monuments, in Cambodia, and the Kailasanathar temple in Uttiramerur, in Kancheepuram District, in India. When the institute was engaging in this work, it became apparent that there is a pressing need for sustained research towards ensuring the safety of our heritage structures, many of which are more than a thousand years old and located in seismically active zones. The National Centre for Safety of Heritage Structures (NCSHS) has therefore been created and funded to the tune of Rs.12 crores by the MHRD. This centre will bring together faculty members from multiple disciplines and draw on the knowledge of traditional sculptors and artisans. An MoU is also being signed with the ASI for collaborative work to be taken up by this centre.

IIT Madras has signed an MoU with Hindustan Aeronautics Ltd. to set up the Centre for Aerospace Transmission System (CATS) for undertaking joint research on software and design solutions for different types of gears, bearings, lubrication systems, vibration monitoring systems and production technologies in helicopter transmission systems.

The Thematic Unit of Excellence (TUE) is an advanced research laboratory funded by the DST for water purification using nano-technology. This year, the passive water purification technology developed by the centre for removing arsenic contamination is being deployed in 2000 communities in the affected districts of West Bengal.

The Healthcare Technology Innovation Centre (HTIC), a joint initiative of IIT Madras and the DBT, launched Eye-PAC, an intelligent image computing technology for extracting clinically important information from images of the eye. This enables screening for eye diseases in remote areas even when an expert is not available locally. The HTIC has partnered with Forus Health, an Indian med-tech start-up that has indigenously developed a revolutionary eye examination device, to take Eye-PAC to the public. The device has now reached around 200 installations across 10 countries.

The National Centre for Combustion Research & Development (NCCRD), set up last year at IIT Madras with funding from the DST, is progressing well. A number of sophisticated instruments such as a high-speed tomographic PIV, PDPA and high-pressure TGA have been procured, and many versatile test set-ups are being developed. A 24000 sq. ft 5-storey building is being constructed to house the centre. The centre will focus on three application sectors in which combustion plays a central role, namely the automotive, aerospace and thermal power sectors. In addition, research on fire safety and microgravity combustion will be carried out. An industry consortium consisting of leading automotive OEMs and ancillary parts manufacturers has been constituted to work together with NCCRD on gasoline direct injection (GDI) engine technology development optimized for different duty cycles under Indian conditions. On the thermal power front, distributed power generation through gasification of combinations of high-ash coal, biomass and other waste is being explored. On the aerospace front, advanced technologies related to combustion instability, micro-sprays, lean direct injection, supersonic combustion and solid propellants are being investigated.

The Department of Civil Engineering has been carrying out research and development activities, since 2003, in the area of rapid, affordable mass housing using glass fibre reinforced gypsum (GFRG) panels. These panels, originally developed by RBS Australia, were intended to be used in rapid erection of walls in buildings to carry gravity loads. The IIT Madras research team extended the application of this product to the entire building system—including floors, roofs and staircases. This system has the advantages of facilitating rapid construction, being cost-effective and sustainable. The consumption of energy-intensive materials such as cement and steel, and increasingly scarce materials such as river sand and water, are drastically reduced. In order to demonstrate this technology, a two-storeyed demonstration GFRG building was built on our campus, all in one month's time. The work has received widespread acclaim. The R&D work and technology transfer are supported by the Department of Science & Technology, and the design and construction methodology has been approved by the Building Materials & Technology Promotion Council, Government of India. This technology will hopefully serve as a game-changer for affordable mass housing in India.

The Centre for Non-Destructive Evaluation has developed a high-temperature magnetostriction-based ultrasonic sensor for monitoring the health of pipes in process industries, an acoustic emission sensor and associated electronics and software for online monitoring of marine, power plant and automobile engines using a novel r-Wavelet algorithm, and a new method for measuring the elastic moduli of materials as a function of temperature up to 1500°C using an ultrasonic waveguide technique.

The Centre for NanoElectroMechanical Systems and Nanophotonics (CNNP) is a multi-disciplinary centre set up to carry out application-oriented research in the material science, health, food safety and communication sectors and translating these into commercial products. Characterization equipment such as a spectroscopic ellipsometer, surface profiler, Doppler vibrometer, and probe stations have been commissioned, while processing equipment such as an ICP PECVD, DRIE and e-beam lithography system are being installed in a Class 1000 clean room. Lamellar gratings have been developed for compact FTS systems, and RF switches and silicon-ridge and single-mode waveguides have been fabricated. Silicon nanoporous membranes developed at the centre have been effective in size-based filtration of several biomolecules.

A fibre optics spectrophotometer that is capable of measuring both absorbance and fluorescence spectra has been designed in the Chemistry Department. An optical fibre-based dynamic interrogator for elastic wave sensing has been developed for IGCAR, Kalpakkam by the Electrical Engineering Department.

1.2.3. New Research and Fabrication Facilities

Research at the highest levels requires constant upgradation of instruments and facilities. It is our constant endeavor to equip the faculty and students of IIT Madras with the best possible facilities to take on the most challenging research problems in the years ahead.

A low-noise, low-speed wind tunnel facility for studying hydrodynamic stability, transition and flow control has been built in the Aerospace Engineering Department, while localized surface plasmon resonance (LSPR) and surface enhanced Raman Scattering (SERS) facilities have been created in the Applied Mechanics Department.

IIT Madras and the Glazing Society of India (GSI) have developed the Structural Glass Research and Testing Facility (SGRT) in the Civil Engineering Department. It is a first-of-its-kind facility in India for safety testing of and research in structural glass.

Under the FIST project (Rs.4.6 crores) sanctioned to the Department of Civil Engineering by the Department of Science and Technology, a unique facility to determine the behaviour of practically all materials used in the construction of infrastructure, housing and other essential services is being set up. This facility has servo-controlled systems having digital closed-loop controllers and data acquisition systems. This new set-up will promote, for the first time in a single Indian facility, characterization of material response ranging from elastic to post-cracking regimes, from dynamic to static to nonlinear creep loading rates, over a range of temperatures, under both monotonic and cyclic loading and under atmospheric and hydrostatic confining pressures. The materials that could be studied range from

highly deformable polymer fibres, geotextiles and bitumens to quasi-brittle concretes, rocks and ceramics and to high-strength steels and fibre reinforced composites.

The Industrial Automation Laboratory has been established with support from the Automation Industries Association of India in the Department of Engineering Design.

A 3D printer received by the Centre for Social Innovation and Entrepreneurship has been installed at the CFI lab to enable students to develop quick prototypes.

The 4096-node IBM iDataPlex HPC cluster installed last year has been ranked 224th amongst the fastest computing clusters in the world and the 5th in India. It is the fastest cluster in an Indian academic institution. In terms of energy efficiency, this is the best in India and is ranked 5th globally.

Specialized equipment such as spectrometers, aerodynamic particle size sensors, a vacuum brazing furnace and an Nd³⁺ YAG laser have been installed in different departments. The cryogenic nitrogen and helium plants of the institute have also been commissioned.

1.3. Academic Distinctions Secured by Our Faculty Members and Students

Several academic distinctions, honours and awards, fellowships of professional societies, and memberships of editorial boards of journals, have been bestowed on our faculty, staff and students in recognition of their academic achievements during the current year. Prof. Y. Shanthi Pavan of the Electrical Engineering Department was selected for the prestigious Shanti Swarup Bhatnagar Award in Engineering Sciences for 2012. Prof. Krishnan Balasubramanian has been awarded the Roy Sharpe Prize 2012 (lifetime achievement) by the British Institute for Non-Destructive Testing for his outstanding contributions to the field of NDT. He is only the second non-European and the first Indian to receive this award.

Dr. Satyanarayana Gummadi has won the NASI Scopus Young Scientist Award for 2012. Five of our young faculty members, Drs. Ashwin Mahalingam, Edamana Prasad, Deepa Venkitesh, Andrew Thangaraj and N.V. Ravikumar, have won the Young Faculty Recognition Award of the Institute for 2012. Prof. C. Balaji has won the award for Excellence in Teaching for the year 2012–2013.

Our faculty have also been prolific during the past year, writing books and monographs and filing patents for their inventions. An exhaustive list of laurels won by our faculty and students is given as an annexure to this report.

1.4. Industrial Consultancy and Sponsored Research

IIT Madras is pro-active in seeking out industry collaborations with a view to raising the technology bar in industry and making Indian industry globally competitive. Our faculty and students gain tremendously from the interaction as well. In 2012–2013, the Institute received sanctions for Rs.46 crores from industry for carrying out new projects, nearly 50% of the amount being for research-based consultancy.

Public funding for research in the form of sponsored projects from science ministries and government departments is critical for the high research intensity of IIT Madras. The faculty secured sanctions for projects worth Rs.105 crores in 2012–2013. The total value of ongoing sponsored projects in the Institute is Rs.460 crores, which constitutes a sizable part of the Institute's total budget.

The Institute has earned Rs.173 lakhs from technology transfer fees and royalties during the year 2012–2013. The details are provided in the annexure. An intellectual property management cell has been created in the Centre for Industrial Consultancy and Sponsored Research. This cell assists the faculty and students to protect their intellectual property by filing patents and pro-actively commercializes the products and processes developed at the institute.

In order to enable students and new faculty members to initiate and establish their research activities, the institute has supported seven new innovative student projects to the tune of Rs.8.5 lakhs and 30 new faculty proposals to the tune of Rs.369 lakhs.

We have signed 22 MoUs during the year with industries such as ITC Limited, Automation Industry Association of India, MRF Limited, Saint-Gobain Research India Ltd., Anant Udyog, LG Soft India Pvt. Ltd., Gopalpur Ports Ltd., Mahindra & Mahindra Ltd., AT&T Services Inc. and New Jersey etc. A new initiative called ReachIITM has been initiated for reaching out to the various stakeholders of IIT Madras via Facebook, Twitter and YouTube. A fortnightly e-newsletter has also been launched.

1.5. Research Park and Incubation

IIT Madras Research Park, three years after its inception, continues to attract new companies. Such sustained interest exemplifies the confidence that industry has placed in our ability to provide at the Research Park an environment conducive to foster technological collaboration and nurture innovation. During 2012–2013, the last couple of spaces meant for R&D clients were taken.

Despite constraints in space availability, there is no dearth of applicants, re-inforcing the value proposition that industry perceives in being located at the Research Park and collaborating with IIT Madras. In this context, IITMRP has taken a giant leap forward by starting to build another 8 lakh sq. ft, which will be ready for fitment by January 2015. Saint-Gobain Research has signed up as an anchor client to set up their India Research Centre. The next phase will have specialized spaces for sophisticated-materials, biological and machine laboratories and will make IIT Madras Research Park a very powerful platform for industry–academia collaboration.

The institute has set up an incubation cell to implement the incubation policy of the institute. This cell provides overarching governance to the specialized incubators operating in the institute, as well as support services to incubatees. While the cell will assist the faculty and students to launch start-ups, it will also support external start-ups that can benefit from association with the institute and its faculty. A key objective of the cell is to leverage the intellectual capital of the faculty and students, the research infrastructure of the institute and the ecosystem of the Research Park to unlock value and create a large number of new enterprises.

The alumni-funded Center for Social Innovation and Entrepreneurship (CSIE) initiated ‘Entrepreneurship Week’ during 3–9 March 2013, an event dedicated to celebrating and fostering entrepreneurship on campus. IIT Madras’ Rural Technology and Business Incubator (RTBI), housed in the Research Park, has incubated 12 new companies in the last year in diverse areas ranging from education to development of cloud- and mobile-based technology and solutions for the dairy sector.

I am heartened to report that 25% of the graduating class of the Engineering Design Department have started companies this year. The department was started in 2006 with a distinct curriculum to encourage product development and design. We are glad that our efforts are beginning to yield fruit.

Two companies, one focusing on providing appropriate and cost effective environmental engineering solutions based on sustainability principles and another specializing in drafting and implementing social media and branding strategies for businesses and events, have also been incubated.

1.6. Continuing Education

IIT Madras has an extensive outreach programme catering to teachers, practising engineers and researchers. The Centre for Continuing Education (CCE) has been very active, with our faculty members organizing 13 AICTE-funded Short-Term Training Programmes (QIP) for the benefit of engineering college faculty members, as well as 84 Continuing Education Programmes (CEP) for the benefit of industrial personnel, through the Curriculum Development Cell. These programmes have benefitted about 3000 participants in 2012–2013 and resulted in revenue of around Rs.3.5 crores.

Under the Book Writing Scheme, designed to encourage textbook writing by our faculty members, 74 books have so far been published, and 7 books are under publication in the current year.

1.7. Our Contributions to the National S&T Educational System

IIT Madras plays an important role in assisting other engineering institutions in the country with their curriculum, laboratory upgradation and faculty career development. Under the Quality Improvement Programme (QIP), 604 faculty members from other institutions have obtained their Ph.D. degrees, and 567 faculty members from other institutions have obtained their M.Tech degrees. from IIT Madras since its inception. Currently we have a total of 96 QIP scholars—68 pursuing Ph.D. and 28 M.Tech., including 20 and 9 women, respectively. The institute is also assisting engineering colleges in Tamil Nadu and the neighbouring states to implement their TEQIP-II programmes.

The National Programme on Technology Enhanced Learning (NPTEL) is India’s largest ICT-based technical course dissemination programme in the higher-education sector. Its main objective is to increase the reach of high-quality engineering and sciences education across our country. A total of 575 (web/video) courses in engineering, science and technology developed under NPTEL are freely available on our NPTEL website (<http://nptel.iitm.ac.in>) and through YouTube at <http://www.youtube.com/iit>. The courses are also telecast through the Eklavya channel, made available by the MHRD exclusively for this purpose. The NPTEL channel in YouTube has received more than 88 million upload views, and the NPTEL site has recorded more than 22 million visits since inception.

The NPTEL at IIT Madras has also started conducting online courses. Two live online courses, ‘Digital System Design’ and ‘Basic Electrical Circuits’, were offered in 2013. Several institutions and some individuals participated in these courses. A large Massive Open Online Course on computer science, with a proctored examination and certification in collaboration with NASSCOM, is planned for engineering college students across the country. This will enable them to be better qualified for employment in the IT industry. With the experience gained from this exercise, NPTEL will thereafter launch online courses in various engineering disciplines as well.

In the area of renewable energy, the Central Electronics Centre has been playing a key role by conducting several training programmes related to solar photo-Voltaics (SPV). Forty SPV training programmes have been conducted,

and more than 860 personnel have been trained. The project was sponsored by IREDA (Indian Renewable Energy Development Agency), New Delhi. SPV Laboratory (indoor and outdoor) facilities have been established to promote the developmental activities in this area.

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, and 167 students participated in the programme this year.

1.8. International Collaboration

IIT Madras has been interacting with several globally reputed universities and organizations for collaborative research, exchange of faculty and students, etc. The Office of I&AR, set up last year, promotes research collaborations and student exchanges with leading academic institutions and organizations around the world. More than 150 MoUs are in effect, and one joint doctorate programme has been launched in partnership with NUS, Singapore. During the academic year 2012-2013, more than 100 foreign students were hosted on campus, and an equal number of IIT Madras students travelled abroad for study and research purposes. About a hundred university delegations visited the campus, and in each case, faculty–faculty interactions were facilitated.

The first ever 'International Day' was celebrated in November last year and was attended with great enthusiasm by Indian and foreign students alike. Both groups collaborated, planned and executed a great event.

The Indo-German Centre for Sustainability (IGCS) is a collaborative venture with German universities, established in our Golden Jubilee year to discover sustainable pathways for development in the 21st century. IIT Madras and RWTH Aachen University signed an MoU when the Prime Minister's delegation visited Germany in April 2013, which is expected to give a fillip to collaborative research between the two countries. The centre will receive Rs.53.37 million during 2013–2016 from the Department of Science and Technology, Government of India to carry out research projects in four thematic areas—energy, land-use, waste and water—around sustainability challenges that will be exacerbated by climate change. The German Academic Exchange Service (DAAD) has committed up to €2.8 Mio from the New Passage to India programme to RWTH Aachen during 2013–2016. This will enable German scientists from partnering universities in the field of sustainability science to travel to IIT Madras and spend 1–2 years each to carry out this research jointly with faculty and researchers at IIT Madras.

IIT Madras signed 5 MoUs with international companies and research laboratories for collaborative R&D last year. During the summer, as many as 200 faculty members from the Institute visited universities and research laboratories abroad for collaborative research, participation in conferences, visiting assignments, etc.

Over the past few years, the institute has created several opportunities for international student exchange. Under the Indo-German agreement between the seven IITs and seven technical universities in Germany, we deputed 7 M.Tech. students to undertake their project/thesis work in these German universities last year. We also received 56 students from Germany so that they could undertake their projects in our research laboratories. Under the DAAD-sponsored IITM–Bremen Student Exchange Programme, 3 M.A. students will visit the University of Bremen for a semester. Under the MoU with EPFL, 4 students visited last year, and under the student exchange programme, 4 B.Tech./DD students visited NTU.

1.9. Human Resources Training

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 121 staff members benefitted from 16 in-service and 22 offsite training programmes. Apart from this, as many as 25 officers/staff members were provided Hindi training.

The Teaching Learning Centre (TLC), the first of its kind among higher technical institutions in the country, established to create human resources with the highest professional and personal qualities, organized many faculty development programmes, workshops and lectures in the last year, and several faculty members benefitted from it.

1.10. Quality and Process Improvement Initiatives

IIT Madras has been awarded ISO 9001:2000 certification for academic support processes since 1999 and for administrative support processes since 2001. In 2011, all the units of IIT Madras were recertified as per the ISO standard ISO 9001:2008. The certificate is valid until August 2014 for academic support processes and till January 2014 for administrative support processes. In addition to ISO 9001:2008 certification, the Central Electronic Centre has been NABL-accredited for its Testing and Calibration Laboratories since 2004.

With the increased student intake in recent years and the faculty recruitment, the implementation of an enterprise resource planning (ERP) software system, internally referred to as Workflow, was initiated to enhance the efficiency

and quality of the processes at IIT Madras. A suite of electronic data services (e-services) have been provided to the students, faculty and staff via Workflow processes in the different sections, such as Academics, Administration, Accounts, Stores & Purchase and ICSR.

The benefits of an institute-wide effort to adopt an ERP solution are beginning to bear fruit, and the benefits are now tangible. Each of the administrative and academic processes has been mapped and optimized. The ERP platform is flexible and can connect to third-party packages such as Tally for accounting and payrolls and to open-source software such as Moodle for academics. While our operations are being streamlined, the staff are also being trained in the use of Workflow.

1.11. Infrastructure Development

The Engineering Unit plays a vital role in overseeing all construction activities and facilities management on the campus. The major infrastructure projects completed during the academic year 2012–2013 include a new shopping centre, a campus community hall, additional rooms in the men's hostels, G-type quarters (one tower, 30 units), a new bus shed and an auto workshop and diesel refueling facility. The construction projects currently under progress include new hostels (one hostel for women and two hostels for men (creating approximately 1351 additional rooms, thereby meeting the needs of the growing student population), the new Academic Complex and Canteen, a new block for the Chemistry Department, the DST Thematic Unit of Excellence—Water Purification Using Nanotechnology, the National Centre for Combustion R&D (NCCRD) and a fully rebuilt swimming pool.

One of the major green initiatives taken up by IIT Madras is the generation of power using solar photo-voltaic systems. A 1 MW roof-top solar PV plant is being installed. We have also initiated innovative R&D efforts to adaptively match the load to the power being generated, adoption of energy-efficient DC appliances and modifications of appliances for higher efficiency when operating on power generated using solar PV.

The institute ensures that all new buildings meet the green building and GRIHA norms and are provided with energy-efficient light fittings. The IIT Madras Campus Master Plan, which was updated in 2010, serves as the blueprint for planned growth to meet future infrastructure needs of IIT Madras in a sustainable way while preserving the natural beauty, flora and fauna of the campus.

The Zero Waste Zone (OWZone) project continues to render commendable service to the cause of keeping the campus clean. It employs five self-help groups to collect the solid waste on campus on a daily basis for segregation, recycling and composting.

1.12. Student Co-curricular and Extra-curricular Activities

The academic year 2012–2013 has been yet another remarkable one for the students. The co- and extra-curricular activities continued with great enthusiasm and scaled new heights. Eminent personalities from all walks of life addressed our students in different forums. Several new initiatives were launched for the welfare of the students.

The IIT Madras sports contingent came second in the overall Men's General Championship in the 48th Inter-IIT Sports Meet, held at IIT Roorkee. Considering the biting cold in mid-December, it was a commendable performance by our sportspersons.

IIT Madras coordinated the fourth edition of the Terry Fox Run, which surpassed the previous editions in terms of both participation (12000) and sponsorship funds collected (Rs.12 lakhs).

The Gerhard Fischer and Kokila Rajaiah basketball tournaments were successfully conducted in the OAT after a long gap of almost a decade.

On the occasion of Holi, the Gymkhana organized for the first time the Great Indian Sports Mela. Thirteen traditional games were organized for the students, faculty and residents of IIT Madras, and the entire event was a super hit. It helped increase interactions among the students, faculty and staff and family members.

A 24-hour snacketeria has been created in the Hostel Zone. After a gap of 3 years, the community laundry service has been restarted at Brahmputra Hostel. Two cycle repair shops—one in the men's hostel zone and the other in the women's hostel zone—have been approved. A music room, equipped with high-quality amplifiers and a professional drum kit, is available for use by student-musicians.

Shaastra, the annual technical festival of IIT Madras, received the ISO 2001:9000 certification for three more years. Envisage, the first ever techno-entertainment show, conceived and performed by our students, was a huge success. More than 60 exhibits featured this year. With a total of 14 workshops, Shaastra 2013 offered the highest number of workshops, compared with any other technical festival in India. Shaastra Junior Quiz witnessed the first-ever international participation this year.

Saarang, the annual cultural festival of IIT Madras, was held in the second week of January this year. The opening Classical Night presented a perfect blend of Hindustani and Carnatic music performed by the Gundecha and Malladi

brothers, respectively. It was followed by a splendid Kathak performance by the maestro Pt. Birju Maharaj. The 5-day festival concluded with the Popular Night performance by the hugely popular Shankar—Ehsaan—Loy trio.

Two major new initiatives launched this year are Saarang Milan—the first-ever outreach organized by any college cultural festival, which involved the conduct of selected Saarang events in other cities and Saarang Eunoia—an umbrella for Saarang's various social cause activities.

The extramural lecture series saw a plethora of speakers from diverse backgrounds presenting their talks. This series had the most number of lectures in an academic year. The invited speakers included Dr. Alan R. Chambers, Mr. Anand Teltumbde, Mr. Prabir Purkayastha, Mr. Ramachandra Sundaralingam, Mr. Sam Pitroda, Mr. Siddharth Varadarajan, Mr. Narendra Nayak, Mrs. Amala Akkineni, Mr. R. Gopalakrishnan and Mr. V.S. Sampath.

As always, the students of IIT Madras have made a sincere attempt to give back their due share to society. The students partnered with Teach for India, Make A Difference, Milaap, Eureka Child, etc., to render service to the less fortunate. Volunteers from the speaking skills, dramatics and Western music clubs taught underprivileged children at two centres. The computer vision group of the Center for Innovation developed an alternative to the Optical Mark Reader machine. This was launched during Shaastra 2013 and was implemented in collaboration with an NGO, Pravinya. In association with Sankara Netralaya and the Elite School of Optometry (ESO), a two-day vision screening camp was conducted in the village of Natham, Kancheepuram district, Tamil Nadu. The IViL team conducted weekly English classes for the students in this village with the objective of opening up newer avenues for interaction with the villagers.

The quiz team from IIT Madras stood 3rd overall and 1st among the IITs at Nihilanth, the Inter-IIT/IIM Quiz Fest, held at IIT Bombay. For the first time, students from IIT Madras participated in two major international competitions, namely, FSAE 2012 and Mirosof, held by FIRA (Federation of International Robot-soccer Association). We were the only Indian team to participate in Mirosof 2012. We also won the award for the Best Idea in Robocon 2013.

A contingent of 10 students represented IIT Madras in the New York Global Young Leaders' Summit 2013, International Model United Nations programme, held in New York from 26 to 29 March this year, and received the Outstanding Delegation award from among the delegations from various countries that participated in the programme. Additionally, two of our students received individual Best Delegate awards.

1.13. Student Welfare

MITr has been proactive this year, with a wide range of activities organized with the objective of nurturing a physically, socially, emotionally and intellectually balanced life among our students.

Freshmen Forum was hosted on the website officially for the first time and was publicized well. It received a massive response from the freshers, who shared their doubts/concerns, which were answered by the MITr team.

IIT Madras has set up a one-of-its-kind dedicated student-driven Disaster Management Committee. Three emergency medical care workshops were conducted, with ALERT as a knowledge partner, to offer training to more than 300 students and staff members of the institute. Training was imparted in fire safety and handling of fires by the institute's Fire Officer and his team.

The event titled CONNECT 12–13, held between 5 and 7 October 2012, consisted of panel discussions in preparation for the civil services admissions, CAT, etc.

1.14. Placement

As a result of reaching out to a total of 1200 core and non-core companies—500 from the previous year and 700 new ones—we had 313 companies registering this year. The focus was on contacting various Fortune 500 companies and leading companies in the automobile sectors, such as Rolls Royce, Mahindra and Renault and semiconductor industries. A total of 814 students were placed through the Placement Office, of whom a large fraction joined core engineering companies. To enhance student interaction with the companies, the Research Park co-ordinated the Summer Internship 2013 drive, placing about 611 3rd year students into internships.

1.15. Alumni Matters

The alumni of our Institute make us proud by distinguishing themselves in various professions and walks of life. Many occupy leadership positions in India and abroad in industry, government organizations and educational institutions, fulfilling the original intent of the creators of the IIT system. A position of Dean (International and Alumni Relations) was created in 2012–2013 to leverage the institute's excellent relations with its alumni and to catalyse increased engagement with academic institutions, industry and enterprises across the world. Till now, nearly 40,000 students have been awarded degrees. Since 1997, we have been honouring select alumni for their distinguished contributions to society, through Distinguished Alumnus Awards, every year. The names of the awardees for the year 2013 were announced on Republic Day.

They are:

- Dr. S. Gopalakrishnan, Professor, Department of Aerospace Engineering, Indian Institute of Science, Bangalore; M.Tech. in Applied Mechanics, 1987
- Dr. Hari Balakrishnan, Professor, Department of Computer Science, Massachusetts Institute of Technology, Cambridge, MA, USA; B.Tech. in Computer Science, 1993
- Dr. Shankar Ramamurti, Professor, Department of Physics, Yale University, New Haven, CT, USA; B.Tech. in Electrical Engineering, 1969
- Dr. Ramanathan V. Guha, Google Inc., Los Altos Hills, CA, USA; B.Tech. in Mechanical Engineering, 1986
- Dr. Kumar N. Sivarajan, Chief Technology Officer, Tejas Networks, Bangalore; B.Tech. in Electrical Engineering, 1987
- Dr. Venky Harinarayanan, Senior VP, Walmart Global eCommerce and Head of @walmartLabs, Saratoga, CA, USA; B.Tech. in Computer Science, 1988
- Dr. Anand Rajaraman, Founding Partner, Cambrian Ventures, Palo Alto, CA, USA; B.Tech. in Computer Science, 1993
- Dr. Sailesh Krishna Rao, Founder and Executive Director, Climate Healers, Danville, CA, USA; B.Tech. in Electrical Engineering, 1981

with this, the number of Distinguished Alumni of IIT Madras now exceeds 100.

Alumni continue to contribute generously towards the development of the institute and to the welfare of our students. In 2012, for the first time ever, alumni donations to IIT Madras exceeded Rs.12 crores in a calendar year. Contributions were directed towards research infrastructure, socially relevant projects, chair professorships, student and faculty awards and students' fee waivers. Endowments were created to support entrepreneurship initiatives and to facilitate discretionary expenditure by the institute on worthy causes.

Many events were held on campus to strengthen and celebrate alumni and international relations—PG Confluence Day; Alumni Day; and Re-Union Days of the 1997, 1992, 1987, 1988 and 1972 batches. The Leadership Lecture Series, featuring alumni, has been received very well by the campus community, and nearly 30 lectures have been delivered so far in this series.

1.16. 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 organizations who assist us in various capacities; and our alumni. In particular, I would like to thank office-bearers such as heads of departments, deans, 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.

Annexure

Faculty Awards

Dr. Athi N. Naganathan (BT)	– Innovative Young Biotechnologist Award, Department of Biotechnology, New Delhi
Dr. Mukesh Doble(BT)	– The Dow Professor M.M. Sharma Distinguished Visiting Professorship, Institute of Chemical Technology, Mumbai
Dr. Satyanarayana N. Gummadi (BT)	– NASI Scopus Young Scientist Award
Dr. Smita Srivastava (BT)	– Rashtriya Gaurav Award, India International Friendship Society
Dr. Ashwin Mahalingam (CE)	– Young Faculty Recognition Award, IIT Madras
Dr. Balaji Narasimhan (CE)	– Distinguished Achievement Award, International SWAT Conference
Dr. Koshy Varghese (CE)	– Distinguished Scholar Award, Project Management Institute (PMI), India
Dr. Lelitha Devi V. (CE)	– Volvo Sustainable Mobility Award, Volvo Buses India Pvt. Ltd., Karnataka
Dr. Mathews M.S. (CE)	– Vishwakarma Award, Construction Industry Development Council
Dr. Rajagopal K. (CE)	– Achievement Award, International Geosynthetics Society, USA
Dr. Raghuram Chetty (CH)	– Top Cited Article Certificate, Elsevier

- Dr. Hema A. Murthy (CS) – Prof. Rais Ahmed Memorial Lecture Award, Acoustical Society of India
- Dr. Balasubramanian K.K. (CY) – Gold Medal, Chemical Research Society of India
- Dr. Dhamodharan R. (CY) – INSA Teachers Award, Indian National Science Academy
- Dr. Edamana Prasad (CY) – Young Faculty Recognition Award, IIT Madras
- Dr. Pazhamalai Anbarasan (CY) – Thieme Chemistry Journals Award
- Dr. Pradeep T. (CY) – India Nanotech Innovation Award
- Dr. Santosh J. Gharpure (CY) – B.M. Birla Science Prize in Chemistry
- Dr. Sundargopal Ghosh (CY) – Bronze Medal, Chemical Research Society of India
- Dr. Shankar Ram C.S. (ED) – INAE Young Engineer Award, Indian National Academy of Engineering
- Dr. Andrew Thangaraj (EE) – Young Faculty Recognition Award, IIT Madras
- Dr. Ashok Jhunjhunwala (EE) – A.V. Rama Rao Technology Award, Indian Institute of Chemical Technology, Hyderabad
- Dr. Deepa Venkitesh (EE) – Young Faculty Recognition Award, IIT Madras
- Dr. Shanthi Pavan Y. (EE) – Shanti Swarup Bhatnagar Prize, Council of Scientific and Industrial Research
- Dr. Ajit Kumar Kolar (ME) – Distinguished Service to the Institute Award, IIT Madras Alumni Association
- Dr. Chakravarthy Balaji (ME) – Srimathi Marti Annapurna Gurunath Award for Excellence in Teaching, IIT Madras
- Dr. Krishnan Balasubramanian (ME) – Roy Sharpe Prize, a lifetime achievement award, British Institute for Non-destructive Testing
- Dr. Sarit Kumar Das (ME) – India Citation Award 2012, Thomson Reuters (Web of Science)
- Dr. Murty B.S. (MM) – Distinguished Visiting Professorship, PSG College of Technology
- Dr. Ravikumar N.V. (MM) – Young Faculty Recognition Award, IIT Madras
- Dr. Sundar (OE) – Distinguished Membership Award, International Association of Hydro-Environment Engineering and Research
- Dr. Natarajan T.S. (PY) – National Award for Technology Innovation in Petrochemicals (runner-up), Ministry of Chemicals and Fertilizers

Fellowships

- Dr. Michael Gromiha M. (BT) – Senior Scientist S&T Visiting Fellowship, INSA
- Dr. Arun K. Tangirala (CH) – IAS Visiting Fellowship, TUM, Germany
- Dr. Shankar Narasimhan (CH) – Fellow, Indian National Academy of Engineering
- Dr. Murty C.V.R. (CE) – Fellow, Institution of Engineers (India)
- Dr. Ravindra Gettu (CE) – Fellow, RILEM International Union of Laboratories and Experts in Materials, Structures & Systems, France
- Dr. Sudheer K.P. (CE) – Visiting Research Scientist Fellowship, Purdue, USA
- Dr. Siva Ram Murthy(CS) – Fellow, Indian National Science Academy
- Dr. Baskaran S. (CY) – Fellow, Indian Academy of Sciences
- Dr. Asokan T. (ED) – Indo-Australian Senior Scientist Visiting Fellowship, INSA
- Dr. Chakravarthy Balaji (ME) – Fellow, Indian National Academy of Engineering
Alexander Von Humboldt Fellowship
- Dr. Sitaram N. (ME) – Associate Fellow, American Institute of Aeronautics and Astronautics
- Dr. Prem B. Bisht (PY) – Fellow, Optical Society of India

Best Thesis Awards

- Ramsatish Kaluri (CH)—guided by Dr. Tanmay Basak – Dr. A.V. Rama Rao Foundation's Best Ph.D. Thesis and Research Award
- Arun Srikanth S. (CH)—guided by Dr. Shankar Narasimhan and Dr. Sridharakumar Narasimhan – ISTE-IPCL Best Master's Thesis Award

- Jagadeesh Chandra Prasad (CY) —guided by Dr. Sekar G. – 2nd Prize, Lilly Outstanding Thesis Award
- Murali A (CY)—guided by Dr. S. Baskaran – 2nd Prize, Lilly Outstanding Thesis Award
- Siva Kumar G. (EE) and Srinivas Bhaskar Karanki—guided by Dr. Kalyan Kumar B. and Dr. Mahesh Kumar – POSOCO Power System Award

Scholarships

- Maya Raman (BT) – Woman Scientists Scheme (WOS-A), DST
- Mayank N. K. Choudhary (BT) – Honda Young Engineer and Scientist Award
- Nishita Mohan P V (BT) – Honda Young Engineer and Scientist Award
- Siddharth Dialani (BT) – Nissan Foundation Scholarship
- Venkata Santhosh Kumar (CE) – Fulbright–Nehru Scholarship
- Satya Nunna Mounika (CS) – Aditya Birla Scholar
- Naveen Nikamanth A B (ME) – Nissan Foundation Scholarship

Books/Monographs

- Dr. Bhaskar K. (AE) – *Plates: Theories and Applications*, Ane Books, 2013
- Dr. Gummadi S.N. (BT), Dr. Mukesh Doble et al. – *Cyclic β -Glucans from Microorganisms: Production, Properties and Applications*, Springer Briefs in Microbiology
- Dr. Michael Gromiha M. (BT) – *Advanced Intelligent Computing: Theories and Applications*, Lecture Notes in Artificial Intelligence, Springer
- Dr. Srinivasa Chakravarthy V. (BT) – *Demystifying the Brain*, e-book, NPTEL
- Dr. Ligy Philip (CE), Dr. Murty B.S. et al. – *Guidelines for Decentralized Waste-Water Management*, Ministry of Urban Development
- Dr. Murty C.V.R. (CE), Dr. Goswami R. et al. – *Some Concepts in Earthquake Behaviour of Buildings*, Gujarat State Disaster Management Authority, Gandhinagar
- Dr. Murty C.V.R. (CE), Dr. Goswami R. et al. – *Introduction to Earthquake Protection of Non-structural Elements in Buildings*, Gujarat State Disaster Management Authority, Gandhinagar
- Dr. Murty C.V.R. (CE), Dr. Goswami R. et al. – *Build a Safe House with Confined Masonry*, Gujarat State Disaster Management Authority, Gandhinagar
- Dr. Kamala Krithivasan (CS) and Dr. Rama R. (MA) – *Introduction to Formal Languages, Automata and Computation*, Pearson Education
- Dr. Kamala Krithivasan (CS) – *Discrete Mathematics and Its Applications*, McGraw-Hill
- Dr. Ravindran B. (CS) – *Relativized Hierarchical Decomposition of Markov Decision Processes*, Progress in Brain Research, Elsevier
- Dr. Pradeep T. (CY) – *Nanoscience in India: A Perspective. Volume 1, Nanostructures Through Chemistry*, Paul O'Brien (Ed.), Royal Society of Chemistry, London
- *A Textbook on Nanoscience and Nanotechnology*, McGraw-Hill Education, New Delhi
- Dr. Bhaskar Ramamurthi (EE) and Dr. Ashok Jhunjunwala – *Powering Cellular Base Stations: A Quantitative Analysis of Energy Options (Solar PV, Diesel Generators, Batteries and Electrical Grid)*, Telecom Centre of Excellence (RiTCOE), IIT Madras
- Dr. Aysha Iqbal (HS) – *Politics of Global Reception and Awards*, Anthem Press
- Dr. Raghu Prakash (ME) – *ICoRD'13—Global Product Development*, Springer-Verlag
- *Infrared Thermography*, In-Tech Publishers
- Dr. Soundarapandian S. (ME) – *Laser Surface Hardening*, ASM

- Dr. Narasimhan A. (ME) – *Essentials of Heat and Fluid Flow in Porous Media*, Ane Books (Indian edition) and CRC Press, Taylor and Francis Group, NY
- Dr. Sampath Kumar T.S. (MM) – *Characterization of Biomaterials*, Elsevier Science & Technology
- Dr. Ramaprabhu S. (PY) – *Graphene: The Wonder Material*, SAMS Publishers

Membership of Editorial Boards

- Dr. Michael Gromiha M. (BT) – Guest Editor, *Protein and Peptide Letters*
- Dr. Rama S. Verma (BT) – Member, *International Advanced Biotechnology and Bioinformatics*
- Dr. Sanjib Senapati (BT) – Member, *Journal of Theoretical Chemistry*
- Dr. Vignesh Muthuvijayan (BT) – Associate Editor, *World Research Journal of Biomaterials*
- Dr. Raghuram Chetty (CH) – Member, *Nano Hybrids*
- Dr. Rajagopal K. (CE) – Member, *Journal of Geotextiles and Geomembranes*
– Member, *Journal of Ground Improvement and Geosynthetics*
- Dr. Janakiram D. (CS) – Associate Editor, *IEEE Transactions on Cloud Computing*
- Dr. Kamala Krithivasan (CS) – Editor, *International Journal of Communication Networks and Distributed Systems*
- Dr. Krishna Moorthy Sivalingam (CS) – Editor-in-Chief, *Photonic Network Communications*
– Member, *Wireless Networks*
- Dr. Sukhendu Das (CS) – Editor, *CSI Journal of Computing*
- Dr. Baskaran S. (CY) – National Representative, International Union of Pure and Applied Chemistry
- Dr. Pradeep T. (CY) – Member, *Surface Innovations*
- Dr. Sankararaman S. (CY) – Associate Editor, *Journal of Chemical Sciences*
- Dr. Shankar Ram C.S. (ED) – Associate Editor, *Journal of Dynamic Systems, Measurement, and Control*
- Dr. Bijoy Krishna Das (EE) – Associate Editor, *Journal of Optical Engineering*
- Dr. Enakshi Bhattacharya (EE) – Member, *Journal of Institute of Smart Structures and Systems*
- Dr. Karmalkar S. (EE) – Associate Editor, *IEEE Transactions on Education*
- Dr. Shanti Bhattacharya (EE) – Member, *Optik*
- Dr. Sonika Gupta (HS) and Dr. Mugur Zlotea – Co-editors, *China: An International Journal*
- Dr. Parthasarathy R.P. (MA) – Member, *Advances in Operations Research*
- Dr. Satyajit Roy (MA) – Member, Advisory Committee, *Journal of the Indian Academy of Mathematics*
- Dr. Sivakumar K.C. (MA) – Editor, *Journal of Applied Mathematics*
– Member, *Algebra*
- Dr. Sundar S. (MA) – Member, Advisory Committee, *Journal of the Indian Academy of Mathematics*
- Dr. Thamban Nair (MA) – Associate Editor, *Inverse Problems in Science and Engineering*
- Dr. Chakravarthy Balaji (ME) – Member, *International Journal of Thermal Sciences*
- Dr. Prakash Maiya M. (ME) – Member, *International Journal of Sustainable Built Environment*
- Dr. Shunmugam M.S. (ME) – Member, *International Journal of Machine Tools and Manufacturing*
- Dr. Sampath Kumar T.S. (MM) – Regional Editor (Asia—India), *Journal of Biomaterials and Tissue Engineering*
– Member, *The Indonesian Journal of Dental Research*
– Member, *Trends in Biomaterials & Artificial Organs*
- Dr. Rajiv Sharma (OE) – Member, *Journal of Engineering for the Maritime Environment*
- Dr. Sundar V. (OE) – Member, *Journal of Applied Water Engineering and Research*
– Member, *China Ocean Engineering Journal*

- Dr. Nandigana Krishna Mohan (PY) – Associate Editor, *Optics and Lasers in Engineering*
 Dr. Ramaprabhu S. (PY) – Editor-in-Chief, *Graphene*
 Dr. Subrahmanyam A. (PY) – Member, Editorial Board, *Solar Energy Materials and Solar Cells Journal*

Student Prizes/Awards

- Saida Naik Bhukya (AE), Vinay Kottapalli and Venkata Ramana Makkapati
 Selected for Round 2, Fly Your Ideas Global Student Competition, for their Arble Wings: Adjustable Wings for Parking
- Boeing Singh L. (CE)
 Young Research Scholar Award, Project Management Institute (PMI), India
- Mothukuri Snigda (CE) and Nandita Vadali
 Runner-up, Bentley Design Competition for innovation in bridge/road design, Bentley Systems
- Suyog Sawala (CH)—guided by Dr. Basavaraja Gurappa and Dr. Sridharakumar Narasimhan
 Best Project Award (Mechanical Division), Joy of Engineering, Design and Innovation (JED-I) Project Challenge for their robust method for feature extraction for applications in colloidal science and biology
- Biswabandan Panda (CS) and Krithika R.
 Selected for the TCS Research Scholar Program, TATA Consultancy Services
- Binesh Babu (ED), Harsit Agarwal and Nagendar V.
 Invention award, Intellectual Ventures, USA
- Mukul Mohan (EE), Jairaj M.V. (ME) et al.—guided by Dr. Sujatha Srinivasan (ME), Dr. Shanti Bhattacharya (EE) and Dr. Nitin Chandrachoodan (EE)
 Overall Best Project Award and Best Project Award (Electrical Division), Joy of Engineering, Design and Innovation (JED-I) Project Challenge for the development of a low vision telescope
- Pramitha V. (EE)
 Innovative Student Project Award, INAE
- Vishwanath R.V. (EE), Sushant Veer and Rohith Mittapally (ME)—guided by Dr. Nitin Chandrachoodan (EE), Dr. Anil Prabhakar (EE) and Dr. Sujatha Srinivasan (ME)
 Third Prize, IEEE All India Young Engineers Humanitarian Challenge 2012 for their TactoGraph, a low-cost assistive device for tactiling simple images in pre-literacy and early literacy books for visually impaired children
- Jobin Jacob Kavalam (EE) and Sudarshan V.—guided by Dr. Shankar Balachandran (CS) and Dr. Nitin Chandrachoodan (EE)
 First Prize, TAU Workshop, Ridge Tahoe Resort, NV, USA for their ‘IITiMer: A Parallel Variation Aware-Timing Analyser’
- Sahil Mathur (HS), Prateek Vijayavargia and Kavim Aadithyan C.
 Winner, Chennai leg, the Sweden India Nobel Memorial Quiz
- Tarun Kumar Mishra (ME)
 Top 10 Innovators in India, Lockheed Martin–DST for development of DeTecT, a high-temperature magnetostriction-based ultrasonic sensor for monitoring the health of pipes in process industries
- Sushant Veer (ME)—guided by Dr. Sujatha Srinivasan
 Yeongchi Wu International Education Award for his presentation on the ‘Standing Wheelchair’ at the International Society of Prosthetics and Orthotics (ISPO) World Congress
- Gokul B. (ME)—guided by Dr. Somashekhar S. Hiremath
 Innovative Student Project Award, INAE
- Chirag Jain (MS)
 Nissan Student Brand Manager Award, Nissan Motor Corporation
- Ravinder Reddy (MS)
 Second runner-up, ICICI Stockmind Competition
- IIT Madras Team, led by Dr. Hema A. Murthy (CS)
 GE India Innovation Award and First Prize, Research Expo, SHASTRA 2013, IIT Madras for their ‘Text to Speech Converter’, a software that promises to be a boon for the visually challenged

Best Paper Awards

- Dr. Boominathan A (CE) and Krishna Kumar R. – Prof. C.S. Desai Biannual Prize, Indian Geotechnical Society
- Dr. Ravindra Gettu (CE) – Best Paper Award, Indian Concrete Institute
- Dr. Robinson R.G. (CE) and Bushra I. Keerthiga G. (CH)—guided by Dr. Raghuram Chetty – IGS–ONGC Biannual Prize, Indian Geotechnical Society
- Mirnalinee T.T. (CS), Dr. Sukhendu Das and Dr. Koshy Varghese (CE) – Best Paper Award, National Symposium on Electrochemical Science and Technology
- Dr. Sukhendu Das (CS) – Best Paper Award, *Journal of Indian Society of Remote Sensing*
- Amutha N. (EE)—guided by Dr. Kalyan Kumar B. – Best Paper Award, National Symposium on Space Technology for Food and Environment Security
- Ankesh Jain (EE)—guided by Dr. Shanthi Pavan – Best Paper Award, 1st National Conference on Power Electronics Systems and Applications
- Aravind P.A. (EE)—guided by Dr. Deepa Venkitesh – Best Student Paper Award, International Symposium on Circuits and Systems
- Lakshma Naik P. (EE)—guided by Dr. Krishna Jagannathan – Best Paper Award, International Symposium on Nonlinear Optics
- Nizar M. (EE) and Haseen R. —guided by Dr. Gaurav Raina – Best Paper Award, 11th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks
- Suman Kumar (EE)—guided by Dr. Giridhar K. – Zhang Si-Ying Outstanding Youth Paper Award, 25th Chinese Control and Decision Conference
- Suman Kumar (EE) and Sheetal Kalyani—guided by Dr. Giridhar K. – Best Paper Award, International Academy, Research and Industry Association
- Vaibhav P. Singh (EE)—guided by Dr. Anil Prabhakar and Dr. Nitin Chandrachoodan – Best Paper Award, 8th International Conference on Wireless and Mobile Communications
- Dr. Shankar Ram C.S. (ED) – Best Paper Presentation Award, International Conference on Wireless and Optical Communications
- Padmaja M. (HS)—guided by Dr. Subash S. – IET Electrical Systems in Transportation Premium Award, the Institution of Engineering and Technology, UK
- Dr. Chandramouli P. (ME) and Bhanuprakash Ila P. – Best Paper Award, 6th Doctoral Theses Conference, Indian Business School
- Harshavardhan B. (ME)—guided by Mallikarjuna J.N. – C.V. Raman Award, Acoustical Society of India
- Hanumantray Baluragi (ME)—guided by Dr. Ramesh Babu N. – Best Paper Presentation and Best Content Award, International Conference on Mechanical and Industrial Engineering
- Shivaprasad S. (ME)—guided by Dr. Krishnan Balasubramaniam – IIM–Binani Gold Medal for Best Paper, Indian Institute of Metals
- Rayudu R.K. (MM)—guided by Dr. Bhattacharya S.S. – Best Paper Award, National Conference of Non-destructive Evaluation
- Bharathi R. (MS)—guided by Dr. Rupashree Baral – Best Paper Award (materials processing session), International Symposium for Research Scholars
- Ranjitha Ajay (MS)—guided by Dr. Madhumathi R. – Best Paper Award, 3rd National Conference on Human Resource Management
- Sumathi G.N. (MS)—guided by Dr. Kamalanabhan T.J. and Dr. Thenmozhi M. – Highly Commendable Paper Award, Conference on Global Strategies for an Emergent India
- Sowmya K. (MS)—guided by Dr. Sundarraj R.P. – Best Paper Award, 16th International Conference of the Indian Academy of Applied Psychology
- Best Paper Award, International Symposium on Cloud and Service Computing

- Best Paper Award, International Simulation Conference of India
Venkata Prasad Palakiti (MS)—guided by Dr. Usha Mohan and Dr. Sundarraj R.P.
- Best Paper Award, International Simulation Conference of India
- Venkataraghavan K. (MS)—guided by Dr. Sundarraj R.P.
- Best Paper Award, 16th Annual International Conference of the Society of Operations Management
- Vijayalakshmi Rangarajan (MS)
- Best Paper Award, 16th Annual International Conference of the Society of Operations Management
- First Prize, ELIXIR, 3rd International Conference on Challenges and Strategies in the Global Scenario for Business and Societal Excellence
- Yamini Srinivasan (MS)—guided by Dr. Rahul Marathe
- Best Paper Award, 16th Annual International Conference of the Society of Operations Management
- Ratheesh Kumar R.T. (OE)—guided by Dr. Rajesh R. Nair
- Best Paper Award, 25th Kerala Science Congress

Best Poster Awards

- Pramal Biswa (BT)—guided by Dr. Doble Mukesh
- Second Prize for Best Poster, International Conference on Regulatory Network Architecture in Bacteria
- Dr. Aswathy E.V. (CE)—guided by Dr. Sachin S. Gunthe
- Best Poster Award, Conference of Indian Aerosol Science and Technology Association
- Abhishankar Kumar (CH)—guided by Dr. Sridharakumar Narasimhan
- Best Oral Presentation Award, Chemference
- Amala M. Mathai (CH)
- Best Poster Award, International Workshop on Mathematics in Chemical Kinetics and Engineering
- Fazil A. (CH)
- Best Poster Award, Indo-US Workshop on Electrocatalytic Materials for Fuel Cells and Biofuel Cells
- Keerthiga G. (CH)—guided by Dr. Raghuram Chetty
- Best Digital Presentation, 10th International Oil and Gas Conference and Exhibition
- Rajamohan K.S. (CH)—guided by Raghuram Chetty
- Best Poster Award, 4th International Conference on Advanced Nanomaterials
- Sriram S. (CH)—guided by Dr. Tanmay Basak and Dr. Madhuchhanda Bhattacharya
- Best Poster Presentation, Chemference
- Sudhakar M. (CH)—guided by Dr. Sridharakumar Narasimhan
- Best Poster Award, International Symposium on Process Systems Engineering
- Bijan Mondal (CY)—guided by Dr. Sundargopal Ghosh
- Best Poster Presentation Award, National Symposium on Recent Advances in Chemistry
- Debajyoti Basak (CY)—guided by Dr. Nandita Madhavan
- First Special Poster Award, 4th Indian Peptides Symposium
- Dipak Kumar Roy (CY)—guided by Dr. Sundargopal Ghosh
- Best Poster Presentation Award, Chemistry In-House Symposium, IIT Madras
- Dr. Karthikeyan I. (CY)—guided by Dr. Sekar G.
- Best Poster Presentation Award, Chennai Chemistry Conference
- Sharmila D. (CY)—guided by Dr. Sundargopal Ghosh
- Best Poster Presentation Award, Chennai Chemistry Conference
- Anish Bekal (EE)—guided by Dr. Kovendhan Vijayan and Dr. Balaji Srinivasan
- Best Poster Award, Photonics
- Gerald Tennyson P. (MM)—guided by Dr. Phani Kumar G. and Dr. Harikumar K.C.
- Best Poster Award, 5th International Conference on Solidification Science and Processing

- Mitun Das (MM)—guided by Dr. Sampathkumar T.S. – 2nd Best Poster Award, International Conference on Design of Biomaterials
- Muthuchamy A. (MM)—guided by Dr. Janakiram G.D. and Dr. Phanikumar G. – Best Poster Award, National Conference on Advances in Naval Materials
- Niraj Chawake (MM)—guided by Dr. Ravi Sankar Kottada – Best Poster Award, International Symposium for Research Scholars
- Praveen S. (MM)—guided by Dr. Ravi Sankar Kottada – Best Poster Award, National Conference on Advances in Naval Materials
- Paresh Hader (OE)—guided by Abdus Samad – Best Poster Award, ANSYS Convergence Conference
- Shri Prashant Dabas (PY)—guided by Dr. Hariharan K. – Best Poster Award, 57th DAE Solid State Physics Symposium
- Rajib Mondal R. Nirmala (PY), Arouth Chelvane and Nigam A.K. – Best Poster Award, AGM of Materials Research Society of India

Patents Filed

- Dr. Srinivasa Chakravarthy V. (BT) – Bharati: A Universal Script for Indian Languages with Applications in Online Handwritten Character Recognition
- Dr. Rajagopal K. (CE) – A Novel Method for Making Gabion Box-Mediated Reinforcement System
- Dr. Raghuram Chetty (CH) et al. – A Universal Approach to the Synthesis of Palladium Dendrites on Carbon-Based Substrates
- Dr. Raghuram Chetty (CH) – A Method of Preparing Palladium Dendrites on Carbon Paper
- A Method of Preparing Palladium Dendrites on Carbon Nanotubes
- A Method of Preparing Palladium Dendrite
- Dr. Muraleedharan K.M. (CY) et al. – Synthesis of Quinolone Antibiotics from Baylis-Hillman Adducts
- Dr. Pradeep T. (CY) et al. – Methods for Selective Visual Detection of TNT
- Visible Detection of Quantity of Water Flow Using Quantum Clusters
- A Method for the Preparation of Graphenic Material from Asphalt and Its Application in Water Purification
- Dr. Asokan T. (ED) – A Non-destructive Method to Identify Used Syringes and Thus Prevent Their Re-use
- Dr. Sandipan Bandyopadhyay (ED) – Mapaman: A Reconfigurable Parallel Manipulator
- Dr. Sandipan Bandyopadhyay (ED) and Dr. Saravana Kumar G. (ED) – A Human-Powered Device
- Design and Assembly of a Clutch
- Dr. Sankara J. Subramanian (ED) – Forceps
- Dr. Sankara J. Subramanian (ED) and Dr. Murthy H.S.N. (AE) – Invention Disclosure: Non-destructive Structural Health Monitoring Using On-board Device
- Dr. Reddy K.S. (ME) – Solar Parabolic Trough Collector with Integrated Torque Tube–Box Support Structure
- Passive Cooling-Based Secondary Concentrator for Solar Concentrating Photovoltaic (CPV) System for Uniform Flux Distribution and Effective Cooling
- Dr. Soundarapandian S. (ME) – Laser-Assisted Machining (LAM) of Hard Tissues and Bones
- Dr. Sujatha Srinivasan (ME) – Standing/Reclining Wheel Chair
- Dr. Murthy B.S. (MM) et al. – A Process for Coating Refractories in Steel Plant
- Process for Manufacture of Nano Copper in a Green Way

- Dr. Abdus Samad (OE) – A Point Absorber System for Wave Energy Extraction
 – Bi-directional Flow Turbine
 – An Apparatus to Convert Bidirectional Linear Motion to Unidirectional Rotary Motion
- Jeniston Deviraj Klutto Milleth (CeWIT), Dr. Bhaskar Ramamurthi (EE) et al. – Methods for Multi-operator Coexistence in Hetero/Homogeneous Networks
- Kiran Kumar Kuchi (CeWIT) – Precoding for Single Transmission Streams in Multiple-Antenna Systems
 Dr. Bhaskar Ramamurthi (EE),
 Dr. Krishnamurthi Giridhar (EE) et al.

Patents Granted

- Dr. Varadaraju U.V. (CY) et al. – A Novel Bioprocess for the Preparation of Sulfide Compounds of Cerium
 Dr. Bhaskar Ramamurthi (EE) et al. – Multi-antenna Cellular Broad Band Wireless Communication System with Interference Mitigation
- Dr. Rajagopalan A.R. (EE) – US Patent for Recovering 3D Structure Using Blur and Parallax
 – US Patent for Method and System for Generating a High-Resolution Image
- Vinosh Babu (CeWIT) and Dr. Bhaskar Ramamurthi (EE) – A Method of Spatial Multiplexing for High Data Rate Wireless Communication
- Kothapalli Venkata Srinivas (CeWIT), Dr. Ravinder David (EE), Dr. Krishnamurthy Giridhar (EE) et al. – Multi-antenna Cellular Broadband Wireless Communication System with Interference Mitigation

Technology Transfers

- Dr. Ligy Philip (CE) – Bioremediation of Hexavalent Chromium-Contaminated Aquifers
 Dr. Ramanathan S. (CH) – Treatment of Ceria Slurry with Hydrogen Peroxide and Reuse
 – Composite Materials for Fast and Energy-Efficient Microwave Crucible and Susceptors
- Dr. Gonsalves T.A. (CS) – Development of LAN Trainer Kit
- Dr. Debashis Chakraborty (CY) – Imino (Phenoxy) Alane: A High-Mileage Catalyst
- Dr. Dillip Kumar Chand (CY) – Novel Process for the Synthesis by the One-Pot (Single Reactor) Combination of Tetramethylethylenediamine and Selected Diagonals to Construct a Class of Commercially Useful Pd(II)-Based Self-Assembly Nanolayer
- Dr. Edamana Prasad (CY) – Designing Molecules for Naked-Eye Detection of Fluoride Ions in Organic Medium
- Dr. Kothandaraman Ramanujam (CY) – Anion-Mediated Lithium Air Battery
- Dr. Mangala Sunder K. (CY) – Distribution and Marketing of NPTEL Educational Material
- Dr. Pradeep T. (CY) – Pesticide Removal Attachment Based on Nano Technology
 – Organic Polymer–Inorganic Fine Particle Antimicrobial Composites and Uses Thereof
 – Graphene-Based Antimicrobial Composite and Uses Thereof
 – Reusable Rewritable Luminescent Transparent Grapheme Patterns for Tracking
 – Zeptomolar Visual Detection of Mercury Ions Uses Single Mesostructures
 – Luminescent, Freestanding Composite Films of Au₁₅ of Specific Metal Ion Sensing
 – Creation of Heterojunction Nanowires
 – Zeptomolar Visual Detection of Trinitrotoluene (TNT)
 – Graphene–Quantum Cluster Hybrid Molecule

- Dr. Asokan T. (ED) – A Method to Easily Identify Used Syringes to Prevent the Reuse
- Dr. Sandipan Bandhyopadhyay (ED) – Mapaman: A Reconfigurable Three Degrees of Freedom
- Dr. Ashok Jhunjhunwala (EE) – Royalty on OFT Form Benchmark
– Transfer of Technology for the ATM Development
– Remote Diagnostic Kit and Weather Monitoring
- Dr. Giridhar K. (EE) – WICOMM-T KIT
- Dr. Abdus Samad (OE) – Energy Harvesting from Vibrations
– A Power Take Off Apparatus for Wave Energy Extraction
– Timer Valve
– Progressing Cavity Pump Roto-Progressive Cavity Pump Rotor–Stator Modification to Reduce the Leakage
- Dr. Jitendra S. Sangwai (OE) – Novel Couette Geometry for Measurement of In-Situ Dynamic Viscosity of Multiphase Systems Such as Emulsions and Slurries
- Dr. Srinivasan Chandrasekaram (OE) – Double-Rack Mechanical Wave Energy Converter: A Novel Method of Harnessing Wave Energy
– Offshore Triceratops for Ultra-Deep Water Oil Exploration
- Dr. Natarajan T.S. (PH) – Electro Spinning Apparatus
- Dr. Prem B. Bisht (PH) – Enhancement Of Raman Scattering Signal by Using Photonic Nanojet of a Single Microsphere
– An Efficient Metal Nanocomposite Saturable Absorber (Mensa) for Broadband Mode-Locking Applications
- Dr. Ramachandra Rao M. (PH) – Method/Discovery of Stable P-Type Semiconducting Behaviour in Li and Ni codoped ZnO
- Dr. Ramaprabhu S. (PH) – Metal and Metal Oxide Nanoparticles Dispersed Grapheme Composites Synthesized by Focused Solar Energy
– Graphene Functionalized Carbon Nanotube–PVDF Based Nanocomposite as Structural Strain Sensor
– Transition Metal Oxide-Decorated Grapheme Nanocomposites for Field Emission
– Platinum–Cobalt Nitrogen-Doped Grapheme Electrocatalyst
– Platinum–Graphene Electrocatalyst
– Wide Operating Potential Super Capacitor with HEG–CNT–Ionic Liquid Composites
– Platinum–3D Transition Metal Alloy Nanoparticles-Decorated Nitrogen-Doped (Grapheme–MWNT) Hybrid Structure Electro Catalyst for Proton Exchange Membrane Fuel Cell
– Platinum–Graphene Electrocatalyst

INDIAN INSTITUTE OF TECHNOLOGY MADRAS

MAJOR ACHIEVEMENTS

ANNUAL REPORT 2012-13 AND DEVELOPMENT TILL AUGUST 2013

1. Courses

The Institute offers Ph.D. programme in all the 16 departments, M.S. programme in 12 departments, M.Tech. programme in 30 streams/ specialisations, M.Sc. programme in 3 branches, B.Tech. programme in 9 departments, Dual Degree (B.Tech. and M.Tech.) programme in 11 departments, Dual Degree (BS & MS) in Biological Sciences and Physics, M.B.A. programme, M.A. Integrated programme and PG Diploma in Metro Rail Technology and Management in Civil Department besides a preparatory course for SC/ST students during the year.

2. User Oriented Programme

User oriented M.Tech. programmes are currently offered in the Department of Civil Engineering, Mechanical Engineering & Ocean Engineering.

3. Preparatory Course for SC/ST

The Preparatory Course programme for weaker section students offers intensive coaching to eligible candidates to prepare them for entry into IITM on successful completion of this one-year programme. Accordingly, 4 PD candidates have been admitted in B.Tech. & Dual Degree in 2013. 17 (10 PD, 3 SC & 4 ST) candidates have been admitted to Preparatory Course 2013.

4. 50th Convocation

The details of programme-wise degrees awarded in 50th Convocation:

In the 50th convocation a total of 1536 graduands were awarded degree – 156 Ph.D., 119 M.S., 448 M.Tech., 51 M.B.A., 24 M.A., 125 M.Sc., 249 Dual Degree (B.Tech. & M.Tech.) and 318 B.Tech, and 46 PG Diplomas.

So far 40564 degrees were awarded out of which 1785 degrees were awarded during 50th Convocation held on 19th July 2013.

Convocation 2013



5. Admission & Students on Roll

2083 students (Inclusive of 280 Ph.D. and 195 MS Scholars) have joined in various programmes in July 2013. As on 31 August 2013, 8206 students on roll [Foreign Nationals: 6, Women Students 1488: and QIP (Teachers from other Engineering Colleges): 104.

6. Research and Development

Research at IIT Madras continued to flourish during the year under review. Around 360 new Ph.D. students have enrolled in 2012–13, in keeping with the national goal of increasing the availability of the highest-quality researchers and teachers to industry and academia. In 2012–13, our faculty and research scholars have published 1014 papers in refereed international journals and 54 in refereed national journals. They have also presented 371 research papers in international conferences and 80 in national conferences. IIT Madras is thus a significant contributor to the national research output.

7. Patents

27 patents have been filed in the year 2012–13 and 6 patents were granted.

8. Industrial Consultancy and Sponsored Research

In 2012–13, the Institute received sanction for Rs.46 crores in new projects from industry, of which nearly 50% was for research-based consultancy. The faculty secured sanction for projects worth Rs.105 crores in 2012–13. The total value of ongoing sponsored projects in the Institute is Rs.460 crores, which constitutes a sizable part of the Institute's total budget. The Institute has earned Rs.173 lakhs from technology transfer fees and royalties during the year 2012–13. In order to enable students and new faculty to initiate and establish their research activities, the Institute has supported seven new Innovative Student Projects to the tune of Rs.8.5 lakhs and 30 new faculty proposals to the tune of Rs.369 lakhs.

9. Centre for Continuing Education

IIT Madras has an extensive outreach programme catering to teachers, practising engineers, and researchers. The Centre for Continuing Education (CCE) has been very active, with our faculty members organizing 13 AICTE-funded Short Term Training Programmes (QIP) for the benefit of engineering college faculty, as well as 84 Continuing Education Programmes (CEP) for the benefit of Industrial personnel, and programmes under the Curriculum Development Cell. These programmes have benefitted about 3000 participants in 2012–13, and resulted in revenue of around Rs.3.5 crores.

10. Quality Improvement Programme

IITM plays a lead role in providing guidance and assistance to the other engineering institutions in the country. Currently there are a total of 104 QIP scholars – 67 Ph.D & 37 M.Tech.

11. National Programme on Technology Enhanced Learning (NPTEL)

The National Programme on Technology Enhanced Learning (NPTEL) is India's largest ICT-based technical course dissemination programme in the higher education sector. Its main objective is to increase the reach of high-quality engineering and sciences education across our country. 575 (web/video) courses in Engineering, Science and Technology developed under NPTEL are freely available on our NPTEL website (<http://nptel.iitm.ac.in>) and through YouTube at <http://www.youtube.com/iit>. The courses are also telecast through the Eklavya channel made available by MHRD exclusively for this purpose. The NPTEL Channel in Youtube has received more than 88 million upload views and the NPTEL site has recorded more than 22 million visits since inception.

NPTEL at IIT Madras has also started conducting online courses. Two live online courses on 'Digital System Design' and 'Basic Electrical Circuits' were offered in 2013. Several Institutions and some individuals participated in these courses. A large Massive Open Online Course on Computer Science with a proctored examination and certification in collaboration with NASSCOM, is planned for engineering college students across the country.

12. Research Park and Incubation

IIT Madras Research Park after three years of its inception continues to attract new companies. Such sustained interest exemplifies the confidence that industry has placed on our ability to provide at the Research Park an environment conducive to foster technological collaboration and nurture innovation. During 2012–13, the last couple of spaces meant for R&D Clients were taken.

The Institute has set up an Incubation Cell to implement the Incubation Policy of the Institute. This Cell provides overarching governance to the specialized incubators operating in the Institute, as well as support services to the incubatees. While the Cell will assist faculty and students to launch start-ups, it will also support external start-ups that can benefit from association with the Institute and its faculty. A key objective of the Cell is to leverage the intellectual capital of the faculty and students, the research infrastructure of the Institute and the ecosystem of the Research Park to unlock value and create a large number of new enterprises.

The alumni-funded Center for Social Innovation and Entrepreneurship (CSIE) initiated the ‘Entrepreneurship Week’ from 3–9 March 2013, an event dedicated to celebrating and fostering entrepreneurship on campus. IITM’s Rural Technology and Business Incubator (RTBI) housed in the Research Park has incubated 12 new companies in the last year in diverse areas ranging from education to development of cloud and mobile based technology and solutions for the dairy sector.

I am heartened to report that 25% of the graduating class of the Engineering Design Department have started companies this year. The department was started in 2006 with a distinct curriculum to encourage product development and design. We are glad that our efforts are beginning to yield fruit.

Two companies, one focusing on providing appropriate and cost effective environmental engineering solutions based on sustainability principles, and another that specializes in drafting and implementing social media and branding strategies for businesses and events, have also been incubated.

2. ADMINISTRATION

2.1. General

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 (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 Council 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 the overall administration and control.

The Senate decides the academic policies of the institute. It approves and controls 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 facilities and standards. The Director of the institute is the Chairman of the Senate. Members of the Senate are listed in the Appendix. Financial advice is given to the institute by the Finance Committee. The Buildings and Works Committee advises the institute on matters relating to buildings and work activities.

The compositions of the above committees and boards and a list of other officers are also given in the Appendix.

2.2. Staff Position

As on 31 March 2013, 1225 faculty/staff members were in position.

Number of Faculty/staff members in position

Faculty Members	Visiting Faculty	Group A Staff	Scientific Officers	Technical staff	Administrative Staff
509	6	71	5	268	366

Number of faculty/staff members appointed during 2012–2013

Professors	Associate Professors	Assistant Professors	Visiting Faculty	Administrative Staff (Including Registrar)
1	2	31	7	30

- Four faculty/staff members were relieved/resigned from service.
- Forty faculty/staff members retired from service.
- Four faculty/staff members expired.
- Eighteen faculty/staff members were on long leave.

2.2.1. Faculty/Staff Members Appointed between 1 April 2012 and 31 March 2013

List of faculty members/staff members appointed during the period from April 2012 to March 2013

Sl. No.	Name	Designation	Department	Date of Joining
1	Dillip Kumar Satapathy	A.P.	Physics	26 March 2012
2	Santanu Ghosh	A.P. (on contract)	Aerospace Engineering	29 March 2012
3	Mude Srinivasa Naik (ST)	Jr. Asst.	Academic	21 May 2012
4	Murali Gururajan	A.P.	Biotechnology	23 May 2012
5	R. Anand (ST)	Jr. Asst.	Accounts	23 May 2012
6	R. Sujatha (ST)	Jr. Asst.	Administration	23 May 2012
7	Ravi Babu (ST)	Jr.Asst.	Humanities	25 May 2012
8	G. Vijaya Kumar (ST)	Jr. Asst.	Physics	25 May 2012
9	C. Balakrishnan (ST)	Jr. Asst.	Academic	25 May 2012
10	P. Kumaresan (ST)	Jr. Asst.	Academic	30 May 2012
11	M.K. Thiagarajan (ST)	Jr. Asst.	Library	30 May 2012
12	K. Udayakumar (ST)	Jr.Tech. Supt.	Electrical Engineering	31 May 2012
13	M. Alaguthambi (ST)	Jr. Asst.	Ocean Engineering	1 June 2012

14	P. Satyanarayana (ST)	Jr. Asst.	Physics	1 June 2012
15	Nallathambi (ST)	Jr. Asst.	Management Studies	1 June 2012
16	K. Naresh Kumar (ST)	Jr. Asst.	Mathematics	1 June 2012
17	G. Jayavel (ST)	PTI	Gymkhana	16 May 2012
18	Bholeswar Kisan (ST)	SLIA	Library	5 June 2012
19	G. Hemalatha (SC/PD)	Jr. Asst.	Academic	11 June 2012
20	Sahaya Josephin Mary (OBC/PD)	Jr. Asst.	Finance and Accounts	19 June 2012
21	Surya (PD)	Jr. Asst.	Chemistry	21 June 2012
22	Jagannadan (PD)	Jr. Asst.	Finance and Accounts	21 June 2012
23	A. Prasanna (PD)	Jr. Asst.	Stores and Purchase	21 June 2012
24	Balaji Nayak Ramavath (ST/PD)	Jr. Asst.	Administration	21 June 2012
25	N. Ravi (SC/PD)	Jr. Asst.	Administration	25 June 2012
26	H. Dhanalakshmi (OBC/PD)	Jr. Asst.	Placement	26 June 2012
27	S.I. Varun Durai (SC/PD)	Jr. Asst.	Applied Mechanics	27 June 2012
28	A. Jeevarathinam (SC/PD)	Jr. Asst.	Academic	13 July 2012
29	Prafulla Kumar Behera	Assoc. Prof.	Physics	20 July 2012 (AN)
30	R. Vinu	A.P.	Chemical	25 July 2012
31	Hamsa Priya Mohanasundaram	A.P.	Biotechnology	30 July 2012
32	S.K.M. Varadhan	A.P.(on contract)	Applied Mechanics	1 August 2012
33	Ranjith Mohan	A.P.	Aerospace	6 August 2012
34	Venu Chandra	A.P.	Civil Engineering	8 August 2012
35	Ajay Kumar Shukla	A.P.	Metallurgical and Materials Engineering	10 August 2012
36	Santosh Abraham	A.P.	Humanities	24 August 2012
37	Shyama Prasad Das	A.P.	Mechanical	18 September 2012
38	Upadhye Neelesh Shankar	A.P.	Mathematics	25 September 2012
39	Dawood Kothawala	A.P.(on contract)	Physics	26 September 2012
40	Manoj Pandey	A.P.	Mechanical Engineering	1 October 2012
41	Pradeep Kiran Sarvepalli	A.P.	Electrical Engineering	1 October 2012
42	Ganapathy Krishnamurthi	A.P.	Engineering Design	1 October 2012
43	Manikandan Mathur	A.P.	Aerospace Engineering	3 October 2012
44	Shankar Ghosh	A.P. (on contract)	Aerospace Engineering	15 October 2012
45	Sheetal Kalyani	A.P.	Electrical Engineering	17 October 2012
46	Soumendra Nath Kuiry	A.P. (on contract)	Civil Engineering	18 October 2012
47	B.V. Raghavendra Rao	A. P.	Computer Science and Engineering	22 October 2012
48	Mathangi Krishnamurthy	A.P. (on contract)	Humanities	25 October 2012
49	Ramakumar Penchaliah	A.P.	Mechanical Engg.	26 October 2012
50	N. Narayanan	A.P.	Mathematics	21 November 2012
51	V.G. Bhooma	Registrar	Administration	5 December 2012
52	Rajesh Kumar	A.P.	Humanities	18 December 2012
53	Kunal Krishna Mukherjee	A.P.	Mathematics	20 December 2012
54	Anup Kumar Bhandari	A.P.	Humanities	21 December 2012
55	Anand Krishna Kanjarla	A.P. (on contract)	Metallurgical and Materials Engineering	26 December 2012
56	V.V.S.D. Ratna Kumar Annabattula	A.P.	Mechanical Engineering	27 December 2012
57	Kamlesh Hatua	A.P.	Electrical Engineering	31 December 2012
58	Achintya Mukhopadhyay	Prof.	Mechanical Engineering	1 January 2013
59	Soundarapandian Santhanakrishnan	A.P. (on contract)	Mechanical Engineering	2 January 2013
60	G. Rajesh	Assoc. Prof.	Aerospace Engineering	1 February 2013
61	C. Jackulin	Nurse	Hospital	6 February 2013
62	S. Anita Mercy	Nurse	Hospital	11 February 2013
63	E. Revathi	Nurse	Hospital	15 February 2013
64	K. Radha	Nurse	Hospital	4 March 2013

Sl. No.	ID No.	Name	Designation	Department	Date of Joining
1	VF-89	Sibylle Petrak	Visiting Assistant Professor	HSS	10 April 2012
2	VF-90	Soma Guhathakurta	Visiting Professor	ED	25 May 2012
3	VF-91	Vinu Ravikrishnan	Visiting Assistant Professor	CH	14 June 2012
4	VF-92	Anantha Sundararajan	Visiting Assistant Professor	MS	6 July 2012
5	VF-93	K. Vijayaraghavan	Hosted Fellow	CH	23 July 2012
6	VF-94	Christain Thaulow	Visiting Professor	CE	17 September 2012
7	VF-95	Jean-Paul Ryckaert	Visiting Professor	PH	8 October 2012

Faculty/staff members resigned/relieved

Sl. No.	ID No.	Name	Designation	Department	Date of Relief
1	8526	Murali Gururajan	A.P.	Biotechnology	13 September 2012
2	0161	Jayaseelan P.	Jr. Supdt.	Administration	7 November 2012
3	8512	Amitava Mukherjee	A.P.	Mathematics	17 December 2012
4	8506	Upasna Sharma	A.P.	Humanities	31 December 2012

Faculty/staff members who retired between 1 April 2012 and 31 March 2013

Sl. No.	ID No.	Name	Designation	Department	Date of Retirement
1	1682	Jayakumar M.	S.I.	Security Section	6 March 2012 (VR)
2	636	Malathi K.V.	Jr. Supdt.	Physics	30 April 2012
3	309	Dhanabalan P.	Jr. Tech. Supdt.	Metallurgical and Materials Engineering	30 April 2012
4	653	Boopathy A.	Sr. Attdt.	Chemistry	30 April 2012
5	2886	Joseph A.	Jr. Tech. Supdt.	Chemical Engineering	30 April 2012
6	219	Sumathy R.	Sr. Tech. Supdt.	Electrical Engineering	31 May 2012
7	2622	Kalpagam S. (W)	Prof.	Mathematics	31 May 2012
8	98	Vincent George J.	Sr. Attdt.	Civil Engineering	31 May 2012
9	626	Anandarao G.	Sr. Attdt.	Aerospace Engineering	31 May 2012
10	896	Mohandoss S.	Sr. Attdt.	Engineering Unit	31 May 2012
11	547	Maryamma P.	Attdt.	Engineering Unit	30 June 2012
12	3104	Thirunavukkarasu A.	Registrar	Administration	30 June 2012
13	2365	Suryakumar T.	DR	Stores and Purchase	30 June 2012
14	4	Muniammal N.	Helper	Applied Mechanics	30 June 2012
15	307	Subramani M.	Helper	Finance and Accounts	30 June 2012
16	2801	Thamizh Arasan V.	Prof.	Civil Engineering	30 June 2012
17	944	Gnanasekaran N.	SLIO	Library	30 June 2012
18	810	Sekar C.R.	Asst. Librarian	Library	31 July 2012
19	56	Elumalai T.S.	Sr. Lab Asst.	Applied Mechanics	31 August 2012
20	2704	Santhakumar S.	Prof.	Aerospace Engineering	31 October 2012
21	2808	Mathews M.S.	Prof.	Civil Engineering	31 October 2012
22	2821	Ramachandraiah A.	Prof.	Civil Engineering	31 October 2012
23	8247	Ramachandran K.B.	Prof.	Biotechnology	31 October 2012
24	1017	Sankaran D.	Tech. Supdt.	Physics	31 October 2012
25	2670	Jayaprakash S.	SSE	Computer Science	31 October 2012
26	2626	Swaminathan K.	Assoc. Prof.	Mathematics	31 October 2012
27	2703	Gokhale S.S.	Professor	Aerospace Engineering	29 June 2012 (VR)
28	3115	Moni M.S.	SSO Gr. I	SAIF	30 November 2012
29	2130	Muthulakshmi P.	Jr. Attdt.	Engineering Unit	31 December 2012
30	917	Santha Vijayakumar	TO Gr. I	Chemistry	31 December 2012
31	1036	Senthi P.	Jr. Tech. Supdt.	Central Photographic Section	31 January 2013
32	2338	Thangamani V.P.	Sr. Attdt.	Electrical Engineering	31 January 2013
33	231	Penchalaiah G.	Supdt.	Academic	31 January 2013

34	2663	Swaminathan T.	Prof.	Chemical Engineering	28 February 2013
35	1528	Ekambaram P.M.	SSI	Security Section	28 February 2013
36	788	Jothi Ramalingam V.	Sr. Attdt.	Mechanical Engineering	28 February 2013
37	2419	Muraleedhara Prabhu K.M.	Prof.	Electrical Engineering	31 March 2013
38	2460	Kesavan Nair P.	Prof.	Metallurgical and Materials Engineering	31 March 2013
39	1212	Muthukrishnan S.	AR	Finance and Accounts	31 March 2013
40	1284	Rajendran C.	AR	Stores and Purchase	31 March 2013

Faculty/staff members expired while in service

Sl. No.	ID No.	Name	Designation	Department	Date
1	294	G. Arumugam	Tech. Supdt.	Metallurgical and Materials Engineering	10 June 2012
2	8031	V. Jayashankar	Prof.	Electrical Engineering	26 December 2012
3	1262	R. Kannan	Sr. Asst.	Office of Dean, Administration	7 February 2013
4	2519	D. Loganathan	Prof.	Chemistry	9 February 2013

Faculty members/fficers/staff members on long leave

Faculty/staff members on extraordinary leave

Sl. No.	Name	Designation	Department	Period	Details
1	R. Gnanamoorthy	Prof.	Mechanical Engineering	27 August 2008 to 26 July 2013	Deputy Director at IIITD & M, Kancheepuram.
2	S. Mohan	Prof.	Civil Engineering	5 May 2009 to 4 May 2014	Director, NITTTR, Taramani, Chennai
3	S.V. Raghavan	Prof.	Computer Science and Engineering	21 October 2009 to 30 June 2013	Scientific Secretary in the Office of the Principle Scientific Advisor to the GoI
4	T.A. Gonsalves	Prof.	Computer Science and Engineering	14 January 2010 to 13 January 2015	Appointment as Director, IIT Mandi, Himachal Pradesh
5	K. Rizwan Ali	AEE (CE)	Engineering Unit	21 January 2011 to 20 January 2013 (extended upto 19 April 2013)	Manager (Tech.) at NHAI, New Delhi
6	K. Prasad Rao	Prof.	Metallurgical and Materials Engineering	21 November 2011 to 20 November 2013	Visiting Research Professor at Metallurgical Engineering, University of Utah, USA
7	Shaligram Tiwari	ASP	Mechanical Engineering	1 June 2012 to 31 May 2013	Visiting Faculty at IIT Rajasthan, Jodhpur, Rajasthan
8	Gharpure Santhosh Janardan	ASP	Chemistry	5 July 2012 to 4 July 2014	Appointment as Associate Professor at IIT Bombay
9	S. Devaki Reddy	ASP	Humanities and Social Sciences	15 January 2013 to 30 June 2014	Personal affairs
10	S. Ponnusamy	Prof.	Mathematics	10 October 2012 to 9 October 2014	Assignment as Head, Indian Statistical Institute, Chennai Centre
11	R. Rama	Prof.	Mathematics	4 January to 30 June 2013	Temporary assignment as Professor in the Department of Computer Science and Engineering, IIT Bombay

Faculty members on sabbatical leave

Sl. No.	Name	Designation	Department	Period	Details
1	M. Manivannan	ASP	Applied Mechanics	1 February 2012 to 31 May 2013	Book writing— <i>Biomechanics</i> ; Visiting Prof. at MIT Cambridge, MA, USA under DBT-CREST Award Fellowship
2	Y. Shanthi Pavan	Prof.	Electrical Engineering	1 May 2012 to 31 July 2013	Principal Engineer in the MEMs Division at Fairchild Semiconductor, California, USA

3	Arun Kumar Tangirala	ASP	Chemical Engineering	1 August 2012 to 31 July 2013	Visiting Professor in the Department of Chemical Engineering, University of Delaware, Newark, USA
4	P.V. Subrahmanyam	Prof.	Mathematics	1 August to 31 December 2012 (extended upto 30 April 2013)	Book writing at the institute
5	B.S. Murty	Prof.	Civil Engineering	1 January to 30 June 2013	Writing book for UG and PG students
6	Krishna Moorthy Sivalingam	Prof.	Computer Science and Engineering	1 August 2013 to 31 May 2014	Consultant to HCL Technology Engineering & R&D Services
7	V. Sundar	Prof.	Ocean Engineering	9 March to 31 December 2013	Fellowship Programme for Research in Japan

2.3. Staff Welfare

2.3.1. Human Resource Development

As part of 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 in order that they may perform their duties effectively. In addition, the programmes are also aimed to enhance the pride and satisfaction they feel in their work. The overall feeling of happiness engendered by these programs 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, 16 internal training programmes and 22 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 the programmes were designed on the basis of the needs.

Training calendar for the year 2012

Internal training

Sl. No.	No. of Persons Attended	Course Title	Duration	Section/Department	Organization
1	3	CNC Lathe Programming, Operating Programming and Machine Setting	17–19 May 2012	Central Workshop	Ace Designers and ACE Manufacturing Systems at Chennai
2	2	Vertical Machining Centre (VMC) Operating Programming and Machine Setting	21–23 May 2012	Central Workshop	Ace Designers and ACE Manufacturing Systems at Chennai
3	5	ACE CC Lathe Maintenance—Electrical, and Mechanical & Diagnostics Aids	8–9 June 2012	Central Workshop	Ace Designers and ACE Manufacturing Systems at Chennai
4	2	Recent Trends in Analytical Chemistry (TRAC) 2012	31 August 2012	Department of Chemistry	Advancement of Chemical Sciences & Education, Kalpakkam and University of Madras
5	2	Cisco Network Routing and Switching	24–28 September 2012	Computer Centre	Launch Pad Ventures Pvt. Ltd., Chennai
6	4	Fire and Life Safety Management in High-Rise Buildings	2 November 2012	Security Section	Indian Institute of Security Management, Madras Chapter, Chennai

7	22	Communication Skills, Procedures Adopted in Sections, Personality Development and Computer Skills	5–8 November 2012 19–23 November 2012 26 November 2012 27–28 November 2012	Newly recruited administrative staff	Conducted at IC&SR IIT Madras with invited expert members
8	3	Arbitration Practice Step by Step	7–8 December 2012	Engineering Unit	The Institute of Engineers (India), Chennai
9	2	Tally Development Language Course	18 classes (2 hours)	Accounts Section, JEE Office	YENNES Infotech Pvt. Ltd., Chennai
10	9	CNC Milling with Function Control Programming and Operation Level I	15–25 January 2013	Central Workshop	Advance Training Institute, Chennai
11	1	Mechanical Testing of Metals (DT & NDT)	Two weeks from 28 January 2013	Mettalurgical and Materials Engineering Department	Advance Training Institute, Chennai
12	1	Advanced Excel Practical Training	Three days	JEE Office	MSME Development Institute, Chennai
13	7	Waterproofing of Concrete Structures	Three days	Engineering Unit	Indian Concrete Institute, Chennai
14	8	CNC Turning with Function Control Programming and Operation	18 February to 1 March 2013	Central Workshop	Advance Training Institute, Chennai
15	3	National Conference on Reaching Out to Users Through Technology (ROUTE-2013): Enhancing Innovative Library Services in Open Environment	13–15 March 2013	Central Library	IRF Structural Engineering Research Centre, Chennai
16	3	The Dynamics of Security Management—Latest Trends	28 March 2013	Security Section	Indian Institute of Security Management (Madras Chapter)

External training

Sl. No.	No of Persons Attended	Course Title	Duration	Section/ Department	Organization
1	1	National Platform on Disaster Risk Reduction (NPDRR), New Delhi	25–26 April 2012	Security Section	National Institute of Disaster Management, New Delhi
2	1	HPC Workshop at IBM, Bangalore	2–4 May 2012	Computer Centre	IBM, Bangalore
3	9	Oceanographic Survey	14–23 May 2012	Department of Ocean Engineering	NIOT Vessel CRV Sagar Paschimi
4	1	Current Trends in Microwave Design and Applications	11–16 June 2012	Department of Electrical Engineering	IIT Kharagpur
5	5	Technical Workshop on Cash Accounts, Budget Management and Income Tax Matters	26–28 July 2012	Administration & Accounts Section	Integrated Training & Policy Research, New Delhi
6	3	Foreign Procurements—Procedure and Formalities	6–8 August 2012	Stores & Purchase Section	Parsam Institute of Statutory Rules, Bangalore
7	2	Recent Trends in Analytical Chemistry (TRAC) 2012	30–31 August 2012	Department of Chemistry	Society for Advancement of Chemical Sciences and Education, Kalpakkam

8	3	CNC Milling Machines	August 2012, 2 days	Central Workshop	BFW Ltd., Bangalore
9	2	Tutorial Programme on LED Lighting Systems	8 October 2012	CEC	Central Power Research Institute, Bangalore
10	2	B&R Programming Basics and HMI Screen Design	8–12 October 2012	Department of Engineering Design	B&R Industrial Automation Pvt. Ltd., Bangalore
11	2	Three-day international conference, Green Buildings and Green Homes/Green Cities	30 October to 1 November 2012	Engineering Unit	Confederation of Indian Industry, Hyderabad
12	1	Battery Testing Unit	6–13 January 2013 16–26 January 2013 30 January to 7 February 2013	Central Electronics Centre	Exicom CSTR, New Delhi
13	2	Annual Meet and Workshop of INDEST–AICTE Consortium	17–19 January 2013	Central Library	INDEST–AICTE
14	1	High Voltage Testing of Power System Equipment	18–22 February 2013	Electrical Division, Engineering Unit	Power Systems Training Institute, Bangalore
15	1	Power Cables and Jointing Techniques	26–28 February 2013	Electrical Division, Engineering Unit	Power Systems Training Institute, Bangalore
16	1	Short-term course, Transforming Indoor and Outdoor Landscapes	1–2 March 2013	Engineering Unit	Confederation of Indian Industry
17	1	Two-day workshop on fire safety	2–3 March 2013	Security Section	IIT Gandhinagar, Ahmedabad
18	2	68th Residential Training Programme for the Chief Liaison Officers for SC/ST/OBC Employees, CAOs, AOs, EOs and Other Officers on the Reservation Policy	4–6 March 2013	SC/ST/OBC Liaison Officers	Institute of Public Administration, Bangalore
19	1	Inspection of Electrical Installations under IE Safety and Supply Regulations	4–8 March 2013	Electrical Division, Engineering Unit	Power Systems Training Institute, Bangalore
20	1	Power and Telecommunication & Co-ordination	18–22 March 2013	Electrical Division, Engineering Unit	Power Systems Training Institute, Bangalore
21	1	Renewable Energy Sources and Grid Integration	25–29 March 2013	Electrical Division, Engineering Unit	Power Systems Training Institute, Bangalore
22	1	International Green Campus Summit 2013	4–5 April, 2013	Engineering Unit	Association for Promoting Sustainability in Campuses and Communities (APSCC), Pondicherry

2.3.2. Hindi Coaching

In accordance with the directions of the Department of the Official Language of the Home Ministry, GoI, Hindi training was conducted regularly for both technical and administrative staff members to improve their knowledge in Hindi. In 2012–2013, 44 staff members attended the Hindi examination. As on 31 March 2013, 25 staff members were offered this course.

Every year, the institute celebrates the Hindi Day Function. This year the Hindi Day Function was celebrated on 12 September 2012, where the Director presided over the function and distributed certificates, cash awards and personal pay to the staff members who had passed the Hindi examination.

2.3.3. School Fee Concession

The institute reimbursed fees paid by the staff members for their children's education as per the GoI norms. During the period under report, 483 staff members benefited.

2.3.4. Transport Facilities for Children of Staff Members

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.17.98 lakhs was sanctioned as advances for the following:

Sl. No.	Advance	No. of Employees	Amount Sanctioned (Rs.)
1	House building advance	—	—
2	Car advance	1	1,80,000
3	Personal computer advance	14	4,19,850
4	Two-wheeler advance	17	4,37,200
5	Festival advance	203	7,61,250
	Total	235	17,98,300

Insurance

Group Mediclaim insurance scheme for the period from 1 February 2012 to 31 January 2013

Sl. No.	Category	No. of Persons Covered	Premium Paid (Rs.)
Basic Coverage			
1	Employee & Dependant	4313	
2	Pensioners & Spouses	1626	2,16,18,800
3	Family Pensioner	428	
4	Fire Insurance		6,00,874
Additional Coverage			
5	Employee & Dependant	461	
6	Pensioners & Spouses	522	89,63,456
7	Family Pensioners	84	

Group term insurance scheme for the period from 10 February 2012 to 9 February 2013

Sl. No.	Group	No. of Employees Covered	Sum Insured per Employee (in lakhs of Rs.)	Annual Premium/ Employee (Rs.)	Total Premium Paid (Rs.)	Death Claims Made During Period (in lakhs of Rs.)
1	A	641	30	7,140	45,76,740	60
2	B	212	15	3,570	7,56,840	30
3	C	271	10	2,380	6,44,980	—

2.3.6. Meetings of the Authorities

Board of Governors	Four meetings were held on 20 July 2012, 5 October 2012, 14 December 2012 and 22 March 2013.
Finance Committee	One meeting was held on 14 December 2012.
Buildings & Works Committee	One meeting was held on 18 February 2013.
Senate	Six meetings were held on 3 May 2012, 4 July 2012, 20 September 2012, 4 December 2012, 27 February 2013 and 6 March 2013.

2.3.7. ISO 9001:2000 in IIT Madras: April 2012 to March 2013

ISO summary

International Organization for Standardisation (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 ISO-9001:2000 certification for academic and support processes (QSM-I: Academic Section, Central

Library, Central Workshop, Computer Centre, IC&SR 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 2012, all the academic and support units of IIT Madras were reassessed as per the ISO standard ISO 9001:2008. The certificate is valid up to August 2014 for QSM-I and January 2014 for QSM-II. In addition to 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 2012–2013

Internal audits

Unit/Section	Schedule	
	First Audit	Second Audit
QSM-I	21–23 May 2012	27–30 November 2012
QSM-II	14–16 May 2012	3–5 December 2012

Management review meetings

Unit/Section	Schedule	
QSM-I and QSM-II	19 June 2012	(31st MR meeting)
QSM-I and QSM-II	12 December 2012	(32nd MR meeting)

Surveillance audits (undertaken by TUV India Ltd.)

Unit/Section	Schedule	
QSM-II	30–31 January 2012	(Surveillance)
QSM-I	26 June 2012	(Surveillance)
QSM-II	18 December 2012	(Surveillance)

ISO activities

- Surveillance audits for QSM-I and QSM-II units were successfully completed. The ISO 9001:2008 certificate is valid until August 2014 for QSM-I and January 2014 for QSM-II.
- Prof. C. Rajendran and Dr. Saji Mathew have been nominated as Management Representative and Co-Management Representative, respectively, with effect from 30 January 2013.

II. NABL activities for the year 2012–2013 (for Central Electronics Centre)

- NABL Reassessment Audit was conducted during 6–7 February 2012 and 18–19 February 2012.

2.3.8. List of Faculty Members and Officers in the Academic and General Administration

(i) Academic Administration

Director	Bhaskar Ramamurthi
Deans:	
Academic Courses	K. Ramamurthy
Academic Research	K. Krishnaiah (up to 31 October 2012) Saritkumar Das (from 1 November 2012)
Administration	P. Sriram
Industrial Consultancy & Sponsored Research	Krishnan Balasubramaniam
Students	L.S. Ganesh
Planning	Ravinder David Koilpillai
International and Alumni Relations	R. Nagarajan (from 6 September 2012)

(ii) Heads of Departments

Aerospace	K. Bhaskar
Applied Mechanics	M. Ramasubba Reddy
Biotechnology	Mukesh Doble

Chemical Engineering	S. Pushpavanam (up to 20 October 2012)
	P. Sesha Talpa Sai (from 21 October 2012)
Chemistry & MSRC	S. Sankararaman (up to 8 August 2012)
	U.V. Varadaraju (from 9 August 2012)
Civil Engineering	S.R. Gandhi
Computer Science & Engineering	C. Siva Ram Murthy (up to 15 January 2013)
	P. Sreenivasa Kumar (from 16 January 2013)
Electrical Engineering	Enakshi Bhattacharya
Engineering Design	Nilesh Jayantilal Vasa
Humanities & Social Sciences	Sudhir Chella Rajan
Management Studies	G. Srinivasan
Mathematics	S.H. Kulkarni
Mechanical Engineering	T. Sundararajan
Metallurgical and Materials Engineering	T.S. Prasanna Kumar (up to 2 September 2012)
	M. Kamaraj (from 3 September 2012)
Ocean Engineering	S.K. Bhattacharaya (up to 23 September 2012)
	J.S. Mani (from 24 September 2012)
Physics	G. Markandeyalu (up to 13 May 2012)
	P.B. Sunil Kumar (from 14 May 2012)

(iii) Heads of Research Centres

Sophisticated Analytical & Instrumentation Facility	G.K. Suraish Kumar (up to 20 January 2013)
	S.S. Bhattacharyya (from 21 January 2013)

(iv) Heads of special facilities for interaction with other institutions

Centre for Industrial Consultancy & Sponsored Research	Krishnan Balasubramanian
Chairman, CCE and Central Photographic Section	Ajit Kumar Kolar
Central Electronics Centre	V. Jagadeesh Kumar
Computer Centre	P.B. Sunil Kumar (upto 3 May 2012)
	Koshy Varghese (from 4 May 2012)

Chairman

GATE	C. Chandra Sekhar
JEE	Arindama Singh (up to 13 August 2012)
	S. Sarathy (from 14 August 2012)

(v) Central administration

Registrar	A. Thirunavukkarasu (upto 30 June 2012)
	N. Sivaprasad (from 1 July 2012 to 4 December 2012)
	V.G. Bhooma (from 5 December 2012)

Deputy Registrars

Academic Section	G. Ravichandran
Administration	R. Esakkimuthu
Finance & Accounts Section	S. Sambasivam
	S. Sundaravinayagam
Stores and Purchase Section	A.V. Sudarsanam
Training & Placement	B. Nagarajan
IC&SR	Prema Chakkarapani
Students	Lt. Col. (Retd.) Jayakumar
Internal Audit Section	J. Lazar

Assistant Registrars

Academic	D. Ravee
	M. Chakkarapani

Administration	P. Jamuna
Finance & Accounts Section	K. Kumarappan
Stores & Purchase Section	S. Muthukrishnan
IC&SR	C. Rajendran
Security cum Fire Officer	V. Rajendran
	N. Elumalai

(vi) Heads of central services, facilities and sections

Central Library	Harish Chandra
Chief Medical Officer in Charge	Mahalakshmi M. Ravi
Central Gas Supplies Unit & Central Glass Blowing Section	U.V. Varadaraju
Professor in Charge, Central Workshop	N. Ramesh Babu
Co-ordinator, NSS	Srinivasa Chakravarthy (upto 17 September 2012)
	John Bosco Lourdusamy (from 18 September 2012)
Advisor, Sports	K.P. Sudheer
Advisor, Cultural	Udayachandran Chakkingal
Advisor, Foreign Students	Sudarshan Padmanabhan
Vigilance	N. Sivaprasad
Placement & Training	N. Ramesh Babu
Advisor, Mentoring for Individual Transformation (MITr)	M.S. Sivakumar
Professor in Charge (Alumni Affairs)	R. Nagarajan

(vii) Engineering Unit

Chairman, Engineering Unit	K.N. Satyanarayana
Co-Chairman, Engineering Unit	A. Veeraraghavan
Superintending Engineer	R. Arumugam
Assistant Registrar	V. Perumal
Executive Engineers	Shri. K. Viswanath
	Shri. L. Venkataraman
Assistant Executive Engineers	Shri. V. Seenivasan
	Shri. K. Dharmaraj
	Shri. M. Ramachandran
	Shri. M. Murali Prakash
	Shri. H. Anandram
	Smt. N.R. Vineetha
	Shri. K. Rizwan Ali

3. ACADEMIC PROGRAMMES AND AWARD OF DEGREES

During the year under report, the institute offered Ph.D. programmes in all the 16 departments, M.S. programmes in 12 departments, M.Tech. programmes in 28 streams/specializations, M.Sc. programmes in 3 branches, B.Tech. programmes in 10 branches, Dual Degree (B.Tech. and M.Tech.) programmes in 21 streams/specializations, a Dual Degree (B.S. and M.S.) in biological sciences and physics, an M.B.A. programme, an M.A. integrated programme in 3 streams and a PG diploma in Metro Rail Technology and Management in the Civil Engineering Department besides a preparatory course for SC/ST students.

3.1. Admissions 2012-2013

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

The numbers of students and scholars admitted to various programmes in July 2012 and in January 2013 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	38	21	23	—	—	—	—	17	10	109
2	Applied Mechanics	—	—	23	—	—	—	—	25	20	68
3	Biotechnology	—	57	12	—	—	—	—	11	30	110
4	Chemical Engineering	75	18	39	—	—	—	—	7	14	153
5	Chemistry	—	—	—	—	47	—	—	—	43	90
6	Civil Engineering	64	34	96	13	—	—	—	19	34	260
7	Computer Science and Engineering	31	26	58	—	—	—	—	35	16	166
8	Electrical Engineering	66	54	75	—	—	—	—	43	22	260
9	Engineering Design	—	57	—	—	—	—	—	22	19	98
10	Humanities & Social Sciences	—	—	—	—	—	—	46	—	8	54
11	Management Studies	—	—	—	—	—	103	—	19	15	137
12	Mathematics	—	—	12	—	47	—	—	—	11	70
13	Mechanical Engineering	75	71	103	—	—	—	—	55	42	346
14	Metallurgical & Materials Engineering	36	13	30	—	—	—	—	9	14	102
15	Ocean Engineering	37	15	42	—	—	—	—	25	21	140
16	Physics	28	8	12	—	38	—	—	—	43	129
	Total	450	374	525	13	132	103	46	287	362	2292

In addition to the above, 5 students (OBC PD, 3; GE PD, 2) joined the preparatory course.

Fresh admissions of OBC/SC/ST students

Sl. No.	Programme	OBC	SC	ST	PD	Female
1	B.Tech.	127	67	36	5	48
2	Dual Degree	108	53	29	3	52
3	M.Tech.	122	52	23	8	61
4	PG Diploma in Metro Rail	4	2	1	—	2
5	M.B.A.	11	22	1	1	13
6	M.Sc.	32	20	1	—	41
7	M.A.	12	7	4	—	27
8	M.S.	68	3	0	—	63
9	Ph.D.	138	21	2	1	110
	Total	622	247	97	18	417

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

Foreign nationals	5	User-Oriented Programme (M.Tech.)	50
		Q.I.P.	M.Tech. 17
OBC	622		Ph.D. 15
Scheduled castes	247	Sponsored	M.Tech. 22
Scheduled tribes	97	Project	M.S. 41
Physically handicapped	18		Ph.D. 15
Women students	417	External registration	M.S. 11
Defence officers (M.Tech.)	36		Ph.D. 24

3.2. Enrolment of Students/Scholars

The number of students on roll in various programmes of the institute during the academic year 2012–2013 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	123	107	46	—	—	—	—	44	61	381
2	Applied Mechanics	—	—	39	—	—	—	—	54	76	169
3	Biotechnology	100	124	32	—	—	—	—	24	165	445
4	Chemical Engineering	278	90	62	—	—	—	—	40	72	542
5	Chemistry	—	—	—	—	96	—	—	—	212	308
6	Civil Engineering	240	176	176	13	—	—	—	42	150	797
7	Computer Science & Engineering	132	130	121	—	—	—	—	86	71	540
8	Electrical Engineering	232	322	128	—	—	—	—	172	129	983
9	Engineering Design	—	259	—	—	—	—	—	35	46	340
10	Humanities & Social Sciences	—	—	—	—	—	—	199	—	34	233
11	Management Studies	—	—	—	—	—	154	—	50	84	288
12	Mathematics	—	—	21	—	95	—	—	—	54	170
13	Mechanical Engineering	317	335	194	—	—	—	—	122	197	1165
14	Metallurgical & Materials Engineering	125	59	37	—	—	—	—	21	84	326
15	Ocean Engineering	127	82	82	—	—	—	—	59	80	430
16	Physics	98	32	19	—	76	—	—	—	133	358
	Total	1772	1716	957	13	267	154	199	749	1648	7475

The students on roll included the following:

Foreign nationals	5	Q.I.P.	M.Tech. 28
			Ph.D. 68
OBC	1723	Sponsored	M.Tech. 35
			M.S. —
Scheduled castes	772	Project	M.S. 88
			Ph.D. 92
Scheduled tribes	331	External registration	M.S. 62
			Ph.D. 163
Physically handicapped	79	Registration kept alive	M.S. 7
			Ph.D. 9
Women students	1324	Part-time programme (Ph.D.)	M.S. 10
			Ph.D. 37
Defence officers (M.Tech.)	67	User-Oriented Programme (M.Tech.)	102

OBC/SC/ST students on roll

Sl. No.	Course	OBC	SC	ST	Female
1	B.Tech.	440	263	144	221
2	Dual Degree	379	247	121	205
3	M.Tech.	226	89	47	135
4	M.Sc.	72	40	0	68
5	M.BA.	12	29	1	24
6	M.A.	40	30	13	121
7	Ph.D.	396	67	4	418
8	M.S.	158	7	1	132
	Total	1723	772	331	1324

The branch-/discipline-wise and year-wise details of students enrolled in the 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	2012	2011	2010	2009	2008 and Earlier Batches	Total
1	Aerospace Engineering	33	28	36	21	5	123
2	Biotechnology	0	38	37	21	4	100
3	Chemical Engineering	71	69	75	57	6	278
4	Civil Engineering	64	60	56	44	16	240
5	Computer Science & Engineering	33	33	33	26	7	132
6	Electrical Engineering	73	53	54	43	9	232
7	Engineering Physics	25	29	21	19	4	98
8	Mechanical Engineering	83	83	82	64	5	317
9	Metallurgical & Materials Engineering	32	31	36	21	5	125
10	Naval Architecture	33	34	35	21	4	127
	Total	447	458	465	337	65	1772

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

Sl. No.	Branch	2012	2011	2010	2009	2008	2007 and Earlier Batches	Total
1	Aerospace Engineering	11	12	14	17	17	5	107
	AE (B.Tech.) & AM (M.Tech.)	9	7	7	5	3		
2	Biotechnology	—	16	17	23	18	1	75
	Biological Engineering	26	—	—	—	—	—	26
	Biological Sciences (B.S. & M.S.)	23	—	—	—	—	—	23
3	Chemical Engineering	16	18	20	19	14	3	90
4	Civil Engineering & Infrastructural Civil	24	29	29	30	31	4	179
	CE (B.Tech.) & AM (M.Tech.)	7	5	7	8	5		
5	Computer Science & Engineering	29	28	29	21	18	5	130
6	Electrical Engineering	49	67	62	56	50	5	322
	EE (B.Tech.) & AM (M.Tech.)	9	9	7	3	5		
7	Engineering Design	57	53	56	46	42	5	259
8	Mechanical Engineering	77	68	73	64	51	2	335
9	Metallurgical & Materials Engineering	11	12	12	14	9	1	59
10	Naval Architecture & Ocean Engineering	7	10	10	11	7	4	82
	NA (B.Tech.) & AM (M.Tech.)	7	9	8	5	4		
11	Physics (B.S. & M.S.)	8	8	6	10	0	0	32
	Total	370	351	354	332	274	35	1716

TABLE 3.5. M.Sc. students on roll

Sl. No.	Branch	2012	2011 and Others	Total
1	Chemistry	47	48	95
2	Mathematics	46	43	89
3	Physics	37	39	76
	Total	130	130	260

TABLE 3.6. M.Tech. students on roll

Sl. No.	Department/Discipline/Batch	2012	2011	Extended Students	Total
1	Aerospace Engineering	20	25	1	46
2	Applied Mechanics	22	16	1	39
3	Biotechnology–Clinical Engineering	12	20	—	32
4	Chemical Engineering	29	26	1	56
	Catalysis Technology	3	3	—	6
5	Civil Engineering	—	—	2	2
	CE 1—Building Technology	11	7	—	18
	CE 2—Environmental Engineering	5	5	—	10
	CE 3—Geotechnical Engineering	12	10	—	22
	CE 4—Hydraulic & Water Resource Engineering	4	6	—	10
	CE 5—Structural Engineering	17	21	—	38
	CE 6—Transportation Engineering	6	11	—	17
	CE 7—Construction Technology & Management	30	29	—	59
6	CS 1—Computer Science & Engineering	57	61	3	121
7	Electrical Engineering	—	—	1	1
	EE 1—Communication Systems	22	20	—	42
	EE 2—Power Systems and Power Electronics	12	6	—	18
	EE 3—Micro Electronics and VLSI Design	14	15	—	29
	EE 4—Control and Instrumentation System	14	12	—	26
	EE 5—Photonics	5	7	—	12
8	Industrial Maths & Scientific Computing	12	8	1	21
9	Mechanical Engineering				
	ME 1—Thermal Engineering	42	37	—	79
	ME 2—Design	32	30	—	62
	ME 3—Manufacturing Engineering	12	16	—	28
	ME 4—Automotive Engine Technology	10	7	—	17
10	MM—Metallurgical & Materials Engineering	21	11	1	33
	NE—Nuclear Engineering	4	8	—	12
11	OE—Ocean Engineering	12	9	2	23
	—Ocean Technology & Management	5	10	—	15
	—Petroleum Engineering	12	8	—	20
	—Offshore Structures and Engineering	10	14	—	24
12	Physics				
	PH—Solid State Technology	11	8	—	313
	Total	478	466	13	957

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

Sl. No.	Branch	2012	2011	Total
1	Management Studies	102	52	154

TABLE 3.8. M.A. students on roll

Sl. No.	Branch	2012	2011	2010	2009	2008 and Earlier Batches	Total
1	Humanities & Social Sciences	46	41	44	39	28	198

TABLE 3.9. M.S. scholars on roll

Sl. No.	Branch	I Year	II Year	III Year	IV Year	V Year and Others	Total
1	Aerospace Engineering	17	12	7	5	3	44
2	Applied Mechanics	25	12	14	1	2	54
3	Biotechnology	10	8	4	2	0	24
4	Chemical Engineering	7	21	7	4	1	40
5	Civil Engineering	18	9	7	7	1	42
6	Computer Science & Engineering	34	23	15	11	3	86
7	Electrical Engineering	57	56	40	14	5	172
8	Engineering Design	10	14	7	4	0	35
9	Management Studies	18	14	13	5	0	50
10	Mechanical Engineering	53	29	23	14	3	122
11	Metallurgical & Materials Engineering	9	6	2	3	1	21
12	Ocean Engineering	23	15	15	6	0	59
	Total	281	219	154	76	19	749

TABLE 3.10. Ph.D. scholars on roll

Sl. No.	Branch	I Year	II Year	III Year	IV Year	V Year and Others	Total
1	Aerospace Engineering	12	9	10	12	18	61
2	Applied Mechanics	19	14	17	11	15	76
3	Biotechnology	30	36	19	22	58	165
4	Chemical Engineering	13	26	16	5	12	72
5	Chemistry	39	60	42	25	46	212
6	Civil Engineering	33	44	28	31	14	150
7	Computer Science & Engineering	17	9	10	13	22	71
8	Electrical Engineering	30	24	26	19	30	129
9	Engineering Design	12	12	8	5	9	46
10	Humanities & Social Sciences	8	6	7	5	8	34
11	Management Studies	14	19	11	20	20	84
12	Mathematics	12	20	3	8	11	54
13	Mechanical Engineering	44	42	34	36	41	197
14	Metallurgical & Materials Engineering	13	22	14	15	20	84
15	Ocean Engineering	23	25	16	11	5	80
16	Physics	41	21	24	20	27	133
	Total	360	389	285	258	356	1648

3.3. Courses Offered

In the academic year 2012–2013, 1272 courses were offered, of which 651 courses were offered in July–November 2012 and 621 courses were offered in January–May 2013. 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 2011				No. of Courses Offered in January–May 2012			
		Core	Elective	Lab.	Total	Core	Elective	Lab.	Total
1	Aerospace Engineering	10	11	4	25	6	15	4	25
2	Applied Mechanics	5	7	2	14	9	8	3	20
3	Biotechnology	12	8	3	23	7	10	1	18
4	Chemical Engineering	12	20	3	35	14	15	3	32
5	Chemistry	5	10	2	17	6	13	3	22
6	Civil Engineering	30	29	5	64	24	22	8	54
7	Computer Science & Engineering	12	13	6	31	6	21	4	31

8	Engineering Design	13	3	5	21	12	6	3	21
9	Electrical Engineering	16	32	6	54	15	36	8	59
10	Humanities & Social Sciences	37	36	0	73	30	26	1	57
11	Management Studies	27	41	0	68	6	45	0	51
12	Mathematics	15	19	1	35	12	21	1	34
13	Mechanical Engineering	42	34	6	82	51	24	7	82
14	Metallurgical & Materials Engineering	9	23	4	36	9	23	8	40
15	Ocean Engineering	20	14	2	36	18	8	2	28
16	Physics	20	10	7	37	18	21	8	47
	Total	285	310	56	651	243	314	64	621

3.4. Convocation

The 49th Convocation was held on 22 July 2012. Shri Fali Sam Nariman delivered the convocation address. A total of 1464 candidates were awarded various degrees, and 1206 candidates received their degrees in person. The department-wise details of the degrees awarded are provided in Table 3.12.

TABLE 3.12. Degrees awarded

Department	Ph.D.	M.S.	M.Tech.	PG Diploma	M.Sc.	M.B.A.	M.A.	Dual Degree		B.Tech.	Total
								B.Tech.	M.Tech.		
Aerospace Engineering	5	8	27	—	—	—	—	11	11	17	79
Applied Mechanics	5	7	15	—	—	—	—	16	16	—	59
Biotechnology	12	5	10	—	—	—	—	16	16	15	74
Chemical Engineering	4	7	34	—	—	—	—	15	15	44	119
Chemistry	16	—	—	—	45	—	—	—	—	—	61
Civil Engineering	19	10	86	9	—	—	—	23	23	15	185
Computer Science & Engineering	4	16	67	—	—	—	—	18	18	19	142
Electrical Engineering	12	20	64	—	—	—	—	43	43	43	225
Engineering Design	2	3	—	—	—	—	—	22	22	—	49
Humanities & Social Sciences	4	—	—	—	—	—	29	—	—	—	33
Management Studies	7	13	—	—	—	69	—	—	—	—	89
Mathematics	4	—	9	—	43	—	—	—	—	—	56
Mechanical Engineering	21	21	97	—	—	—	—	44	44	61	288
Metallurgical & Materials Engineering	6	13	19	—	—	—	—	13	13	21	85
Ocean Engineering	4	4	32	—	—	—	—	4	4	20	68
Physics	16	—	8	—	35	—	—	—	—	18	77
Total	141	127	468	9	123	69	29	225	225	273	1689

With this convocation, the total number of degrees awarded so far by the institute is 38,760, the details of which are given below:

Sl. No.	Programme	No.
1	Ph.D.	3622
2	M.S.	2655
3	M.Tech.	12293
4	M.Sc.	2789
5	M.B.A.	550
6	M.A.	53
7	Dual Degree	
	B.Tech.	1341
	M.Tech.	1341
8	B.Tech.	13821
9	PGDMEM	30
10	B.Sc. (Tech.)	20
11	DIIT	245

3.5. Award of Prizes to students

3.5.1. Convocation Prizes

The following are the details of Prizes awarded to the students at the 49th Convocation:

President of India Prize	Anjan Dwaraknath, B.Tech., Engineering Physics
Governor's Prize	Joseph Joseph Cherukarar, Dual Degree, Electrical Engineering

Other prizes

Sl. No.	Donor/Prize	Department	Name of Student	
Doctor of Philosophy—Ph.D.				
1	Prof. V. Ramamurti Award	Applied Mechanics	Srinivasan K.	(AM07D005)
2	Shree Gaayathree Devi Award	Civil Engineering	Priyadarshini R.S.	(CE07D016)
3	GE Ecomagination Excellence Award	Civil Engineering	Srimuruganandam	(CE07D002)
4	Prof. Langmuir Prize	Chemistry	Christy George	(CY06D018)
			Monalisa Mohapatra	(CY06D024) [Joint winners]
5	Prof. Werner Prize	Chemistry	Shubhankar Kumar Bose	(CY07D012)
6	Prof. C.N. Pillai Prize	Chemistry	Murali A.	(CY04D046)
			Suheel Kumar Porwal	(CY05D030)
7	Prof. G. Sundararajan Endowment Prize	Chemistry	Santosh Kumar Alamsetti	(CY07D007)
8	Sudharshan Bhat Memorial Prize	Metallurgical & Materials Engineering	Sangeetha Raman	(MM07D013)
			Kesavan D.	(MM07D006) [Joint winners]
9	Prof. A.L. Lashkar Prize	Physics	Ashish Kumar Mishra	(PH07D004)
10	Bhagyalakshmi and Krishna Ayengar Award	Chemical Engineering, Electrical Engineering, Physics	Tessy Theras Baby	(PH07D014)
			Arun Srikanth S.	(CH09S001)
			Arun K.	(CH10M003)
			R. Sneha Raj	(EE07B079) [Joint winners]
Master of Technology—M.Tech.				
1	Air India Prize	Aerospace Engineering	Navin Soni	(AE10M023)
2	Prof. B.V.A. Rao Endowment Prize	Applied Mechanics	Padma Amani Mula	(AM10M013)
3	Usha Kothandaraman Memorial Prize			
4	Indira Sivasailam Merit Prize	Fluid Mechanics	Sandeep V.R.	(AM10M017)
5	Sushruta Award	Biomedical Stream	Gurpeet Singh	(AM10M008)
6	Institute Merit Prize	Clinical Engineering	Archana Suresh	(BT09M003)
7	Dr. K. Subba Raju Memorial Prize	Chemical Engineering	Maharishi Maitra	(CH10M017)
8	Sri. S.V. Balakrishnan Prize	Catalysis Technology	Ajgaonkar Aditya Vishnu	(CA10M001)
9	Valli Anantharamakrishnan Merit Prize	Civil Engineering	Athulya Balakrishnan	(CE10M051)
10	K. Devarajan Memorial Prize	Civil Engineering	Saranya Vijayan	(CE10M149)
11	L&T Endowment Prize	Civil Engineering— Construction Technology and Management	Venkata V. Santhosh Kumar Annabattula	(CE10M195)
12	CMC Prize	Computer Science & Engineering	Vijay E.	(CS10M067)
13	Prof. H.N. Mahabala Endowment Prize			
14	Siemens Prize	Electrical Engineering	K. Sri Ramya	(EE10M051)
15	Prof. Achim Bopp Endowment Prize	Electrical Engineering	Ahammed Muneer K.V.	(EE10M101)
16	Prof. Helmut Neunzert Endowment Prize	Industrial Mathematics & Scientific Computing	Chandra Shekhar Nishad	(MA10M001)
17	Prof. B. Sengupto Prize	Mechanical Engineering	Umesh M.	(ME10M038)

18	Dr. S. Vaidyanathan Memorial Prize	Mechanical Engineering	Theenathayalan K.	(ME10M132)
19	Mico-Bosch Prize	Mechanical Engineering	Saswat Kumar Rout	(ME10M136)
20	S. Anantharamkrishnan Merit Prize	Mechanical Engineering	Sougata Roy	(ME10M129)
21	Prof. Ramamohana Rao Memorial Prize	Mechanical Engineering	Uday Shankar Roy	(ME10M089)
22	Delphi–TVS Diesel Systems Ltd. Prize	Mechanical Engineering— Automotive Engine Technology	Suresh Kumar N.	(AT10M008)
23	Prof. Ram Rao Jayanti Memorial Prize	Mechanical Engineering	Lino George	(NE10M005)
24	Sudharshan Bhatt Memorial Prize	Metallurgical & Materials Engineering	Jayalakshmi	(MM10M009)
25	American Bureau of Shipping Prize	Ocean Engineering	Punya Das P.V.	(OE10M009)
26	Prof. K.A.V. Pandalai Prize	Ocean Technology & Management	Debasis Baruah Shan Victor Pereira	(OE10M032) (OE10M040) [Joint winners]
27	Sri. R.R.P. Sinha & Vimla Dewi Prize	Petroleum Engineering	Abhishek Joshi	(PE10M001)
28	Sri Krishnamurthy Sundarambal Prize	Solid State Technology	Saisunilkumar M. Venkatarao	(PH10M009)

PG Diploma in Metro Rail Technology & Management

1	Institute Merit Prize	Civil Engineering	Bhavya S.	(CE11G002)
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Master of Science—M.Sc.

1	Dr. S.R. Ramadas 60th Birthday Commemoration Award	Chemistry	R. Srinivasan	(CY10C042)
2	Ratna Rao Memorial Prize			
3	Mira Paul Memorial Prize	Mathematics	Arundhathi Krishnan	(MA10C008)
4	Prof. Chilukury Ramasastry Memorial Prize	Physics	Apurva Sarkar	(PH10C004)

Master of Business Management—M.B.A.

1	K.V. Arunkumar Memorial Prize	Management Studies	Avinash Kumar Sinha	(MS10A011)
2	Coka Parthasarathy Prize	Management Studies	Preetdeep Kaur Chawla	(MS10A040)

Master of Arts—M.A.

1	Prof. A. Ravindran Prize	Economics	Vishnu Prasad	(HS07H029)
2	Dr. Dilip Veeraraghavan Memorial Award	Development Studies	Sudheesh Ramapurath Chemmencheri	(HS07H023)
3	Prof. A.V. Krishna Rao Memorial Award	English Studies	Harigovind G.	(HS07H009)

Dual Degree

1	Dr. V. Mohan Raman Prize	Aerospace Engineering	Shivaram N.V.	(AE07B030)
2	Mayan Prize			
3	Biocon Prize	Biotechnology	Shreyas Rangan	(BT07B039)
4	B. Ravichandran Memorial Prize	Chemical Engineering	Thimmineni Ravikeerthi	(CH07B056)
5	Dr. N.R. Dave Prize	Civil Engineering	Nikhil S.	(CE07B054)
6	Alumni Association Prize	Computer Science & Engineering	Kirtika Bharatraj Ruchandani	(CS07B040)
7	Phillips India Prize	Electrical Engineering	Ananda Narayan	(EE07B058)
8	Prof. G.V.N. Rayudu Memorial Prize	Mechanical Engineering	Sameer Bardapurkar	(ME07B074)
9	Giri Brothers Prize	Mechanical Engineering	P. Bhanu Chander Reddy	(ME07B030)
10	S. Anantharamkrishnan Memorial Prize	Metallurg. & Materials Engineering	Navale Sanket Sunil	(MM07B030)
11	Goodearth Shipbuilding Pvt. Ltd. Prize	Naval Architecture & Ocean Engineering	Neshal Das	(NA07B013)

Bachelor of Technology—B.Tech.

1	HAL Prize	Aerospace Engineering	Nimmagadda Sravya	(AE08B013)
2	The Divashri Award	Biotechnology	Chaitra P	(BT08B007)
3	C.A. Sastry Endowment Prize	Chemical Engineering	Sreekanth Rajagopalan	(CH08B042)
4	Reliance Heat Transfer Pvt. Ltd. Prize	Chemical Engineering	Rohit Kannan	(CH08B036)

5	Larsen & Toubro ECC Endowment Prize	Civil Engineering	Srinivasan G.D.	(CE08B040)
6	B. Ravichandran Memorial Prize	Computer Science & Engineering	Rakesh Ramesh	(CS08B044)
7	Siemens Prize	Electrical Engineering	Shaileshh Bojja Venkatakrishnan	(EE08B029)
8	Banco Foundation Prize	Mechanical Engineering	M. Brij Bhushan	(ME08B112)
9	Sivasailam Merit Prize	Mechanical Engineering	Rakesh Sridhar	(ME08B044)
10	Vaidy Krishna Memorial Prize	Mechanical Engineering	Achyuth Sanjay	(ME08B002)
11	Dr. Dhandapani Memorial Prize	Metallurgical & Materials Engineering	Kirthi C.	(MM08B011)
12	American Bureau of Shipping Prize	Naval Architecture and Ocean Engineering	Karthik Balaji S.	(NA08B023)

3.5.2. Institute Day Prizes

On the basis of performance, the following students were awarded Merit Prizes on the 53st Institute Day, held on 12 April 2012 at the Student Activities Centre. Shri. M.M. Murugappan, Vice Chairman, Murugappa Group of Companies was a Chief Guest.

I. Institute Merit Prizes

Silver medal and cash award of Rs.5000

For the student with the best academic record in the first 2 semesters of the B.Tech./Dual Degree Programme (2010 batch)

AE	AE10B014	G. Karthik	(Sri S. Subramanian Prize) [Joint winners]
CS	CS10B032	Babbula Spandana Raj [DD]	
CS	CS10B038	K. Karthik [DD]	(Sri K. Krishnamurthi Prize) [Joint winners]
EE	EE10B046	Vidya Muthukumar	

For the best academic record in the third and fourth semesters put together in the B.Tech./Dual Degree programme (2009 batch)

AE	AE09B031	Vivek Subramaniam	(Prof. T.K.Varadan Prize)
BT	BT09B007	Chetan S.	(Dr. Anita Mehta-Damani Prize)
CH	CH09B083	Asha Chigurupati	(Dr. Anita Mehta-Damani Prize)
CE	CE09B075	Vadali Nandita [DD]	(Computer Age Management Services Pvt. Ltd. Prize)
CS	CS09B050	Vijay Karthik M.	(Sri V. Ramachandran Prize)
EE	EE09B007	Archith Mohan	(Sri V. Rajagopalan Memorial Prize)
ED	ED09B042	Mohit K. Bhatia	(Ms. Latha & Sampath Srinath Prize)
EP	EP09B021	Varun Saravanan	(Ms. Latha & Sampath Srinath Prize)
ME	ME09B095	Sneha Abhyankar [DD]	(Ms. Jayshree Ananth Prize)
MM	MM09B003	Ashwin S. Kalkar	(Sri Satish Pai Prize)
NA	NA09B007	Ashwin Mohandas	(Ms. Latha & Sampath Srinath Prize)

For the student with the best academic record in the first four semesters of the B.Tech. programme (2009 batch)

ME	ME09B043	Preetish K.L.	(Sri Raghavendra Memorial Prize)
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For the student with the best academic record in the fifth and sixth semesters in each branch of the B.Tech./Dual Degree programme (2008 batch)

AE	AE08B013	Nimmagadda Sravya	(Prof. E.G. Tulapurkara Prize)
BT	BT08B045	Shukla Chinmay Jayesh [DD]	(Dr. Anita Mehta-Damani Prize)
CH	CH08B036	Rohit Kannan	(Dr. R.K. Viswanath Memorial Prize)
CE	CE08B053	Madhukant Kumar [DD]	(M.S.K. Chaitanya Varma Memorial Prize) [Joint winners]
	CE08B063	Swetha M.D. [DD]	

CS	CS08B044	Rakesh Ramesh	(Computer Age Management Services Pvt. Ltd. Prize)
EE	EE08B048	Siddharth Shekar [DD]	(Sri Ramasarma V. Kolluri Memorial Prize)
ED	ED08B008	Garudaiah Gari Surya Teja Reddy [DD]	(Institute Merit Prize) [Joint winners]
	ED08B028	S. Srinath [DD]	
ME	ME08B112	M. Brij Bhushan	(Dr. Vivekanand Kochikar Award)
MM	MM08B033	Sai Gautam G. [DD]	(Ratna Award)
NA	NA08B035	Rajshree Gosal [DD]	(Institute Merit Prize)
EP	EP08B004	Anjan Dwaraknath	(Institute Merit Prize)

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

ME	ME08B112	M. Brij Bhushan	(Dr. S. Chandrasekharan Memorial Prize)
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For the B.Tech./Dual Degree students of Naval Architecture of 2007 and 2006 batches for the best project in the areas of shipping and ship building

First prize *Silver medal and cash award of Rs.10000*
Second prize *Silver medal and cash award of Rs.5000*

NA	NA07B006	Atheendra Sreenivasan (ClassNK-100 Award)	First prize
NA	NA07B004	Alokraj Valsaraj (ClassNK-100 Award)	Second prize

For the student with the best academic record in the seventh and eighth semesters in each branch of the Dual Degree programme

AE	AE07B030	Shivaram N.V.	(Institute Merit Prize)
AM	CE07B064	K. Vineet Kumar Reddy	(Institute Merit Prize)
BT	BT07B039	Shreyas Rangan	(Sri Madan Gopal Damani Prize)
CH	CH07B053	Sehej Kaw	(Dr. Anita Mehta-Damani Prize)
CE	CE07B052	Mithin Jac Mathews	(Sri Venkataraman Ravi Prize)
CS	CS07B039	Rajkishan G.	(Computer age Management Services Pvt. Ltd. Prize)
ED	ED07B003	Arun Srivatsan R.	(Institute Merit Prize)
EE	EE07B070	S.H. Sai Srikanth Vidya Sagar (VLSI)	(Electronics For You Prize)
EE	EE07B044	Ishaque Ashar K. (Commn.)	(D. Anand Subramaniam Memorial Award)
EE	EE07B076	Mohammed Iqbal R. (PSPE)	(Sri Ramanan Ramamurthy Memorial Prize)
ME	ME07B068	Deepak Narayanan Subramani (ET)	(Sri Raghu Ramamoorthy Prize)
ME	ME07B091	Praneeth Kumar B. (PD)	(Sri Rajesh Achanta Prize)
ME	ME07B074	Sameer Bardapurkar (IM)	(Sri Sagar Pushpala Prize)
MM	MM07B031	Paranjape Ninad Bhushan	(Prof V. Sundaresan Prize)
NA	NA07B026	Bokepalli Anita Raja	(Sri Poovai T.R. Srinivasan & S. Alamelu Prize)

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

ME	ME08B112	M. Brij Bhushan	(Dr. Dinesh Balagangadhar 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

EP	EP08B019	Sanjay Guruprasad	(Dr. Dilip Veeraraghavan Memorial Award)
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For the B.Tech./Dual Degree student with the best cumulative performance in courses offered under the HSS category from the third to seventh semesters (2008 batch)

EP	EP08B019	Sanjay Guruprasad	(K. Srinivasan and Indira Srinivasan Prize)
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For carrying out a project in the area of particle technology and securing the highest CGPA at the end of the pre-final semester

CH	CH06B033	Ravi Teja Darbha	(Prof. M Ramanujam Memorial Award)
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For the student with best academic record in the first nine semesters of the Dual Degree in intelligent manufacturing in the Mechanical Engineering Department

ME	ME07B074	Sameer Bardapurkar	(Prof. V. Radhakrishnan Endowment Award)
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For the student who secured the highest marks in the Mechanical Operations course

CH	CH09B083	Asha Chigurupati	(Prof. M. Ramanujam Memorial Award)
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For the B.Tech./Dual Degree student with the best cumulative performance in the minor category under “English Studies” in the fifth, sixth and seventh semesters

EE	EE08B048	Siddharth Shekar [DD]	(Rajalakshmi Krishnamurthy English Prize)
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For the B.Tech./Dual Degree/M.A. student with the highest CGPA in the Management minor in the fifth, sixth and seventh semesters

BT	BT08B045	Shukla Chinmay Jayesh [DD]	(Sri S. Viswanathan Prize) [Joint winners]
ED	ED08B035	Anindita Das [DD]	

For the B.Tech./Dual Degree/M.A. student with the highest CGPA in the Innovation and Entrepreneur minor in the fifth, sixth and seventh semesters

OE	NA08B031	Vinay K. Sridhar [DD]	(Ms. Pattammal Viswanathan Prize)
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For the M.A. student (2010 Batch) with the best academic record in the first and second semesters

HS	HS10H029	Sahil Mathur	(Institute Merit Prize) [Joint winners]
	HS10H039	Vaishali V.	

For the M.A. student (2009 batch) with the best academic record in the third and fourth semesters

HS	HS09H008	Anu Joshy	(Institute Merit Prize) [Joint winners]
	HS09H034	Sneha A.	

For the student with the best academic record in the fifth and sixth semesters in each branch of the M.A. programme (2008 batch)

HS	HS08H003	M. Akhil (Eco)	(Institute Merit Prize)
HS	HS08H008	Dipali Anumol (DS)	
HS	HS08H010	Kaamya Y. Sharma (ES)	

For the student with the best academic record in the seventh and eighth semesters in each branch of the M.A. programme (2007 batch)

HS	HS07H029	Vishnu Prasad (Eco)	(Institute Merit Prize)
HS	HS07H023	R.C. Sudheesh (DS)	
HS	HS07H009	Harigovind G. (ES)	

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

AE	AE10M023	Navin Soni	(Institute Merit Prize)
AM	AM10M013	Padma Amani M.	(Institute Merit Prize)
BT	BT10M012	Soumya P.D.	(Institute Merit Prize)
CA	CA10M001	Ajgaonkar Aditya Vishnu (CT)	(Institute Merit Prize)
CH	CH10M016	Mahamulkar Shilpa Suresh	(Chevron Products Company Prize)
CE	CE10M051	Athulya Balakrishnan	(Smt. Jayalakshmi Narasimhan Memorial Prize)

CE	CE10M195	Venkata V. Santhosh Kumar Annabattula [CTM]	(Institute Merit Prize)
CS	CS10M067	Vijay E.	(Institute Merit Prize)
EE	EE10M051	K. Sri Ramya	Prof. M.K. Achuthan Prize
MA	MA10M001	Chandra Shekhar Nishad	(Institute Merit Prize)
ME	ME10M038	Umesh M.	(Sri Ramanan Ramamurthy Memorial Prize)
ME	AT10M008	Suresh Kumar N. [AT]	(Institute Merit Prize)
NE	NE10M005	Lino George	(Prof. Rama Rao Jayanti Memorial Prize)
MM	MM10M009	Jayalakshmi M.	(Institute Merit Prize)
OE	OE10M009	Punya Das P.V.	(Prof. Vallam Venkataswami Prize)
OE	OE10M031	Anu A.P. [OTM]	(Institute Merit Prize)
PE	PE10M001	Abhishek Joshi	(Prof. M.S. Ananth Prize)
PH	PH10M009	M. Saisunilkumar M. Venkatarao (SST)	(Ms. Lakshmi Ravikumar Memorial Prize)

For the student with the best academic record in the Geotechnical Engineering stream of the M.Tech. programme in civil engineering

CE	CE09M056	Reshma K.V.	(Rajnikant Gandhi Memorial Award)
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For the M.Tech. Mechanical Engineering student (Thermal Engineering) with the best academic record in the first two semesters

ME	ME10M038	Umesh M.	(Prof. N. Venkatarayulu Memorial Prize)
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For the best M.Tech. project in the area of environmental engineering

CH	CH09M041	Ravikiran Anapagaddi	(Smt. D.L. Saraswati Memorial Prize)
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For the student with the best experimental M.Tech. thesis in the Structural Engineering Division

CE	CE09M095	Arunsekhar C.	(Prof. Juergen Plaehn Prize)
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For the best M.Tech. project in automotive technology (ME)

AT	AT09M006	Ranganath S.	(Lucas–TVS Limited Prize) [Joint winners]
	AT09M007	Sambathkumar R.	

For the student with the highest CGPA in Marketing Specialization in the M.B.A. programme

MS	MS10A020	Esha Gupta	(Dr. V. Kumar Prize)
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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	CY10C005	Ankita Das	[Ms. Kalaimani Natarajan Prize]
MA	MA10C008	Arundhathi Krishnan	[Institute Merit Prize]
PH	PH10C004	Apurva Sarkar	[Chilukuri Ramasastry Memorial Prize]

For the best 3rd semester M.Sc. chemistry student satisfying the criteria specified by the donor (with the lowest parental income among those with a CGPA at the end of the 2nd semester (combined) greater than 7.0)

CY	CY10C010	Debabrata Dhara	(R. Padmanabhan Memorial Prize)
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For one M.Sc. Mathematics student (2010 batch) with the best academic record up to the third semester

MA	MA10C008	Arundhathi Krishnan	(L.V.K.V. Sarma Prize)
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For one M.Tech. IMSC student (2010 batch) with the best academic record up to the third semester

MA	MA10M001	Chandra Shekhar Nishad	(L.V.K.V. Sarma Prize)
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For the best M.S. thesis in computer science and engineering

CS	CS07S005	Lavanya J.	(Sri Biswajit Sain Endowment Prize)
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For the best M.S. thesis in structural engineering

CE	CE08S004	Dhrubajyoti Mukherjee	(Sri K. Sreeharsha Memorial Prize) [Joint winners]
	CE08S016	Hari Hara Puthiran H.	

For the best Ph.D. thesis in electrical engineering in inter-disciplinary areas of research

EE	EE06D015	Jayaraj Joseph	(Dr. M. Mukunda Rao Endowment Prize)
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Swati/Jayalakshmi Memorial Award to the girl student with the best academic record at the end of the pre-final semester in each of the following programmes

B.Tech.	AE08B013	Nimmagadda Sravya
Dual Degree	CS07B040	Ruchandani Kirtika Bharatraj
M.Tech.	MM10M009	Jayalakshmi M.
M.Sc.	MA10C008	Arundhathi Krishnan

For the faculty members who guided the project work of Ph.D., M.S., M.Tech., Dual Degree and B.Tech. students who received awards during the 48th Convocation (2011)—*cash award of Rs.10,000 each*

Department	Name of the Faculty Member	Name of the Student/Roll No.	Project Title	Award
EE	V. Jayashankar	Mala K., EE08D004	A Twin Unidirectional Impulse Turbine- Based Power Module for Wave Energy	Bhagyalakshmi & Krishna Ayengar Award
EE	N. Lakshminarasamma	R.M. Amarsagar Reddy, EE06B081	Design and Implementation of a Synchronous DC–DC Converter with Soft Switching	
EE	N. Lakshminarasamma	Jami Hima Tej, EE07B016	Low Concentration Photo Voltaic with MPPT	
ME	Ajit Kumar Kolar	S. Anand, ME09M003	CO ₂ Capture By Calcined Limestone from a Gas Stream by a Cyclic Operation of a Fluidized Bed Calciner–Carbonator	
CE	Ravindra Gettu	Vinayak S., CE07B041	Design and Construction of Eco- Friendly Street Furniture	

Notional prize of Rs.1000 and a certificate of merit for B.Tech./DD students of 2011 batch

Sl. No.	Roll No.	Name	Sl. No.	Roll No.	Name
1	CS11B012	Dhivya E.	16	CS11B028	Viswajith V.
2	CS11B001	Aarati K.	17	EE11B001	Abhilash S.
3	EE11B015	Dilip K. Kainikkara	18	EE11B038	Siddharth Jacob Varughese
4	EE11B005	Aditya Gaonkar P.	19	EP11B002	Akshay Krishna
5	CS11B015	Ganesh P. Kumar	20	EE11B013	Chitturi Sidhartha
6	CS11B002	Aayush Agarwal	21	EE11B039	Sri Kalyan Yarlagadda
7	CS11B021	Niranjan R.	22	EE11B028	Moningi Sai Ashish
8	EE11B041	Sripada Sai Bhaskar	23	EE11B010	Bharat Chandrahas Dandu
9	EE11B033	Rohan Jaishankar	24	EE11B048	Vikram Ganapathineedi
10	CS11B006	Amal Joy	25	EE11B009	Bhagavathula S.N.S. Saratchandra
11	EE11B026	Matam Srivatsav	26	CS11B047	Shantanu Gupta
12	CS11B010	Chandra Sekhar R.	27	CS11B059	Srinivasan R.
13	EE11B027	Mikkilineni Abhishek	28	EE11B046	Veluri Venkata Rama Aditya
14	CS11B011	Chappidi Hitish	29	EE11B002	Abhishek Namballa
15	CS11B004	Aishwarya P.			

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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, propulsion and structures.

4.1.2. Academic Programmes

B.Tech./Dual/M.Tech./M.S./Ph.D.

New courses introduced

Name of the faculty member: **Dr. Sunetra Sarkar**

Course No.	Subject	Credits
AS 6050	Dynamic Fluid Structure Interaction	3 0 0 3

Students on roll

Programme	I Year	II Year	III Year	IV Year	V Year and Others	Total
B.Tech.	33	28	36	21	5	123
Dual Degree	20	19	21	22	25	107
M.Tech.	20	25	1	0	0	46
M.S.	17	12	7	5	3	44
Ph.D.	12	9	10	11	19	61
Total	102	93	75	59	52	381

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

Sl. No.	Name of Scholar	Roll No.	Name of Conference/ Seminar/Symposium/ Workshop	Date and Venue	Financial Assistance from
India					
1	Vijaya Kumar Cheeda	AE07D009	8th International High Energy Materials Conference & Exhibition (HEMCE-2011)	10–12 November 2011, TBRL, Chandigarh	IIT Madras
2	Vijaya Kumar Cheeda	AE07D009	National Propulsion Conference	21–23 February 2013, IIT Madras	
3	Sanjeev Chourasia	AE11M023			
4	M. Mahendran	AE08S003			
5	C. Palani Kumar	AE06D005			
6	Vinayak Malhotra	AE09S018			
7	Amit Kumar Panigrahy	AE10S007			
8	P. Senthil Kumar	AE08D004			
9	S. Sujith	AE08D003			
10	Harendra K. Verma	AE10S010			
11	Sonu K. Thomas	AE08D021			
12	Arun K. Ampi	AE12S001			
13	B. Manikandan	AE12S006			
Abroad					
1	C. Palani Kumar	AE06D005	48th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibition	July–August 2012 Atlanta, USA	IIT Madras

2	Ishitha	AE08D019	34th International Symposium on Combustion	27 July–4 August 2012, Warsaw, Poland	IIT Madras
3	Guru Sideswar	AE09D009	Annual Meetings of Mechanical Sciences	10–12 October 2012, Georgia Institute of Technology, USA	
4	S. Venkatesh	AE10S020	ASME IMECE 2012, International Mechanical Engineering Congress & Exposition	November 2012, Houston, Texas, USA	
5	Ranjit Shukla	AE10S015	65th Annual Meeting of the APS Division of Fluid Dynamics 2012	18–20 November 2012, San Diego, USA	
6	Rajiv Kumar	AE07D008	9th International Conference on Flow Dynamics	19–21 September 2012, Sendai, Japan	

4.1.3. Faculty and Their Activities

1. Dr. K.V. Nagendra Gopal has been included as an Expert Member of the Working Group of the Centre for Wind Energy Technology (C-WET), MNRE, Government of India to support the Bureau of Indian Standards (BIS) in preparing Indian standards on wind turbines and other standards-related activities.
2. Dr. S. Santhakumar inaugurated the student chapter of AeSi at Abdul Rahman University on 3 August 2012.
3. Dr. S.R. Chakravarthy co-ordinated the SERC School on Combustion Fundamentals for Aerospace Propulsion at DRDL, Hyderabad during 19–21 July 2012.
4. Dr. Job Kurian participated as an invited expert in the inaugural blow down of the 1 m hypersonic wind tunnel and 1 m hypersonic shock tunnel at VSSC, Trivandrum on 17 December 2012.
5. Dr. P.A. Ramakrishna chaired a session at the 26th National Convention of Aerospace Engineers 2012 during 24–25 November 2012.
6. Dr. S.R. Chakravarthy co-ordinated the National Propulsion Conference during 21 – 23 February 2013 at IIT Madras.
7. Dr. T.M. Muruganandam co-ordinated the meeting on “Futuristic Research on Supersonic Combustion” on 21st Feb. 2013. Participants included distinguished Scientists from ISRO, NAL and DRDO and faculty members from IITM and IISc.

Faculty and their areas of specialisation

Name and Qualifications	Major Areas of Specialization (Only 3 Areas)
Professors	
Job Kurian, Ph.D., IIT Madras	Gas dynamics, combustion, shock tube flows and measurements
Santhakumar S., Ph.D., IIT Madras	Aerodynamics, flight mechanics, instrumentation
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, plants 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
Velmurugan R., Ph.D., IIT Delhi	Composite structure 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.)
Associate Professors	
Panchapakesan N.R., Ph.D., Cornell University, USA	Fluid mechanics, stability and transition of fluid flows, turbulence
Murthy H.S.N., Ph.D., Purdue University	Fatigue and fracture, non-destructive evaluation, tribology
Amit Kumar, Ph.D., Case Western Reserve University	Combustion, propulsion, fire research

Ramakrishna P.A., Ph.D., Indian Institute of Science	Combustion, propulsion, fuel cells
Nandan Kumar Sinha, Ph.D., IIT Bombay	Nonlinear dynamics, bifurcation theory and continuation methods, flight dynamics and controls
Sunetra Sarkar, Ph.D., Indian Institute of Science	Insect aerodynamics, fluid structure interaction, uncertainty quantification
Rajesh G., Ph.D., Andong National University, South Korea	Shock wave dynamics, high speed flows, experimental aerodynamics
Assistant Professors	
Nagendra Gopal K.V., Ph.D. (Aero), Indian Institute of Science	Computational mechanics and multi-scale modelling, fracture mechanics, structural dynamics and aero-elasticity
Muruganandam T.M., Ph.D., Georgia Institute of Technology	Combustion, blowout dynamics, optical diagnostics
Sameen A., Ph.D., Indian Institute of Science	Stability, transition and turbulence, computational fluid dynamics
Ranjith Mohan, Ph.D.	Helicopters, rotocraft MAVs, spectral methods in fluid dynamics
Santanu Ghosh, Ph.D., North Carolina University	Computational fluid dynamics, turbulent flows, boundary layer interaction methods
Manikandan Mathur, Ph.D.	Geophysical fluid dynamics, Lagrangian coherent structures
Shankar Ghosh, Ph.D.	Hypersonic flow simulation, non-equilibrium effects, computational fluid dynamics
Shyam M. Keralavarma, Ph.D.	Plasticity, ductile fracture, computational materials modelling

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

Sl. No.	Coordinator(s)	Title	Period
1	S.R. Chakravarthy, T.M. Muruganandam	Short-term course on Industry Academic Workshop on Combustion at IIT Madras	7–8 July 2012

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(s)	Title	Period and Venue
Workshops			
1	S.R. Chakravarthy, T.M. Muruganandam	Organised an Indo-US workshop, Flame Stabilisation and Combustion Stability	6–8 August 2012
2	R.I. Sujith	Organised the DST-sponsored SERC school, Combustion Dynamics	3–7 December 2012, Jadavpur University, Kolkata
Conferences			
1	Job Kurian	National Propulsion Conference	21–23 February 2013, IIT Madras
Meetings			
1	Dr. P.A. Ramakrishna attended the review meeting at DRDL on 16 May 2012.		
2	Dr. A. Sameen attended the AR&DB Annual Meeting at IIT Bombay in May 2012.		
3	Dr. S.R. Chakravarthy visited MEPCO as examiner on 16 July 2012.		
4	Dr. S. Santhakumar attended a Faculty Selection Committee meeting at DIAT, Pune, on 24 July 2012		
5	Dr. R.I. Sujith conducted a Ph.D. viva voce at IISC on 17 August 2012.		
6	Dr. Job Kurian attended an AR&DB Propulsion Panel meeting at Delhi on 31 August 2012.		
7	Dr. S.R. Chakravarthy attended an AR&DB Propulsion Panel meeting at Delhi on 31 August 2012.		
8	Dr. A. Sameen attended a DST project meeting at MNIT, Jaipur, on 10 and 11 September 2012.		
9	Dr. M. Ramakrishna attended an integral technical review meeting at ISRO on 4 October 2012.		
10	Dr. M. Ramakrishna attended the GSLV MKII Aerodynamics Sub. Com. meeting on 19 October 2012.		
11	Dr. N.R. Panchapakesan conducted a Ph.D. viva voce at IIT Delhi on 2 November 2012.		
12	Dr. K.V. Nagendra Gopal inspected the R&D facilities of Mercedes Benz Research and Development India Pvt. Ltd. on 7 November 2012 for M.S. and Ph.D. admissions.		
13	Dr. S.R. Chakravarthy had discussions with TVS scientists/engineers on optical engine development on 9 January 2013.		
14	Dr. S.R. Chakravarthy reviewed the preliminary design of the stage-1 propulsion system of the A6 configuration at ASL, DSPSC on 11 January 2013.		
15	Dr. K.V. Nagendra Gopal visited DRDL, Hyderabad, for discussions regarding collaborative research projects on 15 January 2013.		
16	Dr. R.I. Sujith attended the Aerodynamics Panel meeting at MIT, Chromepet, on 22 January 2013.		

- 17 Dr. K.V. Nagendra Gopal visited ADA, Bangalore, for collaborative research on 1 February 2013.
- 18 Dr. R.I. Sujith attended a review meeting at GTRE regarding experiments on the Kaveri Engine on 13 February 2013.
- 19 Dr. S.R. Chakravarthy attended a review meeting at GTRE regarding experiments on the Kaveri Engine on 13 February 2013.
- 20 Dr. S.R. Chakravarthy attended an SERC School Planning Committee meeting at IISc, Bangalore, on 27 February 2013.
- 21 Dr. Job Kurian attended the BoG meeting of TEQIP-II of Government Engineering College, Wayanad, on 12 March 2013.
- 22 Dr. Job Kurian attended a Research Board meeting at IIST, Trivandrum, on 27 March 2013.

Special lectures delivered by faculty in other institutions

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
1	Job Kurian	Nilakantan Memorial Lecture	ACSI, Trivandrum	2 June 2012
2	S. Santhakumar	Interaction between Train and Aircraft	SRM University	17 July 2012
3	T.M. Muruganandam	Two invited lectures as part of the SERC school on combustion as a part of NCCRD	DRDL, Hyderabad	19–21 July 2012
4	P.A. Ramakrishna	Solid Propellant Combustion	DRDL, Hyderabad	21 July 2012
5	T.M. Muruganandam	Advanced Gas Dynamics	VSSC, Trivandrum	24 July 2012
6	R. Velmurugan	Recent Trends in Manufacturing Processes	Tagore Engineering College	7 August 2012
7	P.A. Ramakrishna	Hybrid Rocket	DRDL, Hyderabad	9 August 2012
8	R. Velmurugan	Impact on Large Deformation	ISA, New Delhi	30 September 2012
9	R. Velmurugan	New Materials for Windmill Blades	IIT, Delhi	9 October 2012
10	S.R. Chakravarthy	Combustion Dynamics	Jadhavpur University, Kolkata	3–4 December 2012
11	T.M. Muruganandam	Combustion Dynamics	Jadhavpur University, Kolkata	3–7 December 2012
12	R.I. Sujith	Combustion Instability and Measurement Techniques	GTRE, Bangalore	11–12 December 2012
13	Job Kurian	Glimpses of Hypersonic Research at IIT Madras	IISc, Bangalore	12 December 2012
14	S.R. Chakravarthy	Advanced Trends in Propellant Processing	DRDO, Jagdalpur	31 January 13 – 1 February 2013
15	P.A. Ramakrishna	Numerical Simulation of Composite Solid Propellant Combustion	VSSC, Trivandrum	5 March 2013
16	Amit Kumar	Numerical Simulation of Electrical Propulsion	VSSC, Trivandrum	6 March 2013
17	R.I. Sujith	Liquid Ramjet Combustion Instability		12 March 2013

Visits abroad by faculty

Sl. No.	Name of Faculty Member	Country Visited	Date	Purpose of Visit	Funding From
1	R.I. Sujith	Munich, Germany	1 June 2012	To deliver an invited talk, Nonlinear Self-Excited Thermoacoustic Oscillations: Intermittency and Flame Blowout	Germany
2	Sunetra Sarkar	USA	June 2012	To present two papers	IIT Madras
3	S.R. Chakravarthy	The Netherlands	25 July 2012	Part of project Optimizing Gassification of High-Ash Coals for Electricity Generation	European Commission
		Orleans, France	26 July 2012	Part of project Optimizing Gassification of High-Ash Coals for Electricity Generation	European Commission
		Warsaw, Poland	29 July–3 August 2012	To present paper, Experimental Data and Model Predictions of Aluminium Agglomeration in Composite Propellants including Plateau-Burning Formulations	IIT Madras
4	R. Velmurugan	Durban Tech. University, South Africa	8 July 2012	Discussions regarding Indo-South Africa collaborative project, Nano Composites for Space Applications	Durban Tech. University

5	P.A. Ramakrishna	Sendai, Japan	19–21 September 12	To present three papers: (1) Improving the Mechanical Properties of Paraffin Based Hybrid Fuels, (2) Enhancement of Regression Rate using Blu Body in Hybrid Fuels and (3) Enhancement of Regression Rate in Hybrid Rockets using Recrystallised AP and Pyral	IIT Madras
6	Job Kurian	Maryland, USA	7–16 September 12	Joint collaboration project	
7	N.R. Panchapakesan	USA	November 2012	To attend Division of Fluid Dynamics meeting, APS, and visit Johns Hopkins University	

Books, monographs authored/co-authored

Sl. No.	Name of Author	Title	Publisher	Co-author
1	K. Bhaskar	Plates: Theories and Applications	Ane Books	T.K. Varadan

4.1.4. Design and Development Activities

New facilities

1. Stability and transition wind tunnel
2. A low-noise, low-speed wind tunnel for studying hydrodynamic stability, transition and flow control

4.1.5. Research and Consultancy

Sponsored research projects

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of Rs.)	Co-ordinators
1	TDLAS-Based Multispecies and Temperature Non-uniformity Detection in Gas Turbine Engine Combustors	February 2012– February 2015	AR&DB Propulsion Panel	46.665	T.M. Muruganandam, & Job Kurian
2	An Experimental Investigation of Flow Field Around Shaped Blockages for Application in Flame to Detonation Transition		ARMREB	11.64	Amit Kumar
3	Investigation of Movement of Starting Normal Shock Across Second Throat of Supersonic Tunnel	December 2012– December 2014	AR&DB	20.02	T.M. Muruganandam, Job Kurian
4	Numerical Simulation of Suppression of Residual Flames and Cooling of Solid Rocket Motors Using Water Injection	18 March 2013– 17 March 2015	ISRO	17.75	V. Raghavan, Amit Kumar
5	Experimental Studies on High-Speed Air Intakes With Moving Cowl	March 2013– March 2015	ISRO–IITM Cell	19.56	T.M. Muruganandam, N.R. Panchapakesan
6	Marie Curie Initial Training Network Project on Thermo-acoustic and Aero-acoustic Nonlinearities in Green Combustors With Orifice Structures	1 November 2012–30 October 2016	European Union	235	R.I. Sujith
7	Establishment of Pyroshock Setup for RCI, Hyderabad		DRDO	9.9	R. Velmurugan
8	National Centre for Combustion Research and Development (NCCRD)	December 2011– December 2016	DST	600	Large number of faculty members from IIT
9	Dense Gas Aeroelasticity in Centrifugal Impellers		TNO, The Netherlands	64.31	Sunetra Sarkar
10	Uncertainty Quantification and Thermoacoustic Instabilities		AR&DB Propulsion Panel	18	Sunetra Sarkar R.I. Sujith

RBIC projects

Sl. No.	Name of Faculty Member	Title	Industry	Amount (Rs. In lacs)
1	T.M. Muruganandam	Design and Setting up of Shock Tube Facility at CFEES to Simulate Blast Effects From High Explosives	DRDO	8.818

Research publications

Total number of papers published in refereed national journals: 2

Total number of papers published in refereed international journals: 24

Total number of papers presented at national conferences: 16

Total number of papers presented at international conferences: 16

(a) Refereed national journals

1. S.L.N. Desikan and Job Kurian. February 2013. Experimental investigation of the role of struts in high speed mixing. *The Aeronautical Journal – The Journal of the Royal Aeronautical Society* 117(1188)
2. Rajarshi Das and Job Kurian. February 2013. Supersonic flow over three dimensional cavities. *The Aeronautical Journal – The Journal of the Royal Aeronautical Society* 117(1188).

(b) Refereed international journals

1. Sunetra Sarkar et al. 2012. Study of asymmetric hovering in flapping flight. *European Journal of Mechanics B/Fluids*.
2. Manish R. Wankhede and Nandan K. Sinha. July–August 2012. Auto-rotational spin evolving towards chaos. *AIAA Journal of Aircraft* 49(4): 1184–1189.
3. Amit K. Khatri, Jatinder Singh and Nandan K. Sinha. September–October 2012. Aircraft maneuver design using bifurcation analysis and sliding mode control techniques. *AIAA Journal of Guidance, Control and Dynamics* 35(5): 1435–1449.
4. P. Subramanian, P. Wahi and R.I. Sujith. 2012. Subcritical bifurcation in thermo-acoustic systems. *Journal of Fluid Mechanics*.
5. L. Kabiraj and R.I. Sujith. 2012. Nonlinear self-excited thermo-acoustic oscillations intermittency and flame blowout. *Journal of Fluid Mechanics*.
6. P. Nagasankar, S. Balasivananda Prabhu and R. Velmurugan. 2012. The influence of the different fiber lay-ups on the damping characteristics of polymer matrix composite. *Journal of Applied Sciences* 12(10): 1071–1074.
7. Vinayak Malhotra and Amit Kumar. 2012. Effect of gas phase heat sink on suppression of opposed flow flame spread over thin solid fuels in microgravity environment. *Journal of Combustion* DOI:10.1155/2012837019 (Hindawi Publishing Corp.).
8. Vinayak Malhotra and Amit Kumar. 2012. Effect of gas phase heat sink on suppression of downward flame spread over thin solid fuels. *International Journal of Advances in Engineering Sciences and Applied Mathematics* 4(3): 138–151 DOI 10.1007/s12572-012-0064-0.
9. Santanu Ghosh, Jack R. Edwards and Yung-II Choi. 2012. Numerical simulation of the effects of meso-flaps in controlling shock/boundary-layer interactions. *Journal of Propulsion and Power* 28(5): 955–970 DOI:10.2514/1.59758 2010, Impact Factor 0.84.
10. P. Agharkar, P. Subramanian, N. Kaisare and R.I. Sujith. Thermo-acoustic instabilities in a ducted premixed flame: Reduced order models and control. *Journal of Combustion Science and Technology*
11. S.S. Rahul, R. Velmurugan and V. Madhu. 2012. Experimental and analytical study of high velocity impact on Kevlar/epoxy composite plates. *Central European Journal of Engineering* 2(4): 838–850.
12. C. Palanikumar & Amit Kumar. Numerical investigation on the effect of diaphragms on regression rate in hybrid rocket motors. *Journal of Power and Propulsion (AIAA)*.
13. Amit Kumar and James T'ien. Numerical modeling of limiting oxygen index apparatus for film type fuels. *International Journal of Spray and Combustion Dynamics (Multi-science)*
14. Rajarshi Das and Job Kurian. January 2013. Acoustic and velocity fields over 3D cavities. *Theoretical & Applied Mechanics Letters* (published jointly by Chinese Society for Theoretical & Applied Mech., American Instt. Of Physics) 3(1).
15. Ajit Desai, J.A.S. Witteveen and Sunetra Sarkar. 2013. Uncertainty quantification of a nonlinear aero-elastic system using polynomial chaos expansion with constant phase interpolation. *ASME Journal of Vibration and Acoustics*.

16. R. Blumenthal, P.Subramanian, R.I. Sujith and W. Polike. Novel perspectives on the dynamics of premixed flames. *Combustion and Flame*.
17. Santhosh Jude, Sunetra Sarkar and A. Sameen. February 2013. Reconstruction of 2-D porous media using Karhunen–Loeve expansion. *Probabilistic Engineering Mechanics*.
18. I. Mulla and S.R. Chakravarthy. February 2013. Propagation velocity and flame stretch measurements in coflowing partially premixed flames with widely varying premixedness. *Combustion and Flame*, Impact Factor: 3.585.
19. Vijaya Kumar Cheeda, Amit Kumar and K. Ramamurthi. Influence of shear layer on structure of shocks formed from rectangular and parabolic blockages placed in a subsonic flow-field. *Journal of Shock Waves* (Springer).
20. C. Palani Kumar and Amit Kumar. Effect of swirl on the regression rate in hybrid rocket motors. *Journal of Aerospace Science Technology* (Elsevier).
21. R. Velmurugan, C. Balaganesan and N.K. Gupta. 2013. Energy absorption characteristics of nano clay dispersed glass/epoxy composites. *Journal of Key Engineering Materials* 535–536: 72–75.
22. R. Sooraj and A. Sameen. 2013. Effect of vortex line distribution in superfluid plane Poiseuille flow instability. *Journal of Fluid Mechanics* 720:R1
23. D.S. Bhatt and S.R. Chakravarthy 2012. Nonlinear dynamical behaviour of intrinsic thermal diffusive oscillations of laminar flames with varying premixedness. *Combustion and Flame* 159:2115–2125.
24. L. Tao and K.R. Rajagopal. 2012. On the construction of constitutive relations in hyperelasticity. *International Journal of Structural Changes in Solids: Mechanics and Applications* 4: 13–21.

(c) Proceedings of national conferences

1. P.A. Ramakrishna. Studies on the mechanism of iron Oxide and copper chromite in solid propellant combustion. *Proceedings of the 26th National Convention of Aerospace Engineers*.
2. P.A. Ramakrishna. Pyral as a burn rate enhancer in a composite solid propellant. *Proceedings of the 26th National Convention of Aerospace Engineers*.
3. C.Palani Kumar and Amit Kumar. Scaling in hybrid rocket motors. *9th International Conference on Flow Dynamics*, Sendai, Japan, September 2012.
4. P.A. Ramakrishna. Studies to understand the low pressure deflagration limit of ammonium perchlorate. *National Propulsion Conference*, 21–23 February 2013, IIT Madras.
5. Vijaya Kumar Cheeda, Amit Kumar and K. Ramamurthi. Formation of shock waves due to blockages in ducts of variable heights. *National Propulsion Conference*, 21–23 February 2013, IIT Madras.
6. Sanjeev Chourasia and Amit Kumar. Extinction of ventilated pool fire with water mist. *National Propulsion Conference*, 21–23 February 2013, IIT Madras.
7. M. Mahendran and Amit Kumar. A numerical study on operating limits of coaxial and 2D magnetoplasma-dynamic thrusters. *National Propulsion Conference*, 21–23 February 2013, IIT Madras.
8. C.Palani Kumar and Amit Kumar. Regression rate enhancement in vortex hybrid rocket motors using mixed hybrid concept. *National Propulsion Conference*, 21–23 February 2013, IIT Madras.
9. Vinayak Malhotra and Amit Kumar. Effect of external heat source on opposed flow flame spread over thin solid fuel in microgravity environment. *National Propulsion Conference*, 21–23 February 2013, IIT Madras.
10. Amit Kumar Panigrahy and T.M. Muruganandam. Experimental studies on inlet buzz in high speed air intakes. *National Propulsion Conference*, 21–23 February 2013, IIT Madras.
11. P. Senthil Kumar and T.M. Muruganandam. Experimental studies on high speed air intakes. *National Propulsion Conference*, 21–23 February 2013, IIT Madras.
12. S Sujith, T.M. Muruganandam and Job Kurian. Gaseous injection into supersonic flow using various strut configurations. *National Propulsion Conference*, 21–23 February 2013, IIT Madras.
13. Harendra K. Verma and T.M. Muruganandam. Diode laser temperature non-uniformity sensor using species CO and CO₂.
14. Sonu K. Thomas and T.M. Muruganandam. Application of fluidic diodes in acoustic pumps. *National Propulsion Conference*, 21–23 February 2013, IIT Madras.
15. Arun K. Ampy and T.M. Muruganandam. Study of precursor prior to blow out in an axisymmetric shear layer stabilized flame. *National Propulsion Conference*, 21–23 February 2013, IIT Madras.
16. B. Manikandan and T.M. Muruganandam. Comparison of stagnation point flame stabilization in axisymmetric and 2D slot burner. *National Propulsion Conference*, 21–23 February 2013, IIT Madras.

(d) Proceedings of international conferences

1. Hiteshwar Brahma, Rajiv Kumar and P.A. Ramakrishna. Improving the mechanical properties of paraffin based hybrid fuels. *Ninth International Conference on Flow Dynamics*, Sendai, Japan.

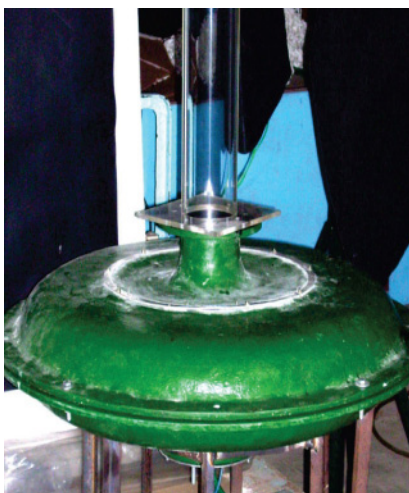
2. Rajiv Kumar and P.A. Ramakrishna. Enhancement of regression rate using a bluff body in hybrid fuels. *Ninth International Conference on Flow Dynamics*, Sendai, Japan.
3. Gaurav Marothiya and P.A. Ramakrishna. Enhancement of regression rate in HTPB based hybrid rocket using recrystallized AP and pyro-Al. *Ninth International Conference on Flow Dynamics*, Sendai, Japan.
4. J. Santhosh et al. Reconstruction of porous media using Karhunen Loeve expansion. *Probabilistic Mechanics and Structural Reliability*, University of Notre Dame, USA, 17–20 June 2012.
5. S. Venkatesh and Sunetra Sarkar. Uncertainty quantification in a fluid structure interaction system subject to random wind. *Probabilistic Mechanics and Structural Reliability*, University of Notre Dame, USA, 17–20 June 2012.
6. L. Kabiraj, P. Wahi and R.I. Sujith. Route to chaos for combustion instability in ducted laminar premixed flames. *Chaos* 22, 023129.
7. V. Jagadesan and R.I. Sujith. Experimental investigation of noise induced triggering in thermo-acoustic system. *Proceedings of the Combustion Institute*.
8. L. Kabiraj and R.I. Sujith. Dynamics of thermoacoustic oscillations leading to lean flame blowout. *Proceedings of ASME Turbo Expo*, 11–15 June 2012, Copenhagen, Denmark, GT2012-69696.
9. Amit Kumar. Numerical study on suppression of spreading flames over solid fuel by water mist. *International Safety Conference 2012*, 12–13 October, IIT Gandhinagar.
10. Vijayakumar Cheeda, Amit Kumar and K. Ramamurthi. On the sizing of obstacles in confined and partially confined geometries to avoid catastrophic explosions. *International Safety Conference 2012*, 12–13 October, IIT Gandhinagar.
11. Guru Sideswar and R. Velmurugan. Strain rate effect on nano composites. *Annual Meetings of Mechanical Sciences*, Georgia Institute of Technology, USA, 10–12 October 2012.
12. S. Venkatesh, A. Desai, and Sunetra Sarkar. Analysis of aeroelastic system under random gust with parametric uncertainties using polynomial chaos expansion. *ASME IMECE-2012, International Mechanical Engineering Congress and Exposition*, Houston, USA, 9–15 November 2012.
13. K.P. Aditya and T.M. Muruganandam. Detection of precursor at blowout in non/partially premixed gas turbine type combustor at atmospheric pressure. *ASME IGTI Gas Turbine India Conference 2012*, Mumbai, India, December 2012, Paper GT India 2012-9585.
14. R. Prasad and T.M. Muruganandam. Optimisation of gas Ehd pump with a nozzle downstream. *39th IEEE International Conference on Plasma Science Conference Program*, 8–12 July 2012, Edinburgh, Scotland, UK, Paper No. IP-78.
15. Chenthil Kumar and Amit Kumar. Gravity modulation study on opposed flame spread over thin solid fuels. *Proceedings of the Combustion Institute 2012*.
16. Ranjit Shukla and Amit Kumar. A numerical study on effects of pressure and gravity on opposed flow flame spread rate over thin fuels. *65th Annual Meeting of the APS Division of Fluid Dynamics 2012*, San Diego, USA, 18–20 November 2012.

Distinguished visitors

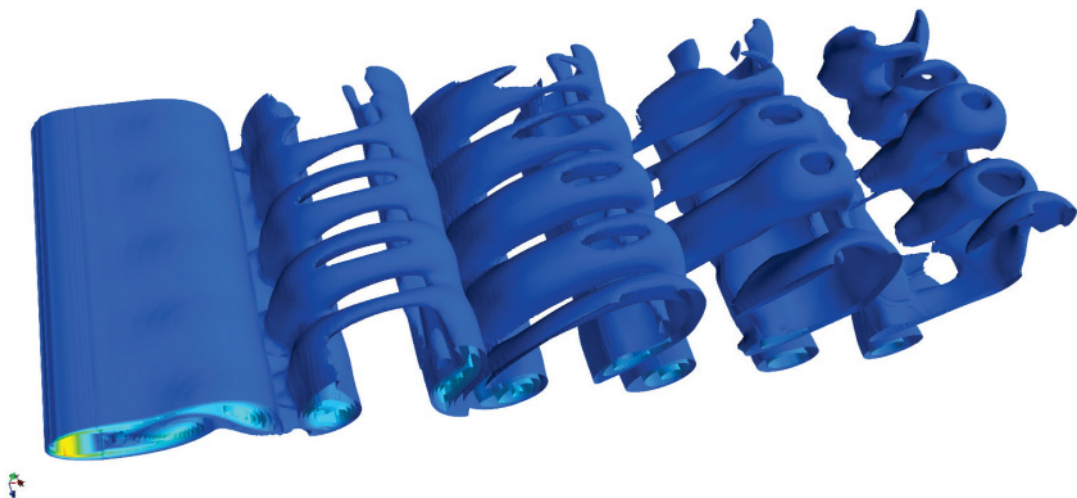
Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1	Dr. Gurupatham Anand, PT & EV Technology	19 April 2012	To deliver an industrial lecture, Combustion in Automobiles
2	Dr. Venkateswaran Narayanaswamy, Professor, North Carolina State University, USA	23 August 2012	To deliver a guest lecture, Soot–Turbulence Interactions
3	Dr. Ali Rangwala, Associate Professor, Department of Fire Protection Engineering, Worcester Polytechnic Institute	23 August 2012	To deliver a guest lecture, Flame Propagation in Dust Clouds
4	A team from NAL headed by Dr. Manjunath	26 December 2012	To discuss the modalities of collaboration in supersonic combustion research with the NCCRD
5	Dr. Petter Krus, Professor in Fluid and Mecahtronic Systems, Linköping University, Sweden	10 January 2013	To deliver an invited talk, Aircraft System Simulation for Preliminary Design
6	Dr. L.P. Mikkelsen and Dr. D. Prabhakaran of Danish Technical University, Denmark	27 February 2013	To visit the Composite Facilities



High Mach number supersonic blowdown flow facility. This Mach 3.6 tunnel in the Gas Dynamics Laboratory (GD Lab) was built using ISRO–IITM Cell funding. This facility is used for studies on high speed air intakes in the GD Lab. The Mach number is limited by the supply pressure in the GD Lab, which is around 12 bar. This facility is modular, and the nozzle can be changed in the future to higher Mach number nozzles if the supply pressure can be increased further. The test section has many feed-through flanges for supporting several measurement ports.



Vortex tube. The vortex tube was built to study the phenomenon of transition between vortex breakdown (VBD) modes. This facility has a design similar to the one made by the famous VBD researcher Sarpkaya. While his facility had water as the working fluid, this facility has air as the working fluid. It has radial vanes for creating swirl. The angles of the vanes can be changed in a continuous manner to change the swirl number continuously. The flow tube is transparent, allowing us to perform flow diagnostics such as laser Doppler velocimetry (LDV) and Mie scattering.



Vorticity isosurface of wakes behind a heated cylinder (results from recent research by A. Sameen). Heating a bluff body is a flow control strategy, and this study shows how vortex shedding depends on buoyancy and fluid diffusivities. The fluid Prandtl number is 0.7, and the flow Reynolds number is 117.

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, viz., biomedical engineering, fluid mechanics and solid mechanics.

The department also offers minor streams to undergraduate students.

4.2.2. Academic Programmes

Students on roll

Programme	I year	II Year	III Year	IV Year	V Year and Others	Total
M.Tech.	22	16	1	–	–	39
M.S.	25	12	14	1	2	54
Ph.D.	19	14	17	11	15	76
Total	66	42	32	12	17	169

Names of students/scholars who attended conferences/workshops/seminars and 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
Abroad					
1	Ravidra A. Shirsath	AM09S005	20th Annual Conference of the CFD Society of Canada – Unsteady aerodynamics of multiple airfoils in formation	May 2012, Ontario, Canada	–
2	Dhatreyi Boyina	AM08D007	15th European Conference on Composite Materials – Suitability of cruciform specimens for characterizing bi-axial behaviour of composite laminates	24–28 June 2012, Venice, Italy	–
3	Y. Appalanaidu, Yash Vyas	AM10D004	8th European Solid Mechanics Conference – A stochastic continuum damage mechanics based methodology for residual life assessment against creep damage	9–13 July 2012, Graz, Austria	–
4	Jithin Jith	AM12D013	Speciality Conference in probabilistic mechanics, – Crossings of quadratic functions of LMA processes	July 2012, Notre Dame, USA	–
5	Dhanwani Manish	AM10S011	2012 International Conference on Advances in Wind and Structures (AWAS12) – Modeling of vortex induced vibration for systems with two degrees of freedom	26–30 August 2012, Seoul, Korea	–
6	Shafi Mohamad		9th European Fluid Mechanics Conference at Rome, Italy	9-13 September 2012, Italy, Rome	–
7	Akhilesan S.	AM11S001	ASME 2012 Conference on Smart Materials, Adaptive Structures and Intelligent Systems – Electromechanical behavior of conductive polyaniline/poly(vinyl alcohol) blend films under uniaxial loading, SMASIS2012-7937	19-21 September 2012, Stone Mountain, USA	IIT Madras
8	Sandeep Jose	AM10D024	ASME 2012 Conference on Smart Materials, Adaptive Structures and Intelligent Systems – Optimal arrangement of PZT actuators for the buckling control of cylindrical shells	19-21 September 2012, Stone Mountain, USA	IIT Madras

9	Rajesh P. Nair	AM06D009	ASME-International Mechanical Engineering Congress & Exposition – Simulation of failure of a fixed beam subjected to impact load using QDEM	9-15 November 2012, Texas, USA	IIT Madras
10	Kalvapalli Sai Karthik	AM11M007	Research internship under Prof. Sondipon Adhikari	1-21 November 2012, Swansea University, UK	Newton International Fellowship Follow-On Support Program
11	P. Mahalakshmi	AM08D004	IEEE EMBS Conference on Bio Medical Engineering and Sciences – Investigation of the envelope and phase information for improved speech perception using an acoustic simulation model for cochlear implants	17–19 December 2012, Langkawi, Malaysia	–
12	V. Jaganathan	AM09D007	IEEE EMBS Conference on Bio Medical Engineering and Sciences – Optimal K space sampling scheme for compressive sampling MRI	17–19 December 2012, Langkawi, Malaysia	–
13	Kavitha	AM10D001	IEEE EMBS Conference on Bio Medical Engineering and Sciences – Modeling design and development of tissue mimicking phantoms for ultra sound elastography	17–19 December 2012, Langkawi, Malaysia	–
14	P. Mahalakshmi	AM08D004	Singapore Bio Imaging Consortium (SBIC) – visited NMR and MRI research facilities used for animal imaging purposes	20 December 2012, Singapore	–
15	V. Jaganathan	AM09D007	Biopolis Shared Facilities(BSF) – visited various shared facilities available at BSF	20 December 2012, Singapore	–
16	Kavitha	AM10D001	Discussion with Dr. Huang Zhiwei about the ongoing research activities in the department	21 December 2012, Singapore	–
17	Ravidra A. Shirsath, Hossain Aziz	AM09S005	A numerical study of tandem pitching airfoils	5–11 January 2013, Grapevine, Texas, USA	–

India

1	Sandeep Jose	AM10D024	International Conference on Stability and Structural Dynamics (ICSSD-2012) – Numerical study on buckling control of aluminum shallow shell using piezoelectric actuators	4–6 January 2012, Jaipur	–
2	Kankapriya K.	AM09D001	Conference on IEEE, BITS Hyderabad, INDICON 2011 – Performance analysis of variable density sampling in compressed sensing MRI	2 April 2012, Hyderabad	–
3	Bharat Pokale	AM10S003	7th International Workshop on Advanced Smart Materials and Smart Structures Technology	27–28 July 2012, IISc, Bangalore	–
4	Rangaraj P.	AM10S020	7th International Workshop on Advanced Smart Materials and Smart Structures Technology	27–28 July, 2012, IISc, Bangalore	–
5	Akhileshan S.	AM11S001	ACMFMS 2012 – Biaxial mechanical response of polyaniline/poly(vinyl alcohol) blend films under monotonic and cyclic loading	5–8 December 2012, IIT Delhi	–
6	Vineet Kumar Reddy K.	CE07B064	ICCMS-2012 – Numerical modeling of response of beams subjected to blast loading	10–12 December 2012, IIT Hyderabad	–

7	Rajesh P. Nair	AM06D009	ICCMS-2012 – Simulation of failure of a cantilever beam subjected to impact load using QDEM	10–12 December 2012, IIT Hyderabad	–
8	P. Sasikumar	AM09D004	4th International Conference on Recent Advances in Composite Materials	18–21 February 2013, International Center, Goa	–

4.2.3. Faculty and Their Activities

Faculty and their areas of specialisation

Name and Qualifications	Major area of specialization (only 3 areas)
Professors	
M. Ramasubba Reddy [Head]	Biosignal and image processing, bio instrumentation
K. Ramesh	Digital photoelasticity, fracture mechanics
C. Lakshmana Rao	Fracture mechanics, modeling of materials, piezoelectric materials
M.S. Sivakumar	Smart materials and structures, plasticity
Associate Professors	
S. Vengadesan	Fluid mechanics, turbulent flows and modeling, CFD
S. Ramakrishnan	Biomedical instrumentation, enhancing diagnostic relevance of medical equipment
Mahesh Panchagnula	Spray combustion and atomization, surface tension phenomena, multi-phase flows
A. Arockiarajan	Smart materials, finite elements mesh-free methods
A. Baburaj Puthanveettil	Turbulent convection, interfacial phenomena
M. Manivannan	Haptics, medical simulation
B.S.V. Prasad Patnaik	CFD, flow control, flow-induced vibrations
Assistant Professors	
Anuradha Banerjee	Fracture mechanics, composites
Arul Prakash	Large eddy simulation (LES) and related techniques, CFD and thermal hydraulics
Abhijit Chaudhuri	Modeling of geo-thermal systems, stochastic groundwater hydrology
Pijush Ghosh	Nanocomposites, self-healing materials, molecular dynamics
Rinku Mukerjee	Post-stall flow prediction, applied aerodynamics, boundary layer stability
Raghavendra Sai V.V.	LSPR and SERS phenomena, clinical diagnostics and therapeutics using nanomaterials and nano-devices, sensors for environmental monitoring and explosive detection, fiber optic and microfabricated waveguides and nanoparticles
Sayan Gupta	Dynamics and random vibration, structural reliability, probabilistic mechanics
N. Sujatha	Biomedical imaging, speckle metrology
Shaikh Faruque Ali	Vibration control, control of nonlinear systems, feedback linearization, energy harvesting, structural dynamics
Varadhan S.K.M.	Neuromechanics, motor behavior and motor learning, rehabilitation, understanding action and perception

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

Sl. No.	Coordinator(s)	Title	Period	Venue
Conferences				
1	S. Ramakrishnan, Ramasubba Reddy	Conference on Bio Medical Systems, Signals and Images	28 November to 1 December 2012	IC & SR, IIT Madras
QIP Programmes				
1	S. Vengadesan, Mahesh Panchagnula	Research Topics in Fluid Dynamics	19–24 November 2012	

Workshops

1	Rinku Mukherjee	One-day workshop on aerodynamics	16 May 2012	Aerospace Engineering, IIT Bombay
2	M. Manivannan	Two-day workshop, Dasa Naadi: Clinical and Scientific Exploration. About 60 siddha and ayurveda college graduates and about 20 faculty members of these colleges attended the workshop.	26–27 July 2012	IC & SR, IIT Madras
3	Mahesh V. Panchagnula, M.S. Sivakumar	Career Goals Planning & Advancement (CGPA-II) Workshop The following resource persons were involved: Prof. Shankar Narasimhan, CH, IITM AC Mr. Haridas, AGM, CAE Group, Ashok Leyland, career in private sector Dr. Manju Prasad, Head, Aerostructures Group-NAL, career in public sector Mr. V. Sashi Kumar, CEO, Pheonix Medical Systems Pvt. Ltd., career as an entrepreneur They talked about the aspirations and demands that go with each career choice and held informal Q&A sessions with students. Approximately 30 students participated in the workshop. They will also be developing an individual action plan to work towards their vision.	29 September 2012	
4	S. Ramakrishnan	Workshop on signal and image processing	17 December 2012	IC & SR, IIT Madras

Short-term courses

1	B.S.V. Prasad Patnaik	Heat and Mass Transfer in Single- and Two-Phase Flows	22–23 February 2013	Newton Hall
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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	Title	Institution	Period
Conferences				
1	Shaikh Faruque Ali	Energy harvesting from beam–moving oscillator interaction problem	ANCRISSST, IISc, Bangalore	27–28 July 2012
2	C. Lakshmana Rao	Mechanics of functional materials and structures	3rd Asian Conference, IIT Delhi	5–8 December 2012
		Simulation of failure of a cantilever beam subjected to impact load using quadrilateral discrete element methods	ICCMS 2012, IIT Hyderabad	11 December 2012
3	M.S. Sivakumar	Validation of numerically predicted impact responses of cementitious composite panels through field firing tests	ICCMS 2012, IIT Hyderabad	9–12 December 2012
4	K. Arul Prakash	Numerical prediction of turbulent fluid flow and heat transfer characteristics in square and rectangular ducts using open foam	NCFMFP 2012, Surat	13–14 December 2012
5	Sayan Gupta	Crack identification from vibration measurements using particle filtering	ANCRISSST, IISc, Bangalore	27–28 July 2012
		Identification of flexural rigidity in a vibrating beam using a PCE-based bootstrap filter	ANCRISSST, IISc, Bangalore	27–28 July 2012
		Stochastic modeling of uncertainties in layered composites, 4th International Conference in Advances in Composite Materials	Goa	18–21 February 2013

Others

1	Anuradha Baneerjee	Final presentation for project titled Stress – State-Dependent Ductile Fracture Model	VSSC, Thiruvananthapuram	11 January 2013
2	A. Arockia Rajan	To attend the review meeting of the Executive Board of Project LOHITA	NPOL, Kochi	3–4 September 2012
3	K. Arul Prakash	Annual symposium report	IIT Bombay	17–18 May 2012
4	C. Lakshmana Rao	To conduct a Ph.D. viva voce examination	VTU, Belgaum	13–14 September 2012
		To attend a project review meeting	DMRL, Hyderabad	24–25 September 2012
5	Mahesh V. Panchagnula	MHRD, JEE 2013	New Delhi	11 April 2012
		Consultancy work	Pune	15–16 May 2012
		Viva voce examination	JNCASR, Bangalore	10 July 2012
		Discussion regarding simulation of atomization nozzles	Metal Particle Mfg Co., Madurai	16 July 2012
		Spray Subgroup meeting	IISc, Bangalore	17 November 2012
		SERC school on combustion dynamics	Jadavpur University, Kolkata	3–7 December 2012
6	Prasad Patnaik B.S.V.	Presentation at BRNS review meeting	Bangalore	30 November 2012
		Lecture – CFD–FDP	MIT, Chromepet	16 May 2012
7	V.V. Raghavendra Sai, A. Subramanian	Research proposal, DRDE	Gwalior	11–13 April 2012
		Interacting with Dr. Harish for getting new collaboration	NAL, Bangalore	9 January 2013
8	S. Ramakrishnan	DBT project meeting	Bangalore	14 April 2012
		DC meeting of a Ph.D. scholar	NIT Trichy	14 June 2012
		Invited presentation and discussion on project	NSTL, Visakhapatnam	22 June 2012
		Seminar on Software Safety and security	Bangalore	3–4 September 2012
		DC Meeting of a Ph.D. scholar	NIT Trichy	29 October 2012
9	Ramasubba Reddy	Faculty selection meeting	JNTU, Kakinada	1 October 2012
		To conduct academic audit and Board of Studies meeting	PSG College of Technology, Coimbatore	12–14 October 2012
		NBA accreditation work	Ambedkar Institute of Technology, Bangalore	19–21 October 2012
		Chairing the Project Evaluation Committee at DRDO	New Delhi	21 November 2012
10	K. Ramesh	DC meeting	IIST, Thiruvananthapuram	9–10 October 2012
		Ph.D. viva voce exam	IISc, Bangalore	13–14 May 2012
11	Rinkhu Mukherjee	Presenting project review to the aerodynamics panel	IIT Bombay	17–18 May 2012
12	Sayan Gupta	Research proposal presentation to Naval Research Board	NMIT, Bangalore	21 September 2012

13	Shaikh Faruque Ali	To attend first AGM of Automatic Control & Dynamic Optimization Society”	IISc, Bangalore	2–5 November 2012
14	M.S. Sivakumar	Viva voce exam, IIT	Guwahati	3 May 2012
		Second meeting of the Centre’s Scientific Committee	NAL, Bangalore	16 May 2012
		Pre-examination meeting for Engineering Science	HRDG, New Delhi	27 September 2012
		Modeling studies on low-cycle fatigue investigations	Bangalore	16–17 October 2012
		Comprehensive exam of Ph.D. scholar	IIST, Thiruvananthapuram	30 November 2012
		AR & DB Structures panel meeting	RCMA, CEMILAC, Nashik	3 December 2012

Special lectures delivered by faculty in other institutions

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
1	B.S.V. Prasad Patnaik	Finite Elements Analysis and Its Applications	Maharaja Institute of Technology, Mysore	11–15 June 2012
		Lecture about basics of turbulence modeling	SSN College of Engineering, Kalavakkam	10 January 2013
2	V.V. Raghavendra Sai	Surface-Enhanced Raman Scattering	Raman Research Institute, Bangalore	9 January 2013
		Biosensors	BMS College of Engineering, Bangalore	2 February 2013
3	M.S. Sivakumar	Fun With Materials, for school students	Madras Metallurgical Society (MMS)	1 September 2012
4	Rinku Mukherjee		Aerospace Engineering Department, SRM University	21 February 2013

Visits abroad by faculty

Sl. No.	Name of Faculty Member	Country Visited	Date	Purpose of Visit
1	M. Ramasubba Reddy	Israel	6–12 June 2012	Meeting on ‘The Brain Technologies’ under India–Israel–Canada trilateral R&D collaboration in biotechnology
		Langkawi, Malaysia	17–19 Dec. 2012	IEEE EMBS conference on bio medical engineering and sciences
		SBIC/BSF, Singapore	20 December 2012	Singapore Bio Imaging Consortium (SBIC) – visited NMR & MRI research facilities used for animal imaging purposes; Biopolis Shared Facilities(BSF) – visited various shared facilities available at BSF
		National University, Singapore	21 December 2012	Discussion with Dr. Huang Zhiwei about the ongoing research activities in the department
2	Sayan Gupta	USA	17–20 June 2012	11th ASCE Joint Specialty Conference, USA, on probabilistic mechanics and structural reliability
		Graz, Austria	9–13 July 2012	A stochastic continuum damage mechanics based methodology for residual life assessment against creep damage, 8th European Solid Mechanics Conference
	Sayan Gupta, Igor Rychlik	Notre Dame, USA	July 2012	Crossings of Quadratic Functions of LMA Processes, speciality conference in probabilistic mechanics

3	Shaikh Faruque Ali	UK	20 June–6 July 2012	Newton International Fellowship at Swansea University, UK
		Ireland	29 June–3 July 2012	To build a strategic partnership of research and student exchange through a MoU, University College Cork, Cork, Ireland
4	Mahesh V. Panchagnula	Qatar	23–27 June 2012	Collaboration discussion on joint fluid mechanics projects at Texas, A&M University, Doha, Qatar
5	S. Ramakrishnan	Spain	19–20 July 2012	Attended and presented a paper at 2012 Biomedical Innovation Conference and M+ Vision Open House at Madrid, Spain
		London, UK	17–20 September 2012	Attended and presented a paper at the IMA conference Mathematics of Medical Devices and Surgical Procedures, University College London, UK
6	Rinku Mukherjee	Ontario, Canada	May 2012	20th Annual Conference of the CFD Society of Canada – Unsteady aerodynamics of multiple airfoils in formation
		Grapevine, Texas, USA	5–11 January 2013	A numerical study of tandem pitching airfoils
7	S. Vengadesan	Italy, Rome	9–13 September 2012	Attended the 9th European Fluid Mechanics Conference at Italy, Rome

Honours and awards obtained by faculty

Sl. No.	Name of faculty	Name of Award	Awarded by	Awarded for	Date of award
1	K. Ramesh	Zandman Award	Costa Mesa, California, USA	Significant contributions to the development of measurements or applications utilizing photoelastic coatings	13 June 2012
2	A. Arockiarajan	INAE Young Associates	INAE	Potential young researchers	1 January 2013

4.2.4. Design and Development Activities

Patents filed

Sl. No.	Name of Faculty Member(s)	Title of Patent
1	M. Manivannan, Kanakapriya, KS.	CPR Mannequin with Non-linear Chest Stiffness, numbered 1174/CHE/2012, filed on 23 March 2012 with the Chennai Patent Office

4.2.5. Research and Consultancy

Sponsored research projects

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of Rs.)	Co-ordinators
1	Modelling and Experimental Investigation of Magnetostrictive Thin Films		DMRL, Hyderabad	22.44	A. Arockiarajan
2	Studies on a Scanning Probe Based Fluorescence Imaging System for Quantification of Biomarkers in Multilayered Tissue Phantoms		DST	13.5	N. Sujatha
3	Development of a Navier Stokes Solver for Simulating Fluid Flow Past a Rectangular Cylinder to Study the Effect of Flow Induced Vibrations		ARDB	9.41	K. Arul Prakash

4	An Experimental Characterization on Fatigue Behavior of Piezoelectric Materials	2012–2014	NRB	44.184	A. Arockiarajan, M.S. Sivakumar
5	Buckling Control of Cylindrical/Conical Shells for Aerospace Applications Using PZT Actuators	2010–2013	ISRO	29.48	C. Lakshmana Rao
6	Characterization of Polymeric Piezoelectric Thin Films Used as Sensors in Aerospace Applications, sponsored by Aeronautical Research and Development Board, 2007–2009, Rs. 23.37 lakhs (ongoing).	2011–2013	ARDB	17.296	C. Lakshmana Rao
7	Blast Mitigation Through Fluid–Structure Interaction	2011–2013	DRDO	21.6	C. Lakshmana Rao
8	Development of Structural Health Monitoring Schemes for Indian Civil Engineering Infrastructure Using Smart Sensing Technologies	Ongoing	NPMAS	231.52	Sayan Gupta
9	Extreme Value Distribution for Stochastic Loads Modeled as LMA Processes	Ongoing	NRB	11.412	Sayan Gupta
10	Performance of Newly Developed Nonlinear Turbulence Model in CFD Simulation of Low and High Speed Underwater Vehicles	Ongoing	NRB	28	S. Vengadesan, S.K. Bhattacharyya (OE)

Research publications

Total number of papers published in refereed national journals: 2

Total number of papers published in refereed international journals: 25

Total number of papers presented at international conferences: 1

(a) Refereed national journals

1. Rajesh P. Nair and C. Lakshmana Rao. 2013. Simulation of depth of penetration during ballistic impact on thick targets using a 1-D discrete element model. *Sadhana* 37: 261–279.
2. Sayan Gupta and N. Ganesh. Estimating the rain-flow fatigue damage in wind turbine blades using polynomial chaos. *Life Cycle Reliability and Safety Engineering* 1(4): 17–25.

(b) Refereed international journals

1. A. Arockiarajan and Naresh Pakam. 2012. An analytical model for predicting the effective properties of magneto-electro-elastic (MEE) composites. *Computational Materials Science* 65: 19–28.
2. A. Arockiarajan, R. Palaninathan, B. Santhosh, K.M. Usha and K. Senthil. 2013. Experimental and numerical studies on adhesively bonded CFRP laminates with closed debonds. *Composite Structures* 95: 598–606.
3. A. Arockiarajan and R. Jayendiran. 2013. Experimental and theoretical studies on ferroelastic switching of 1–3 type piezocomposites. *European Journal of Mechanics A/Solids* 38: 48–58.
4. A. Arockiarajan and R. Jayendiran. 2012. Modelling of dielectric and piezoelectric response of 1–3 type piezocomposites. *Journal of Applied Physics* 112: 044107. Impact factor 2.1.
5. A. Arockiarajan, S. Skatulla and C. Sansour. 2012. A multiplicative approach for nonlinear electro-elasticity. *Computer Methods in Applied Mechanics Engineering* 245: 243–255.
6. S. Kalyanaraman, K. Arul Prakaksh and S. Vengadesan. 2012. Numerical study of mixed convection around an elliptic cylinder using immersed boundary method. *Numerical Heat Transfer, Part A* 3(62): 639–658.
7. N. Shajil, S.M. Srinivasan and M. Santhanam. August 2012. Self centering of shape memory alloy fibre reinforced cement mortar members subjected to strong cyclic loading. *Materials and Structures Journal*.
8. R.S. Priyadarsini, V. Kalyanaraman and S.M. Srinivasan. July 2012. Numerical and experimental study of buckling of advanced fibre composite cylinders under axial compression. *International Journal of Structural Stability and Dynamics*.

9. Sunir Hassan, C. Lakshmana Rao and K. Ganesh Babu. 2012. Script enhanced unit cell approach for the simulation of compressive behaviour in fiber reinforced cement composites. *International Journal of Computer Applications* 44: 32–37.
10. K. Chinnaraj, M. Sathya Prasad and C. Lakshmana Rao. 2012. Experimental analysis of residual stresses in cold formed truck frame side rail structures. *Advanced Materials Research* 418–420: 1107–1113.
11. K. Chinnaraj, M. Sathya Prasad and C. Lakshmana Rao. 2012. Characterization of bolt hole residual stresses for assessing structural behavior of truck frame rails. *Advanced Materials Research* 418–420: 1124–1131.
12. K. Chinnaraj, M. Sathya Prasad and C. Lakshmana Rao. 2013. Effect of bolt hole residual stresses on the fatigue performance of truck frame rail sections. *Applied Mechanics and Materials* 301: 1089–1098.
13. Sayan Gupta, Jithin Jith and Igor Rychlik. 2013. Crossing statistics of quadratic transformation of LMA processes. *Probabilistic Engineering Mechanics* 9–17.
14. M.S. Raghuprasad, S. Purswany and M. Manivannan. 2013. Force JND for right index finger using contra-lateral force matching paradigm. *ICoRD'13, Lecture Notes in Mechanical Engineering* 365–375.
15. M.S. Raghuprasad, P. Sunny and M. Manivannan. 2013. Modeling of human hand force-based tasks using Fitts's law. *ICoRD'13, Lecture Notes in Mechanical Engineering* 377–386.
16. G. Singh and M. Manivannan. 2013. Drowsiness detection system for pilots. *ICoRD'13, Lecture Notes in Mechanical Engineering* 991–1003.
17. S. Wills, G. Mathew, M. Manivannan and S. Devasahayam. 2012. A comparison of pinch force between finger and palm grasp techniques in laparoscopic grasping. *Engineering* 4(108): 46–49.
18. K. Kanakapriya and M. Manivannan. 2012. Blood pressure measurement with sphygmomanometer in high fidelity mannequins. *International Journal of Emerging Technology and Advanced Engineering* 2(9): 533–537.
19. M. Manivannan and P.K. Suresh. 2012. On the somatosensation of vision. *Annals of Neurosciences* 19(1): 31–39.
20. Ranjith S. Kumar, B.S.V. Patnaik and S. Vedantam. 2013. Hydrodynamics of the developing region in hydrophobic microchannels: A dissipative particle dynamics study. *Physical Review E* 87: 033303.
21. M.S. Reddy, S. Muddada and B.S.V. Patnaik. 2013. Flow past a circular cylinder with momentum injection: Optimal control cylinder design. *Fluid Dynamics Research* 45: 015501.
22. K. Satpathy, K. Velusamy, B.S.V. Patnaik and P. Chellapandi. 2013. Numerical simulation of liquid fall induced gas entrainment and its mitigation. *International Journal of Heat and Mass Transfer* 60: 392–405.
23. Ranjith S. Kumar, B.S.V. Patnaik and S. Vedantam. 2013. No-slip boundary condition in finite-size dissipative particle dynamics. *Journal of Computational Physics* 232: 174–188.
24. K. Muralidharan, S. Muddada and B.S.V. Patnaik. 2013. Numerical simulation of vortex induced vibrations and its control by suction and blowing. *Applied Mathematical Modeling* 37: 284–307.
25. V. Anand, B.S.V. Patnaik and B.N. Rao. 2012. Efficient extraction of vortex structures by coupling Proper Orthogonal Decomposition (POD) and High Dimensional Model Representation (HDMR) techniques. *Numerical Heat Transfer B – Fundamentals* 61: 229–257.

(c) Proceedings of international conferences

1. N. Kunju, G. Tharion, S. Devasahayam and M. Manivannan. 2012. Muscle activation pattern and weight bearing of limbs during wheelchair transfers in normal individuals: A step towards lower limb FES assisted transfer for paraplegics. *International Conference on Neuro-Rehabilitation, ICNR2012, Toledo, Spain.*

Distinguished visitors

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1	Dr. Sundarajan Natarajan, Cardiff University, UK	10 April 2012	Guest lecture, Next Generation Computational Methods: Achieve More with Less
2	Prof. Ashoke Sen, Harish-Chandra Research Institute, Allahabad	3 January 2013	Guest lecture

Other activities of the department/centre

1. Dr. Pijush Ghosh. Has taken a 'Socially Relevant Project' on 'A Student in Teacher's Role in Rural Schools: A Pilot Study on the (C minus 4) Model' for one year, funded by IIT Madras.
2. Dr. Ramakrishnan and Dr. Ramasubba Reddy. An international conference was held at IIT Madras on 'Biomedical Signals, Systems and Imaging' from 28 November to 1 December 2012.
3. Dr. M.S. Sivakumar. Took over as Coordinator ARDB Structures Panel during the panel meeting held at Leh, Ladakh, on 16 August 2012.
4. Dr. S. Vengadesan. Interim progress presentation on RBIC, NPOL, Kochi, July 2012; project proposal defence presentation, NAL, Bangalore, October 2012.

4.2.6. Other Activities

Major infrastructure development in the department:

Localized surface plasmon resonance (LSPR) and surface-enhanced Raman scattering (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

4.3. DEPARTMENT OF BIOTECHNOLOGY

4.3.1. Introduction

The Department of Biotechnology at IIT Madras came into formal existence in July 2004 but has grown rapidly in the past nine years. 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 29 faculty members, and the diversity of challenges that biotechnologies tackle is reflected in our research activities. The thrust areas of research are bioprocess engineering, computational biology, chemical biology and medical biotechnology related to cancer and cardiovascular aspects. Faculty members of the department hold several patents and are 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. We have set up a Center of Excellence in bioprocess engineering to develop knowledge and expertise in this domain. We have also set up a DST-funded national facility to identify potential drug targets through cellular dynamics. We have funding from the DBT for programme support related to cancer biology. A bioinformatics centre has also been set up with funding from the DBT.

We offer B.Tech., Dual Degree, M.S. and Ph.D. programmes in biotechnology. In addition, we offer M.Tech. (Clinical Engineering) and Ph.D. (major: biomedical devices and technology) programmes, jointly with Sree Chitra Tirunal Institute of Medical Sciences and Technology, Trivandrum and Christian Medical College, Vellore. The aim of the department is to produce talented graduate and undergraduate students who are confident of providing solutions to the technological problems faced by Indian biotechnology industries. The undergraduate programme in biotechnology has a strong emphasis on modern biology and engineering and on several laboratory experiences. The M.S. and Ph.D. programmes emphasize research excellence. The M.Tech. (Clinical Engineering) programme is designed to train students to address the complete management of the technology aspects in a hospital as well as the medical technology needs of the country.

4.3.2. Academic Programmes

B.Tech, Dual Degree, M.S. and Ph.D. in Biotechnology, M.Tech. in Clinical Engineering and Ph.D. in Biomedical Devices and Technology.

Students on roll

Programme	I year	II Year	III Year	IV Year	V Year and Others	Total
B.Tech.	0	38	37	21	4	100
Dual Degree	49	16	17	23	19	124
M.Tech.	12	20	0	0	0	32
M.S.	10	8	4	2	0	24
Ph.D.	30	36	19	22	58	165
Total	101	118	77	68	81	445

Names of students/scholars who attended conferences/workshops/seminars and 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
Abroad					
1	Rothangmawi Victoria Hmar	BT09D018	15th International Biotechnology Symposium and Exhibition (IBS 2012)	16–21 September 2012, Daegu, South Korea	IIT Madras
2	Thakkellapati Sivakumari	BT10D025	13th Tetrahedron Symposium, Asian edition, Challenges in Bioorganic & Organic Medicinal Chemistry	27–30 November 2012, Taipei, Taiwan	
3	Nisha S Devi	BT09D006	4th European Workshop for Lipid Mediators	27–28 September 2012, Pasteur Institute, Paris, France	IIT Madras
4	B. Pragathi Priyadharsini	BT10D028	International Conference on Artificial Neural Networks (ICANN-2012)	11–14 September, Lausanne-Switzerland	Institute and Travel Grant

5	Vidhya B.S.	BT09D015	Neurofly 2012	3–7 September, Padua, Italy	IIT Madras Academic Section, IIT Madras Alumni Fund
6	Thangavelu Saravanan	BT08D033	Internship for six months under the guidance of Prof. Janine Cossy and Dr. Stelios Arseniyadis in ESPCI Paris Tech, Paris, France under IIT-ParisTech Ph.D. Exchange Program	2 April – 28 September 2012, Paris, France	Paris Tech, France
7	Nidhi Aggarwal	BT07D001	13th Tetrahedron Symposium, Asian edition	27–30 November, 2012, Taipei, Taiwan	IIT Madras
8	Sivakumari Thakkellapati	BT10D025	13th Tetrahedron Symposium, Asian edition	27–30 November, 2012, Taipei, Taiwan	IIT Madras
9	Saravanan K.	BT12D043	Third International Conference on Multifunctional, Hybrid and Nanomaterials	3–7 March 2013, Sorrento, Italy	DST and ICMR
10	Shoba Narayan	Post doc	Third International Conference on Multifunctional, Hybrid and Nanomaterials	3–7 March 2013, Sorrento, Italy	DST and ICMR
11	Vinayak Gupta	BT09D044	EMBO Conference Series: From Functional Genomics to Systems Biology	17–20 November, 2012, Heidelberg, Germany	IIT Madras
12	Prasanna Kumar Reddy Allu	BT08D019	EMBO Conference Series: From Functional Genomics to Systems Biology	17–20 November, 2012, Heidelberg, Germany	IIT Madras
13	Dhanasekaran Sugapriya	BT2847SS	10th Annual Meeting of International Society for Stem Cell Research	13–16 June 2012, Yokohama, Japan	IIT Madras
14	Prasanna V.	BT08D005	10th Annual Meeting of International Society for Stem Cell Research	13–16 June 2012, Yokohama, Japan	IIT Madras
15	S. Pavithra	BT08D017	24th Annual Fanconi Anemia Research Fund Scientific Symposium	27–30 September 2012, Denver, Colorado, USA	Fanconi Anemia Research Fund
16	Sneh Sanjay Badle	BT09D040	15th International Biotechnology Symposium and Exhibition 2012 (IBS 2012)	16–21 September 2012, Korea	IIT Madras
17	Rothangmawi Victoria Hmar	BT09D040	15th International Biotechnology Symposium and Exhibition 2012 (IBS 2012)	16–21 September 2012, Korea	IIT Madras
18	Geetha Venkatachalam	531GG	3rd International Conference on Life Science and Technology (ICLST 2013)	19–20 January 2013, Dubai, UAE.	International Travel Grant, DST, India
19	Nandakumar V.	BT10D003	Colloids & Nanomedicine 2012	15–17 July 2012, Amsterdam, The Netherlands	IIT Madras and IITM alumni
20	Arutchelvi J.	BT08D008	Colloids & Nanomedicine 2012	15–17 July 2012, Amsterdam, The Netherlands	DST and IITM alumni
21	Nisha S. Devi	BT09D006	Workshop on lipid mediators	27–28 September 2012, Pasteur Institute, Paris	IIT Madras
India					
1	Shabir Ahmad Zargar	BT10D026	Three days hands-on training on flow cytometry(aria)	14–18 January 2013, National Flow Cytometry Center, NCBS	

2	Venkata Reddy Chirasani	BT12D026	International conference, Biomolecular Forms and Functions	8–11 January 2013, IISc, Bangalore	IIT Madras
3	Nagarajan R.	BT12D012	International interdisciplinary science conference, Protein Folding and Diseases	8–10 December 2012, Jamia Milia Islamia, New Delhi, India	IIT Madras
4	B. Pragathi Priyadharsini	BT10D028	Neurobionics 2013	8–11 January 2013, IISc, Bangalore	IIT Madras
5	Merlin Rajesh Lal L.P.	BT10D018	NANO BIO 2012, Second International Conference on nanotechnology at the Bio-Medical Interface	5–7 February, JIPMER, Pondicherry	JIPMER bursary
6	Rajeswari A.	BT10D006	International conference, Biomolecular Forms and Functions 2013	21–23 February 2012, Amrita Centre for Nanosciences and Molecular Medicine, Cochin, Kerala	IIT Madras
7	R. Hindumathi	BT09D035	International Symposium for Research Scholars on Metallurgy, Materials Science and Engineering ISRS 2012	8–11 January 2013, IISc, Bangalore	IIT Madras
8	Rayala Sarika	BT12D020	International conference, Biomolecular Forms and Functions – a Celebration of 50 Years of the Ramachandran Map	13–15 December 2012, IIT Madras	
9	Rajesh Kanna	OE113005	10th international oil & gas conference and exhibition	8–11 January 2013, IISc, Bangalore	
10	R. Balaji	BT12D003	International conference on design of biomaterials (BIND12)	14–17 October 2012, New Delhi	
11	Nidhi Aggarwal	BT07D001	Biomers symposium	9–12 December 2012, Bangalore	
12	Sneha Sudhakara	BT11S008	3rd International Conference and Exhibition on Analytical and Bioanalytical Techniques Biomers symposium	21 September 2012, IIT Madras	IIT Madras
13	Saravanan K.	BT12D043	Young Scientist Training Workshop in Biomaterial Science 2012	8–12 January 2013, IISc, Bangalore	Project
14	Shoba Narayan	Post doc	4th International Conference on Advanced Materials	22–24 November 2012, Hyderabad	Project
15	R. Preetha	Post doc	3rd International Conference and Exhibition on Analytical and Bioanalytical Techniques Biomers symposium	21 September 2012, IIT Madras	IIT Madras
16	Maya Raman	1254MM	Indo-European Food and Health Conference	6–8 December 2012, Materials Research Centre, IISc, Bangalore	DST, DRDO and IISc
17	Geetha Venkatachalam	531GG	International Symposium of Chemistry and Chemical Biology of Natural Products	17–19 October 2012, Chennai	DST
18	Pramal Biswa	BT09D003	International conference, Regulatory Network Architecture in Bacteria(RNAB)	22–24 November 2012, Hyderabad	
				21 September 2012, IIT Madras	
				10–12 February 2013, IIT Madras	DST
				2–4 August 2012, ICT-Hyderabad	DST WOS-A fund
				9–11 March 2012, Sastra University, Trichy, Tamil Nadu	CSIR

19	T. Boobalan	709BB	National Conference on Advances in Naval Materials (ADNAM-2013)	22–23 February 2013, National Institute of Ocean Technology, Chennai	IC & SR, (DBT)
20	Nandakumar V.	BT10D003	IRHPA workshop	25–26 February 2013, IIT Bombay, Mumbai	DST
21	Anshika	BT09D038	First Indo-US International Conference on Polymers for Packaging Applications (ICPPA 2012), Kottayam, Kerala	31 March—2 April 2012	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	Pramal Biswa	BT09D003	Second prize for best poster presented at RNAB-2012	Sastra University
2	Maya Raman	1254MM	WOS-A	DST

4.3.3. Faculty and Their Activities

Name and Qualifications	Major Area of Specialization (Only 3 Areas)
Professors	
Mukesh Doble [Head]	Biomaterials, drug design, biochemical engineering
K.B. Ramachandran	Bioprocess engineering, bioprocess modeling and simulation, metabolic engineering
Anju Chadha	Biocatalysis and organic [asymmetric] synthesis using enzymes, green chemistry, biosensors
T.S. Chandra	Microbiology and genetics
A. Jayakrishnan	Biomaterials science and technology
Guhan Jayaraman	Biochemical and bioprocess engineering
D. Karunakaran	Cancer biology, signal transduction, apoptosis
G.K. Suraishkumar	Reactive species, algal biofuels, microbial deactivation in drinking water
S. Mahalingam	Molecular virology and cell biology
Rama Shanker Verma	Stem cell biology and tissue regeneration, cancer therapeutics development, molecular biology
V Srinivasa Chakravarthy	Computational neuroscience
Associate Professors	
Amal Kanti Bera	Electrophysiology
Sanjib Senapati	Computational biophysics, computational green chemistry
Nitish R. Mahapatra	Cardiovascular genetics, molecular medicine
Satyanarayana Gummadi	Bioprocess engineering
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	Proteins crystallography
Assistant Professors	
V. Kesavan	Chemical biology
R. Murugan	Theoretical biology and biophysics
R. Baskar	Developmental genetics
Madhulika Dixit	Vascular biology
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
Adjunct Faculty	
Shree Kumar Suryanarayan	Bioprocess engineering, algal biofuels
Venil Sumantran	Cancer biology

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

Sl. No.	Coordinator(s)	Title	Period
Conferences/Symposia			
1	N. Athi Narayanan	First Research Scholar Symposium, BIOMERS 2012, Department of Biotechnology, IIT Madras	21 September 2012
2	M. Hamsa Priya	First Research Scholar Symposium, BIOMERS 2012, Department of Biotechnology, IIT Madras	21 September 2012
3	Karthik Raman	First Research Scholar Symposium, BIOMERS 2012, Department of Biotechnology, IIT Madras	21 September 2012
4	Anju Chadha	First Research Scholar Symposium, BIOMERS 2012, Department of Biotechnology, IIT Madras	21 September 2012
5	S. Mahalingam	First Research Scholar Symposium, BIOMERS 2012, Department of Biotechnology, IIT Madras	21 September 2012
6	Rama S. Verma	International symposium on molecular medicine	19–22 February 2012
		1st Faculty Research Symposium, Department of Biotechnology, IIT Madras	6 January 2012
Short-term Courses/Workshops			
1	Rama S Verma	Next generation Sequencing and Bioinformatics for Genomics & Healthcare conferences	1–3 November 2012
		National Workshop on Drug Discovery and Development	11–13 May 2012
2	Mukesh Doble, Sathya Narayana Gummadi	Summer Workshop on Bioprocess Engineering – Continuing Education Programme	9–13 July 2012
3	Smita Srivastava	IIT Madras Faculty Training Programme (IITMFTP) 2012 (programme coordinator along with Dr. Basavaraja Madivala Gurappa)	20–22 August 2012
		National Essay Competition (NEC 2012) (programme coordinator along with Dr. Rajiv Sharma)	6–8 December 2012

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
Conference/Symposia				
1	N. Athi Narayanan	Protein Folding: Integrating Theory, Simulation and Experiment	CECAM-ETHZ, Zurich, Switzerland	3–6 September 2012
		International Symposium on Protein Folding and Dynamics	National Center for Biological Sciences (NCBS), Bangalore, India	15–17 October 2012
2	M. Hamsa Priya	International Symposium on Protein Folding and Dynamics	National Center for Biological Sciences (NCBS), Bangalore, India	15–17 October 2012
3	M. Michael Gromiha	National Conference on Bioinformatics	Indian Institute of Technology Delhi	July 2012

	M. Michael Gromiha	Annual symposium of CBRC	Computational Biology Research Center, Tokyo, Japan	October 2012
4	Madhulika Dixit	International conference, Angiogenesis: Basics and Applications	AU-KBC research center, Chennai	1–3 March 2012
		2nd World Congress on Cell Science and Stem Cell Research	San Antonio, USA	12–14 November 2012
		ICMR symposium on inflammation	Madurai Kamaraj University, Madurai	October 2012
		1st Cell Mechanics Meeting	Raman Research Institute, Bangalore	1–2 February 2013
5	Sanjib Senapati	Theoretical Chemistry Symposium 2013	IIT Guwahati	19–22 December 2012
		Symposium on HPC Applications	IIT Kanpur	12–14 March 2012
		Biomolecules in Motions	JNU, New Delhi	4–7 January 2013
6	Rama S. Verma	Recent Trends in Bioinformatics, System Biology & Biomolecular Interaction	Center of Bioinformatics Institute of Inter-disciplinary Studies University of Allahabad	8–12 January 2012
7	G.K. Suraishkumar	International Conference on Engineering Education (ICEE) 2012	Turku, Finland	30 July–3 August 2012
8	Mukesh Doble	Optimising the Production of Beta Cyclic Glucans	Istanbul, Turkey, from September	23–26 September 2012
		Optimisation of Linear and Cyclic Glucans Production	Haus der Kirche, in Bad Herrenalb, Germany	20–22 February 2012
9	Gopala Krishna A.	Gordon Research Conference on Peptides – Structure and Function	California, USA	19–24 February 2012
Short-term Courses/Workshops				
1	Vignesh Muthuvijayan	MITr (Mentoring for Individual Transformation), In Need and Indeed For You	IIT Madras	9 January 2013
2	M. Hamsa Priya	4th Faculty Training Program 2012	IIT Madras	10–12 December 2012

Special lectures delivered by the faculty in other institutions

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
1	Sathyanarayana N. Gummedi	Biochemical and Biophysical Characterization of Heavy Metal Interaction with hPLSCR1	SV University, Tirupati	22 December 2012
		Bioreactors	Vignan University, Guntur	26 November 2012
		Flippases and Scramblases	Sree Sastha Institute of Engineering and Technology, Chennai	22 September 2012
		Bioprocess Engineering for Global Prosperity	St. Joseph Engineering College, Chennai	7 September 2012
		Fermentation Technology	SV University, Tirupati	30 August 2012
		Microbial Degradation of Caffeine	SV University, Tirupati	30 August 2012
		Enzyme Kinetics	Pondicherry University	21 June 2012
2	N. Athi Narayanan	Effects of Surface Electrostatics on the Dynamic and Thermodynamic Behavior of Proteins	Bioinformatics Centre, Pondicherry University, India	26 September 2012

3	N. Athi Narayanan	Thermodynamic Barriers and Conformational Stabilities of Proteins: Perspectives and Predictions from a Simple Statistical Model	National Center for Biological Sciences (NCBS), Bangalore, India	17 October 2012
		Linking Protein Conformational Heterogeneity, Folding Mechanism and Function	Center for Biotechnology, Anna University, Chennai, India	13 December 2012
		An Ensemble and Free-Energy Based Approach Towards Engineering Protein Stabilities	CSIR-Central Leather Research Institute, Chennai, India	9 February 2013
4	Karthik Raman	Metabolic Network Modelling	Workshop on Biological Sequence Analysis, Anna University	13 December 2012
		Representation and Modelling of Metabolic Networks	Workshop on Analysis of Biological Networks, IIT Guwahati	7 November 2012
		From Networks to Drug Targets: Leveraging Systems Biology in Drug Discovery	National Workshop-cum-Seminar on Drug Discovery and Translational Research at Pondicherry University	14 February 2013
5	A. Gopala Krishna	On the Nobel Prize	Chennai Science Club	17 November 2012
6	A. Jayakrishnan	Engineering Body Parts: Challenges and Prospects	National Colloquium on Emerging Areas of Research in Engineering Sciences, Rajiv Gandhi Institute of Technology, Kerala	8 March 2013
		Polymeric Prodrugs	Workshop of Chemistry and Physics of Advanced Materials, NSS Engineering College, Palakkad, Kerala	1 March 2013
		Polymeric Prodrugs of Amphotericin B and Primaquine	International Symposium on Nanomaterials, Toyo University, Hakusan Campus, Tokyo, Japan	8 December 2012
7	Smita Srivastava	Industrial Application of Plant Cell Technology	Mepco Schlenk Engineering College, Sivakasi	16 March 2013
8	M. Michael Gromiha	Protein–DNA Interactions: Database Analysis, Prediction Algorithms and Binding Specificity	Chuo University, Tokyo, Japan	April 2012
		Bioinformatics Approaches for Structural and Functional Annotation of Membrane Proteins	University of Bologna, Italy	June 2012
		Development of Databases and Tools for Functional Annotation of Membrane Proteins	National Conference on Bioinformatics, IIT Delhi	July 2012
		Protein Stability: Features and Applications, UGC refresher course in physics/chemistry	Bharthidasan University	November 2012
		Bioinformatics Applications for Understanding Protein Structure and Function	VIT University	2012
		Online Resources for Annotating the Functions of Membrane Proteins	Workshop, Computational Genome Analysis Techniques, National Bureau of Plant Genetic Resources, New Delhi	September 2012

	M. Michael Gromiha	Protein Stability: Concepts and Applications, inaugural lecture at Computational Biology Group	Sastra University, Thanjavur	October 2012
		Protein–DNA Complexes: Binding Site Analysis, Discrimination, Prediction and Recognition Mechanism	Shanghai Jiao Tong University, China	December 2012
		Computational Approaches for Annotating Membrane Proteins Based on Their Structure and Function	Shanghai Jiao Tong University, China	December 2012
		Development of Database and Bioinformatics Tools for Predicting the Stability of Proteins	Shanghai Jiao Tong University, China	December 2012
		Structural and Functional Annotation of Membrane Proteins	IISc, Bangalore	January 2013
		Factors Governing the Stability of Proteins: Database Analysis, Prediction and Applications	Tokyo Institute of Technology	January 2013
		Binding Specificity and Recognition Mechanism of Protein Complexes: Principles, Prediction and Applications	Macquarie University, Australia	February 2013
		Bioinformatics Applications to Understand the Stability of Proteins	University of Madras	February 2013
		Bioinformatics Applications in Human Health and Medicine	Sathyabama University	February 2013
9	Madhulika Dixit	Glucose Metabolism and Vascular Progenitors: A Link to Stem Cell Kinetics	AU-KBC Research Center, Chennai	1–3 March 2012
		Glucose Metabolism and Vascular Progenitors: A Link to Stem Cell Kinetics	OMICS group conferences, San Antonio, USA	12–14 November 2012
		Chronic Insulin Uncover the Pro-inflammatory Phenotype in Endothelial Cells	Madurai Kamaraj University, Madurai	October 2012
		Endothelial Cells and Shear Stress	Raman Research Institute, Bangalore	1–2 February 2013
10	Anju Chadha	Biocatalysis by <i>Candida parapsilosis</i> ATCC 7330: The Case of Its Carbonyl Reductase – A Potential Target for Drug Design	School of Chemistry, Sastra University	18–19 January 2013
		Biocatalysts – An Important Green Tool for Organic Chiral Synthesis	Department of Chemistry, Stella Marris College, Chennai	24–25 January 2013
		Biocatalysts – An Important Green Tool for Asymmetric Synthesis	Department of Chemistry, IIT Delhi	8–9 February 2013
11	Rama S. Verma	Perspectives in Immunotoxins	Department of Biochemistry, IISc, Bangalore	February 15 2013
		Computation Identification and Experimental Characterization of Binding Domain of Fusion Protein	Center of Bioinformatics Institute of Inter-disciplinary Studies, University of Allahabad, Allahabad, India	
		A Potential Biological Scaffold for Cardiac Tissue Regeneration	Frontier Life Line Hospital and Dr. K.M. Cherian Heart Foundation	21 January 2012

12	K. Chandraraj	Cellulosic Ethanol Production: Technology and Potential in India	Thiruvalluvar University, Thiruvallur	28 February 2013
		Recombinant Technology for Cellulosic Ethanol Production	Thiruvalluvar University, Thiruvallur	8 September 2012

Visits abroad by faculty

Sl. No.	Name of Faculty Member	Country Visited	Date	Purpose of Visit	Funding from
1	N. Athi Narayanan	Switzerland	3-6 September 2012	Workshop on Protein Folding: Integrating Theory, Simulation and Experiment	CPDA
2	A. Gopala Krishna	California, USA	19-24 February 2012	Gordon Research Conference	GRC fees waiver and CPDA
3	A. Jayakrishnan	Japan	7-10 December 2012	To deliver a keynote lecture at International Symposium on Nanomaterials, Toyo University, Hakusan Campus, Tokyo, Japan	Toyo University, Japan
4	Amal Kanti Bera	New Orleans, USA	13-17 October 2012	Society for Neuroscience meeting	CPDA
5	M. Michael Gromiha	Tokyo, Japan	April 2012	Collaborative research and delivering invited lectures at Tokyo Institute of Technology	Tokyo Institute of Technology, Japan
		Trieste, Italy	May-June 2012	Short-term visit; collaborative research and delivering invited lectures at International Center for Genetic Engineering and Biotechnology	Tokyo ICGEB, Trieste, Italy
		Tokyo, Japan	October 2012	Presenting a paper at the Annual Symposium of CBRC 2012; collaborative research; Indo-Japan project discussion	CBRC, Japan
		Tokyo, Japan	January 2013	Collaborative research and delivering invited lectures at Tokyo Institute of Technology	Tokyo Institute of Technology, Japan
6	Madhulika Dixit	Macquarie University, Australia	February 2013	Research collaboration under INSA Senior Scientist S&T Visiting Fellowship Program	Indian National Science Academy
		Sweden	23-26 May 2012	Consortium meeting of the project partners on Indo-EU co-sponsored FUNCFOOD project	DBT
		USA	12-14 November 2012	Giving a talk at World Congress on Cell Science and Stem Cell Research	DBT
7	Sanjib Senapati	USA	25-29 March 2012	Delivering an invited lecture	CPDA and ACS
8	Anju Chadha	Cambodia	19-21 October 2012	Talk at CMCC 2012, Cambodian Malaysian Chemical Conference	IIT Madras
9	Nitish Mahapatra	USA	9-13 September 2012	10th International Catecholamine Symposium, Asilomar, Pacific Grove, California	CPDA and PCF
10	K.B. Ramachandran	Malaysia	18-22 March 2013	External Examiner for Bachelor of Engineering (Hons) Chemical and Bioprocess Program Of University Technology Malaysia	University Technology Malaysia
11	Mukesh Doble	Germany	20-22 February 2012	Delivering a talk at symposium	CPDA

	Mukesh Doble	Turkey	23–26 September 2012	Delivering a talk at symposium	CPDA
12	K. Chandraraj	USA	20 January 2013	Indo-US Project Meeting	IUSSTF, New Delhi
13	G.K. Suraishkumar	Turku, Finland	30 July–3 August 2012	Presenting a paper at International Conference on Engineering Education (ICEE) 2012	CPDA

Other professional visits by faculty

Sl. No.	Name of Faculty Member	Place	Date	Purpose of Visit	Funding from
1	Karthik Raman	Samsung Advanced Institute of Technology (SAIT) Bangalore	7 June–13 July 2012	Worked on a research project in metabolic engineering	Samsung

Honours and awards received by faculty

Sl. No.	Name of Faculty	Name of Award	Awarded by	Awarded for	Date of Award
1	N. Athi Narayanan	Innovative Young Biotechnologist Award (2012)	Department of Biotechnology (DBT), India		5 March 2013
2	Smita Srivastava	Rashtriya Gaurav Award	India International Friendship Society (IIFS)	Young Achiever Award	4 May 2012
3	M. Michael Gromiha	INSA Senior Scientist S&T Visiting Fellowship Award	Indian National Science Academy		November 2012
		ICTP Associateship	Abdus Salam International Center for Theoretical Physics, Trieste, Italy		April 2012
		ICGEB Visiting Fellow	International Center for Genetic Engineering and Biotechnology, Trieste, Italy		April 2012
4	Sanjib Senapati	Prof. B.K. Bachhawat International Travel Grant for Young Scientists, 2013	CMC, Vellore	International travel grant for participating in conferences	11 January 2013
5	Mukesh Doble	The Dow Professor M.M.Sharma Distinguished Visiting Professorship in Chemical Engineering	Institute of Chemical Technology, formerly UDCT/ UICT, Mumbai	Distinguished person as a visiting professor	2012–2013
6	G.K. Suraishkumar	Expert, Faculty Selection Committee	IIT Hyderabad, North Eastern Hill University (NEHU)		2013
		Member, Academic Committee	Sree Chitra Tirunal Institute of Medical Sciences and Technology, Trivandrum		2013
		Member, Board of Studies	Sastra University, Thanjavur		2013

Fellowships of academies and professional societies

Sl. No.	Name of Faculty Member	Society and Year of Admission
1	Mukesh Doble	Fellow of Royal Society of London, UK (2010) Fellow of American Institute of Chemical Engineers (1983)

Journal editorial boards

Sl. No.	Name of Faculty Member	Position (Editor/Member)	Journal
1	A. Jayakrishnan	Member	<i>Open Biomaterials Journal</i>
		Associate Editor	<i>Biomaterials and Biomedical Engineering</i>
		Member, International Editorial Board	<i>Microspheres, Microcapsules and Liposomes</i> , reference series Citus Books, London

	A. Jayakrishnan	Member, International Editorial Board	<i>Polymeric Biomaterials</i> , reference Series, Citus Books, London
2	M. Michael Gromiha	Editor-in-Chief Associate Editor Member, Editorial Board Guest Editor Guest Editor	<i>Open Structural Biology</i> <i>BMC Bioinformatics</i> <i>Current Computer Aided Drug Design</i> <i>Current Bioinformatics</i> <i>Protein and Peptide Letters</i>
3	Vignesh Muthuvijayan	Associate Editor	<i>World Research Journal of Biomaterials</i>
4	Sanjib Senapati	Member, Editorial Board	<i>Journal of Theoretical Chemistry</i>
5	Rama S. Verma		<i>International Advanced Biotechnology and Bioinformatics (IJABB 2012)</i> <i>Cytotherapy (USA) (2010 onward)</i> <i>Botanics: Targets and Therapy (2010 onward)</i>
6	K.B. Ramachandran	Member Member	<i>Bio Resource Technology</i> <i>Preparative Biochemistry and Biotechnology</i>
7	Mukesh Doble	Member, Editorial Board Member, Editorial Board	<i>Chemical Engineering</i> , McGraw Hill, USA <i>Open Journal of Enzyme Engineering</i> , Bentham Publ.

4.3.4. Design and Development Activities

New facilities added or major equipment procured

Sl. No.	Equipment	Value (lakhs of Rs.)
1	pH probe accessory for bioreactor	0.28
2	ELGA water purifier system	3
3	Samsung double door fridge	0.3
4	Flow cytometer, BD	40
5	Class 10000 primary cell culture facility	13.8
6	4-GPU workstation	8
7	GC	15
8	GC-MS	30
9	FOSS NIR system	74
10	96 well thermal cycler (Applied Biosystems)	3.3
11	Spin coating system (Apex Equipments)	1.46
12	Dip coating system (Apex Equipments)	1.38
13	Lyophilizer (Lark Innovative)	4.72
14	Multimode plate reader (Perkin Elmer)	18
15	Deep freezer (-20°C)	1
16	Water purification system (Siemens)	2.45
17	Fermentor	14.6

Major infrastructure development made in the department

- New instruments and equipments purchased for proteomics and genomics: FACS, surface plasmon resonance spectroscopy, LC-MS, X-ray diffractometer

4.3.5. Research and Consultancy

Sponsored research projects

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of Rs.)	Co-ordinators
1	Hybridization induced genomic rearrangements in flowering plants	Till February 2014	DBT	57	R. Baskar
2	Studies on the biochemical, biophysical and functional characterization of human phospholipid scramblase 1 (HPLSCR1) cxv interaction with topoisomerase II	3 years (new)	BRNS, Department of Atomic Energy	27.05	Sathyanarayana N. Gummadi
3	Purification and biochemical characterization of caffeine demethylase and its applications on food products	3 years (ongoing)	DBT	37.07	Sathyanarayana N. Gummadi

4	Bioprocess development for production of ethanol and polyols by <i>Debaryomyces nepalensis</i>	3 years (ongoing)	DBT	24.76	Sathyannarayana N. Gummedi
5	Evaluation of the performance of a recombinant thermostable endoglucanase under process conditions	3 years (ongoing)	DBT	39.98	N. Manoj, Sathyannarayana N. Gummedi
6	Biocatalytic production of a L-carnitine precursor: Studies on enzymes involved	3 years (ongoing)	DBT	30.05	Anju Chadha, Sathyannarayana N. Gummedi
7	Bioprocess development of production of linear and cyclic glucans (biopolymers)	3 years (ongoing)	DBT	31.256	Sathyannarayana N. Gummedi
8	Mutational tuning of folding mechanism in a model helical domain	2012–2015	IIT Madras	19.97	N. Athi Narayanan
9	Characterizing the link between folding mechanism and function in a transcription regulatory protein by combining experiments, simulations and statistical models	2013–2016	DBT	41.81	N. Athi Narayanan
10	Molecular mechanism behind UV induced skin cancer	January 2010, 3 years	DRDO, India	30	Rayala Suresh Kumar
11	Targeting IGF1-R in head and neck cancers	March 2010, 3 years	DBT, India	70	Rayala Suresh Kumar
12	Pak1 in head and neck cancers	March 2010, 3 years	BRNS,DAE, India (Young Investigator Grant)	14.5	Rayala Suresh Kumar
13	PELP1 and inflammation	March 2010, 3 years	DST (fast track for young investigator)	22	Rayala Suresh Kumar
14	Signal transduction mechanism of calumenin	3 years (new)	BRNS	26	A. Gopala Krishna
15	Novel nanotechnological approaches for the treatment of leishmaniasis using 2-propylquinoline	3 years (new)	Indo-French Centre for Advanced Scientific Research	42.17	A. JayaKrishnan, V. Kesavan (IIT Madras), Philippe Loiseau (University of Paris-Sud, France)
16	Understanding the effect of cosolvents on protein folding and stability	2012–2015	IIT Madras	6.22	M. Hamsa Priya
17	Probing the conformational changes associated with the gating of acid sensing ion channel	2013–2016	DST	52.82	Amal Kanti Bera
18	Enhanced production of alpha-tocopherol by genetically transformed cell culture of <i>Helianthus annuus</i> L.	3 years	DBT	29	Smita Srivastava, Karthik Raman, R. Baskar
19	Over expression of <i>Arabidopsis thaliana</i> HPPD gene for enhanced α -tocopherol production in <i>in vitro</i> culture of sunflower (<i>Helianthus annuus</i>)	3 years	DST (fast-track scheme of DST-2012 (SERC) for young scientists)	19.9	Smita Srivastava
20	Studies on production of a cytotoxic cyclotide (Cycloviolacin O2) in <i>Viola odorata</i>	3 years	DBT (RGYI/2011–2012)	17	Smita Srivastava, Nandita Madhavan
21	Dissecting important amino acid residues for folding and binding of proteins	2013–2016	DST	24.7	M. Michael Gromiha, N. Manoj

22	Exploring gab1 in endothelium	2009–2012	Fast-track grant from Department of Science and Technology (DST), Government of India	13.44	Madhulika Dixit
23	Analysis of angiopoietin-2 expression and its regulation in endothelial cells	2009–2012	Council of Scientific and Industrial Research (CSIR), Government of India	26.26	Madhulika Dixit
24	Impact of agents with potential use in functional food on biomarkers for induction of age-related diseases	2010–2014	An Indo-EU grant funded by Department of Biotechnology (DBT), Government of India	126.08	Madhulika Dixit
25	Vascular complications of type 2 diabetes: tyrosine phosphorylation of endothelial nitric oxide synthase	2010–2012	Indo-German grant funded by Department of Science and Technology (DST), Government of India	15.91	Madhulika Dixit
26	Functional characterization and rejuvenation of diabetes-associated dysfunctional circulating endothelial progenitor cells (EPCs) for therapeutic neovasularization. – Senior IYBA funding	2011–2014	Department of Biotechnology (DBT), Government of India	95.97	Madhulika Dixit
27	Nucleotide-dependent conformational changes in free tubulin dimer and microtubule dynamic instability	1 February 2011 to 31 January 2014	CSIR	19.66	Sanjib Senapati
28	Role of protein hydration water in the flap opening–closing mechanism of HIV-1 protease: Possible implications for designing new class of anti-AIDS drugs	21 December 2012 to 20 December 2015	DST	39	Sanjib Senapati
29	A structure–function correlation study to unravel the mechanism of action of human catestatin	26 August 2010 to 25 August 2013	DBT	34	Nitish Mahapatra, Sanjib Senapati
30	High value low volume biocatalytically prepared chiral synthons: studies on the enzymes involved in the production of L-carnitine intermediate	5 September 2011 to 4 September 2014	DBT	46.05	Anju Chadha, S.N. Gummadri
31	Selective biocatalytic oxidation of alcohols; developing a “green” oxidizing agent	6 September 2011 to 5 September 2014	DST	24.8	Dr. Preetha; mentor: Anju Chadha
32	Chemical strategies for conjugating fluorescent labeled VEGFR targeting peptides to gold nanoparticles	19 September 2011 to 18 September 2014	DBT	26	Dr. Shoba Narayan; mentor: Anju Chadha
33	Development of a biocatalytic process for the oxidation of primary and secondary alcohols: a kinetic and mechanistic study	19 October 2012 to 18 October 2015	CSIR	16.92	Anju Chadha
34	Centre for NEMS and Nanophotonics at IITM	2012–2017	DIT	4947	Anju Chadha
35	Transcriptional and post-transcriptional regulation of monoamine oxidase A and B	December 2012 to December 2015	DBT	68.43	Nitish R. Mahapatra

36	Regulation of HMG-CoA reductase gene by microRNAs	November 2012 to October 2015	CSIR	19.92	Nitish R. Mahapatra
37	Molecular mechanisms of regulation of the cystathionine gamma-lyase gene	November 2011 to October 2014	BRNS, DAE	24.15	Nitish R. Mahapatra
38	A structure–function correlation study to unravel the mechanism of action of human catestatin	August 2010 to July 2013	DBT	50.00	Nitish R. Mahapatra
39	Therapeutic targeting of cancer using novel humanized immunotoxins in lymphoma and leukemia cell lines	2 July 2012 to 1 July 2015	DST	25	Rama S. Verma
40	Studies on Muller cells potential to regenerate photoreceptor by photoreceptor-specific transcription factors		CSIR	15	Rama S. Verma
41	Evaluation of antioxidant properties of lichens obtained from Eastern Ghats for biomedical		ICMR	10.2	Rama S. Verma
42	Identification of novel biomarkers and elucidation of the molecular basis of phenotypic features of Fanconi anemia using micro array analysis		DBT	35	Rama S. Verma
43	Establishing bioincubator facility	2013–2018	BIRAC-DBT	1191.18	K.B. Ramachandran, Guhan Jayaraman, Mukesh Doble, Shrikumar Suryanarayanan
44	Protease imobilized active food packaging system for cottage cheese	21 February 2012 to 20 February 2015	DBT	34.4	Mukesh Doble
45	Development of antifouling coating based on surface modification approach	16 March 2012 to 15 March 2015	BRNS	67.2	Mukesh Doble
46	Production of recombinant glycosyl hydrolases by fed batch fermentation of <i>B. subtilis</i> and application in biomass conversion to fuel-ethanol	October 2010 to September 2013	DBT	48	K. Chandraraj
47	US–India consortium for development of sustainable advanced lignocellulosic biofuel systems	November 2012 to October 2017	IUSSTF	84	K. Chandraraj
48	Enzymatic production and characterization of prebiotic xylooligosaccharides from lignocelluloic biomass	January 2013 to December 2015	DBT	50	K. Chandraraj
49	Reactive species for improved bio-oil yields from microalgae	2013–2016	DST	32.83	G.K. Suraishkumar
50	Network interactions in temporal lobe epilepsy: An integrated approach using in vitro studies and computational modeling in human brain and animal models	2013–2016	DST	49	V. Srinivas Chakravthy (Co-PI)
51	Genetic and metabolic engineering in two flavinogenic hemiascomycete fungi <i>Ashbya gossypii</i> and <i>Eremothecium ashbyii</i> for enhanced flavins production through stress mechanisms	3 years	DBT	36.89	T.S. Chandra

Industrial consultancy projects

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of Rs.)
1	Rama S. Verma	Development of hepatitis B and <i>Haemophilus influenzae</i> type b vaccines (Hib)	HLL Life Care Limited	14
		Evaluation of phytochemicals of phyto-pharmaceuticals using HPLC	Laila Pharma	5
2	K.B. Ramachandran	Advice on project implementation	Orchid Chemicals and Pharmaceuticals	6

RBIC projects (ongoing and new)

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of Rs.)
1	Anju Chadha; Co-PIs: Mukesh Doble, S.N. Gummadi	Omega fatty acids: An efficient method of preparation	Unique Biotech, Hyderabad	20
2	Rama S. Verma	Molecular mechanism involved in cardiogenic differentiation of bone marrow derived mesenchymal stem cells in microfluidics	CHARUSAT	4
3	K.B. Ramachandran, K. Chandraraj	Preparation of lyophilized vials and identification of the microorganisms	Indophyto Chemicals Pvt. Ltd., Noida	2
4	K. Chandraraj	Screening of microorganism producing lactone based biopesticides	Sree Ramcide Chemicals P. (Ltd.), Chennai	15

Research publications

Total number of papers published in refereed international journals: 100

Total number of papers presented at international conferences: 34

Total number of books: 4

Total number of chapters in books: 7

(a) International journal publications

1. P. Jaiswal, T. Soldati, and R. Baskar (2012) Conserved action of adenosine and its antagonist caffeine on aggregation and pattern formation in cellular slime molds. *BMC Developmental. Bioogy*. 12: 5.
2. P. Jaiswal, S.P. Singh, P. Aiyar, A. Rakhil and R. Baskar (2012) Regulation of multiple tip formation by caffeine in the cellular slime mold. *BMC Developmental. Bioogy* 12: 26.
3. V.G. Francis and S.N. Gummadi (2012) Biochemical and functional characterization of human phospholipid scramblase 4 (hPLSCR4). *Biological Chemistry* (in press).
4. V.G. Francis, A. Majeed and S.N. Gummadi (2012) Recovery of functionally active recombinant human phospholipid scramblase 1 from inclusion bodies using N-lauroyl sarcosine. *Journal of Industrial Microbiology and Biotechnology* 39: 1041–1048.
5. A. Rajasekharan and S.N. Gummadi (2012) Inhibition of biogenic membrane flippase activity in reconstituted ER proteoliposomes in the presence of low cholesterol levels. *Cellular and Molecular Biology Letters* 17: 136–152.
6. T.K. Gayatri, M. Doble and S.N. Gummadi (2012) Production and downstream processing of (1→3)-β-D-glucan strain from mutant strain of *Agrobacterium* sp. ATCC 31750 *Applied Microbiology and Biotechnology Express* 2: 31.
7. K. Hima Bindu, N. Shweta and S.N. Gummadi (2012) A statistical approach to optimize xylitol production by *Debaryomyces nepalensis* in vitro. *Food and Nutritional Science* 3: 1027–1036.
8. A.N. Naganathan (2012) Predictions from an Ising-like statistical mechanical model on the dynamic and thermodynamics effects of protein surface electrostatics. *Journal of Chemical Theory and Computation* 8: 4646–4656.
9. A.N. Naganathan. Coarse-grained models of protein folding as detailed tools to connect with experiments. *Computational Molecular Science* DOI: 10.1002/wcms.1133
10. M. Kanuru, R. Raman and G.K. Aradhyam (18 January 2013) Serine protease activity of calnuc: regulation by Zn²⁺ and G proteins. *Journal of Biological Chemistry* 288(3): 1762–1773. doi: 10.1074/jbc.M112.382846. Epub: 29 November 2012.

11. A. Jejurikar, X.T. Seow, G. Lawrie, D. Martin, A. Jayakrishnan, L. Grondahl (2012) Degradable alginate hydrogels crosslinked by macromolecular crosslinker alginate dialdehyde. *Journal of Materials Chemistry* 22: 9751–9758.
12. A.C. Borges, A. Jayakrishnan, P.-E. Bourban, C.J.G. Plummer, D.P. Pioletti and J.E. Manson (2012) Synthesis and photopolymerization of Tween 20 methacrylate-N-vinyl-2- pyrrolidone blends. *Materials Science and Engineering C* 32: 2235–2241.
13. S. Manju, C.V. Muraleedharan, A. Rajeev, A. Jayakrishnan and R. Joseph (2011) Evaluation of alginate dialdehyde cross-linked gelatin hydrogel as a biodegradable sealant for polyester vascular graft. *Journal of Biomedical Materials Research Part B: Applied Biomaterials* 988: 139–149.
14. G. Sahu and A.K. Bera (2013) Contribution of intracellular calcium and pH in ischemic uncoupling of cardiac gap junction channels formed of connexins 43, 40, and 45: a critical function of C-terminal domain. *PLOS ONE* (in press).
15. S.M. Swain and A.K. Bera (2013) Coupling of proton binding in extracellular domain to channel gating in acid sensing ion channel. *Journal of Molecular Neuroscience* (in press).
16. B.S. Sahu, J.M. Obbineni, G. Sahu, P.K. Allu, L. Subramanian, P.J. Sonawane, P.K. Singh, B.K. Sasi, S. Senapati, S.K. Maji, A.K. Bera, B.S. Gomathi, A.S. Mulasari and N.R. Mahapatra (21 December 2012) Functional genetic variants of the catecholamine-release-inhibitory peptide catestatin in an Indian population: allele-specific effects on metabolic traits. *Journal of Biological Chemistry* 287(52): 43840–43852.
17. S.M. Swain, S. Parameswaran, G. Sahu, R.S. Verma, A.K. Bera (2012) Proton-gated ion channels in mouse bone marrow stromal cells. *Stem Cell Research* 9(2): 59–68.
18. B.S. Sahu, J. Mohan, G. Sahu, P.K. Singh, P.J. Sonawane, B.K. Sasi, P.K. Allu, S.K. Maji, A.K. Bera, S. Senapati and N.R. Mahapatra (1 May 2012) Molecular interactions of the physiological anti-hypertensive peptide catestatin with the neuronal nicotinic acetylcholine receptor. *Journal of Cell Science* 125(9): 2323–2337.
19. S. Srivastava and A.K. Srivastava (2012) Azadirachtin production by hairy root cultivation of *Azadirachta indica* in a modified stirred tank reactor. *Bioprocess and Biosystems Engineering* 35(9): 1549–1553.
20. R. Reddy, S. Srivastava and A.K. Srivastava (2012) Development of a mathematical model for growth and oxygen transfer in *in vitro* plant hairy root cultivations. *Applied Biochemistry and Biotechnology* 167(6): 1831–1844.
21. S. Srivastava and A. Srivastava (2012) Strategies to overcome oxygen transfer limitations during hairy root cultivation of *Azadirachta indica* for enhanced azadirachtin production. *Applied Biochemistry and Biotechnology* 167(6): 1818–1830.
22. S. Srivastava and A.K. Srivastava (2012) Statistical medium optimization for enhanced azadirachtin production in hairy root culture of *Azadirachta indica*. *In Vitro Cellular and Developmental Biology—Plant* 48: 73–84.
23. S. Srivastava and A.K. Srivastava (2012) *In vitro* cultivation of azadirachtin production by hairy root cultivation of *Azadirachta indica* in nutrient mist bioreactor. *Applied Biochemistry and Biotechnology* 166(2): 365–378.
24. N. Boddapati, K. Anbarasu, R. Suryaraja Ashish V. Tendulkar and S. Mahalingam (2012) Sub-cellular distribution of human putative nucleolar GTPase, GNLI is regulated by a novel arginine-lysine-rich and GTP-binding domains in a cell cycle dependent manner. *Journal of Molecular Biology* 416: 346–366.
25. R. Suryaraja, M. Anitha, K. Anbarasu, G. Kumari and S. Mahalingam (2013) The E3 ubiquitin ligase Itch regulates tumor suppressor protein RASSF5/NORE1 stability in an acetylation dependent manner. *Cell Death and Disease* (in press).
26. M. Michael Gromiha, K. Harini, R. Sowdhamini and K. Fukui (2012) Structure–function relationship in olfactory receptors and discrimination of mutants with enhanced specificity. *BMC Bioinformatics* 13 (Suppl 7): S1.
27. A.M. Thangakani, S. Kumar, D. Velmurugan and M. Michael Gromiha (2012). How do thermophilic proteins resist aggregation? *Proteins* 80: 1003–1015.
28. L.-T. Huang and M.M. Gromiha (2012) Real value prediction of protein folding rate change upon point mutation. *Journal of Computer-Aided Molecular Design* 26: 339–347.
29. M.M. Gromiha (2012) Development of RNA stiffness parameters and analysis on protein–RNA binding specificity: comparison with DNA. *Current Bioinformatics* 7: 173–179.
30. T.R. Priyadarzini, J.F. Selvin, M. M. Gromiha, K. Fukui and K. Veluraja (2012) Theoretical investigation on the binding specificity of sialyldisaccharides with hemagglutinins of influenza A virus by MD simulations. *Journal of Biological Chemistry* 287: 34547–34557.

31. M.M. Gromiha, A.M. Thangakani, S. Kumar and D. Velmurugan (2012) Sequence analysis and discrimination of amyloid and non-amyloid peptides. *Communications in Computer and Information Science* 304: 447–452.
32. M.M. Gromiha, M.C. Pathak, K. Saraboji, E. Ortlund and E. Gaucher (2013) Hydrophobic environment is a key factor for the stability of thermophilic proteins. *Proteins: Structure, Function and Bioinformatics* (in press).
33. M.M. Gromiha and R. Nagarajan (2013) Computational approaches for predicting the binding sites and understanding the recognition mechanism of protein–DNA complexes. *Advances in Protein Chemistry and Structural Biology* (in press).
34. M.M. Gromiha and Y.-Y. Ou (2013) Bioinformatics approaches for functional annotation of membrane proteins. *Briefings in Bioinformatics* (in press).
35. S. Bairgai, J. Gopal, A.A. Nathan, Babu, N.P. Kumar and M. Dixit (2012) Glucose induced increase in circulating progenitor cells is blunted in anovulatory subject. *Human Reproduction* 27(3): 844–853.
36. H. Giri, M. Illayaraja, M. Dhar, K. Rathnakumar, R. Uma and M. Dixit (2012) Protein tyrosine phosphatase SHP2 mediates chronic insulin induced endothelial inflammation. *Arteriosclerosis, Thrombosis and Vascular Biology* 32: 1943–1950.
37. S. Abhijit, R. Bhaskaran, A. Narayanasamy, A. Chakroborty, N. Manickam, M. Dixit, V. Mohan and M. Balasubramanyam (2012) Hyperinsulinemia-induced vascular smooth muscle cell (VSMC) migration and proliferation is mediated by converging mechanisms of mitochondrial dysfunction and oxidative stress. *Molecular and Cellular Biochemistry* 373(1–2): 95–105.
38. K. Rushendhiran, U.R. Potunuru, B. Nastasijevic, T. Avaneesh, G. Joksic and M. Dixit (2013) Inhibition of vascular smooth muscle cell proliferation by *Gentiana lutea* root extracts. *PLoS One* (accepted).
39. A. Raheja, A. Agarwal, V. Muthuvijayan, T.S. Chandra and T.S. Natarajan. Studies on encapsulation of BSA, lysozyme and insulin through coaxial electrospinning. (accepted).
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(b) Proceedings of international conferences

1. R. Sarika, S. Ulaganathan, V.G. Francis and S.N. Gummadi. Biophysical and biological characterization of human phospholipid scramblase 2. *International Conference on Biomolecular Forms and Functions: A Celebration of 50 years of the Ramachandran Map* (8–11 January 2013), Indian Institute of Science, Bangalore, India.
2. R. Kanna, S.N. Gummadi and S. Kumar. Experimental investigations on microbial enhanced oil recovery. *Petrotech 2012, 10th International Oil & Gas Conference and Exhibition* (14–17 October 2012), New Delhi, India.
3. A. Kumar and S.N. Gummadi. Biochemical and biophysical characterization of heavy metal ion binding properties of human phospholipid scramblase 1: Target for toxicological implications. *48th International Conference on Medicinal Chemistry* (4–6 July 2012), Poitiers, France.
4. A. Jayakrishnan. Polymeric prodrugs of amphotericin B and primaquine. *International Symposium on Nanomaterials* (7–10 December 2012) Toyo University, Hakusan Campus, Tokyo, Japan.
5. A.N. Naganathan. Thermodynamic barriers and conformational stabilities of proteins: perspectives and predictions from a simple statistical model. *International Symposium on Protein Folding and Dynamics* (17 October 2012) National Centre for Biological Sciences (NCBS), Bangalore, India.
6. A.N. Naganathan. Protein folding: integrating theory, simulation and experiment. *CECAM-ETHZ* (3–6 September 2012) Zurich, Switzerland.
7. M.M. Gromiha, Y.-Y. Ou, R. Sowdhamini, D. Velmurugan and K. Fukui. Structure–function relationship in olfactory receptors and discrimination of efflux proteins (October 2012) *Annual Symposium of CBRC*.

8. M. Dixit. Glucose metabolism and vascular progenitors: a link to stem cell kinetics. *International Conference on Angiogenesis* (March 2012) *Basics and Applications*, Chennai.
9. M. Dixit. Glucose metabolism and vascular progenitors: a link to stem cell kinetics, *2nd World Congress on Cell Science and Stem Cell Research* (November 2012) San Antonio, USA.
10. M. Dixit. Chronic insulin uncover the pro-inflammatory phenotype in endothelial cells. *ICMR Symposium on Inflammation* (October 2012).
11. M. Dixit. Endothelial cells and shear stress. *First Cell Mechanics Meeting* (1–2 February 2013) Bangalore.
12. P.S. Pavithra, A. Mehta, R.S. Verma (2012) Anti proliferative activity of methanol and aqueous extracts of *Mollugo cerviana* (L.) Ser. *12th International Congress of Ethnopharmacology—ISE 2012* (17–19 February 2012) Jadavpur University, Kolkata, p. 108.
13. D. Sugapriya, V. Prasanna, S. Pavithra, S. Rajalakshmi and R.S. Verma (2012) Increased levels of the folate receptor in Kg-1 cells by curcumin augmented sensitivity to methotrexate. *International Conference on Molecular Medicine: MOLMED 2012* (19–22 February 2012) CBST-VIT University, p. 134.
14. S. Devilahshmi, J. Madhumathi, P.S. Pavithra and R.S. Verma (2012) Production and characterisation of high-level expression of immunotherapeutic target Ep-CAM monoclonal antibody in retinoblastoma. *International Conference on Molecular Medicine: MOLMED 2012* (19–22 February 2012) CBST-VIT University, p. 133.
15. D. Anjana, K.A. Nair, N. Somashekara, R. Yelucheri, M. Venkata, R. Sripathy, H. Parmer, R. Upadhyay, S.R. Verma and C.N. Ramchand. Formulation development and characterization of L101001 for the treatment in allergic conjunctivitis. *International Conference on Molecular Medicine: MOLMED 2012* (19–22 February 2012) CBST-VIT University, p. 200.
16. S. Choudhary, A. Pardo, R.S. Verma, J.K. Batra and S. Barth (2012) Construction and evaluation of c-kit targeting immunotoxins in c-kit overexpressing pancreatic cancer. *Biomedica* (18–19 April) Liege, Belgium.
17. D. Sugapriya and R.S. Verma (2012) Induction of functional hepatocytes-like cells from mouse mesenchymal stem cells by FOXA2 for liver development. *International Society for Stem Cell Research 10th Annual Meeting* (13–16 June) Yokohama, Japan.
18. P. Vidyasekar, P. Shyamsunder, S. Rajalakshmi and R.S. Verma (2012) Enhanced cardiomyogenic lineage differentiation of adult bone marrow derived stem cells grown on cardiogel. *International Society for Stem Cell Research 10th Annual Meeting* (13–16 June) Yokohama, Japan.
19. S. Nirvanashetty, A. Kapoor, R.S. Verma and C.N. Ramchand. Screening and development of formulation of BACE-1 inhibitor for the treatment/management of Alzheimer's disease (AD), *PG Conference 2012* (15–18 November) Swinburne University of Technology, Melbourne, Australia.
20. D.K. Bishi, S. Guhathakurta, K.M. Cherian and R.S. Verma. Trans-differentiation of human mesenchymal stem cells generates functional hepatospheres on poly(L-lactic acid)-co-poly(ϵ -caprolactone)/collagen nanofibrous scaffolds. *International Conference on Design of Biomaterials (BIND-12)* (9–11 December) IISc, Bangalore.
21. G. Venkatachalam and M. Doble. Synthesis and characterization of cyclic β - (1, 2)- glucan from *Agrobacterium tumefaciens*. *APCBEES 3rd International Conference on Life Science and Technology (ICLST 2013)* (19–20 January), Dubai, UAE, oral presentation.
22. M. Raman and M. Doble (2013) Physicochemical properties and structural evaluation of macroalgal polysaccharides. *Communications in Agricultural and Applied Biological Sciences* 78(1): 48. *Indo-European Food and Health Conference* (10–12 February 2013) IIT Madras, India. Poster presentation.
23. G. Venkatachalam and M. Doble. Isolation and characterization of cyclic β -glucans from *Rhizobium meliloti*. *International Symposium of Chemistry and Chemical Biology of Natural Products, 2012* (2–4 August) ICT-Hyderabad, India. Poster presentation.
24. V. Nandakumar, S. Chittaranjan and M. Doble. PLGA nanoparticle with high glycolic acid content as drug delivery devices. *Colloids & Nanomedicine 2012*, Amsterdam, The Netherlands. Poster presentation.
25. J. Arutchelvi and M. Doble. Effect of counterions on micellar morphologies of cyclic lipopeptide produced by *Bacillus subtilis* YB7, *Colloids & Nanomedicine 2012*, Amsterdam, The Netherlands. Poster presentation.
26. P. Biswa and M. Doble. Isolation of a marine quorum sensing species of *Proteus*. International conference, *Regulatory Network Architecture in Bacteria (RNAB)* (9–11 March 2012) Sastra University, Tamil Nadu. Poster presentation awarded the 2nd prize.
27. N.S. Devi, P.P. Vedanthi and M. Doble. Evaluation of the 5-lipoxygenase inhibitory activity of coumarins. *Fourth European Workshop on Lipid Mediators* (27–28 September 2012) Pasteur Institute, Paris.

28. B.R. Sunil, T.S.S. Kumar, U. Chakkingal, V. Nandakumar and M. Doble. Friction stir processing of magnesium–nanoapatite composites for rapid biomineralization with controlled degradation. *4th Biometal 2012, International Symposium on Biodegradable Metals for Biomedical Application*, Maratea, Italy. Oral presentation.
29. J. Joseph, M. Radhakrishnan, A. Dusteecker, V. Kumar, S. Swaminathan, R. Balagurunathan, A. Senthilkumar, M. Doble, J. David and S. Bhakta. Characterization of anti-mycobacterial compound from less explored ecosystems: towards novel drug discovery for Tuberculosis. International conference, Mycobacterium tuberculosis ... *Can We Beat It?* (21 March 2013) The Royal College of Pathologists, Birkbeck, University of London, United Kingdom.
30. G.K. Suraishkumar. Active learning through video lectures. *International Conference on Engineering Education*, Turku, Finland (2012). Peer-reviewed full paper published in the proceedings.
31. N. Aggarwal and A. Chadha (2012) Studies on alcohol dehydrogenase from *Candida parapsilosis* ATCC 7330. *Biomers Symposium* (21 September 2012) Department of Biotechnology, IIT Madras.
32. S. Sneha, R. Preetha and A. Chadha. *3rd International Conference and Exhibition on Analytical and Bioanalytical Techniques (Analytica Acta-2012)* (22–24 November 2012) Hyderabad International Convention Center, India.
33. S. Narayan, A. Rajagopalan, S. Reddy and A. Chadha. Designing probes for molecular sensing: spectroscopic studies on the specific and non-specific-crosslinking of gold nanoparticles to a model protein. *4th International Conference on Advanced Materials* (17–19 October 2012) Chennai, India.
34. A. Agarwal, A. Raheja, T.S. Natarajan and T.S. Chandra. Application of nanoclay containing electrospun nanofibers for developing packaging system for bread. *International Conference on Poly Packaging Application, 2012*. Invited talk.

(c) Books

1. *Future of Energy in India-Proceedings of the National Essay Competition 2012 (NEC 2012)*, 6–8 December 2012. Editors: S. Srivastava and R. Sharma. ISBN: 978-93-80689-12-8. Copyright ©2012 by Indian Institute of Technology Madras, Chennai (TN)-600 036.
2. M.M. Gromiha (co-author). *Advanced Intelligent Computing: Theories and Applications, Lecture Notes in Artificial Intelligence*. Publisher: Springer.
3. S.N. Gummadi, V. Geetha and M. Doble. *Cyclic β -Glucans from Microorganisms: Production, Properties and Applications*. Publisher: Springer.
4. V.S. Chakravarthy. *Demystifying the Brain*. E-book by NPTEL.

(d) Chapters in books

1. R. Parthasarathy and A. Jayakrishnan (2011) Dextran and pentosan sulphate: clinical applications. Chapter 6 in *Biodegradable Polymers in Clinical Use and Clinical Development*, A. Domb, N. Kumar and A. Azra (eds.), Wiley.
2. S. Srivastava and A.K. Srivastava (2013) Biotechnology and genetic engineering for alkaloid production. In *Handbook of Natural Products*, K.G. Ramawat, J.M. Merillon and M. Henry (eds.), Springer-Verlag Berlin Heidelberg (doi: 10.1007/978-3-642-22144-6_95).
3. S. Mahalingam, M.R.K.S. Rao, N. Boddapati, T.I. Jose and D. Datta (2013) Nucleolar transport of putative GTPase GNL1 and related proteins. In *Proteins of the Nucleolus: Regulations, Translocations, and Biomedical Functions*, D.H. O’Day and A. Catalano (eds.), Springer. In press.
4. M.M. Gromiha (2013) Computational approaches for understanding the recognition mechanism of protein complexes. Pp. 198–209 in *Biomolecular Forms and Functions*, M. Bansal and N. Srinivasan (eds.), IISc Press and Word Scientific, Singapore.
5. R.S. Verma, S. Potala, M. Mathew and S. Chaudhary (2012) Application of microbial toxins for cancer therapy. In *Microorganisms in Sustainable Agriculture and Biotechnology*, T. Satyanarayana et al. (eds.), Springer (doi: 10.1007/978-94-007-2214-9_28).
6. P.M. Sivakumar and M. Doble. (2012) Artificial neural network model based QSAR for oxygen containing heterocycles as selective COX-2 inhibitors. Pp. 255–271 in *Recent Trends on QSAR in the Pharmaceutical Perceptions*, M.T.H. Khan (ed.) (doi: 10.2174/978160805379711201010255).
7. V. Prabhawathy, P.M. Sivakumar and M. Doble (2012) Biological synthesis of silver nanoparticles and their functional properties. Pp. 162–179 in *Nanoscience and Advancing Computational Methods in Chemistry*, E.D. Castro (ed.) (doi: 10.4018/978-1-4666-1607-3).

Sophisticated Instruments in Department of Biotechnology



X ray Diffractometer: Can be used to determine the 3 D crystal structure of proteins and biomolecules. Useful tool in Proteomics



LC-MS: Liquid chromatograph cum Mass spectrometer. Can be used to separate various components in a mixture of proteins, biomolecules, polymers, phytochemicals or small molecules and then determine the molecular weight of individual components



CD (Circular dichroism) Spectrometer: Used for estimation of protein and nucleic acid conformation (secondary and tertiary structure). Determination of conformational changes due to the interactions of molecule with the protein

4.4. DEPARTMENT OF CHEMICAL ENGINEERING

4.4.1. Introduction

The Department of Chemical Engineering was established in 1959. The Department has 28 faculty members who carry out research in state-of-the-art areas. The focus of the research is geared towards 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	CH5012	Modelling and Simulation of Particulate Processes
2	CH5013	Principles of Fuel Cells
3	CH5014	Interfacial Science and Engineering

Students on roll

Programme	I year	II Year	III Year	IV Year	V Year and Others	Total
B.Tech.	71	69	75	57	6	278
Dual Degree	16	18	20	19	17	90
M.Tech.	32	29	1	0	0	62
M.S.	7	21	7	4	1	40
Ph.D.	13	26	16	5	12	72
Total	139	163	119	85	36	542

Names of students/scholars who attended conferences/workshops/seminars and 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
Abroad					
1	M. Sudhakar	CH08D013	11th International Symposium on Process Systems Engineering	9 July 2012, Singapore	IIT Madras
2	K. Sivagami	CH08D015	International AOP Conference 2012	7–9 May 2012, Goslar, Germany	IIT Madras
			International Symposium on Advanced Control of Chemical Processes	10–13 July 2012, Singapore	–
3	Nabil M.	CH09D004	11th International Symposium on Process Systems Engineering	15–19 July 2012, Singapore	IIT Madras
4	Gokul Siva Sankar G.	CH10S012	11th International Symposium on Process Systems Engineering	5–19 July 2012, Singapore	IIT Madras
5	Dugyala Venkateswar Rao	CH11D015	16th International Congress of Rheology	5–12 August 2012, Portugal	IIT Madras
6	Anjali T.G.	CH11D018	16th International Congress of Rheology	5–12 August 2012, Portugal	IIT Madras
7	Sreenita Bhattacharya	CH11S008	International Conference CCECP 2013	25–26 December 2012, Singapore	IIT Madras
India					
1	K. Goutham	CH11M011	SERC School on Molecular Simulations	28 December 2012–2 January 2013, Kanpur	Organizers
2	M. Sudhakar	CH08D013	International Workshop on Mathematics in Chemical Kinetics and Engineering (MaCKiE 2013)	4-6 February 2013, IIT Madras	IIT Madras

3	G. Keerthiga	CH09D007	10th International Oil and Gas Conference and Exhibition (Petrotech-2012)	14–17 October 2012, New Delhi	IIT Madras
			National Symposium on Electrochemical Science and Technology (NSEST-12)	24–25 August 2012, IISc, Bangalore	–
4	K.S. Rajamohan	CH10D003	4th International Conference on Advanced Nanomaterials – ANM 2012	17–19 October 2012, IIT Madras	IIT Madras
5	C.N. Pratheeba	CH10D015	International Workshop on Mathematics in Chemical Kinetics and Engineering (MaCKiE 2013)	4–6 February 2013, IIT Madras	IIT Madras
			Symposium on International Automotive Technology (SIAT-2013)	9–12 January 2013, Pune	IIT Madras
6	Dipin S. Pillai	CH10D017	International Workshop on Mathematics in Chemical Kinetics and Engineering (MaCKiE 2013)	4–6 February 2013, IIT Madras	–
7	Harikrishna Reddy B.	CH10S013	Chemference'12	10–12 December 2012, IIT Bombay and ICT, Mumbai	IIT Madras
			International Workshop on Mathematics in Chemical Kinetics and Engineering (MaCKiE 2013)	4–6 February 2013, IIT Madras	IIT Madras
8	R. Piramuthu Raja Ashok	CH11D007	4th International Conference on Advanced Nanomaterials – ANM 2012	17–19 October 2012, IIT Madras	IIT Madras
9	Abhishankar Kumar	CH11D016	Chemference'12	10–11 December 2012, IIT Bombay and ICT, Mumbai	IIT Madras
10	Basavaraja R.J.	CH11D019	International Workshop on Mathematics in Chemical Kinetics and Engineering (MaCKiE 2013)	4–6 February 2013, IIT Madras	IIT Madras
11	Beula C.	CH11D020	International Workshop on Mathematics in Chemical Kinetics and Engineering (MaCKiE 2013)	4–6 February 2013, IIT Madras	IIT Madras
12	Fathima Fasmin	CH11D024	Fifth ISEAC Triennial International Conference on Advances and Recent Trends in Electrochemistry	16–20 January 2013, Hyderabad	IIT Madras
13	Jason Ryan Picardo	CH11D026	International Workshop on Mathematics in Chemical Kinetics and Engineering (MaCKiE 2013)	4–6 February, 2013, IIT Madras	–
14	Amala M. Mathai	CH11M002	International Workshop on Mathematics in Chemical Kinetics and Engineering (MaCKiE 2013)	4–6 February, 2013, IIT Madras	–
15	Fazil A.	CH11M007	Chemference'12	10-11 December 2012, IIT Bombay and ICT, Mumbai	IIT Madras
			Indo-US Workshop on Electrocatalytic Materials for Fuel Cells and Biofuel Cells	26–28 February 2013, BHU, Varanasi	IIT Madras
16	Abhilash J. Kottiyatil	CH11M016	Indo-US workshop on Electrocatalytic Materials for Fuel and Biofuel Cells	26–28 February 2013, BHU, Varanasi	IIT Madras
17	Danny Raj M.	CH11S013	International Workshop on Mathematics in Chemical Kinetics and Engineering (MaCKiE 2013)	4–6 February, 2013, IIT Madras	IIT Madras
18	Dhanya Ram V.	CH12D002	International Workshop on Mathematics in Chemical Kinetics and Engineering (MaCKiE 2013)	4–6 February, 2013, IIT Madras	IIT Madras

19	R. Savitha	CH12D004	4th International Conference on Advanced Nano Materials	17–19 October 2012, IIT Madras	–
20	Simi Santosh	CH12D006	International Workshop on Mathematics in Chemical Kinetics and Engineering (MaCKiE 2013)	4–6 February, 2013, IIT Madras	IIT Madras
21	M. Volga	CH12D019	Indo-US Workshop on Electrocatalytic Materials for Fuel Cells and Biofuel Cells	26–28 February 2013, BHU, Varanasi	IIT Madras
22	G. Sri Bala	CH12S012	International Workshop on Mathematics in Chemical Kinetics and Engineering (MaCKiE 2013)	4–6 February, 2013, IIT Madras	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	K. Ram Satish	CH06D009	Best Ph.D. thesis and research award in chemical engineering	Dr. A.V. Rama Rao Foundation
2	M. Sudhakar	CH08D013	Best student poster award	11th International Symposium on Process Systems Engineering, Singapore
			Best paper award	IISc, Bangalore
3	G. Keerthiga	CH09D007	Best digital presentation	Ministry of Petroleum & Natural Gas, GoI, New Delhi
4	Arun Srikanth S.	CH09S001	Best thesis award	ISTE-IPCL
5	K.S. Rajamohan	CH10D003	Best poster award	IIT Madras
6	Abhishankar Kumar	CH11D016	Best poster presentation	IIT Bombay
7	Amala M. Mathai	CH11M002	poster award	IIT Madras
8	Fazil A.	CH11M007	Best poster award	BHU, Varanasi
9	S. Sriram	CH11S029	Best poster presentation	IIT Bombay

Names of students/scholars who won institute convocation prizes

Sl. No.	Name of the Student/Scholar	Roll No.	Name of Prize
1	Thimmineni Ravikeerthi	CH07B056	B. Ravichandran Memorial Prize
2	Rohit Kannan	CH08B036	Reliance Heat Transfer Pvt. Ltd. Prize
3	Sreekanth Rajagopalan	CH08B042	C.A. Sastry Endowment Prize
4	Arun Srikanth S., Arun K.	CH09S001 CH10M003	Bhagyalakshmi and Krishna Ayengar Award for the best M.Tech. thesis at the 49th convocation
5	Maharshi Maitra	CH10M017	Dr. K. Subba Raju Memorial Prize

4.4.3. Faculty and Their Activities

Faculty

Name and Qualifications	Major Areas of Specialization
Professors	
Dr. P.S.T. Sai [Head]	Chemical reactor analysis and design
Dr. Abhijit Deshpande	Rheology of complex fluids, polymers and polymeric composites, processing flow visualization
Dr. A. R. Balakrishnan	Boiling of multicomponent mixtures, flow boiling heat transfer in conventional and mini/microchannels, thermodynamics of azeotropic mixtures
Dr. M. Chidambaram	Process control
Dr. A. Kannan	Mathematical modeling, simulation and optimization of chemical processes
Dr. K. Krishnaiah	Chemical reactor analysis and design fluidization

Dr. R. Nagarajan	Particle science and technology, ultrasonic processing, statistical quality control
Dr. T. Panda	Bioprocess optimization, bioprocess technology and enzyme design
Dr. S. Pushpavanam	Modeling and simulation, nonlinear dynamics, flow visualization
Dr. Raghunathan Rengasamy	Process systems engineering, fuel cells, computational discrete microfluidics
Dr. R. Ravi	Applied statistical mechanics, foundations of thermodynamics and mechanics, process dynamics and control
Dr. Shankar Narasimhan	Process design, data mining, fault diagnosis
Dr. Sreenivas Jayanti	Fuel cells, combustion, energy systems
Dr. T. Swaminathan	Environmental management, biotechnology, membrane technology, environmental risk assessment
Dr. Tanmay Basak	Microware application, mathematical modeling and simulation
Associate Professors	
Dr. Arun K. Tangirala	Process systems engineering; control, identification and monitoring; applied signal processing
Dr. Preeti Aghalayam	Chemical reaction engineering
Dr. S. Ramanathan	Electrochemistry, chemical mechanical planarization for semiconductor processing
Dr. Susy Varughese	Physics and mechanics of polymeric materials, polymeric nano composites
Dr. Upendra Natarajan	Polymer science and engineering; molecular simulation; statistical thermodynamics of complex fluids; nanostructured hybrid composite materials
Assistant Professors	
Dr. M.G. Basavaraja	Directed assembly of colloids; microstructure and rheology of colloids, surfactants, polymers and their mixtures; interfacial rheology; ionic liquids; particulate gels
Dr. Ethayaraja Mani	Molecular simulations, self-assembly, mathematical modeling
Dr. Raghuram Chetty	Electrocatalysis, fuel cells, wastewater treatment
Dr. R. Ramnarayanan	Structural models for solids, high-resolution spectroscopy and microscopy, industrial catalysts
Dr. R. Ravikrishna	Contaminated sediment remediation, contaminant fate and transport, air pollution process and control
Dr. T. Renganathan	Multiphase reactors, computational fluid dynamics
Dr. Sridharakumar Narasimhan	Process system engineering, optimization, process control, fault diagnosis
Dr. R. Vinu	Thermo-catalytic conversion of biomass to useful intermediates, photocatalysis for environmental decontamination, microkinetic modelling of complex reactions
Adjunct Professors	
Dr. Niket S. Kaisare	Micoreactor technology, multiscale modeling, process control, fuel processing, fuel cells
Hosted Fellows	
Dr. K. Vijaya Raghavan	Environmental biotechnology, water quality and wastewater treatment
Guest Faculty	
Dr. K.S. Ravindran	Technology development and transfer to manufacturing, materials and thin-film technologies, quality management systems

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

Sl. No.	Coordinator(s)	Title	Period
Short-term courses			
1	Arun K. Tangirala	System Identification: Tutorial Overview & Emerging Trends	20–21 June 2012
2	S. Ramanathan, S. Rini Raghavan	Electrochemical kinetics and Thermodynamics — Principles with Applications	11–13 April 2013
3	T. RenganathanKannan	Applications of Process Simulators in Chemical Engineering	26–30 November 2012

Conferences

1	Ethayaraja Mani, Pijush Gosh	Applications of Molecular Simulations in Research & Industry Department of Applied Mechanics	14–18 January 2013
2	S. Pushpavanam	Mathematics in Chemical Kinetics and Engineering Indo-European Food for Health Conference	4–6 February 2013 10–12 February 2013

Workshops

1	Arun K. Tangirala	Transform Techniques for Signal & Image Processing, at PSR College, Sivakasi Linear Systems Theory & System Identification, at TUM, Munich, Germany Safety in Process Industry, sponsored by the Department of Chemicals and Petrochemicals, Ministry of Chemicals and Fertilizers, New Delhi	14–15 June 2012 15–16 May 2012 7–9 November 2012
2	Raghuram Chetty	Technology Appreciation Programme (TAP) on fuel cells, ChemClave 2013	21 December 2012 March 15–17 2013
3	Ethayaraja Mani	Application of Molecular Simulations in Research & Industry	January 14–18 2013

Short-term courses

1	T. Renganathan, Kannan A.	Applications of Process Simulators	26–30 November 2012
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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
Workshops				
1	Sreenivas Jayanti	Coal to Energy for Sustainable Development	NTPC and DST, New Delhi	10–11 January 2013
Symposia				
1	R. Nagarajan	8th International Symposium on Cavitations	NUS, Singapore	14–16 August 2012
2	S. Shankar Narasimhan	11th International Symposium on Process Systems Engineering PSE 2012	Singapore	15–29 July 2012
3	Arun Tangirala	Advanced Control of Chemical Processes (ADCHEM 2012)	Singapore	7–13 July 2012
4	Preeti Aghalayam	Chemical Reaction Engineering (ISCRE)	Maastricht, the Netherlands	2–5 September 2012
5	Raghuram Chetty	Severe Accident Analysis and Management (SAAM-2013) Symposium	Department of Chemical Engineering, IIT Kanpur	1–3 February 2013
Conferences				
1	Arun K. Tangirala	AICHe 2012 ADCHEM 2012	AICHe IFAC	2–7 November 2012 10–13 July 2012
2	S. Pushpavanam	Second Indo-German Workshop on Advances in Reaction and Separation Processes 2012 AICHe Annual Meeting	Bad Herrenalb, Germany Pittsburgh, PA	20–22 February 2012 28 October–2 November 2012
3	T. Swaminathan	International Conference on Sustainable Built Environment'12 Conference	Kandy, Srilanka	14–16 December 2012
4	Sreenivas Jayanti	Opportunities and Challenges in Underground Coal Gasification	Chandigarh, India	11–12 February 2012

5	S. Ramanathan	ECS Fall 2012 Conference	Electrochemical Society (ECS), USA	7–11 May 2012
6	Sridharakumar Narasimhan	IFAC Symposium on System Identification	Brussels, Belgium	11–13 July 2012

Special lectures delivered by faculty in other institutions

Sl. No.	Name of Faculty	Topic of Lecture	Institution	Date
1	Abhijit P. Deshpande	Rheology of Networked Systems: Large-Amplitude Oscillatory Shear	IISc, Bangalore	31 January 2013
		Clean Process Technologies: Reactive Distillation — An Exciting Process Intensification Tool	GMR Institute of Technology, A.P.	4 April 2012
		Concentration of Industrial Effluents Using Natural Evaporators	GMR Institute of Technology, A.P.	4 April 2012
2	Kannan A.	Faculty Development Programme (Heat Transfer): Analysis and Application of Natural Convective Systems	A.C. College of Technology, Anna University, Chennai	4 June 2012
		Aspen Plus Workshop (ALCHEMY)	National Institute of Technology, Trichy	8 March 2013
		Process Intensification	8th International Symposium on Cavitation, Singapore	13–16 August 2012
		Project presentation to GM, BHEL R&D	IITM Research Park, Chennai	13 October 2012
		Project presentation	Pan-IIT Alumni Meet, Kolkata	7–9 December 2012
3	Nagarajan R.	Project presentation	Delhi Alumni Chapter Meet, New Delhi	20 January 2013
		Erosion, Fouling and Slagging	CRRID, Chandigarh	11–12 February 2013
4	T. Panda	Recent Trends in Advanced Fermentation Technology	Department of Biotechnology, Vel Tech High Tech, Chennai	14 March 2013
		Core Annular Flow in a Gently Curved Channel	University of Houston	5 November 2012
		Applications of Nonlinear Dynamics in Chemical Engineering	IIT Madras	28 November 2012
5	Pushpavanam S.	Applications of Nonlinear Dynamics in Chemical Engineering	Gayathri Vidhya Parishad College, Vishakapatnam	13 November 2012
		Transport Processes in Microfluidics	Department of Mechanical Engineering, IIT Madras	17 January 2013
		An Overview of Fuel Cell Technology	Department of Chemical Engineering, Government Engineering College, Thrissur, Kerala	8 March 2013
6	Raghuram Chetty	An Introduction to Electrochemical Techniques	Department of Chemistry, College of Engineering, Anna University, Chennai	17 December 2012
7	Ramanathan S.	Nonlinear Electrochemical Impedance Spectroscopy	Clarkson University, USA	14 May 2012
		Effect of Abrasives in STI CMP	Hanyang University, Korea	10 October 2012
		Quantification of Interactions in Multiloop Control Systems Using Directed Spectral Decomposition	Tsinghua University, Beijing, China	19 June 2012

8	Arun K. Tangirala	Data-Driven Causality Measures for Linear Multivariate Processes	Tsinghua University, Beijing, China	18 June 2012
		On Causality Measures in Linear Multivariate Processes	Technical University of Munich, Munich, Germany	25 May 2012
9	Ravi R.	A Flowsheet for the History of Classical Thermodynamics	Sri Venkateswara University, Tirupati	10 December 2012
10	Renganathan T.	Application of Microsoft Excel for Numerical Methods in Chemical Engineering	Government Engineering College, Thrissur	10–11 September 2012
11	Sreenivas Jayanti	(1) Oxyfuel Combustion in the Context of Carbon Capture and Sequestration (2) Chemical Looping Combustion in the Context of Carbon Capture and Sequestration	NTPC & DST, New Delhi	10–11 January 2013
		Kinetic Monte Carlo to Unravel Reaction Pathways in Complex Systems, given in STTP on Applications of Molecular Simulation in Research and Industry	IIT Madras	18 January 2013
12	Vinu R.	Characterization of Polymer Degradation by Experiments and Kinetic Models, given in One-Day National Seminar on Modern Techniques for the Characterization of Polymeric Materials	Vellore Institute of Technology, Chennai	2 March 2013

Visits abroad by faculty

Sl. No.	Name of Faculty	Country Visited	Date	Purpose of Visit	Funding
1	R. Nagarajan	Singapore	6–8 April 2012	Pan-IIT APAC 2012	Project funds
		USA—Orlando, Florida	30 April to 3 May 2012	IEST 58th Annual Technical Meeting	CPDA, IIT Madras
		USA—Yale University Graduate School Alumni Association and the Department of Chemical Engineering	14–15 May 2012	Discussion regarding research collaboration	CPDA
			30–31 May 2012	Visit to other universities	Not from IIT Madras
		Japan—Kyushu University	24–27 January 2013	Programme launch	Kyushu University
		Singapore—NUS	14 August 2012	Talk, Ultrasonic Process Intensification	IIT Madras
		USA	10–21 June 2012	Alumni visit, academic collaborations, industrial relations and entrepreneurial ventures	Project funds
2	S. Pushpavanam	USA—Pittsburgh, Houston	28 October 2012	Conference, lecture	IIT Madras
		Germany	20 February 2012	Conference	Project
		USA	1 August 2012 to present	Sabbatical	University of Delaware
		China	17–24 June 2012	Special lectures, visiting fellow	Tsinghua University, China
3	Arun K. Tangirala	Munich	13–28 May 2012	Research collaborations, workshop, TUM-IAS Visiting Fellow	Institute of Advanced Studies, TUM, Germany
4	Preeti Aghalayam	The Netherlands	21–22 May 2012	Consortium progress meeting for project	Project funds

5	S. Ramanathan	South Korea	9–12 October 2012	Project discussion meeting	DST
		USA	6–11 May 2012	Conference presentation	CPDA
		USA	11 June to 5 July 2012	Sabbatical	EUFP7
6	R. Ramnarayanan	Spain	28 May to 1 June 2012	Conference, Nanoformulation 2012	EUFP7
		The Netherlands	21–22 May 2012	Consortium progress meeting for project	Project funds
7	Sreenivas Jayanti	Germany—Munich	26–27 June 2012	To attend International Flow Battery Forum 2012	IIT Madras
8	Sridharakumar Narasimhan	Belgium—Brussels,	11–17 July 2012	IFAC symposium on system identification	CPDA
		Belgium—Ghent	9 July 2012	Talk and research discussions	Not from IIT Madras
		Norway—NTNU, Trondheim	11 June to 7 July 2012	Research interaction	Partial funding from NTNU
9	Susy Varughese	USA—California	19–21 September 2012	ASME Conference on Smart Materials, Adaptive Structures & Intelligent Systems (SMASIS-2012)	IIT Madras

Honours and awards obtained by faculty

Sl. No.	Name of Faculty Member	Name of Award	Awarded by	Awarded for	Date of Award
Awards					
1	Raghuram Chetty	Bhagyalakshmi and Krishna Ayengar Award	IIT Madras	For having guided best M.Tech. project work	9 April 2013
		Top cited article certificate	Elsevier	Received for an article published during 2009-2010 in <i>Electrochimica Acta</i>	August 2012
Honours					
1	Shankar Narasimhan	Fellow of the INAE	Council of INAE	Elected for distinguished contribution to engineering	January 2013

Books authored/co-authored

Sl. No.	Name of Faculty Member	Title	Publisher	Co-author/Author
Books				
1	T. Panda	<i>Handbook of Food Process Design</i>	Wiley Blackwell	Co-author (with S. Singha)
2	S. Pushpavanam	<i>Introduction to Chemical Engineering</i>	Prentice Hall India	Author

Fellowships of academies and professional societies

Sl. No.	Name of Faculty Member	Year of Admission
AIChE		
1	A.R. Balakrishnan	1974
INAE		
1	Shankar Narasimhan	2013
2	A.R. Balakrishnan	2003
ISHMT		
1	A.R. Balakrishnan	1989
IChE		
1	A.R. Balakrishnan	1990

ISTE	1	A.R. Balakrishnan	1996
ASME	1	A.R. Balakrishnan	1992
TNASc	1	A.R. Balakrishnan	1996
IAS Visiting Fellowship, TUM, Germany	1	Arun K. Tangirala	13–27 May 2012

Journal editorial boards

Sl. No.	Name of Faculty Member	Position (Editor/Member)	Journal
1	A.R. Balakrishnan	Editor	<i>International Journal of Heat and Mass Transfer</i> , published by Pergamon Press (Elsevier Science)
		Editor	<i>International Communications in Heat and Mass Transfer</i> , published by Pergamon Press (Elsevier Science)
		Editor	<i>Journal of Energy, Heat and Mass Transfer</i> , published by the Regional Centre for Energy, Heat and Mass Transfer
2	Shankar Narasimhan	Member	<i>ICE, Advances in Chemical Engineering</i>
3	Tanmay Basak	Associate Editor	<i>International Journal of Heat and Mass Transfer</i> and <i>International Communications in Heat and Mass Transfer</i>
4	Raghuram Chetty	Member	<i>Nano Hybrids</i>

4.4.4. Design and Development Activities

New facilities added or major equipment procured

Sl. No.	Name of Equipment	Value (lakhs of Rs.)
1	Zeta potential measurement unit	9.6
2	Aspen Plus Process Simulation university license (150 users)	3.3
3	Single shot micropyrolyzer	18.0
4	Syringe pumps (Harvard)	5.0
5	Microchannel chips and fittings(Micronit)	8.0
6	Computers (5 nos.)	4.0

Patents filed

Sl. No.	Name of Faculty Member	Title of Patent
1	Raghuram Chetty	‘A Method of Preparing Palladium Dendrites on Carbon Paper’, Indian Patent Application 5188/CHE/2012
		‘A Method of Preparing Palladium Dendrites on Carbon Nanotubes’, Indian Patent Application 4807/CHE/2012
		‘A Method of Preparing Palladium Dendrite’, Indian Patent Application 3632/CHE/2012

4.4.5. Research and Consultancy

Sponsored research projects

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of Rs.)	Co-ordinators
1	Controlled drop spreading and squeeze flow analysis for improved permeability description in composite process simulation	February 2012 to January 2015	ARDB	16.96	Abhijit P. Deshpande

2	Adhesive joining technology	October 2012 to October 2014	TDB	146	G.D. Janaki Ram, Srinivasa Rao Bakshi MM, Abhijit P. Deshpande CH
3	Megasonic cleaning	October 2009 to October 2013	Crest Ultrasonics Corporation, USA	6.7	R. Nagarajan
4	Optimization of thermal shock wave damage during selective tissue cell removal using pulse shaping	February 2012 to February 2013	DST (Indo-South African)	11.01	Sarit Kumar Das, T. Panda, Franz-Josefkaglen (S. Africa)
5	Study of cell migration under thermal and chemical gradients using microfluids based BIO-MEMS	September 2010 to September 2013	DBT	65.00	Sarit Kumar Das, T. Panda, Amitava Das Gupta, Nandita Das Gupta
6	Understanding mass transfer and reactions in microchannels	2011–2013	CSIR	12	S. Pushpavanam
7	Elucidation of physio-chemical mechanisms in absorption of carbon dioxide using microchannels for optimal design of absorption systems	2012–2015	Department of Science and Technology (DST)	62	S. Pushpavanam
8	Stratification studies in the event of a core disruptive accident	2010–2013	Indira Gandhi Centre for Atomic Research	22	S. Pushpavanam, T. Sundarajan ME
9	Liquid jet instabilities	2012–2013	Department of Atomic Energy	3.8	S. Pushpavanam
10	Buckling control of cylindrical and conical shells for aerospace applications using PZT actuators	September 2010 to September 2013	ISRO	29.48	Prof. C. Lakshmana Rao, Dr. Arun K. Tangirala
11	Experiments and modeling for system-wide control of biodiesel engines and after treatment systems	2 years	DST	36.73	Preeti Aghalayam CH, Niket Kaisare
12	Characterization and modification of ceria particles for STI CMP	2011–2014	DST	31 (+ 40 million Korean Wong)	R. Ramanathan, Tanmay Basak, Jin Goo Park (Korean PI)
13	Electrochemical deposition of Se for CIGS solar cell formation	2013–2016	DST-SERI	100 (project sanctioned but exact funding not announced yet)	S. Ramanathan, Kasi Viswanathan
14	Self-assembly of patchy colloids: A route to advanced functional materials	3 years	DST	55.00	Ethayaraja Mani
15	A nanocomposite material for high-power lithium battery cathodes	2012–2015	DST, Government of India (under Indo-Australian Strategic Research Fund)	35.15	Raghuram Chetty, P. Selvam CY
16	Electrochemical and corrosion behavior of 216L stainless steel as a potential alternative to 316L SS bipolar plates in fuel cell applications	2012–2014	Renault Nissan Technology & Business Centre India Private Limited	9.75	Raghuram Chetty, N. Lakshman MM
17	Titanium compounds of interest in electrochemical titanium production	March 2009 to November 2012 (extension in progress)	Defence Research and Development Organization, India	10.39	
18	Integrating nanomaterials in formulations	July 2009 to June 2012	European Union Framework Program 7	20.7	Ramnarayanan R.

19	Proof-of-principle solar energy fuel storage cells	June 2012 to June 2014 proposed	Nissan (not supported)	8.6 (not supported)	
20	The changing risks posed by petroleum hydrocarbons in groundwater environments: Multiphase fluid dynamics coupled to multispecies biodegradation	September 2011 to August 2014	DST/DIISR (Indo-Australian Joint Research Program)	39.26	Indu Nambi CE, R. Ravikrishna CH, G. Suresh Kumar OE
21	Evaluation of strategies for the environmental restoration of Pallikaranai Marsh	January 2013 to March 2014	Department of Forestry, Government of Tamil Nadu	5.00	Indu Nambi CE, R. Ravikrishna CE, T. Swaminathan CH
22	Green roofs: An extensive study to assess the role of substrate, plants and soil microbes to improve runoff quality	5 years	DBT, Government of India	74.50	K. Vijayaraghavan
23	SANS investigation of sponge-to-lamellar transition in surfactant-protic ionic liquid mixture	1 year	UGC-DAE CSR*	0.35	Basavaraj M. Gurappa CH
24	Modelling accelerated ageing and degradation of solid oxide fuel cells (MAAD-SOFC)	3 years	DST (Indo-UK)	63.27	Ranjit Bauri MM,, Sreenivas Jayanti CH
25	Rheology and microstructure of cellulose-ionic liquid mixtures	3 years	Board of Research in Nuclear Sciences	32.75	Basavaraja M Gurappa, Abhijit P. Deshpande
26	Fundamentals of catalytic fast pyrolysis of biomass to biofuels and intermediates using a micro-pyrolysis reactor	July 2012 to June 2015	IIT Madras Seed Grant	20	R. Vinu
27	Fundamentals of co-processing of biomass residues with waste polymers via fast pyrolysis for biofuels production and resource recovery	January 2013 to December 2015	DST	52.0	R. Vinu and S. Ramanathan

Industrial consultancy projects

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of Rs.)
1	Kannan A.	Performance Guarantee Testing of Induced Draught Concrete Cross Flow Cooling Tower at Rashtriya Ispat Nigam Ltd. Vishakapatnam, A.P.	Hamon Shriram Cottrell Private Ltd.	2.2
2	S. Pushpavanam	Dynamic Simulation of a Pilot Plant Fluidized Bed Gasifier	Bharat Heavy Electricals Limited (BHEL)	17
3	Sreenivas Jayanti	Prediction of the Upper and the Lower Furnace Temperature for High-Ash Coals	BHEL, Tiruchirapalli	20.0

RBIC projects

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of Rs.)
1	R. Nagarajan	Spray Drying Slagging Fouling Zinc Oxide	Hindustan Unilever Ltd. BHEL, Trichy Coromandel Fertilizers	6.6 22.9 23.0
2	S. Pushpavanam	Mathematical Modeling of a Fluidized Bed Gasifier for a Mixture of Indian Coal and Petcoke	Bharat Petroleum Corporation Ltd. (BPCL) and Centre for High Technology	50
3	S. Pushpavanam, A. Kannan	Characterising Tea Extraction in a Vending Machine: An Analysis of Different Protocols	Tata Global Beverages	16

4	S. Pushpavanam, T. Renganathan	Modelling and Optimization of Plasma Enhanced Coal Gasification	Korean Institute of Science and Technology	60
5	Arun K. Tangirala (PI: Krishnan Balasubramanian)	Development of Integrated Software Package for Data Analysis and Interpretations of Inspection Data of Long-Distance Pipelines Using Instrumented and Caliper Pigs of Various Sizes	IOC	59.32
6	Arun K. Tangirala (PIs: T. Renganathan, S. Pushpavanam)	Dynamic Modelling of Fluidized Bed Gasifier	BHEL	17.21
7	Susy Varughese, Abhijit P. Deshpande	Preparation and Characterization of PVA-Based Membranes for Selective Carbon Dioxide Separation	Bloom Energy	16.2
8	T.Renganathan	Development of Simulators and Optimizer for PE-IGCC Process 3 May 2010 to 31 December 2012	Korea Institute of Science and Technology	59.1
9	S. Pushpavanam	Dynamic Modeling of a Fluidized Bed Gasifier 1 October 2011 to 31 March 2013	Bharat Heavy Electricals Limited	17.2

Research publications

Total number of papers published in refereed national journals: 3

Total number of papers published in refereed international journals: 83

Total number of papers presented at national conferences: 3

Total number of papers presented at international conferences: 34

Total number of chapters in books: 1

(a) Refereed national journals

1. M. Chidambaram (2012) Identification of five parameters of a SOPTD model by relay tuning. *Indian Chemical Engineer* 54: 79–96.
2. P.S.T. Sai (2012) Numerical studies on average solids holdup in a liquid–solid circulating fluidized bed riser. *Indian Chemical Engineer* 54(2): 97–112.
3. R. Vinu (2013) Renewable energy via photocatalysis. *Current Organic Chemistry* (in press).

(b) Refereed international journals

1. A.P. Deshpande and S. Varughese (2013) Effect of PES on the morphology and properties of proton conducting blends with sulfonated poly(ether ether ketone) *Journal of Applied Polymer Science* 127(6): 5100–5110.
2. A.P. Deshpande and S. Varughese (2013) Novel polymer electrolyte membranes based on semi-interpenetrating blends of poly(vinyl alcohol) and sulfonated poly(ether ether ketone) *Journal of Applied Polymer Science* 127(3): 2140–2151.
3. A.P. Deshpande (2012) Nonlinear viscoelastic response of asphalt binders: An experimental study of the relaxation of torque and normal force in torsion. *Material Research Communications* 43: 66–74.
4. A.P. Deshpande (2012) Nonlinear viscoelastic response of asphalt binders in transient tests. *Road Materials & Pavement Design* 13(1): 191–202.
5. A.R. Balakrishnan (2013) Effect of inorganic salts on the isobaric vapor–liquid equilibrium of the ethyl acetate–ethanol system. *Journal of Chemical and Engineering Data* 58: 560–569.
6. A.R. Balakrishnan (2012) Entropy generation during natural convection in porous cavity: Effects of thermal boundary conditions. *Numerical Heat Transfer, Part A: Applications* 62: 336–364.
7. M. Chidambaram (2012) Closed loop Identification of multivariable systems by optimization method. *Industrial & Engineering Chemistry Research* 51: 1324–1336.
8. M. Chidambaram (2012) Centralized PI controllers for interacting multivariable processes by synthesis method. *ISA Transactions* 51: 400–409.
9. M. Chidambaram (2012) Closed loop identification of SOPTD models multivariable systems by optimization method. *Industrial & Engineering Chemistry Research* 51: 9620–9633.
10. M. Chidambaram (2012) An improved relay auto tuning of PID controllers for critically damped SOPTD systems. *Chemical Engineering Communication* 199: 1437–1462.

11. M. Chidambaram (2012) Controller design for MIMO processes based on simplified decoupled ETFs and simplified decoupler. *Industrial & Engineering Chemistry Research* 51: 12398–12410.
12. A. Kannan (2013) Performance evaluation of a solar and wind aided cross-flow evaporator for RO reject management. *Desalination* 317: 1–10.
13. A. Kannan (2013) Simulation of non-Newtonian fluid–food particle heat transfer in the holding tube used in aseptic processing operations. *Food and Bioproducts Processing* 91(2): 129–148.
14. A. Kannan (2011) Effects of particle diameter and position on hydrodynamics around a confined sphere. *Industrial & Engineering Chemistry Research* dx.doi.org/10.1021/ie2000852.
15. R. Nagarajan and B.V.S.S.S. Prasad (May 2012) Acoustic enhancement of heat transfer in furnace tubes. *Chemical Engineering and Processing: Process Intensification* 59: 36–42.
16. R. Nagarajan (2013) Fouling intensity of three Indian coals. *Coal Combustion and Gasification Products (CCGP)* (ISSN 1946-0198).
17. R. Nagarajan (2013) Megasonic cleaning to remove nano-dimensional contaminants from wafer surfaces: An analytical study. *Solid State Phenomena* 195: 209–212.
18. T. Panda and T. Basak (2013) A simplified approach to derive Cleland model for enzymatic reactions. *Biotechnology Letters* 35: 785–789.
19. T. Panda (2012) Kinetics of biosynthesis of silver nanoparticles using *Fusarium oxysporum*. *Current Trends in Technology and Science Volume 1*: 47–52.
20. S. Pushpavanam (December 2012) Comparison of laminar and plug flow-fields on extraction performance in micro-channels. *Chemical Engineering Science* 83: 2–11.
21. S. Pushpavanam (2012) A nonlinear analysis of the effect of heat transfer on capillary jet instability. *Physics of Fluids* 24(12): 2012.
22. S. Pushpavanam (2013) On the conditional superiority of counter-current over co-current extraction in microchannels. *Microfluidics and Nanofluidics*. Published online.
23. R. Rengaswamy (2013) Droplet digital signal generation in microfluidic networks using model predictive control. *Journal of Process Control* 23(2): 32–139.
24. R. Rengaswamy (2013) Traffic of pairs of drops in microfluidic ladder networks with fore–aft structural asymmetry. *Microfluidics and Nanofluidics* 14(1–2): 337–344.
25. R. Rengaswamy (2013) Root cause analysis of linear closed-loop oscillatory chemical process systems. *Industrial & Engineering Chemistry Research* 51(42): 13712–13731.
26. R. Rengaswamy (2012) Automatic oscillation detection and characterization in closed-loop systems. *Control Engineering Practice* 20(8): 733–746.
27. R. Rengaswamy (2012) Control loop performance assessment using detrended fluctuation analysis (DFA). *Automatica* 48(7): 1359–1363.
28. R. Rengaswamy (2012) Design of model-based feedback controller for active sorting and synchronization of droplets in a micro fluidic loop. *AIChE Journal* 58(7): 2120–2130.
29. R. Rengaswamy (May 2012) Optimization Studies of a polymer electrolyte membrane fuel cell with multiple catalyst layers. *Journal of Power Sources* 206: 197–203.
30. R. Rengaswamy (2012) Modeling studies of a cylindrical polymer electrolyte membrane fuel cell cathode. *Industrial & Engineering Chemistry Research* 51(13): 5003–5010.
31. R. Rengaswamy (2012) Constrained unscented recursive estimator for nonlinear dynamic systems. *Journal of Process Control* 22(4): 718–728.
32. P.S.T. Sai and K. Krishnaiah (2012) Hydrodynamics and flow regimes in turbulent bed contractor with non-Newtonian liquids. *Canadian Journal of Chemical Engineering* 90(1): 87–92.
33. P.S.T. Sai and K. Krishnaiah (2012) Axial solids holdup distribution in a liquid–solid circulating fluidized bed: Effect of the liquid distributor, method of operation, and viscosity of the fluidizing media. *Industrial & Engineering Chemistry Research* 51(50): 16242–16250.
34. P.S.T. Sai (2013) Drying of solids in a rotary dryer. *Drying Technology* 31(2): 213–223.
35. S. Narasimhan (2012) Optimal operations of reverse osmosis plant driven by solar power without batteries. *Computer Aided Chemical Engineering* 31: 1442–1446.
36. S. Narasimhan (2012) Online model predictive control of municipal water distribution networks. *Computer Aided Chemical Engineering* 31: 1622–1626.
37. S. Narasimhan (2012) Constrained unscented recursive estimator for nonlinear dynamic systems. *Journal of Process Control* 22(4): 718–728.
38. S. Jayanti (2012) Thermal coupling studies of a high temperature proton exchange membrane fuel cell stack and a metal hydride hydrogen storage system. *Energy Procedia* 29: 254–264.

39. S. Jayanti (2012) Underground coal-air gasification based solid oxide fuel cell system. *Journal of Applied Energy* 94: 406-414.
40. S. Jayanti (December 2012) Thermal management strategies for a 1 kWe stack of a high temperature proton exchange membrane fuel cell. *Journal of Applied Thermal Engineering* 48: 465-475.
41. S. Jayanti (2012) Laboratory scale studies on simulated underground coal gasification of high ash coals for carbon-neutral power generation. *Energy* 46(1): 351-358.
42. S. Jayanti (2012) Integration of underground coal gasification with a solid oxide fuel cell system for clean coal utilization. *International Journal of Hydrogen Energy* 37(2): 1677-1688.
43. S. Jayanti (March 2012) Experimental studies of flame extinction in a swirl-stabilized oxy-fuel burner. *Fuel* 93: 75-81.
44. S. Jayanti (March 2012) Flame structure investigations of oxy-fuel combustion. *Fuel* 93: 52-58.
45. S. Jayanti (March 2012) CFD analysis of dense gas dispersion in door environment for risk assessment and risk mitigation. *Journal of Hazardous Materials* 209-210: 177-185.
46. S. Jayanti (2013) Effect of spacer grids on CHF in nuclear rod bundles. *Journal of Nuclear Engineering and Design* 261: 66-75.
47. S. Jayanti and T. Swaminathan (2012) Optimized enriched CO₂ recycle oxy-fuel combustion for high ash coals. *Fuel* 102: 32-40.
48. T. Swaminathan (2013) Statistical optimization for biological decolourisation and COD removal of screen-printing wastewater using *Trametes versicolor*. *International Journal of Environment and Waste Management* 11(3): 304, 314.
49. T. Basak (2012) Heatline analysis for natural convection within porous rhombic cavities with isothermal/nonisothermal hot bottom wall. *Industrial and Engineering Chemistry Research* 51(4): 2113-2132.
50. T. Basak (February 2012) Analysis of entropy generation minimization during natural convection in trapezoidal enclosures of various angles with linearly heated side wall(s). *Industrial Engineering and Chemical Research* 51: 4069-4089.
51. T. Basak (September 2012) Analysis of energy management via entropy generation approach during natural convection in porous rhombic enclosures. *Chemical Engineering Science* 79: 75-93.
52. T. Basak (2012) Analysis of entropy generation during natural convection in porous right-angled triangular cavities with various thermal boundary conditions. *International Journal of Heat and Mass Transfer* 55(17-18): 4521-4535.
53. T. Basak (2012) Role of entropy generation during convective thermal processing in right-angled triangular enclosures with various wall heatings. *Chemical Engineering Research and Design* 90(11): 1779-1799.
54. T. Basak (2013) On multiple steady states for natural convection (low Prandtl number fluid) within porous square enclosures: Effect of non uniformity of wall temperatures. *International Journal of Heat and Mass Transfer* 59(1): 230-246.
55. T. Basak (2013) Role of microwave heating strategies in enhancing the progress of a first-order endothermic reaction. *AiChE Journal* 59(2): 656-670.
56. T. Basak (2012) Heatline analysis on natural convection for nanofluids confined within square cavities with various thermal boundary conditions. *International Journal of Heat and Mass Transfer* 55(21-22): 5526-5543.
57. T. Basak (2012) Numerical study of mixed convection within porous square cavities using Bejan's heatlines: Effects of thermal aspect ratio and thermal boundary conditions. *International Journal of Heat and Mass Transfer*.
58. T. Basak. Heatlines based natural convection analysis in titled isosceles triangular enclosures with linearly heated inclined walls: Effect of various orientations. *International Communications in Heat and Mass Transfer*.
59. T. Basak (2012) Microwave material processing: A review. *AiChE Journal* 58(2): 330-363.
60. T. Basak (March 2013) Heatline based thermal management for natural convection in porous rhombic enclosures with isothermal hot side or bottom wall. *Energy Conversion and Management* 67: 287-296.
61. T. Basak (2012) Analysis of Bejan's heatlines on visualization of heat flow and thermal mixing in titled square cavities. *International Journal of Heat and Mass Transfer* 55(11-12): 2965-2983.
62. T. Basak (July 2012) A complete heatline analysis on mixed convection within a square cavity: Effects of thermal boundary conditions via thermal aspect ratio. *International Journal of Thermal Sciences* 57: 98-111.

63. T. Basak (2012) A pacelet number based analysis of mixed convection for lid-driven porous square cavities with various heating of bottom wall. *International Communications in Heat and Mass Transfer* 39(5): 657–664.
64. A.K. Tangirala (September 2012) Online data compression of MFL signals for pipeline inspection. *NDT & E International* 50: 1–9.
65. S. Ramanathan (2013) Characterization of TMAH based cleaning solution for post Cu-CMP application. *Microelectronic Engineering* 102: 74–80.
66. S. Ramanathan (2012) Electrochemical impedance spectroscopy (EIS) analysis of BTA removal by TMAH during post Cu CMP cleaning process. *Journal of the Electrochemical Society* 159: C447–C452.
67. U. Natarajan and R. Nagarajan (2012) Sono-synthesis of polystyrene/alumina nanocomposites. *Proceedings of the Institution of Mechanical Engineers Part N, Journal of Nanoengineering and Nanosystems* 226(4): 157–164.
68. U. Natarajan (2012) Molecular dynamics simulations of PAA–PMA copolymers in dilute aqueous solution: Chain conformations and hydration properties. *Industrial & Engineering Chemistry Research* 51(33): 10833–10839.
69. U. Natarajan (2012) Molecular thermodynamics of polymer chains confined between surfaces containing end-tethered flexible molecules. *Journal of Macromolecular Science B: Physics* 51(1): 164–183.
70. U. Natarajan (2012) Molecular simulations of the conformational properties of atactic poly(2-ethylbutyl methacrylate). *Journal of Applied Power Science* 25(2): 1586–1591.
71. U. Natarajan (2012) Thermodynamic free energy behavior of diblock copolymer chains confined between planar surfaces having end-tethered flexible polymer molecules. *Journal of Macromolecular Science B: Physics* 51(7): 1282–1302.
72. U. Natarajan (2012) Prediction of structure and energy of trans-1,4-polybutadiene glassy surfaces by atomistic simulations of free-standing ultrathin films. *Journal of Macromolecular Science B: Physics* 51(11): 2201–2221.
73. U. Natarajan (2012) Behavior of hydrogen bonding and structure of ionized poly(acyclic acid) PAA in water–ethanol mixture via molecular dynamics simulations. *Journal of Molecular Simulations* 39(2): 145–153.
74. U. Natarajan (2013) Generalised theoretical study of the effect of molecular bond optical tensor components on the mean-squared optical anisotropy $[\gamma_2]$ of model bead-spring linear homopolymer chains. *Journal of Macromolecular Science B: Physics* 52(1): 95–112.
75. R. Ravikrishna (2013) Evaporation from contaminated, exposed earthen cracks. *Environmental Engineering Science* 30(1): 23–29.
76. R. Ravikrishna (2012) Current atmospheric aerosol research in India. *Current Science* 102(3): 440–451.
77. R. Ravikrishna (2012) Atmospheric pollution in a semi-urban coastal region in India following festival seasons. *Atmospheric Environment* 47: 295–306.
78. T. Renganathan and S. Pushpavanam (2012) CO₂ utilization for gasification of carbonaceous feedstocks: A thermodynamic analysis. *Chemical Engineering Science* 83: 159–170.
79. R. Chetty (2012) Effect of pyrolysis temperature on cobalt phthalocyanine supported on carbon nanotubes for oxygen reduction reaction. *Journal of Applied Electrochemistry* 42: 945–951.
80. E. Mani (2012) Sheet-like assemblies of spherical particles with point-symmetrical patches. *Journal of Chemical Physics* 136: 144706.
81. S. Narasimhan (2012) Data reconciliation using uncertain models. *International Journal of Advances in Engineering Sciences and Applied Mathematics* 4: 3–9.
82. S. Narasimhan (November 2012) Modelling and simulation of unloading operations in petroleum product storage terminals. *Computers and Chemical Engineering* 46: 59–68.
83. S. Narasimhan (2012) Sensor location for optimal operation based on linear data reconciliation. *Industrial & Engineering Chemistry Research* 51: 6789–6797.

(c) Proceedings of national conferences

1. A.R. Balakrishnan (2012) Ionic liquids as entrainers for the separation of ethyl acetate–isopropanol. *National Conference on Recent Advances in Chemical and Environmental Engineering (RACEE)*, NIT Rourkela 20–21 January 2012.
2. R. Nagarajan (2013) Erosion, fouling and slagging: Mitigation strategies for Indian coals. CRRID, Chandigarh, 11–12 February.
3. R. Chetty (2012) Effect of supporting electrolyte on the electrochemical reduction of carbon dioxide at copper electrode. Electrochemical Society of India, IISc, Bangalore, 24–25 August.

(d) Proceedings of international conferences

1. A.R. Balakrishnan (2012) Prediction of salt effect on vapor–liquid equilibrium of methyl acetate–methanol system. *Proceedings of 2012 AIChE Spring Meeting*, Houston, Texas, USA, 1–5 April.
2. S. Pushpavanam and T. Renganathan (2012) Thermodynamic modeling of coal gasification: A universal approach. Pittsburgh, USA, 31 October.
3. R. Nagarajan (2012) Sono-synthesis and dispersion of nano-particles: Experiments & simulation. Singapore, 13–16 August.
4. R. Nagarajan (2013) Basics of nanotechnology. Orlando, Florida, USA, 30 April–3 May 2013.
5. S. Narasimhan (2012) Data reconciliation and its application in mineral processing industry. Delhi, India, 26–28 September 2012.
6. S. Jayanti (2012) A stand-alone coupled solar PV and RFB power generator system for domestic applications. Munich, Germany, 26–27 June 2012.
7. T. Swaminathan (2012) Development of an eco-friendly treatment method of e-waste. Kandy, Sri Lanka, 14–17 December.
8. A.K. Tangirala (2012) Reconstructing plant connectivity using directed spectral decomposition. International Federation of Automatic Control (IFAC), Singapore, 10–13 July.
9. A.K. Tangirala (2012) Analysis of high-throughput multiparametric flow cytometry data to identify cellular phenotypes underlying alcohol mediated aberrant differentiation of embryonic stem cells. AIChE, 2–7 November.
10. A.K. Tangirala (2012) Optimal arrangement of PZT actuators for the buckling control of cylindrical shells. ASME, 19–21 September.
11. P. Aghalayam (2012) CFD: A virtual platform for teaching concepts in non-ideal chemical reactions. Kottayam, India. 19–21 July 2012.
12. S. Ramanathan (2012) Multi-sine EIS-drift, nonlinearity and solution resistance effects. ECS, USA, 6–11 May.
13. S. Ramanathan (2013) Simulation of large amplitude multisine EIS with log spaced frequencies. ELAC 2013, January.
14. S. Varughese (2012) Electromechanical behavior of conductive polyaniline/poly (vinyl alcohol) blend films under uniaxial loading. California, USA, 19–21 September.
15. U. Natarajan (2012) Conformations, hydrogen-bonding structure and dynamics of hydrophobic polyelectrolyte poly (ethacrylic acid) in dilute aqueous solution investigated by molecular dynamics simulations. Varanasi, India, 4–9 November.
16. R. Chetty (2013) Electrodeposited platinum nanocatalysts for PEM fuel cell applications. Banaras Hindu University, Varanasi, India, 26–28 February.
17. R. Chetty (2013) Carbon xerogels as catalyst support for polymer electrolyte membrane fuel cells. Banaras Hindu University, Varanasi, India, 26–28 February.
18. R. Chetty (2013) Electrochemical reduction of nitrate at copper phthalocyanine supported on carbon nanotubes. Hyderabad, India, 16–20 January.
19. R. Chetty (2012) Ag/CNT electrocatalyst for oxygen reduction reactions in alkaline media. IIT Bombay & ICT Mumbai, India, 10–11 December.
20. R. Chetty (2012) Phthalocyanine supported functionalized carbon nanotubes for electrochemical reduction of nitrate. IIT Madras, 17–19 October.
21. R. Chetty (2012) Palladium dendrites on TiO₂ nano tubes as electrocatalyst for formic acid fuel cells. IIT Madras, 17–19 October.
22. R. Chetty (2012) Electrochemical conversion of carbon dioxide to useful chemicals. New Delhi, 14–17 October.
23. R. Chetty (2013) Carbon nanotubes supported silver catalyst for anion exchange membrane fuel cells. Banaras Hindu University, Varanasi, India, 26–28 February.
24. R. Chetty (2012) Development of non-platinum cathode catalysts for proton exchange membrane fuel cells. Merseburg, Germany 13–16 June.
25. S. Pushpavanam and T. Renganathan (2013) Dynamic simulation of fluidized bed gasifier. IIT Madras, 4–6 February.
26. S. Pushpavanam and T. Renganathan (2013) Thermodynamic and rate based models for simulation of gasifiers. IIT Madras, 4–6 February.
27. S. Narasimhan (2012) Online model predictive control of water distribution networks. Singapore, 15–19 July.

28. S. Narasimhan (2012) Optimal operation of reverse osmosis plant driven by solar power without batteries. Singapore, 15–19 July.
29. S. Narasimhan (2012) Approximate dynamic programming based control for water gas shift reactor. Singapore, 15–19 July.
30. S. Narasimhan (2012) Integrated sensor network design. Singapore, 15–19 July.
31. S. Narasimhan (2012) Economic back-off selection based on optimal multivariable controller. Singapore, 11–13 July.
32. S. Narasimhan (2012) Plant friendly input design for system identification in closed loop. Brussels, 11–13 July.
33. R. Vinu (2013) Kinetic modeling of co-pyrolysis of biomass and polymers: A thermogravimetric study. IIT Madras, 4–6 February.
34. R. Vinu (2013) Fundamental understanding of co-(fast)-pyrolysis of biomass and polymers for energy and resource recovery. IIP, Dehradun, India, October 2013.

(e) Chapters in books

1. M. Chidambaram (2012) PI and PID controller design for integrating and unstable systems. Chapter 3 in *PID Control in the Third Millennium*, R. Vilanova and A. Visioli (eds.) Springer-Verlag, London.

Distinguished visitors

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1	B.-J. Cho and H.-M. Kim	18–22 December 2012	Project discussion
2	Dr. Nitin Kaistha Professor, Department of Chemical Engineering IIT Kanpur	5 June 2012	Seminar talk
3	Dr. Rajan Dewar Harvard Medical School, USA & Dr. Swaminthan Rajendran, Sri Ramachandra University	31 July 2012	Special seminar
4	Dr. Rahul Anantharaman SINTEF Energy Research Trondheim, Norway	3 August 2012	Seminar talk
5	Dr. Prabhu R. Nott IISc, Bangalore	4 September 2012	Special seminar
6	Vaidyanathan (Ravi) Subramanian Department of Chemical Engineering College of Engineering, University of Nevada Reno, NV 89557	4 December 2012	Seminar talk
7	Raj Mutharasan Frank A. Fletcher Professor Department of Chemical and Biological Engineering Drexel University, Philadelphia, PA 19104	13 April 2012	Seminar talk
8	Dr. Sharad Gupta IIT Gandhi Nagar	5 November 2012	Special seminar
9	Dr. Swaminathan Rajendran, MD, Dip. R. C. Path., AB(AP&CP), AB(Cyto) Professor of Pathology, Sri Ramachandra University Porur, Chennai, India	31 July 2012	Seminar talk
10	Dr. Ganesh A. Viswanathan Assistant Professor Department of Chemical Engineering IIT Bombay	9 July 2012	Special seminar
11	Dr. Suhanya Duraiswamy NTU, Singapore	28 September 2012	Special seminar
12	Dr. Nirav Bhatt, Ph.D. EPFL, Switzerland	10 August 2012	Seminar talk
13	Prof. Anil Kumar IIT Bombay	25 October 2012	Special seminar

14	Dr. Anna Schreieck	29 November 2012	BASF scientists: Overview of Scientific Computing Unit, Chemical Engineering faculty
15	Danish Ambassador and Prof. Jan Ifversen, Vice-Dean of International Relations of Aarhus University	19 November 2012	Erasmus Mundus Project inauguration
16	Dr. Amit Rastogi and Mr. Deepak Ranjan, Coromandel Fertilizers, and Prof. Amitava Mukherjee, VIT	26 November 2012	Project review
17	Dr. Josef Wünsch BASF scientist	29 November 2012	Overview of BASF and BASF R&D, BASF scientist
18	Dr. Klaus-Juergen Schleifer, Professor from BASF SE, Ludwigshafen, Germany	29 November 2012	Introduced his topics (bioanalytics, bioinformatics and molecular modeling with a focus on life)
19	Dr. Ansgar Schäfer	29 November 2012	BASF scientist: Activities at Department of Quantum Chemistry
20	Dr. Ashok Krishna Ph.D. in chemical engineering, UMass, Amherst	12 April 2012	Seminar talk
21	Dr. Michael S. Wong Rice University, UK	12 September 2012	Special seminar
22	Prof. Norman J. Wagner University of Delaware	12 November 2012	Special seminar
23	Srinivasa R. Raghavan Patrick & Marguerite Sung Professor Department of Chemical & Biomolecular Engineering University of Maryland	18 December 2012	Seminar talk
24	Dr. Erwin K. Reichel Institute for Microelectronics and Microsensors, Austria	23 January 2013	Seminar talk
25	Prof. Jose Torero University of Queensland, Australia	14 February 2013	Seminar talk
26	Dr. Anand Veeraraghavan University of Queensland, Australia	14 February 2013	Seminar talk
27	Dr. C. Mohan IBM Almaden Research Center 650 Harry Road, K01/B1, San Jose, CA 95120, USA	22 February 2013	Seminar talk
28	Dr. rer. nat. Ravi Kumar Department of Metallurgical and Materials Engineering, IIT Madras	14 March 2013	Seminar talk
29	Prof. Jimack Dean of Engineering, University of Leeds, UK	14 March 2013	Seminar talk
30	Dr. Amit Rastogi Coromandel Fertilizers Ltd.	15 March 2013	Seminar talk
31	Dr. Laxmi Narasimhan, GM Novel Catalytic Materials, Bengaluru	6 February 2013	Seminar talk
32	Dr. Sabyasachi (Shobo) Bhattacharya, Former Director of TIFR	7 February 2013	Seminar talk
33	Prof. Farrokh Mistree University of Oklahoma	8 January 2013 9 January 2013	Seminar talk
34	Dr. R. Narayanan University of Florida, Gainesville	9 January 2013	Seminar talk

4.4.6. Other Activities of the Department/Centre

(a) Faculty and staff

Sl. No.	Item
1.	Sri R. Selva Ganapathy, Technical Superintendent, Chemical Engineering Department won a gold medal each in the Intuitive Bow (Seniors category—age 29 and above) and the TAAT Recurve (Seniors category) in the 5th Tamilnadu State Archery Championship.
2.	Prof. T. Swaminathan has been re-employed as Professor in the Department of Chemical Engineering with effect from 1 March 2013 to 30 June 2013.
3.	Prof. P. Sessa Talpa Sai has been nominated as the Head, Department of Chemical Engineering with effect from the forenoon of 22 October 2012 until further orders vice Prof. S. Pushavanam.
4.	Prof. R. Nagarajan, Department of Chemical Engineering, has been nominated as the Dean (Alumni Affairs & International Relations) for a period of two years with effect from 6 September 2012.
5.	Prof. Niket S. Kaisare, Principal Scientist, ABB Corporate Research Centre, Bangalore has been appointed to the post of Adjunct Professor in the Department of Chemical Engineering.

(b) Results obtained in research work from M.S. & Ph.D. theses

Sl. No.	Name of the Scholar/Faculty
1	Venkat Reddy Regatte and Niket S Kaisare: Analysis of Thermal Management in Catalytic Microreactors for Energy and Fuel Processing Applications
2	Prabu V. and Sreenivas Jayanti: Studies on Underground Coal Gasification in the Context of Clean Coal Utilization
3	Suresh K. and A. Kannan: Hydrodynamic and Heat Transfer Studies on Laminar Flow Over a Confined Sphere
4	V. Saravanan & Sreenivas Jayanti: Studies on the Combustion Characteristics of High Ash Indian Coals With a view to Retrofitting Power Plant Boilers for Operation in Oxy-Coal Combustion Mode
5	Abhijnan Sarkar & Raghuram Chetty: Synthesis and Characterization of Ruthenium-Based Catalysts Supported on Carbon Nanotubes for Oxygen Reduction Reaction
6	Anandhan M., K. Kannan and Preeti Aghalayam: A Kinetic Model for Vulcanization of Natural Rubber and Its Application to Curing of Tyres
7	Arun Srikanth S., Sridharkumar Narasimhan and Shankar Narasimhan: Modelling Simulation and Optimization of Unloading Operations in Petroleum Product Storage Terminals
8	Manoj Krishna K.N. & Raghuram Chetty: Development of Titania Based Catalyst Supports for Proton Exchange Membrane Fuel Cells
9	N.S. Pradeep Muramulla and K. Krishnaiah: Hydrodynamic Studies in 3-Phase Inverse Fluidized Bed: Pressure Drop Bed Expansion and Phase Holdups
10	Sangram Roy and P.S.T. Sai: Three-Dimensional Simulations of Hydrodynamics of a Liquid–Solid Circulating Fluidized Bed
11	Sarvani Kuchibhotla and P.S.T. Sai: Enhancement of Esterification Reaction Between Ethanol and Sulphuric Acid Using Ionic Liquids

(c) International collaboration achievements by the department

1. Faculty visits

Sl. No.	Name of the Faculty Member	Purpose of Visit	Date and Venue
1	S. Ramanathan	Project discussion	8–12 October 2012, Korea
2	Srini Raghavan	Chevron Chair	April 2012

2. Student visits

Sl. No.	Name of the Students	Purpose of Visit	Date and Venue
1	Byoung-Jun Cho and Hyuk-Min Kim of Hanyang University, Korea	Project discussion	18–20 December 2012, IIT Madras



This micro pilot plant equipment is designed and fabricated in Chemical engineering Department. It is used to obtain hydrodynamic information which is required for the design of large scale commercial plants.

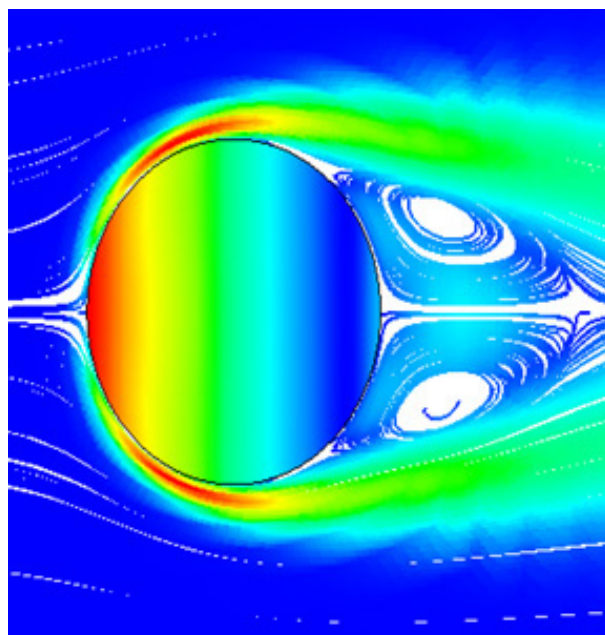
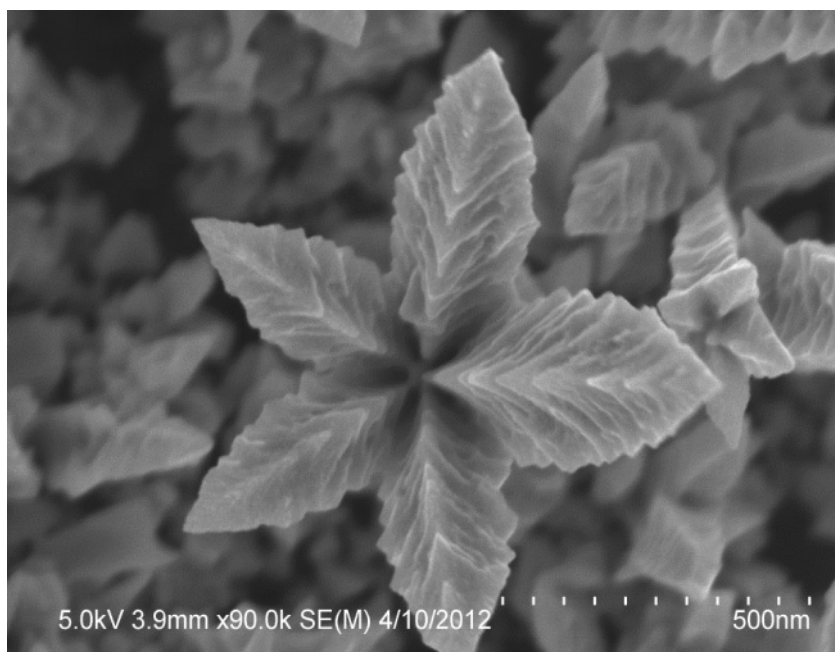


Figure shows CFD based convective fluid flow patterns and convective heat fluxes around a food particle.



Palladium Nanoflower: Palladium was electrodeposited on an electrochemically activated carbon substrate to obtain Pd Nanoflowers. A template free method was developed in our laboratory for the deposition of Pd nanoflowers on carbon substrate.

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

The department offers M.Sc. and Ph.D. programmes in chemistry. It is also involved in teaching various aspects of chemistry at the preparatory level (for weaker-section students) and in the B.Tech. programme (core courses as well as minor stream courses in chemistry). Presently, the department is very well equipped with modern instrumentation facilities and is actively engaged in quality teaching and research in frontier areas.

4.5.2. Academic Programmes

New courses introduced

Sl. No.	Course No.	Title
1	CY 6112	Surface Chemistry and Catalysis

Students on roll

Programme	I year	II Year	III Year	IV Year	V Year and Others	Total
M.Sc.	47	48	–	–	–	95
Ph.D.	39	60	42	25	46	212
Total	86	108	42	25	46	307

Endowment prize instituted

Prof. M.V.C. Sastry Award (2012)

Names of students/scholars who attended conferences/workshops/seminars and 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
Abroad					
1	Raghupatirao Shahukaru	CY09D044	Training Network “SOPRANO” Exchange Program at CRISMAT Laboratory	12 May to 30 September 2012, France	IIT Madras
2	Manas Ranjan Dash	CY09D027	22nd International Symposium on Gas Kinetics 2012	18–22 June 2012, Boulder, Colorado, USA	IIT Madras
3	Ammu Mathew	CY10D021	Gordon Research Conference on Noble Metal Nanoparticles 2012	17–22 June 2012, Mount Holyoke College	IIT Madras
4	Kiran Kumarvarma Chakrahari	CY09D017	13th International Symposium on Inorganic Ring Systems	29 June to 2 August 2012, Victoria, Canada	IIT Madras
5	John Victor	CY08D008	22nd International Symposium on Medicinal Chemistry	1–9 September 2012, Berlin, Germany	IIT Madras
6	Deepan Chakravarthy	CY07D017	Catalysis in Organic Synthesis (ICCOS-2012)	15–20 September 2012, Moscow, Russia	IIT Madras

7	Pratap Kumar Chhotaray	CY11D026	Collaborative research work	1 October to 30 November 2012, Universitat Rovira Virgili, Spain	IIT Madras
8	Bijan Mondal	CY11D052	Collaboration work with Prof. Jean Francois Halet	29 October to 27 November 2012, Universite de Rennes, France	IIT Madras
9	Ayan Dasgupta	CY12D006	Research work	1 January to 1 August 2013, Braunschweig, Germany	INDIGO
10	Radha Gobinda Bhuin	CY10D047	Experimental Laboratory Astrophysics	25–27 February 2013, Poipu, Kauai, Hawaii	IIT Madras
India					
1	Sumanta Kumar Meher	CY05D040	International Conference on Materials Science and Technology (ICMST-2012), Trivandrum	10–14 June, 2012, Department of Physics, St. Thomas College, Pala, Kottayam	Project
2	M.P. Karthikayini	CY12D016	Recent Advances in Electrochemical Energy Materials & Devices	24–27 July 2012, IISc, Bangalore	IIT Madras
3	Ujwal Kumar Sarangi	CY07D002	Chemistry in-house symposium	22 August 2012, IIT Madras	IIT Madras
4	Dipak Kumar Roy	CY11D056	Chemistry in-house symposium	22 August 2012, IIT Madras	IIT Madras
5	Akash Kumar Gupta	CY11D001	Chemical Constellation Cheminar 2012	7–16 September 2012, Jalandhar, Punjab	IIT Madras
			Collaborative research work in protein folding/unfolding studies in ionic liquids	17–30 September 2012, Delhi University	IIT Madras
6	R. Ganesamoorthi	CY09D035	Frontiers In Chemical Sciences(FICS-2012), National Conference	2–3 December 2012, IIT Guwahati	IIT Madras
7	Bootha Raju M.S.	CY09D018	Bangalore Nano-2012	5–7 December 2012, Bangalore	IIT Madras
8	Ammu Mathew	CY10D021	5th Bangalore Nano-2012	5–7 December 2012, Bangalore	IIT Madras
9	Yuvaraj K.	CY12D079	New Direction in Chemical Science, NDCS	7–9 December 2012, IIT Delhi	IIT Madras
10	Anju V.P.	CY12D080	New Direction in Chemical Science, NDCS	7–9 December 2012, IIT Delhi	IIT Madras
11	Akash Kumar Gupta	CY11D001	TCBEP 2012	10–12 December 2012, Sri Venkateswara Univ., Tirupati	IIT Madras
12	Anadi Singhamahapatra	CY08D009	National Carbohydrate Conference	13–15 December 2012, CFTRI, Mysore	IIT Madras
13	S. Senthil Kumar	CY09D051	8th J-NOST Conference	14–20 December 2012, IIT Guwahati	IIT Madras
14	Devi Sirisha Janni	CY08D031	8th J-NOST Conference	14–20 December 2012, IIT Guwahati	IIT Madras
15	Jeelani Basha Shaik	CY10D011	8th J-NOST Conference	15–17 December 2012, IIT Guwahati	IIT Madras
16	I. Karthikeyan	CY09D042	8th J-NOST Conference	14–20 December 2012, IIT Guwahati	IIT Madras
17	Ayan Dasgupta	CY12D006	8th J-NOST Conference	15–17 December 2012, IIT Guwahati	IIT Madras

18	Bahiru Punja Benke	CY09D026	8th J-NOST Conference	15–17 December 2012, IIT Guwahati	IIT Madras
19	Borkar Santosh Ramdas	CY10D026	8th J-NOST Conference	15–17 December 2012, IIT Guwahati	IIT Madras
20	Balamurugan D.	CY09D007	RSC-DS Poster Symposium on Organic/ Medicinal Chemistry	15 December 2012, ICT, Hyderabad	IIT Madras
21	Bhargava Anusuri	CY10D020	Theoretical Chemistry Symposium 2012	19–22 December 2012, IIT Guwahati	IIT Madras
22	K. Shakeela	CY12D074	5th ISEAC Triennial International Conference on Advances and Recent Trends in Electrochemistry, ELAC-2013	16–20 January 2013, Ramoji Film City, Hyderabad	IIT Madras
23	Dipak Kumar Roy	CY11D056	CRSI—National Symposium BHU	30 January to 3 February 2013, Varanasi	IIT Madras
24	Anju R.S.	CY11D045	CRSI—National Symposium BHU	30 January to 3 February 2013, Varanasi	IIT Madras
25	R. Ramya	CY06D025	Chennai Chemistry Conference CCC-2013	8–10 February 2013, CLRI, Chennai	IIT Madras
26	I. Karthikeyan	CY09D042	Chennai Chemistry Conference CCC-2013	8–10 February 2013, CLRI, Chennai	IIT Madras
27	Anju V.P.	CY12D080	Chennai Chemistry Conference CCC-2013	8–10 February 2013, CLRI, Chennai	IIT Madras
28	S.V. Raghava	CY11D028	Chennai Chemistry Conference CCC-2013	8–10 February 2013, Chennai	IIT Madras
29	D. Sharmila	CY12D029	Chennai Chemistry Conference CCC-2013	8–10 February 2013, CLRI, Chennai	IIT Madras
30	K. Yuvaraj	CY12D079	Chennai Chemistry Conference CCC-2013	8–10 February 2013, Chennai	IIT Madras
31	Chanchal Agarwal	CY08D048	Chennai Chemistry Conference CCC-2013	8–10 February 2013, CSIR-CLRI, Chennai	IIT Madras
32	Sandeepan Maity	CY09D038	Electronic Structure and Dynamics of Molecules and Clusters	17–20 February 2013, IACS, Kolkata	
33	B. Abhinav Kumar	CY11D038	Electronic Structure and Dynamics of Molecules and Clusters	17–20 February 2013, IACS, Kolkata	
34	Bhargava Anusuri	CY10D020	Electronic Structure and Dynamics of Molecules and Clusters	17–20 February 2013, IACS, Kolkata	
35	M. Balaganesh	CY10D024	Spectroscopy and Dynamic of Molecules and Clusters 2013	21–24 February 2013, Rajasthan	
36	Srinivasulu Gonu	CY10D015	Spectroscopy and Dynamic of Molecules and Clusters 2013	21–24 February 2013, Rajasthan	
37	N. Naganna	CY09D030	4th Indian Peptide Symposium	21–22 February 2013, Saha Institute of Nuclear Physics, Kolkata	DST Project
38	Debajyoti Basak	CY10D029	4th Indian Peptide Symposium	21–22 February 2013, Saha Institute of Nuclear Physics, Kolkata	DST Project
39	Benke Bhairu Punja	CY09D026	4th Indian Peptide Symposium	21–22 February 2013, Saha Institute of Nuclear Physics, Kolkata	DST Project
40	Bijan Mondal	CY11D052	National Symposium on Recent Advances in Chemistry	22–23 February 2013, Pondicherry Central University	IIT Madras
41	Joseph Ponniah S.	CY10D036	National Symposium on Recent Advances in Chemistry	22–23 February 2013, Pondicherry Central University	IIT Madras

42	Amitava Srimany	CY11D005	12th ISMAS Triennial International Conference on Mass Spectrometry	3–8 March 2013, Dona Paula, Goa	IIT Madras
43	Radha Gobinda Bhuin	CY10D047	12th ISMAS Triennial International Conference on Mass Spectrometry	3–8 March 2013, Dona Paula, Goa	IIT Madras
44	Rabin Rajan J. Methikkalam	CY11D075	12th ISMAS Triennial International Conference on Mass Spectrometry	3–8 March 2013, Dona Paula, Goa	IIT Madras
45	Depanjan Sarkar	CY12D055	12th ISMAS Triennial International Conference on Mass Spectrometry	3–8 March 2013, Dona Paula, Goa	
46	C. Ramanjaneyulu	CY11D029	National Symposium on Recent Advances in Chemistry (NSRAC-2013)	22–23 March 2013, Pondicherry	

Names of students/scholars who won outside prizes and awards

Sl. No.	Name of the Student/Scholar	Guide/Roll No.	Name of Prize	Prize Awarded by/at
1	A. Murali	Prof. S. Baskaran	2012 Lilly Outstanding Thesis Awards 2nd Prize	Eli Lilly and Company, USA
2	D. Jagadeesh Chandra Prasad	Dr. G. Sekar	2012 Lilly Outstanding Thesis Awards 2nd Prize	Eli Lilly and Company, USA
3	Debajyoti Basak	CY10D029	First special poster award	4th Indian Peptides Symposium, Saha Institute of Nuclear Physics, Kolkata
4	Karthikeyan I.	CY09D042	Best poster presentation award	Chennai Chemistry Conference-2013, CLRI
5	Bijan Mondal	CY11D052	Best poster presentation award	National Symposium on Recent Advances in Chemistry (NSRAC-2013), Pondicherry Central University, Pondicherry
6	D. Sharmila	CY12D029	Best oral presentation award	Chennai Chemistry Conference-2013, CLRI
7	Dipak Kumar Roy	CY11D056	Best poster presentation award	Chemistry in-house symposium, IIT Madras

4.5.3 Faculty and Their Activities

Faculty

Name and Qualifications	Major Areas of Specialization
Professors	
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. (U. Mass., USA)	Chemistry of macromolecules
A.K. Mishra, Ph.D. (IIT Kanpur)	Fluorescence spectroscopy
T. Pradeep, Ph.D (IISc, Bangalore) Joint with SAIF	Nanomaterials, spectroscopy, ion chemistry
M.V. Sangaranarayanan, Ph.D (IISc, Bangalore)	Electrochemistry
M.N. Sudheendra Rao, Ph.D. (IISc, Bangalore)	Main group inorganic chemistry
U.V. Varadaraju, Ph.D. (IISc, Bangalore) Joint with MSRC	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
Associate Professors	
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
Assistant Professors	
Santosh J. Gharpure, Ph.D. (IISc Bangalore)	Organic synthesis, new synthetic methods
Debashis Chakraborty, Ph.D. (Göttingen, Germany)	Synthetic organometallic chemistry
Sundaragopal Ghosh, Ph.D. (IIT Bombay)	Organometallic and metalborane chemistry
B. Rajakumar, Ph.D. (IISc. Bangalore)	Atmospheric chemistry, gas-phase kinetics and high-resolution cavity ring down spectroscopy, computational chemistry
K.M. Muraleedharan, Ph.D. (RRL Trivandrum)	Medicinal chemistry, bio-organic chemistry
Edamana Prasad, Ph.D. (RRL Trivandrum)	Divalent lanthanide and dendrimer chemistry
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 at Urbana-Champaign, USA)	Oligopeptide synthesis, polymer chemistry, organic materials
Ramesh Gardas, Ph.D. (South Gujarat University)	Solution thermodynamics, ionic liquids
R. Kothandaraman, Ph.D. (IISc. Bangalore)	Materials electrochemistry
Pazhamalai Anbarasan, Ph.D (IISc. Bangalore)	Organic synthesis

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
Workshops				
1	T. Pradeep	4th ICPC NanoNet Workshop on Nano for Water, Energy & Environment	Goa	2–4 April 2012
2	Mangala Sunder	NPTEL Workshop	Calicut University	24–25 August 2012
		NPTEL–NMEICT awareness workshop	NIT, Warangal	30–31 August 2012
3	R. Kothandaraman	Workshop on automotive power sources	VIT Vellore	2 August 2012
4	T. Pradeep	3rd Trilateral (India, China and Singapore) Workshop on Nanotechnology Applications in Energy, Water and Healthcare	IIT Bombay	19 November 2012
5	P. Anbarasan	BRNS—proposal	BARC, Mumbai	26–28 November 2012
6	K. Mangala Sunder	IGNOU—Workshop on instrumental design for E content	New Delhi	28–30 November 2012
7	Mangala Sunder	Educational conference—NPTEL workshop	Ahmedabad, Goa	8–11 January 2013
8	Ramesh Gardas	2nd International Workshop on Ionic Liquids—Alternative Benign Materials for Renewable Energy and Its Applications	National Chemical Laboratory, Pune	16–17 January 2013
9	Muraleedharan K.M.	Lecture workshop, Recent Trends in Synthetic Organic Chemistry	Kerala	17–18 January 2013
10	R. Kothandaraman	Indo-US workshop on electrocatalytic materials for fuel cells and biofuel cells	BHU, Varanasi	25–28 February 2013
11	A.K. Mishra	Training under Faculty Development Programme of TEQIP-II	SLIET	27–28 March 2013

Symposia

1	G. Ranga Rao	14th NSC CRSI and 6th CRSI-RSC Symposium in Chemistry	IISER and NIIST, Trivandrum	2–5 February 2012
		21st National Symposium on Catalysis—invited lecture on catalysis for sustainable development	IICT, Hyderabad	10–13 February 2013
2	T. Pradeep	Emerging Frontiers of Nanoscience and Nanotechnology	Sree Balaji Dental College and Hospital, Chennai	12 April 2012
3	Sundargopal Ghosh	Symposium, NDCS-12	IIT Delhi	7–9 December 2012
		Chemistry in-house symposium	IIT Madras	22 August 2012
		National Symposium on Recent Advances in Chemistry	Pondicherry Central University	7–9 December 2012
		CRSI—National Symposium, BHU	Varanasi	30 January to 3 February 2013
4	P. Bhyrappa	Chemistry in-house symposium	IIT Madras	22 August 2012
5	G. Ranga Rao	10th International Symposium on Advances in Electrochemical Science and Technology, ISAEST-10	Hotel Green Park, Chennai	28–30 January 2013
6	Sanjay Kumar	International symposium—Electronic Structure and Dynamics of Molecules and Clusters (ESDMC-2013)	Kolkata	17–20 February 2013
7	S. Sankararaman	National symposium on recent trends in chemistry	G.N.D. University, Amritsar	27–28 March 2013

Conferences/seminars

1	T. Pradeep	Conference, Luminescent Clusters of Noble Metals in Chemistry and Biology	Purdue University	14 June 2012
		Affordable Drinking Water Purification Using Nanotechnology	Ministry of Drinking Water and Sanitation, Patna	2 July 2012
2	M.V. Sangaranarayanan	Conference, Electrochemical Energy Materials & Devices	IISc, Bangalore	24–26 July 2012
3	T. Pradeep	Small is Different: New Science at Molecular Length Scales	Department of Physical Chemistry, University of Madras	25 July 2012
4	K. Mangala Sunder	T4E 2012 Conference	IIT Hyderabad	18–19 July 2012
5	N. Chandrakumar	Conference, Recent Advances in Electrochemical Energy Materials & Devices	IISc, Bangalore	26 July 2012
6	R. Kothandaraman	Conference, Recent Advances in Electrochemical Energy Materials & Devices	IISc Bangalore	23–27 July 2012
7	K.M. Muraleedharan	International conference, Chemistry & Biology of Natural Products	IICT, Hyderabad	3 August 2012
8	P. Selvam	Conference, CFM 2012	Goa	14 August 2012
9	T. Pradeep	Conference, Luminescent Clusters of Noble Metals	NIT Surathkal	21 August 2012
10	G. Ranga Rao	National conference, Emerging Trends in Chemical Research (NCETCR-2012)	GITAM University, Visakhapatnam	7–9 September 2012
		National conference, Chemistry for Sustainable Development SUSCON 2012	GITAM	10–11 October 2012
11	K.M. Muraleedharan	NOST conference	Agra	10–13 October 2012
12	Ramesh Gardas	7th National Conference on TCBED	Tirupati	10–12 December 2012

13	A.K. Mishra	National seminar, Science & Technology	Ravenshaw University, Orissa	7–10 December 2012
14	T. Pradeep	National Academy of Sciences, 82nd Annual Session	BHU, Varanasi	29 November to 1 December 2012
		Luminescent Molecules of Noble Metals, Role of Nanoscience in Engineering and Technology	RMK College of Engineering and Technology, Chennai	3 December 2012
15	S. Baskaran	100th Indian Science Congress	Kolkata	3–7 January 2013
16	Sundargopal Ghosh	Chennai Chemistry Conference-2013	CLRI, Madras	8–10 February 2013
17	G. Ranga Rao	5th ISEAC Triennial International Conference on Advances and Recent Trends in Electrochemistry, ELAC-2013	Indian Society for Electroanalytical Chemistry, Mumbai (venue: Ramoji Film City, Hyderabad)	16–20 January 2013
18	M.V. Sangaranarayanan	10th International Conference on Electrochemical Science and Technology	Chennai	28–29 January 2013
19	Ramesh Gardas	Oral presentation, Ionic Liquids as Green Solvents for the Future	Panipat, Haryana	24–25 February 2013
20	Mangala Sunder	Tenth Discussion meeting in Spectroscopy and Dynamics of molecules complexes International conference	Udaipur	21–24 February 2013
21	Ramesh Gardas	Oral Presentation, Ionic Liquids as Green Solvents for the Future	Panipat, Haryana	24–25 February 2013
22	N. Chandrakumar	National Conference on Multifunctional Nano Materials & Nanocomposites	Coimbatore	25 February 2013
23	T. Pradeep	12th ISMAS Triennial International Conference on Mass Spectrometry (12th ISMAS—TRICON-2013)	Hotel Cidade de Goa, Dona Paula Goa	4 March 2013
24	B. Rajakumar	National Seminar on Emerging Trends in Chemistry	AVS College of Arts and Science, Salem	15 March 2013
25	G. Sekar	National Seminar on Emerging Trends in Chemistry	AVS College of Arts and Science, Salem	15 March 2013
26	Ramesh Gardas	National Seminar on Current Research Trends and Developments in Chemical Sciences-2013 (CRTDCS-2013)	Chittoor (Andhra Pradesh)	9–10 March 2013

Meetings

1	T. Pradeep	Faculty selection meeting	IISER, Bhopal	23 April 2012
2	K. Mangala Sunder	NMEICT proposal review meeting	NIIT University, Rajasthan	12–13 April 2012
		Review of NMEICT programme	Indraprastha University, Delhi	15–16 April 2012
3	M.V. Sangaranarayanan	Selection committee meeting	CECRI, Karaikudi	9 April 2012
4	N. Chandrakumar	INSA committee meeting	New Delhi	25–26 April 2012
5	S. Sankararaman	INSPIRE DST camp	Bangalore	23 April 2012
6	M.N.S. Rao	Faculty selection committee meeting	NIT, Tiruchirappalli	3 April 2012
7	P. Selvam	Indo-Russian meeting	New Delhi	25 April 2012
8	G. Sekar	External-expert committee meeting	IISER, Bhopal	2–3 April 2012
9	Ramesh Gardas	Executive committee meeting of SACSE	IGCAR, Kalpakkam	17 April 2012
10	Indrapal Singh Aiden	Review committee meeting	Pondicherry University	18 May 2012

11	Indrapal Singh Aidhen	Review committee meeting	IIT Rajasthan	14–15 May 2012
12	T. Pradeep	Western Ghats visit	Goa–Karnataka– Maharashtra	29 May to 1 June 2012
13	A.K. Mishra	DC meeting	VIT, Vellore	8 May 2012
14	M.V. Sangaranarayanan	Discussion at School of Chemistry	MK University, Madurai	20–21 May 2012
15	Sundargopal Ghosh	Collaborative project discussion meeting	IACS, Kolkata	2–4 May 2012
16	Archita Patnaik	Faculty recruitment	BITS, Pilani	11 May 2012
17	G. Sekar	Meeting: Promoting JRFs to SRFs	Pondicherry University, Pondicherry	14 June 2012
18	N. Chandrakumar	DST INSPIRE programme	Vikrama Simhapuri University, Nellore	18 June 2012
19	A.K. Mishra	Seminar on curricular reforms in higher education	Ravenshaw University, Cuttack	2–4 July 2012
20	K. Mangala Sunder	Faculty teaching and evaluation meeting NCERT board meeting	NIT Warangal Delhi	17 July 2012 20 July 2012
21	U.V. Varadaraju	Discussion meeting at the Indo-French Laboratory for Solid State & Structural Chemistry	IISc, Bangalore	2–3 July 2012
22	M.N.S. Rao	Confidential work, CSIR	IICT, Hyderabad	21–23 July 2012
23	Ramesh Gardas	UGC-DAE-CRS 2012–2013 proposal evaluation meeting and proposal presentation	IGCAR, Kalpakkam	16 July 2012
24	A.K. Mishra	CRSI mid-year meeting	CDRI, Lucknow	21–22 July 2012
25	N. Chandrakumar	INSA meeting	New Delhi	6 August 2012
26	S. Baskaran	DST—Fast Track Young Scientist meeting	IISc, Bangalore	6–7 August 2012
27	T. Pradeep	CFM 2012 Chemical Frontiers	Goa	14–16 August 2012
28	G. Sekar	Project monitoring session	CSIR, New Delhi	30 August 2012
29	B. Rajakumar	DST project review meeting	IIT Delhi	24 August 2012
30	N. Chandrakumar	CSIR Chemical Sciences Committee meeting at CSIR	New Delhi	4 September 2012
31	K. Mangala Sunder	NMEICT review meeting	New Delhi	2–3 September 2012
		NMEICT/NPTEL meeting	VTU Center, Bangalore	7 September 2012
32	U.V. Varadaraju	Joint board meeting	GMR Institute of Technology, Andhra Pradesh	14 September 2012
33	A.K. Mishra	Selection committee meeting	IIT Jodhpur (Rajasthan)	26–27 September 2012
34	M.N.S. Rao	Faculty selection	NITK, Surathkal	25 September 2012
35	K. Mangala Sunder	NPTEL workshop	Arashan Engineering College, Kumbakonam	27–30 September 2012
		NPTEL SMES review meeting	SASTRA University, Tanjore	
36	P. Anbarasan	Conducting an interview for JRF/PF for DST- SERB project as DST nominee	MK University, Madurai	15 October 2012
37	S. Baskaran	DST—Fast Track Young Scientist meeting	IICT, Hyderabad	29–30 October 2012
38	S. Sankararaman	Meeting: DST-PAC on Organic Chemistry	University of Pune	8–10 November 2012

39	P. Anbarasan	DST—proposal	IISER, Pune	9 November 2012
40	K. Mangala Sunder	NPTEL—SME's review meeting	PSG College, Coimbatore	22 November 2012
41	M.V. Sangaranarayanan	Discussion-meeting	Madura College, Madurai	23 November 2012
42	G. Sekar	Presentation of research proposal before Nano Science Advisory Group	IISC, Bangalore	9–10 November 2012
43	K.M. Muraleedharan	Presentation of research proposal before Nano Science Advisory Group	Bangalore	9–10 November 2012
44	K. Mangala Sunder	NCERT meeting	New Delhi	2–3 December 2012
45	Archita Patnaik	Faculty recruitment	BITS Pilani, Goa Campus, Goa	4 December 2012
46	K. Mangala Sunder	Executive board meeting, National Institute of Open Schooling	Noida, Uttar Pradesh	5–6 December 2012
47	U.V. Varadaraju	Interview committee, Indo-Japan project	IIT Hyderabad	7 December 2012
48	Archita Patnaik	Confidential work, CSIR	NCL Pune	19–20 December 2012
49	Sanjay Kumar	13th Theoretical Chemistry Symposium (TCS 2012)	Guwahati	18–22 December 2012
		Biennial Meeting of the Atomic, Molecular and Optical Physics Society of India (ISAMP)	Kolkata	14–17 December 2012
50	U.V. Varadaraju	Selection committee for faculty position	NIT Goa	17 December 2012
51	T. Pradeep	Talk, Nano Technology	Thrissur	24–27 December 2012
52	R. Dhamodharan	78th INSA Meeting	Pune	26–28 December 2012
53	P. Selvam	Project discussion meeting	IIT Mumbai	29 December 2012
54	M.N. Sudheendra Rao	CSIR—SRF and RA selection committee meeting	IICT, Hyderabad	7–8 January 2013
55	K. Mangala Sunder	Selection committee meeting for faculty promotion—senate nominee	IIT Guwahati	28–29 January 2013
56	S. Sankararaman	Chennai Chemistry Conference-2013	CSIR—CLRI, Chennai	8 February 2013
		DST Organic PAC meeting	University of Madras	11–12 February 2013
		CSIR project review meeting	New Delhi	13 February 2013
57	T. Pradeep	Nano India 2013 Meet	CSIR—NIIST, TUM, Kerala	19–20 February 2013
		DST review meeting	CSIR—NIIST,TUM, Kerala	21–22 February 2013
		IIST discussion Meeting	TUM, Calicut	4–5 February 2013
		Meeting—MRSI AGM	IGCAR, Kalpakkam	11 February 2013
58	Sanjay Kumar	Discussion meeting on Spectroscopy and Dynamics of Molecules & Clusters SDMC-2013	Udaipur	21–24 February 2013
59	K. Mangala Sunder	Tenth discussion meeting in Spectroscopy and Dynamics of Molecules and Complexes	Udaipur	21–24 February 2013

60	N. Chandra Kumar	National conference, Multifunctional Nano Materials & Nanocomposites	Coimbatore	25 February 2013
		Science Day celebration (Chief Guest)	VIT	28 February 2013
		Research Scholar Day (Guest of Honour)	IIT Kharagpur	1 March 2013
61	M.V. Sangaranarayanan	Research Council meeting	CECRI, Karaikudi	13 March 2013
62	S. Baskaran	DST—Fast Track Committee meeting	IIT, Guwahati	15 March 2013
63	Archita Patnaik	Presentation related to nanotechnology	SRM University	12 March 2013
64	A.K. Mishra	CSIR—HRDG, confidential meeting	New Delhi	20 March 2013
65	Indrapal Singh Aidhen	Project-related meeting	BRNS, Chandigarh	21–22 March 2013
66	N.N. Murthy	Faculty Selection Committee meeting	Rajiv Gandhi University, Hyderabad	28 March 2013

Special lectures delivered by faculty in other institutions

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
1	Indrapal Singh Aidhen	Invited lecture, Nostalgia, Tribute and Chemistry, during the symposium dedicated to 75th birth Anniversary of Prof. M.S. Wadia	Department of Chemistry, University of Pune	24 March 2012
2	M.N.S. Rao	Invited lecture	IISER Pune	5–6 June 2012
3	Edamana Prasad	Invited lecture	VIT University, Vellore	22 June 2012
4	Indrapal Singh Aidhen	Recent Accomplishments on Synthetic Fronts	Institute of Integrative Medicine, Jammu	12 July 2012
		Recent Accomplishments on Synthetic Fronts	Institute of Himalayan Bio-resource Technology, Palampur, Himachal Pradesh	16 July 2012
5	U.V. Varadaraju	Lecture on automotive power sources	VIT, Vellore	2 August 2012
6	R. Kothandaraman	Lecture on automotive power sources	VIT, Vellore	2 August 2012
7	G. Ranga Rao	Nanostructures Materials for Catalysis and Sensors	Department of Physical Chemistry, University of Madras	3 August 2012
8	Archita Patnaik	Invited talk	PSG College, Coimbatore	6 August 2012
		INSPIRE lecture	Vel Tech Technical University	13 August 2012
9	P. Anbarasan	Invited lecture	Orchid Pharma, Chennai	27 August 2012
10	G. Sekar	Guest lecture, Influence of Chirality in Drug Activity	Hindustan University, Padur	14 September 2012
11	S. Sankararaman	Invited lecture, XV Organic Chemistry Conference, organized by National Organic Symposium Trust (NOST)	Agra	10–13 October 2012
		Invited lecture at the National Seminar on Emerging Trends in Chemistry	CPA College, Bodinayakanur	5 October 2012
12	G. Ranga Rao	Conference and talk	GITAM University, Visakhapatnam	10–11 October 2012
		DST INSPIRE lecture	Raju Arts and Science College, Penugonda, Andhra Pradesh	22 October 2012
13	Sanjay Kumar	Innovation in Science Pursuit for Inspired Research (invited talk, INSPIRE internship science camp)	Sri Venkateshwara University, Tirupati, Andhra Pradesh	15–16 October 2012
14	T. Pradeep	When Gold Glows in the Dark (INSPIRE)	DMI College of Engineering, Chennai	25 October 2012

15	Indrapal Singh Aidhen	Recent Accomplishments on Synthetic Fronts	Guru Nanak Dev University, Punjab	26 October 2012
16	B. Rajakumar	Collaborative discussion and invited talk	Indian Institute of Chemical Technology, Hyderabad	26–29 October 2012
17	T. Pradeep	Research to Product: Our Experience with nanomaterials for clean water technologies—Developing Nanotechnology for an Emerging India	Maastricht University, Hyderabad	22 November 2012
18	G. Ranga Rao	13th orientation programme for research scholars: DST-sponsored training activity (8 lectures)	NCCR, IIT Madras	26 November 2012 to 13 December 2012
19	T. Pradeep	Talk on nanosensors	Bangalore	5 December 2012
		Luminescent Clusters of Noble Metals: From Materials to Sensors, Engineering at Nanoscale: From Materials to Bio-sensors	IIT Indore	10–12 December 2012
20	R. Kothandaaman	Lecture series of Electrochemical Society	Pondicherry University	6–12 January 2013
21	Debashis Chakraborty	Catalyst 2013—lecture	Dr.Reddy's Leadership Academy, Hyderabad	9–10 January 2013
22	P. Anbarasan	Recent Trends in Chemistry	American College, Madurai	11 January 2013
		Frontiers in Chemistry (FIC)-2013	St. Xavier's College, Palaymkottai	1 February 2013
23	A.K. Mishra	Project proposal presentation to DST-PAC	IISc, Bangalore	1 February 2013
		Seminar talk at Academy workshop	Vivekananda College, Madurai	22 February 2013
24	P. Selvam	Invited talk	IICT, Hyderabad	11–13 February 2013
25	P. Anbarasan	To deliver a talk at national seminar	Arul Anadhar College, Madurai	15 February 2013
26	S. Sankararamanan	Invited lecture	MS University, Baroda	21–22 March 2013
27	B. Rajakumar	Talk at NSRAC-2013	Pondicherry	22 March 2013
28	R. Kothandaraman	Non-precious Metal Catalysts for Oxygen Reduction Reaction in PEFCs	BHU Varanasi	25–28 February 2013
29	G. Ranga Rao	Porous Materials—Synthesis, Characterization and Applications	Department of Physics, Faculty of Engineering and Technology, SRM University, Kattankulathur	27 February 2013

Visits abroad by faculty

Sl. No.	Name of Faculty Member	Country Visited	Date	Purpose of Visit	Funding from
1	M.V. Sangaranarayanan	Australia	15–18 April 2012	10th Spring Meeting of the International Society of Electrochemistry	
2	Dillip Kumar Chand	Canada	26–30 May 2012	95th Canadian Chemistry Conference and Exhibitions	
		Canada	31 May 2012	One-day symposium on supramolecular chemistry	

3	P. Bhyrappa	USA	15 June 2011 to 27 May 2012	Visiting Professor	Prof. K.M. Kadish University of Houston, Texas, USA
		Seattle, USA	9–11 May 2012	To deliver an oral presentation at the 221st Electrochemical Society meeting	
4	R. Kothandaraman	USA	7–11 May 2012	221st Electrochemical Society meeting	
5	S. Sankararaman	Germany	15 May to 15 July 2012	Alexander Von Humboldt Foundation Fellowship	
6	B. Rajakumar	NOAA, Boulder, CO, USA	1 May to 28 July 2012	To visit Kinetics Laboratory in the Chemical Science Division (CSD)	
7	T. Pradeep	South Hadley, USA	8–22 June 2012	Gordon Research Conference on Noble Metal Nanoparticles	
8	Sundargopal Ghosh	Purdue University, USA	3–6 June 2012	International conference BORAM-XIII	
9	P. Bhyrappa	Jeju Island, South Korea	1–6 July 2012	To deliver an oral presentation and to chair an invited oral presentation session at the International Conference on Porphyrins & Phthalocyanines ICPP-7	IIT Madras
10	S. Baskaran	The Philippines	11–15 July 2012	Industrial visit	
11	G. Sekar	Beijing, China	27–31 July 2012	2012 TWAS-ROESEAP Symposium on Frontiers in Chemical Engineering	
12	K. Mangala Sunder	Malaysia	19–21 September 2012	Regional OER Symposium in Asia: Policies & Practice	
13	P. Selvam	University of Western Sydney	17–27 September 2012	Indo-Australian joint project discussion	
		Wellington	22–27 September 2012	Chemeca, 40th Australian Chemical Engineering Conference	
14	S. Baskaran	Beijing, China	24–26 September 2012	International workshop on natural products chemistry	
15	G. Sekar	ICSN, Paris, France	25–26 September 2012	To present a paper on nature-inspired chiral catalysis	
16	T. Pradeep	Taipei, Taiwan	4–5 October 2012	Symposium, Recent Development of Nanomaterials: Structures, Dynamics and Applications	
17	Edamana Prasad	Takamatsu City, Kagawa Prefecture, Japan	14–18 October 2012	Paper presentation and discussion in bilateral seminar, Supramolecular Nanomaterials for Energy Innovation	
18	T. Pradeep	Osaka University, Japan	15–16 October 2012	Bilateral seminar, Supramolecular Nanomaterials for Energy Innovation (Indo-Japan workshop)	
19	P. Selvam	St. Petersburg, Russia	22–25 October 2012	To attend the IX International Conference on Mechanisms of Catalyst Reactions	
20	Sundargopal Ghosh	Seoul, Korea	1–3 November 2012	Oral presentation at International Symposium on Organometallic Chemistry 2012	

21	T. Pradeep	Taipei, Taiwan	13–15 December 2012	Workshop on Nanotechnology: Environment, Health and Safety
		Taiwan	17 December 2012	National Dong Hwa University
		Singapore	19 December 12	Singapore National University
22	Ramesh L. Gardas	Portugal	15 December 2012 to 13 January 2013	European Union 7th Framework Programme: Narilar Project
23	P. Selvam	Hong Kong	13–17 December 2012	International Conference on Engineering & Applied Science
		Ireland	19–28 December 2012	Indo-Ireland Joint Project Exchange
24	M.V. Sangaranarayanan	Singapore	16–19 December 2012	7th Singapore International Chemistry Conference
25	P. Selvam	Dublin, Ireland	7–11 January 2013	Indo-Ireland Joint Project

Honours and awards obtained by faculty

Sl. No.	Name of the Faculty Member	Name of the Award	Awarded by
1	T. Pradeep	Invited to serve on the international advisory board of the new journal <i>Particle</i>	The group of journals publishing the materials science trio <i>Advanced Materials</i> , <i>Advanced Functional Materials</i> and <i>Small</i>
2	K.K. Balasubramanian (retired)	Lifetime Achievement Award (CRSI Gold Medal) for 2013	Chemical Research Society of India (CRSI)
3	Sundargopal Ghosh	Bronze Medal for 2012 for contribution to research in chemistry	Chemical Research Society of India (CRSI)
4	Edamana Prasad	IIT Madras Young Faculty Recognition Award for outstanding achievements in teaching, scholarship and creative research work (cash award of Rs.25,000 and a citation)	IIT Madras
5	T. Pradeep	India Nanotech Innovation Award 2012	Government of Karnataka
6	Santhosh Gharpure	B.M. Birla Science Prize	
7	Pazhamalai Anbarasan	Thieme Chemistry Journal Award 2013	
8	Indrapal Singh Aidhen	Member, National Academy of Sciences (MNASc), India during 2013	
9	P. Selvam	Member, Programme Advisory Committee (Physical Chemistry), 2012–2015	DST, New Delhi

Books, monographs authored/co-authored

Sl. No.	Name of Faculty Member	Title	Editors	Author/Co-author
1	P. Selvam	<i>Selective Catalytic Oxidation Over Ordered Nanoporous Metallo-Aluminophosphates</i>	M.G. Clerici, O.A. Kholdeeva	A. Sakthivel
2	T. Pradeep	<i>Nanoscience in India: A Perspective, Volume 1: Nanostructures Through Chemistry</i> Royal Society of Chemistry, London (2012)	P. O'Brien	Paulrajpillai Lourdu Xavier, Anirban Som, Ammu Mathew
3	T. Pradeep and others	<i>A Textbook of Nanoscience and Nanotechnology</i> McGraw-Hill Education, New Delhi (2012)		

Fellowships of academies and professional societies

Sl. No.	Name of Faculty Member	Year of Admission
FASc 1	S. Baskaran, elected as Fellow of the Indian Academy of Sciences	2013

Journal editorial boards

Sl. No.	Name of Faculty Member	Position (Editor/Member)	Journal
1	T. Pradeep	Member	<i>ACS Applied Materials and Interfaces</i>
		Member	<i>Surface Innovations</i>
		Member	<i>Particle</i>

4.5.4. Design and Development Activities

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

A fibre optics spectrophotometer that is capable of measuring both absorbance and fluorescence spectra has been designed.

New facilities added or major equipment procured

Sl. No.	Name of Equipment	Value (in lakhs of Rs.)
1	FT- Raman spectrometer	63
2	Scanning electron microscope	95
3	MALDI-TOF spectrometer	164
4	Circular dichromism spectrometer	66

Patents filed

Sl. No.	Name of Faculty Member	Topic of Patent
1	K.M. Muraleedharan	Synthesis of quinolone antibiotics from Baylis-Hillman adducts
2	T. Pradeep	Visible detection of quantity of water flow using quantum clusters
		Methods for selective visual detection of TNT
		A method for preparation of graphenic material from asphalt and its application in water purification
		Luminescent graphene patterns
		Gel-based water purification: Adsorbent composition and water purification device
		A granulation composition for powder ingredients

4.5.5. Research and Consultancy

Sponsored research projects

Sl. No.	Title	Period (years)	Funding Agency	Amount (in lakhs of Rs.)	Co-ordinators
1	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	25.17	A.K. Mishra
2	High Temperature & High Pressure Thermodynamic Properties of Energetic Nitrogen-Rich Ionic Liquids & Their Mixtures with Organic Solvents	3	DST	27.00	Ramesh Gardas
3	Centre For Catalysis Research—Phase II	5	DST	62.90	B. Viswanathan
4	Measurement of Atmospheric Lifetimes of Hydrofluoroolefines (HFOs), Hydrofluoroethers (HFEs) and Hydrofluoroioethers (HFTEs) due to their Reactions with Hydroxyl Radicals and CI in the Earth's Atmosphere	3	Board of Research in Nuclear Science	33.64	B. Rajakumar

5	Synthesis of Lyotropic & Thermotropic Liquid Crystals from Poly(Aryl ether) Dendron Derivatives	1	TT Funds and IIT Madras	3.20	Edamana Prasad
6	Functionalized Poly (Phenylene) Dendrimers and Dendrimer–Porphyrin Assembles: Synthesis and Their Properties	3	CSIR	13.92	P.Bhyrappa
7	Experimental Measurement and Prediction of Thermophysical and Electrochemical Properties of Ionic Liquids Useful for Metal Ions Separation	3	UGC-DAE Consortium for Scientific Research	6.09	Ramesh Gardas
8	Luminescent Poly(Aryl Ether) Dendron Based Gel Systems for Nanoparticle Stabilization, Mesophase Formation and Energy Transfer Studies	3	CSIR	17.50	Edamana Prasad
9	A Nanocomposite Material for High-Power Lithium Battery Cathodes	3	DST	35.15	P. Selvam
10	Electrochemical Synthesis Of Nanomaterials at Liquid/Liquid Interfaces and Applications	3	DST	42.60	Prof. M.V. Sangaranarayanan
11	Development of Polymer Based Cost Effective Electrochromic Devices for Automotive Applications	2	DST	27.53	R. Dhamodharan
12	Quantum Cluster Solar Cells	3	DST	165.6	T. Pradeep
13	Opto-magnetic Properties of Cd/Zn Based Nanoparticles with Magnetic Dopants and Inorganic Materials	3	DST	32.39	T. Pradeep
14	Research of New Layered Oxides for Energy Storage and Conversion	3	IFCPAR	22.17	U.V. Varadaraju
15	Demonstration of 1.5 W Single Cell All Vanadium Flow Battery	1	ICSR	7.37	U.V. Varadaraju, R. Kothandaraman
16	Transition Metal-Catalyzed Asymmetric Trifluoromethylation and Perfluoroalkylation of Activated Alkenes: Application Towards the Asymmetric Synthesis of Trifluoromethylated Building Blocks and Bioactive Natural Products	3	CSIR	24.42	P. Anbarasan
17	Design and Development of Novel Tetradentate P- & P,N – Ligands for Fe catalyzed asymmetric hydrogenation	3	BRNS	17.00	P. Anbarasan
18	J.C. Bose Fellowship	5	DST	62.2	N. Chandrakumar
19	Unit of Nanoscience at IIT Madras—Phase II	5	DST	555.5	T. Pradeep
20	Total Synthesis of Biologically Active Isokotanin-A Kotanin and Desertorin-C Natural Products Through Catalytic, Enantioselective Oxidative Coupling	3	CSIR	23.26	G. Sekar
21	Abnormal N-Heterocyclic Carbene Ligands: Synthesis, Transition Metal Complexes (Pd, Ni, Cu) and Applications in Asymmetric Synthesis	3	CSIR	13.2	S. Sankararaman
22	Low Energy Ion Collision on Molecular Solids: Chemical Reactions, Phase Transformations and Unique Properties	3	DST	444.5	T. Pradeep
23	Phase-II of the Facility on Spatially Resolved Magnetic Resonance	5	DST	1349.73	N. Chandrakumar
24	Chemistry and Application of Metallasilas and Metallagermaboranes Derived from Group 14 Unsaturated Organic Substrates	3	Indo-French Centre for the Promotion of Advanced Research	37.63	Sundargopal Ghosh
25	New Class of Organochalcogen Derivatives Derived from Group 5, 6 Metallaboranes	3	CSIR	18.76	Sundargopal Ghosh

26	Analysis of Underpotential Deposition of Metals for Electrocatalytic Applications	3	CSIR	16.76	M.V. Sangaranarayanan
27	Polymerization of Cyclic Esters Using Activated Monomer Mechanism	3	CSIR	19.26	Debashis Chakraborty
28	Understanding the Microviscosity and Micropolarity of Different Pluronic Polymers and Their Mixtures	3	DST	22.15	A.K. Mishra
29	Non-Precious Metal catalyst for Oxygen Reduction Reaction in Polymer Electrolyte Membrane Fuel Cells (PEMFC) with Improved Durability and Activity	3	ISRO	27.56	R. Kothandaraman, Raghuram Chetty
30	Functional Noble Metal Nanoparticles	3	CSIR	25.92	Dillip Kumar Chand
31	Non-Precious Metal Catalysts with Increased Active Catalytic-Site Density for Electrochemical Oxygen Reduction Reaction	2	Nissan Renault Research Support Program	8.80	R. Kothandaraman
32	Encapsulation of Divalent Lanthanides in Dendrimers and Lanthanide Based Nano-Structures in Dendritic Aggregates to Generate Novel Optically Active Nano-Systems	3	DST	37	Edamana Prasad
33	Water Purification Using Nanotechnology	5	DST	1081	T. Pradeep, Sarit Kumar Das
34	Thermodynamic Studies of Model Electrolyte and Non-electrolyte Solutes in "Protic Ionic Liquids" and Their Mixtures with the Parent Bronsted Acids and Bases	3	CSIR	20.42	Ramesh Gardas
35	Top Chemistry Departments in the International Year of Chemistry (2011)	2	DST	150.00	Head of the Department
36	Design and Synthesis of Metalloborane Clusters for Catalytic Cyclotrimerization of Alkynes	3	Board of Research in Nuclear Sciences	22.44	Sundargopal Ghosh
37	Metal Nanoclusters for Fluorescence, Catalysis, and Heavy Metal Scavenging	3	DST	42.81	T. Pradeep
38	Chemistry and Applications of Group 4–5 Metallaboranes	3	DST	54.15	Sundargopal Ghosh
39	Generation of Solar Hydrogen	2	DST	50.28	P. Selvam, B. Viswanathan
40	N-Heterocyclic Carbene Ligands and their Lanthanide Ion Complexes: Synthesis, Structure, Redox and Luminescence Studies	3	DST	45.90	S. Sankararaman
41	Thermal Decomposition Studies of Alkyl Silanes and Alkyl Phenols Behind the Reflected Shock Waves in a Single Pulse Shock Tube Between 1000–1500K	—	CSIR	24.42	B. Rajakumar
42	New and General Strategy for the Synthesis of Centrolbine Analogues and Other Important Diarylheptanoids	—	Board of Research in Nuclear Sciences	31.12	Indrapal Singh Aidhen
43	Investigation of Transition Metal Catalyzed Reactivity of α -Diazoimines Derived from 1,2,3-Triazoles: Divergent Synthesis of Molecules of Therapeutic Importance and Bio Active Natural Products	—	DST	54.12	P. Anbarasan
44	Organized CNT–Noble Metal Cluster Conjugates	—	DST	40.07	T. Pradeep
45	Electrospun <i>Calotropis</i> Nanofiber Scaffolds for Applications in Tissue Engineering, Agriculture and Environment	3	Department of Biotechnology	25.85	T. Pradeep
46	Augmentation of Research Facilities in the Department (FIST)	5	DST	407	Head of the Department (CY)

47	Thermodynamic Studies of Ionic Interactions in Pure Ionic Liquids and Their Mixtures with Organic Solvents	3	New Faculty Scheme	19	Ramesh Gardas
48	Exploding Type Metal Precursors for Synthesis of Non-Precious Metal Catalyst with Improved Oxygen Reduction Activity	2	New Faculty Scheme	20.70	R. Kothandaraman
49	Asymmetric Trifluoromethylation Using Transition Metal-Catalyst	3	New Faculty Scheme	19	P. Anbarasan
50	Demonstration of 1.5 W Single Cell All Vanadium Flow Battery	1	Industrial Consultancy & Sponsored Research	7.37	U.V. Varadaraju, R. Kothandaraman

RBIC projects

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of Rs.)
1	S. Baskaran	Synthetic Route for APIs	Apex Laboratories Private Limited	0.66
2	P. Selvam	Development of Heterogeneous Catalyst for Selective Hydrogenation of Nitrobenzene (NB) to <i>p</i> -Aminophenol (PAP) for Economically Feasible Commercial Application	Granules India Limited	29.64
3	Edamana Prasad	Development of Differentiated Gel Ink that can Deliver Better Writing Smoothness with Controlled Ink Flow than Existing Gel Inks	ITC Limited	31.90

Research publications

Total number of papers published in refereed national journals: 3

Total number of papers published in refereed international journals: 179

Total number of papers presented at national conferences: 1

(a) Refereed national journals

1. M. Vinothkumar, G. Nandhini, M.V. Sangaranarayanan (2012) Partition function of the two-dimensional nearest neighbour Ising models for finite lattices in a non-zero magnetic field. *J. Chem. Sci. (Bangalore, India)* 124: 105–113.
2. A. Joseph, G. Venkataramana, S. Sankararaman (2012) Synthesis of dehydrobenzoannulenes with pyrene core. *J. Chem. Sci. (Bangalore, India)* 124: 597–607.
3. B. Upendra, D.S. Lakshmi Prasanna, B. Rajakumar (2012) Kinetic parameters for the reaction of OH radical initiated atmospheric oxidation of (E)-2-pentenal: Ab initio and transition state theory calculations. *Current Science* 102: 460–469.

(b) Refereed international journals

1. P. Biji, A. Patnaik (2012) Interfacial Janus gold nanoclusters as excellent phase- and orientation-specific dopamine sensors. *Analyst* 137: 4795–4801.
2. P. Biji, A. Patnaik, (2012) Surface-confined crown ether-capped gold nanoclusters: Investigation on their electrochemical behavior. *J. Nanoparticle Res.* 14: 1–10.
3. I. Ramakanth, A. Patnaik (2012) Novel two-component gels of cetylpyridinium chloride and the bola-amphiphile 6-amino caproic acid: Phase evolution and mechanism of gel formation. *J. Phys. Chem. B* 116: 2722–2729.
4. I. Ramakanth, N. Ramesh, A. Patnaik (2012) Fibrous gels of cetylpyridinium chloride in binary solvent mixtures: Structural characteristics and phase behaviour. *J. Mater. Chem.* 22: 17842–17847.
5. N. Ramesh N.K. Sarangi, A. Patnaik (2013) Establishing the ellipsoidal geometry of a benzoic acid-based amphiphile via dimer switching: Insights from intramolecular rotation and facial H-bond torsion. *J. Phys. Chem. B* 117: 5345–5354.
6. N.K. Sarangi, A. Patnaik (2012) L-Tryptophan-induced electron transport across supported lipid bilayers: An alkyl-chain tilt-angle, and bilayer-symmetry dependence. *ChemPhysChem* 13: 4258–4270.
7. N.K. Sarangi, A. Patnaik (2012) Structure-directing L-tryptophan for supported DPPC helices and fractals: An alkyl-chain tilt-angle dependence. *ChemPlusChem* 77: 898–907.

8. K. Senthil Kumar, A. Patnaik (2013) Thermodynamic kinetic and electronic structure aspects of a charge transfer active bichromophoric organofullerene. *J. Chem. Sci.* 125: 237–246.
9. K.O. Eyong, S.P. Kumar, V. Kuete, G.N. Folefoc, H. Langmi, M.J.J. Meyer, N. Lall, S. Baskaran (2012) Cobalt mediated ring contraction reaction of lapachol and initial antibacterial evaluation of naphthoquinones derived from lapachol. *Med. Chem. Res.* 21: 2117–2122.
10. K.O. Eyong, M. Puppala, P.S. Kumar, M. Lamshoft, G.N. Folefoc, M. Spiteller, S. Baskaran (2012) A mechanistic study on the Hooker oxidation: Synthesis of novel indane carboxylic acid derivatives from lapachol. *Org. Biomol. Chem.* 11: 459–468.
11. S. Gore, S. Baskaran, B. Konig (2012) Fischer indole synthesis in low melting mixtures. *Org. Lett.* 14: 4568–4571.
12. S. Gore, S. Baskaran, B. Koenig (2012) Synthesis of pyrimidopyrimidinediones in a deep eutectic reaction mixture. *Adv. Synth. Catal.* 354: 2368–2372.
13. S. Gore, K. Chinthapally, S. Baskaran, B. Konig (2012) Synthesis of substituted hydantoins in low melting mixtures. *Chem. Commun.* 49: 5052–5054.
14. M. Puppala, A. Murali, S. Baskaran (2012) Concise enantioselective construction of a bridged azatricyclic framework via domino semipinacol–Schmidt reaction. *Chem. Commun.* 48: 5778–5780.
15. P. Bhyrappa, V. Velkannan (2012) β -Tetrakis(2-thienyl)-meso-tetraphenylporphyrins: Synthesis, structural and electrochemical redox properties. *Inorg. Chim. Acta* 387: 64–73.
16. C. George, N. Chandrakumar (2013) Accelerated spin dynamics in NMR driven by homonuclear scalar couplings. *Chem. Phys. Lett.* 563: 107–111.
17. N. Haridharan, R. Bhandary, K. Ponnusamy, R. Dhamodharan (2012) Synthesis of fluorescent, dansyl end-functionalized PMMA and poly(methyl methacrylate-*b*-phenanthren-1-yl-methacrylate) diblock copolymers, at ambient temperature. *J. Polym. Sci., Part A: Polym. Chem.* 50: 1491–1502.
18. N. Haridharan, V. Ramkumar, R. Dhamodharan (2012) N,N'(1,4-Phenylene)bis(2-bromo-2-methylpropanamide). *Acta Crystallogr., Sect. E: Struct. Rep. Online* 68.
19. K. Ponnusamy, R.P. Babu, R. Dhamodharan (2013) Synthesis of block and graft copolymers of styrene by raft polymerization, using dodecyl-based trithiocarbonates as initiators and chain transfer agents. *J. Polym. Sci., Part A: Polym. Chem.* 51: 1066–1078.
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(c) Proceedings of national conferences

1. K. Shakeela, Ch. Jagedeeswara Rao, A. Sri Dithya, G. Ranga Rao Electrodeposition of Cu–Pd bimetallic films using 1-hexyl-3-methylimidazolium chloride ionic liquid. *Electroanalytical Chemistry—2013 (ELAC-2013)*

Distinguished visitors

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1	Dr. Upendra Harbola, Assistant Professor, IPC Department, IISc, Bangalore	19 April 2012	Guest lecture
2	Hannu Hakkinen, Professor, Department of Physics & Chemistry, Scientific Director, Nanoscience Center (NSC), University of Jyväskylä, Finland	26 April 2012	Guest lecture
3	Dr. Robin Ras, Academy Research Fellow, Molecular Materials, Department of Applied Physics, Aalto University, Puumiehenkuja, Finland	26 April 2012	Guest lecture
4	Dr. Vijay K. Ramani, Associate Professor, Department of Chemical & Biological Engineering, Illinois Institute of Technology, Chicago	11 June 2012	Guest lecture
5	Dr. Rahul Banerjee, Physical & Materials Chemistry Division, National Chemical Laboratory, Pune	27 June 2012	Guest lecture
6	Dr. Amar Natarajan, Associate Professor, Associate Director, HTS Facility, Eppley Institute for Cancer Research, Nebraska Medical Center, University of Nebraska Medical Center, Omaha	28 June 2012	Guest lecture
7	Prof. I.N.N. Namboothiri, Department of Chemistry, IIT Bombay	6 July 2012	Guest lecture
8	Prof. Balaji R. Jagirdar, Department of Inorganic and Physical Chemistry, IISc, Bangalore	9 July 2012	Guest lecture
9	Prof. Ramachandaran, Purdue University, Department of Chemistry, West Lafayette, USA	9 July 2012	Guest lecture
10	Prof. S. Manogaran, Department of Chemistry, IIT Kanpur	18 July 2012	Guest lecture
11	Dr. Subramanian Baskaran, Scientist, GlaxoSmithKline Pharmaceuticals Limited, Durham, North Carolina, USA	19 July 2012	Guest lecture
12	Prof. K.L. Sebastian, Inorganic & Physical Chemistry, IISc, Bangalore	19 July 2012	Guest lecture
13	Dr. Sanjeev K Gajjela, Ph.D., Sustainable Energy Research Center, Mississippi State University, USA	26 July 2012	Guest lecture
14	Dr. V. Ramamurthy, Professor & Chair of Chemistry, University of Miami; Senior Editor, <i>Langmuir</i> , American Chemical Society; Distinguish Alumnus, IIT Madras	21 August 2012	Guest lecture
15	Dr. P. Kuppusamy, Professor of Internal Medicine, Professor of Biomedical Engineering & William D. Jacquelyn L. Wells Chair in Imaging Research, Director of Center for Biomedical EPR Spectroscopy & Imaging, Associate Director (Research) in the Division of Cardiovascular Medicine, Ohio State University, Columbus (Ohio) USA	4 September 2012	Guest lecture
16	Dr. Suhrit Ghosh, Assistant Professor, Polymer Science Unit, Indian Association For the Cultivation of Science, Kolkata	10 September 2012	Guest lecture
17	Dr. Suresh Valiyaveetil, Department of Chemistry, National University of Singapore, Singapore	21 September 2012	Guest lecture
18	Mr. Samir Kumar Pal, Department of Chemical, Biological & Macromolecular Sciences, S.N. Bose National Centre for Basic Sciences, Salt Lake City, Kolkata	28 September 2012	Guest lecture
19	Prof. Dr. Dr. h.c. Lutz F. Tietze, Institute of Organic and Biomolecular Chemistry, University of Goettingen, Germany	3 October 2012	Guest lecture
20	Prof. Wonyong Choi, Namgo (Jong-Ryul Lee) Chair Professor, School of Environmental Science & Engineering (also at Department of Chemical Engineering), Pohang University of Science & Technology (POSTECH), Pohang, Korea	9 October 2012	Guest lecture
21	Prof. Young-Tae Chang, Department of Chemistry, NUS, Singapore	11 October 2012	Guest lecture
22	Dr. Elamparuthi, Postdoctoral Research Fellow, Chemical Biology, LUMU, Munchen, Germany	22 October 2012	Guest lecture

23	Dr. Yusuke Kawakami (Vice President for Research, Industry Academia Government Cooperation and International Affairs), Prof. Kohki Ebitani (School of Material Science) and Prof. Ryo Maezono, (School of Information Science), JAIST	26 October 2012	Visit to the department
24	Dr. Rodney A. Fernandes, Department of Chemistry, IIT Bombay	5 November 2012	Guest lecture
25	Prof. Henry White, CEO of Global Patent Services; Dr. Raghuram Kannan, alumnus of IIT Madras (M.Sc. Chemistry), Director, Nanoparticle Production Core Facility, Associate Professor, Department of Radiology, University of Missouri, Columbia; Prof. Cathy Cutler, University of Missouri Research Reactor, Columbia	26 November 2012	Visit to the department
26	Prof. Toshiaki Murai, Associate Editor, <i>Chemistry Letters</i> , Department of Chemistry, Faculty of Engineering, Gifu University, Yanagido, Gifu 501-1193, Japan	19 November 2012	Guest lecture
27	Prof. D.V.S. Jain, F.I.N.S.A., F.I.A.S., F.N.A.S., F.P.A.S., Professor Emeritus & INSA Honorary Scientist, Department of Chemistry, Punjab University, Chandigarh	13 December 2012	Guest lecture
28	Prof. Douglas R. MacFarlane, Australia Centre for Electromaterials Science, Monash University, Victoria, Australia	15 January 2013	Guest lecture
29	Dr. Subi Jacob George, Faculty Fellow, New Chemistry Unit, Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Jakkur P.O., Bangalore	15 January 2013	Guest lecture
30	Dr. Abhishek Dey, Assistant Professor Indian Association for the Cultivation of Science, Jadavpur, Kolkata	16 January 2013	Guest lecture
31	Prof. Angelika Sebald, Department of Chemistry, University of York, Heslington, YO10 5DD, England	18 January 2013	Guest lecture
32	Prof. Alexandra Navrotsky, Director, NEAT ORU & Peter A. Rock Thermochemistry Laboratory, UC Davis	21 January 2013	Guest lecture
33	Dr. Sampath Srinivasan (Former M.Sc. student, 2005 batch), Post Doctoral Fellow, Northwestern University, Evanston, USA	28 January 2013	Guest lecture
34	Dr. Rafal Klajn, The Robert Edward and Roselyn Rich Manson Career Development Chair, Department Of Organic Chemistry, Weizmann Institute Of Science, Rehovot, Israel	30 January 2013	Guest lecture
35	Prof. R. Graham Cooks, Henry Bohn Hass Distinguished Professor, Department of Chemistry, Purdue University, USA	4 February 2013	Guest lecture
36	Dr. Latha Ramakrishnan, Department of Chemistry and Physics, Saint Cloud State University, USA	7 February 2013	Guest lecture
37	Prof. Jean-Marie Lehn, Nobel Laureate, ISIS—Universite de Strasbourg	12 February 2013	Guest lecture
38	Dr. Devaraj Subramanian, Cell Biology and Biophysics Unit, European Molecular Biology Laboratory, Germany	1 March 2013	Guest lecture
39	Prof. Dr. Hendrik Zipse, Department of Chemistry, LMU Munchen, Germany	6 March 2013	Guest lecture
40	Dr. G.J. Sanjayan, Scientist Division of Organic Chemistry, National Chemical Laboratory, Pune	7 March 2013	Guest lecture
41	Dr. Kalyann Kumar Sadhu, Institute de Science et Ingenierie Supramoleculaires (ISIS), Universite De Stransbourg	12 March 2013	Guest lecture
42	Dr. Yamuna Krishnan, NCBS Bangalore, GKVK, Bellary Road, Bangalore	13 March 2013	Guest lecture

4.5.6. Other Activities of the Department/Centre

Sl. No.	Details
1	T. Pradeep gave a lecture titled Discovery of C ₆₀ —the Ball that Changed the Game at the Central Library, IIT Madras on 9 November 2012.
2	Our department is availing the services of retired faculty members for their study circle activities in November.
3	Study tour visit from American College, Madurai on 21 February 2013. Fifty students and three faculty members visited the department.
4	The Inter-IITs HoD Meet was held at the Department of Chemistry on 22 January 2013.
5	Study Circle: Prof. T.K. Varadarajan, retired faculty member, has assisted the weaker students in CY1001.
6	Chemistry in-house symposium on 22 August 2012: Convener, G. Sekar.
7	Affordable Drinking Water Purification Using Nanotechnology—International conference on emerging technologies for clean water at IIT Madras from 14 September 12 to 16 September 12.

4.6. DEPARTMENT OF CIVIL ENGINEERING

4.6.1. Introduction

The Department of Civil Engineering has been in existence since the inception of IIT Madras in 1959. Since then, it is contributing to the nation's infrastructure development and human resource generation. The 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, Canada, the Netherlands, the former USSR, etc. The faculty members, along with research scholars in the department, carry out innovative and challenging high-end research and 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 organizations worldwide. The activities of the department are carried out under different disciplines, administratively organized into five divisions, namely Building Technology and Construction Management (BTCM), Environmental and Water Resources Engineering (EWRE), Geotechnical Engineering (GT), Structural Engineering (ST) and Transportation Engineering (TR). There are 14 well-equipped laboratories attached to different 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 disciplines/branches introduced

Two minor streams were introduced in the Civil Engineering Department:

- Minor stream I—Sustainable Infrastructure and Environment Management
Objective of the minor stream. This minor stream will pave the way for engineering graduates to understand the compelling reasons for adopting sustainable approaches to life in general and sustainability issues confronting engineers around the world in particular, encompassing infrastructure and the environment.
Requirements of the minor stream. This minor stream is offered to all branches of the B.Tech./DD programmes, except civil engineering. However, civil engineering students may take these courses against their PMT electives apart from three other minor stream courses). This stream has one core course in Semester V and two elective courses in semesters VI and VII.
- Minor Stream II—Structural Mechanics
Objective of the minor stream. This minor stream will introduce the basics of structural mechanics and preliminary structural design to students from branches that do not offer a second-level mechanics course.
Requirements of the minor stream. This minor stream is open only to B.Tech./DD students (Biotechnology, Chemical Engineering, Computer Science, Electrical Engineering, Engineering Physics and Metallurgical and Materials Engineering). This minor stream offers two core courses and one elective.

New courses introduced

Sl. No.	Course No.	Title
1	CE7015	Design of Structures for Ductility
2	CE6780	Advanced Mechanics of Structures (modified)
3	ID6010	Composites Materials and Manufacturing (converted as interdisciplinary course)
4	CE5831	Transportation Engineering Studio
5	CE5810	Urban Transportation Planning (modified)
6	CE5830	Traffic Engineering and Management (modified)
7	CE5334	Global Construction Engineering and Management Practices
8	CE7016	Non-linear Analysis of Frame Structures

9	CE3241	Approaches for sustainable infrastructure and environment systems
10	CE5017	Urban Transport and The Environment
11	CE5015	Environmental Monitoring and Data Analysis
12	CE5014	Sustainable Construction

Students on roll

Programme	I year	II Year	III Year	IV Year	V Year and Others	Total
B.Tech.	64	60	56	44	16	240
Dual Degree	31	34	33	38	40	176
M.Tech.	85	89	2	0	0	176
M.S.	18	9	7	7	1	42
Ph.D.	33	44	28	31	14	150
PG Diploma	13	0	0	0	0	13
Total	244	236	126	120	71	797

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

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposia/Workshop	Date and Venue	Financial Assistance from
Abroad					
1	Aneetha V.	CE10D014	International conference, Construction Research Congress 2012	21–23 May 2012, USA	Institute
2	Parvathy V.S.	CE10S009	Fourth International Symposium on Dynamic Traffic Assignment (DTA 2012)	4–6 June 2012, USA	
3	Neethu Roy	CE09D010	7th International Conference on Maintenance and Rehabilitation of Pavements and Technological Control	28–30 August 2012, New Zealand	
4	A.R. Vijayanarayanan	CE12D065	15th World Conference on Earthquake Engineering	24–28 September 2012, Portugal	OAA
5	Ajay Krishnan	CE09S004	Internal conference, ASPIC 2012	3–5 October 2012, Turkey	Institute
6	Ranju Mohan	CE10D032	Student exchange programme	20 May–20 August 2012, USA	IUSSTF
7	Shika S.	CE12D019	Summer School on Climate Aerosol and the Cryosphere	19–29 June 2012, Italy	Organizers/OAA
India					
1	Ajay Krishnan	CE09S004	International Conference on Sustainability Challenges of Advances in Concrete Technology	2–4 May 2012	IIT Madras
2	Ramsundram N.	CE09D003	International Meet on Impact of Climate Change on Water Resources Development and Management	17–19 August 2012, Coimbatore	
3	Rejoice Aleyamma Abraham	CE10D033	Indian Geotechnical Conference	13–15 December 2012, IIT Delhi	
4	Aswathy Krishnan	CE09S015	Indian Geotechnical Conference	13–15 December 2012, IIT Delhi	
5	Subramanian P.	CE11D034	Indian Geotechnical Conference	13–15 December 2012, IIT Delhi	
6	Ambika S.	CE10D018	Second International Conference on Advanced Oxidation Process	4–8 October 2012	
7	Priya V.S.	CE09D013	Fifth CUSAT National Conference on Recent Advances in Civil Engineering	29 November–1 December 2012, Cochin	
8	Arya V.	CE12D034			
9	Vasudevan M.	CE10D005	Second International Conference on Drilling Technology 2012 (ICDT 2012)	6–8 December 2012, IIT Madras	
10	Berlin M.	CE10D010	and First National Symposium on Petroleum Science Engineering (NSSE)		

11	Mohanasundaram S.	CE09D011	Hydro 2012	6–8 December 2012, IIT Bombay
12	Vasudevan M.	CE10D005	5th International Groundwater Conference (IGWC 2012)	16–22 December 2012, Aurangabad
13	Berlin M.	CE10D010		
14	Mohanasundaram S.	CE09D011		
15	Aswathy E.V.	CE11M023	Indian Aerosol Science and Technology Association Conference 2012 (IASTA 2012)	11–13 December 2012
16	Shika S.	CE12D019		
17	Bahurudeen A.	CE11D002	UKIERI Concrete Congress Innovations in Concrete Construction	2–11 March 2013, Punjab
18	Jayachandran K.	CE10D022		
19	Berlin M.	CE10D010	International Conference on Emerging Trends in Engineering and Technology	21–22 February 2013, Martandam, Tamil Nadu
20	Hrishikesh C.G.	CE12D041	Short course, Air Quality Management	6–7 December 2012, IIT Bombay
21	Kishore Kumar M.	CE11S011	Short course, Air Quality Management	6–7 December 2012, IIT Bombay
22	Chithra V.S.	CE09D023	National conference, Urban Mobility India–research symposium	December 2012, Delhi
			International conferences on advances in building sciences & rehabilitation and restoration of structures	13–15, February, 2013
23	Rohit J.	CE12D015	National conference, Urban Mobility India–research symposium	December 2012, Delhi
			International conferences on advances in building sciences & rehabilitation and restoration of structures	13–15 February, 2013

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	Venkata Santhosh Kumar Delhi	CE09D008	Fulbright–Nehru Scholarship	Fulbright Foundation
2	Aswathy E.V.	CE11M023	Best Poster Award	Indian Aerosol Science & Technology Association, Mumbai
3	Mothukuri Snigda	CE09B081	Runner-up—Bentley Design Competition 2012 (innovation in bridge/road design)	Bentley Systems
4	Nandita Vadali	CE09B075		
5	Sravya Sudha E.	CE09B073	Outstanding Delegation Award	New York Global Young Leaders Summit 2013
6	Ravi Musti	CE09B033		
7	Ayush Nalotia	CE08B004		
8	Boeing Singh L.	CE03D006	Young Research Scholar Award	PMI (India)

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	Srinivasan G.D.	CE08B040	L&T ECC Endowment Prize	Convocation Prize
2	Nikhil S.	CE07B054	N.R. Dave Prize	
3	Bhavya S.	CE11G002	Institute Merit Prize	
4	Athulya Balakrishnan	CE10M051	Valli Anantharamakrishnan Merit Prize	
5	Saranya Vijayan	CE10M149	K. Devarajan Memorial Prize	
6	Venkata V. Santhosh Kumar Annabattula	CE10M195	L&T Endowment Prize	
7	Priyadarshini R.S.	CE07D016	Sree Gayathree Devi Award	
8	Sri Muruganandam B.	CE07D002	GE Ecomagnation Award	

9	Hareesh Pallikara Bahuleyan	CE10B024	Computer Age Management Services Pvt. Ltd. Prize	Institute Day Prize
10	Vadali Nandita	CE09B075	M.S.K. Chaitanya Varma Memorial Prize	
11	Vinu D.	CE08B066	Sri Venkatararaman Ravi Prize	
12	Ramachandran K.	CE11M180	Institute Merit Prize (Best Academic Record)	
13	Athulya Balakrishnan	CE10M051	Rajnikant Gandhi Memorial Award	
14	Swetha M.D.	CE08B063	Swati/Jayalakshmi Memorial Award	

4.6.3. Faculty and Their Activities

Faculty

Name and Qualifications	Major Areas of Specialization
Professors	
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 (Ms.) Ph.D. (IIT Kanpur)	Environmental engineering
M.S. Mathews, Ph.D. (IIT Madras)	Building technology, construction management
A. Meher Prasad, Ph.D. (Rice)	Structural engineering
S. Mohan, Ph.D. (IISc, Bangalore)	Environmental and water resources engineering
B.S. Murty, Ph.D. (Washington State)	Environmental and water resources engineering
C.V.R. Murty, Ph.D. (California Institute of Technology)	Structural engineering
K. Rajagopal, Ph.D. (Florida)	Geotechnical engineering
Rajib Basu Mallick, Ph.D. (Auburn University)	Transportation engineering
A. Ramachandirah Ph.D. (IIT Madras)	Building technology, construction management
K. Ramamurthy, Ph.D. (IIT Madras)	Building technology, construction management
Ravindra Gettu, Ph.D. (Northwestern)	Building technology, construction management
S.R. Satish Kumar, D.Engg. (Nagoya University)	Structural engineering
K.N. Satyanarayana, Ph.D. (Clemson)	Building technology, construction management
R. Sivanandan, Ph.D. (Virginia Tech.)	Transportation engineering
K. Srinivasan, Ph.D. (IIT Madras)	Water resources engineering
V. Thamizh Arasan Ph.D. (IIT Madras)	Transportation engineering
A. Veeraragavan Ph.D. (Bangalore University)	Transportation engineering
Associate Professors	
Amlan Kumar Sengupta, Ph.D. (University of Missouri)	Structural engineering
G. Appa Rao, Ph.D. (IISc, Bangalore)	Structural engineering
Arul Jayachandran, Ph.D. (IIT Madras)	Structural engineering
G.R. Dodagoudar, Ph.D. (IIT Bombay)	Geotechnical engineering
Karthik K. Srinivasan Ph.D. (Texas, Austin)	Transportation engineering
Manu Santhanam, Ph.D. (Purdue University)	Building technology, construction management
J. Murali Krishnan, Ph.D. (IIT Madras)	Transportation engineering
B. Nageswara Rao, Ph.D. (Iowa University)	Structural engineering
R.G. Robinson, Ph.D. (IISc, Bangalore)	Geotechnical engineering
K.P. Sudheer, Ph.D. (IIT Delhi)	Water resources engineering

Indumathi M. Nambi, Ph.D. (Clarkson University)	Environmental engineering
Assistant Professors	
Arun Menon, Ph.D. (University of Pavia, Italy)	Structural engineering
Ashwin Mahalingam, Ph.D. (Stanford University)	Building technology, construction management
Balaji Narasimhan, Ph.D. (Texas A&M University)	Water resources engineering
Dali Naidu Arnepalli, Ph.D. (IIT Bombay)	Geotechnical engineering
Gitakrishnan Ramadurai, Ph.D. (University of Rensselaer)	Transportation engineering
Lelitha Devi, Ph.D. (Texas A&M)	Transportation engineering
Radhakrishna G. Pillai, Ph.D. (Texas A&M University)	Building technology, construction management
S.T.G. Raghukanth, Ph.D. (IISc Bangalore)	Structural engineering
Rupen Goswami, Ph.D. (IIT Kanpur)	Structural engineering
Sachin S. Gunthe, Ph.D. (IITM Pune)	Atmospheric chemistry and physics
U. Saravanan, Ph.D. (Texas A&M)	Structural engineering
S.M. Shiva Nagendra, Ph.D. (IIT Delhi)	Environmental engineering
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 and water resources engineering
Soumendra Nath Kuiry, Ph.D. (IIT Kharagpur)	Hydraulics and water resources engineering
Adjunct Faculty	
A. Ramakrishna, Ph.D. (hc) (JNTU, Hyderabad)	Building technology, construction management
N. Raghavan, M.Tech. (IIT Bombay)	Structural engineering
Peter Fiener, Ph.D.	Environmental and water resources engineering

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

Sl. No.	Coordinator(s)	Title	Period
Conferences			
1	S.R. Gandhi	DFI international conference, Deep Foundation Technologies for Infrastructure Development	17–19 September 2012
2	R. Sivanandan and TR faculty	National conference, Urban Mobility—Challenges, Solutions and Prospects	13–14 July 2012
3	Ravindra Gettu	Twin conference: (1) Advances in Building Sciences; (2) Rehabilitation and Restoration of Structures	13–16 February 2013
Workshops			
1	C.V.R. Murty and Arun Menon	Symposium, Safety and Conservation of Heritage Structures	23–24 August 2012
2	Ligy Philip	Training workshop sponsored by UNICEF, Community-Based Water Quality Monitoring System (organized for the community-level stakeholders of village panchayats), Krishnagiri District, Tamil Nadu	June–July 2012 (6 programmes)
3	Balaji Narasimhan (along with Prof. R. Srinivasan, Texas A&M University)	Introductory SWAT workshop (at IIT Delhi)	16–17 July 2012
4	Ligy Philip and B.S. Murty	Seminar, Exploring the Current Issues in Sustainability	10 December 2012
5	Balaji Narasimhan (along with Prof. R. Srinivasan, Texas A&M University)	Assessment of impact of climate change on water resources using Soil and Water Assessment Tool, IIT Madras	20–22 December 2012
6	S.R. Gandhi and A. Boominathan	Indo-Australian bilateral science cooperation programme (international workshop), Spatially Enabled Nations: A Meta-Integrative Framework Towards Improving Disaster Management Practices in India and Australia	21–26 January 2013

7	Manu Santhanam	Workshop, Durability and Long-Term Performance of Concrete	12 February 2013
8	A. Veeraragavan	Workshop, Using Science and Data in Road Safety Management	15–16 February 2013
9	A. Boominathan (jointly with Indian Geotechnical Society, Chennai Chapter)	National seminar, Embankments: Design and Construction	9 March 2013
10	Sachin S. Gunthe	Workshop, Climate and Health Effects of Tropical Aerosols	6–7 March 2013

Short-term courses

1	V. Thamizh Arasan	Short course, Urban Transportation Planning, for practicing transportation engineers and planners	14–18 May 2012, Accra, Ghana
2	Subhadeep Banerjee and R.G. Robinson	QIP short-term course, Characterisation and Modeling of Soil Behaviour	17–22 September 2012
3	J. Murali Krishnan	AICTE short course, Modified Binder Characterization	30 December 2012 to 1 February 2013
4	Ravindra Gettu	3-day short-term course, Waterproofing of Concrete Structures	17–19 January 2013
5	Rupen Goswami and C.V.R. Murty	AICTE short course, Earthquake Behaviour of Buildings	21–26 January 2013
6	Ravindra Gettu and K.N. Satyanarayana	Short course for Shapoorji Pallonji engineers as part of their leadership development programme	24 February to 2 March 2013
7	B.S. Murty and Ligy Philip (jointly with A.K. Kolar/IGCS)	IGCS Winter School on Urban Sustainability	24 February to 8 March 2013
8	Ashwin Manalingam and Sivakumar Palaniappan	AICTE short-term course, Theory and Advanced Practices in Construction Project Management	4–8 March 2013

Training programmes

1	A. Veeraragavan	Training programme for provincial engineers of Sri Lanka, Recent Trends in Highway Construction	14–18 May 2012
		Recycling of Bituminous Pavement Layers for Sustainable Road Infrastructure—Issues and Concerns	18 June 2012
2	S.M. Shiva Nagendra	Training programme, Industrial Air Pollution Control Techniques and Air Quality Management	11–13 October 2012

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
Workshops				
1	U. Saravanan	Workshop, Asia Pacific Network Centre for Research in Smart Structures Technology 2012	IISc, Bangalore	27–28 July 2012
2	Balaji Narasimhan	CORTEX South Asia Training Workshop	Pune	17–18 October 2012
3	Robinson	First Asian Workshop on Physical Modelling in Geotechnics, Asiafuge 2012	IIT Bombay	13–16 November 2012
4	A. Boominathan	Indo Korean workshop, Geotechnology in Urban Development	IIT Delhi	12–15 December 2012
		International workshop, Seismic Requalification of Geotechnical Structures (SRGS)	IIT Delhi	17 December 2012
5	Arun Menon	Workshop, Interdisciplinary Initiatives: Technology & Culture Interface	MHRD, New Delhi	3 January 2013
6	C.V.R. Murty	Workshop, Interdisciplinary Initiatives: Technology & Culture Interface	MHRD, Government of India	3 January 2013

	C.V.R. Murty	Sensitization workshops on earthquake risk management	National Disaster Management Authority, Government of India, New Delhi	29–30 January 2013
7	B. Nageswara Rao and G. R. Dodagoudar	Workshop, Experimental Structural Dynamics, Structural Health Monitoring and Non-destructive Evaluation	IIT Delhi	9 March 2013
Seminars				
1	Arul Jayachandran	Seminar on pre-engineered buildings	MES, Gujarat	12 October 2012
2	V. Lelitha Devi	Orientation for engineers on earthquake safety	New Delhi	29–30 November 2012
3	B.S. Murty	Seminar, Water Hammer in Piping System	Thrissur Engineering College	17 December 2012
Symposia				
1	Sivakumar P.	International symposium, LCA and Construction	Nantes, France	10–12 July 2012
2	R. Sivanandan	IUT Research Symposium of UMI Conference	New Delhi	4–7 December 2012
3	Gitakrishnan Ramadurai	Research symposium, Urban Mobility India 2012	MOUD, New Delhi	4–6 December 2012
4	Lelitha Devi	Research symposium, Urban Mobility India 2012	MOUD, New Delhi	4–6 December 2012
5	Ligy Philip	Symposium, Indo-German Frontiers of Engineering—2013	International Advanced Research Centre, Hyderabad	15–17 March 2013
6	Ligy Philip, Ashwin Mahalingam and S.T.G. Raghukanth	Symposium, Indo-German Frontiers of Engineering—2013	International Advanced Research Centre, Hyderabad	15–17 March 2013
Conferences				
1	Manu Santhanam	2nd International Conference on Microstructure Related Durability of Cementitious Composite	Amsterdam, The Netherlands	11–17 April 2012
2	K. Rajagopal	2nd International Pan-American Geosynthetics Conference GeoAmericas 2012	Lima, Peru	1–4 May 2012
3	Sivakumar Palaniappan	ASCE Construction Research Congress	Purdue University, USA	21–23 May 2012
		International symposium, LCA and Construction	Nantes, France	10–12 July 2012
4	S.M. Shiva Nagendra	Air Pollution 2012 Conference	Spain	16–18 May 2012
5	A. Boominathan	2nd International Conference on Performance-Based Design in Earthquake Geotechnical Engineering	Taormina, Italy	28–30 May 2012
6	Indumathi M.	American Academy of Science Conference on Environment Science and Technology 2012	Houston, USA	26 June to 1 July 2012
7	Balaji Narasimhan	2012 International SWAT Conference	IIT Delhi	18–20 July 2012
8	S.M. Shiva Nagendra	Asia Oceania Geosciences Society 2012 (AOGS 2012)	Singapore	15–18 August 2012
9	K. Rajagopal	National conference, Geosynthetics in Infrastructure Projects—GeoInfra 2012	Hyderabad	25–26 August 2012
10	A. Ramachandraiah	International Conference on Noise Control Engineering	New York, USA	23–29 August 2012
11	Manu Santhanam	International conference, ICCVRRR 2012	University of Cape Town, South Africa	24 August to 7 September 2012
12	Rupen Goswami	15th World Conference on Earthquake Engineering	Portugal	24–28 September 2012

13	Ravindra Gettu	3rd International Conference on Concrete Repair, Rehabilitation and Retrofitting, Cape Town, South Africa	University of Cape Town, South Africa	3–5 September 2012
14	Ravindra Gettu	8th International Conference on Fibre Reinforced Concrete	University of Minho, Guimaraes, Portugal	18–20 September 2012
15	K. Rajagopal	National conference, Geosynthetics in Infrastructure Project—GeoInfra 2012	Hyderabad	25–26 August 2012
16	A. Ramachandraiah	International Conference on Noise Control Engineering	New York, USA	23–29 August 2012
17	C.V.R. Murty	International Conference of East Asian Countries	Ministry of Home Affairs, New Delhi	8–9 October 2012
18	Sivanandan	International Conference on Transportation Planning and Implementation Methodologies for Developing Countries	IIT Bombay	12–14 December 2012
19	G. Appa Rao	National Conference on Advances in Earth Sciences, Structural, Geotechnical and Earthquake Engineering (AESG2E-2012)	CBIT, Hyderabad	4–5 October 2012
20	K. Srinivasan	Conference, Hydro 2012	IIT Bombay	7–9 December 2012
21	U. Saravanan and B.N. Rao	International conference, ICCMS 2012	Hyderabad	9–12 December 2012
22	S.R. Gandhi	Indian Geotechnical Conference IGC 2013	IIT Delhi	15 December 2012
23	V. Lelitha Devi	National conference, Urban Mobility India—research symposium	Delhi	December 2012
24	R.G. Robinson	Indian Geotechnical Conference IGC 2013	IIT Delhi	12–15 December 2012
25	Koshy Varghese	National conference, Recent Advances in Civil Engineering 2012	Saintgits College of Engineering, Kotayam	20 December 2012
26	Ravindra Gettu	Conference, Special Concretes in India, Their Future and the Way Forward	L&T Construction, International	10 January 2013
27	Arun Menon	International conference, Advances in Building Sciences & Rehabilitation and Restoration of Structures	IIT Madras	13–15 February 2013
28	Devdas Menon	International conference, Human Values in Higher Education (nominated by Director, IIT Madras)	IIIT Hyderabad	17–18 February 2013

Training programmes

1	Sivakumar Palaniappan	2nd IITM Faculty sensitization and skills development programme on Faculty-student connect beyond the classroom in the unique living and learning setting at IIT	IIT Madras	16 March 2013
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Short-term courses

1	S.T.G. Raghukanth	Geotechnical Earthquake Engineering	NIT Silchar	18–22 June 2012
2	S.M. Shiva Nagendra	Short course, Sediment Management for Hydro Power Projects, organized by Central Water and Power Research Station (CWPRS)	IIT Bombay	5–6 December 2012
		Short course, Air Quality Management, organized by Centre for Environmental Science & Engineering	IIT Bombay	7 December 2012
3	G.R. Dodagoudar	Sediment Management for Hydro Power Projects	CWPRS, Pune	5–6 December 2012
4	Venu Chandra	Sediment Management for Hydro Power Projects	CWPRS, Pune	5–6 December 2012

Special lectures delivered by the faculty in other institutions

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
1	Balaji Narasimhan	Introduction to GIS and Remote Sensing	Vel Tech High Tech Rangarajan Sakunthala Engineering College	9 March 2012
2	C.V.R. Murty	Structural Design of Nuclear Power Plants to Resist Earthquake Effects	Safety Research Institute, IGCAR, Kalpakkam	27 April 2012
3	V. Thamizh Arasan	Sustainable Urban Transportation Planning	KNUST, Ghana	30 April to 11 May 2012
4	Sachin S.G.	Aerosol, Monsoon and Air Pollution Over India	Max Planck Institute for Chemistry, Germany	8 May 2012
5	Indumathi M. Nambi	Sustainable Water Management Practices and Projects in India	University of Illinois	15 June 2012
6	S.R. Gandhi	Deep Excavations for Basement Construction	Larsen & Toubro Limited, Chennai	16 June 2012
7	V. Thamizh Arasan	Methodology to Meet Future Demands for Transport	The Institution of Engineers, Tamil Nadu State Centre, Chennai	20 June 2012
		Limit State Design of Steel Structures, Local and Plate Buckling, Design of Compression Members, Design of Beam Columns, Analysis and Design for Earthquake Loads	Tata Bluescope Steel, Pune	25–28 July 2012
8	Rupen Goswami	Some Concepts in Earthquake Behaviour of Buildings	GSDMA, Gandhinagar	30 June 2012
		Walls in Buildings to Resist Earthquake	Dr. MGR Educational and Research Institute University, Chennai	27 July 2012
9	A.K. Sengupta	Seismic Retrofitting of Buildings	Dr. MGR University, Chennai	28 July 2012
10	Balaji Narasimhan	Topographic Analysis Using GIS for Watershed Delineation	Tamil Nadu Agricultural University, Coimbatore	4 September 2012
		Thermal Remote Sensing for Assessing Irrigation Water Use and Efficiency	Tamil Nadu Agricultural University, Coimbatore	4 September 2012
11	Ravindra Gettu	Effective Use of Super Plasticizers for Sustainable Concrete Technology	University of Witwatersrand, Johannesburg, South Africa	14 September 2012
12	S.M. Shiva Nagendra	Current Environmental Issues	Hindustan University, Chennai	27 August 2012
13	M.S. Mathews	European Approach to Monument Preservation and an Indian Example	KCT, Coimbatore	28 August 2012
14	Balaji Narasimhan	Topographic Analysis Using GIS for Watershed Delineation	Tamil Nadu Agricultural University, Coimbatore	4 September 2012
		SWAT as a Tool for Assessing the Climate Change Impacts on the Hydrology: Scientific and Technical Issues	Indian National Committee on Climate Change	19 October 2012
15	S.M. Shiva Nagendra	Current Local, Regional, Global Environmental Issues: Engineering Solutions	Vel Tech High Tech Engineering College	28 September 2012
16	S.R. Satish Kumar	Invited lectures for workshop (CEP)	Kolkata	12–13 October 2012
17	Ligy Philip	Advance Technologies in Water Management	Ben Gurion University, Israel	15–17 October 2012
18	S.M. Shiva Nagendra	Environmental Issues in Chennai City and Possible Engineering Solutions	Vellore Institute of Technology, Chennai	1 November 2012
19	Rupen Goswami	Earthquake Behaviour of Buildings	Guwahati Emergency Management Exercise 2012	1–2 November 2012
		Earthquake Behaviour of Buildings: Elastic Behaviour/Inelastic Behaviour	Delhi Emergency Management Exercise 2012, New Delhi	29–30 November 2012

20	C.V.R. Murty	Designing Structures to Resist Earthquake and Blast Effects on Industrial Structures	FICCI, Hyderabad	26–28 November 2012
		Earthquake-Resistant Design of RC Buildings	Delhi Emergency Management Exercise 2012, New Delhi	29–30 November 2012
21	Arun Menon	Earthquake Behaviour, Design and Strengthening of Masonry Buildings	Delhi Emergency Management Exercise 2012, New Delhi	29–30 November 2012
22	S.R. Satish Kumar	Invited lectures for workshop (CEP)	Kolkata	12–13 October 2012
23	C.V.R. Murty	Science and Technology on Earthquake Safety of Buildings	University of Cochin	1 December 2012
24	K.P. Sudheer	Literature Review and Problem Identification	Government Engineering College, Trivandrum	4–5 December 2012
25	Sachin S. Gunthe	Data Analysis and Result Interpretation	Government Engineering College, Trivandrum	4–5 December 2012
26	K. Rajagopal	Case-Study of Construction of Very High Geosynthetic Reinforced Soil Retaining Walls in India	5th Asian Regional Conference on Geosynthetics, Bangkok	12 December 2012
27	R. Sivanandan	Urban Transport in India—Agenda for Future Research	IIT Bombay	12 December 2012
28	A. Boominathan	Seismic Performance of Pile Foundations and Design Issues	IIT Delhi	17 December 2012
29	Arun Menon	Structure in Architecture: A Chronological Study and Introduction to Mechanical Behaviour of Masonry	Rajiv Gandhi Institute of Technology, Kottayam	18–19 December 2012
30	S.M. Shiva Nagendra	Air Quality Management Concepts and Air Pollution Control Techniques	NIT, Suratkal	26 December 2012
		Environmental Assessment of Industrial Clusters		28 December 2012
31	Balaji Narasimhan	GIS for Water Resources Management	Sri Krishna College of Technology	26 December 2012
32	A. Veeraragavan	(i) Quality Management in Road Construction; (ii) Pavement Management System	Bangalore	29 December 2012
33	K. Rajagopal	Major Civil Engineering Construction	SVIET, Machilipatnam	4 January 2013
34	Devdas Menon	Extra-mural lecture, Self Awareness	NIT Calicut	10–11 January 2013
35	S.M. Shiva Nagendra	Indoor Air Quality Investigations in a Naturally Ventilated School Building	MANIT, Bhopal	11 January 2013
36	Radhakrishna G Pillai	Durability Concrete Construction—Deterioration Mechanisms	RIT, Kottayam	24 January 2013
37	Lelitha Devi	Use of ITS for Prediction of Arrival Time of MTC Buses	Anna University, Chennai	28 January 2013
38	K. Rajagopal	The Use of Geosynthetic for Innovative Construction of Road And Rail Embankments and Retaining Walls	Vel Tech Engineering College, Avadi	7 February 2013
		Geosynthetic for Construction of Steep Embankments	Indian Geotechnical Society—Chennai Chapter	9 March 2013
39	Ligy Philip	Series of lectures on the topic ‘Human Sewer Cleaning System, Economical and Easy Way to Test Water Quality’	Rajiv Gandhi University of Knowledge Technologies, Hyderabad	7–8 February 2013
		Bioremediation of Hazardous Substances	Government College of Technology, Coimbatore	19 March 2013
40	S.R. Satish Kumar	Training programme on IS 800-2007 for teachers and professionals	Institute for Steel Development & Growth, Kolkata	21–22 February 2013
41	A. Boominathan	Problems in Earthquake Prone Areas and Remedies (PREPARE)	Vigyan University, Guntur	23 February 2013

42	K.N. Satyanarayana	R&D in C&D Waste Recycling (at the Workshop on Construction & Demolition Waste Recycling)	ICI & CPWD, New Delhi	1–2 March 2013
43	R.G. Robinson	Intricacies of Subsurface Investigation Site Investigation and Ground Improvement Techniques	Anna University Government Engineering College, Kozhikode	6 March 2013 23 March 2013
44	Gitakrishnan Ramadurai	Recent Techniques in Road Safety Management	Dr. MGR Educational and Research Institute, Maduravoyal	6 March 2013
45	Arun Menon	Masonry Structures	Government Engineering College, Thrissur	12–14 March 2013
46	Ashwin Mahalingam	Public Private Partnership on Water	5th Indo-German Frontiers of Engineering Symposium, Hyderabad	13–15 March 2013
47	A. Veeraragavan	Recent Developments in Highway Construction	Pondicherry Engineering College	14 March 2013
48	S.R. Gandhi	Soil–Structures-Interaction Analysis for Foundation	Larsen & Toubro, Chennai	16 March 2013
49	A. Meher Prasad	Application of Soil–Structure Interaction Analysis for Dynamic Loading	Larsen & Toubro, Chennai	16 March 2013
50	Gitakrishnan Ramadurai	Recent Techniques in Road Safety Management	Dr. MGR Educational and Research Institute, Maduravoyal	6 March 2013
51	Arun Menon	Masonry Structures	Government Engineering College, Thrissur	12–14 March 2013
52	A. Veeraragavan	Recent Developments in Highway Construction	Pondicherry Engineering College	14 March 2013

Visits abroad by faculty members

Sl. No.	Name of Faculty Member	Country Visited	Date	Purpose of Visit	Funding from
1	K.N. Satyanarayana	Singapore	4–8 April 2012	PAN IIT Meeting and visit to NUS	Institute Fund
2	Manu Santhanam	The Netherlands	11–17 April 2012	International Conference, Amsterdam	
3	V. Thamizh Arasan	Ghana	30 April to 18 May 2012	Lectures to PG students and research scholars of KNUST and short course for practicing engineers	
4	K. Rajagopal	Peru	1–4 May 2012	Council meetings of International Geosynthetics Society, Lima	
5	Sachin S. Gunthe	Germany	2–25 May 2012	Visiting Scientist, Collaborative Work, Max Plank Institute, Mainz	
6	S.M. Shiva Nagendra	Spain	11 May	Visit to Technical University of Madrid, Madrid	
		Spain	16–18 May 2012	Paper presentation at international conference, A Coruna	
7	Sivakumar Palaniappan	USA	21–25 May 2012	ASCE Construction Research Congress and university visits	
8	Sivakumar Palaniappan	France	10–12 July 2012	International Symposium on Life Cycle Assessment and Construction	
9	Koshy Varghese and K.N. Satyanarayana	USA	19–28 May 2012	Global Leadership Forum, ASCE Construction Research Congress and university visits	
10	V. Lelitha Devi	USA	25 May to 12 June 2012	University visits	
11	A. Boominathan	Italy	28–30 May 2012	International conference, Taormina	
12	K.P. Sudheer	USA	15 May to 18 July 2012	Visiting Research Fellowship, Purdue University	

13	Indumathi M. Nambi	USA	2 June to 1 July 2012	Meetings at Champaign and international conference at Houston	
14	A. Veeraragavan	China	13–16 June 2012	Visiting cold recycling plant, Hangzhou	
15	K.N. Satyanarayana	Singapore	7–17 July 2012	Joint research proposal, National University of Singapore	
16	Ligy Philip and B.S. Murty	Germany	8–18 July 2012	IGCS Summer School and IGCS Steering Committee Meeting, Berlin	
17	Sivakumar P.	France	10–12 July 2012	Paper presentation at international symposium, Nantes	
18	S.M. Shiva Nagendra	Singapore	15–18 August 2012	Asia Oceania Geosciences Society 2012 (conference)	
19	Ravindra Gettu	South Africa	1–16 September 2012	Concrete Repair and Retrofitting (conference), Cape Town and visit to University of Witwatersrand, Johannesburg	
20	Manu Santhanam	South Africa	24 August to 7 September 2012	International Conference on Concrete Repair, Rehabilitation and Retrofitting (ICRRR2012)	
21	Radhakrishna G. Pillai	Belfast, UK	17–19 September 2012	International Conference on Durability of Concrete Structures—2012 (ICDCS-2012), Belfast, UK	
22	A. Boominathan	Lisbon, Portugal	24–28 September 2012	15th World Conference on Earthquake Engineering (15WCEE)	
23	A. Meher Prasad	Lisbon, Portugal	24–28 September 2012	15th World Conference on Earthquake Engineering	
24	Devdas Menon	Lisbon, Portugal	24–28 September 2012	15th World Conference on Earthquake Engineering	
25	S.R. Satish Kumar	Lisbon, Portugal	24–28 September 2012	15th World Conference on Earthquake Engineering	
26	A. Ramchandraiah	New York, USA	23–29 August 2012	International Conference on Noise Control Engineering	
27	M.S. Mathews	Pavia, Italy	15–23 September 2012	Visit to Centre for Earthquake Studies, University of Pavia, Italy	
28	G. Appa Rao	Canada	19–25 October 2012	ACI Fall Convention, Toronto, Canada	
29	Arun Menon	Poland	15–18 October 2012	8th International Conference on Structural Analysis of Historical Constructions	
30	Ligy Philip	Israel	15–17 October 2012	Invited lecture at 3rd Sede Boker Conference on Water Technologies 2012	
31	K. Rajagopal	Thailand	11–15 December 2012	Asian Regional Conference on Geosynthetics	
32	P. Alagusundaramoorthy	USA	12–20 January 2013	Annual Meeting of Transportation Research Board	Organizers

Honours and awards obtained by faculty members

Honours

Sl. No.	Name of Faculty Member	Name of Honour	Awarded by
1	A. Veeraragavan	Member of the Flexible Pavement, Composite Pavement, Road Maintenance and Asset Management committees Selected as Chairman of the Research Council of National Transportation Planning and Research Centre (NATPAC), India	Indian Roads Congress Government of Kerala

2	Indumathi M. Nambi	Member of State Expert Appraisal Committee Expert Committee Member	Tamil Nadu State Environmental Impact Assessment Authority Integrated Solid Waste Management for Chennai City
3	S.R. Satish Kumar	Jury member for INSDAG Professional Award	INSDAG, Kolkata
4	V. Lelitha Devi	Selected for the Frontiers of Engineering Symposium	National Academy of Engineers, USA
5	R. Sivanandan	Member of Inter-Ministerial Core Group on ITS Member of Awards Selection Committee—Awards for Excellence in Urban Transport	Ministry of Urban Development, Government of India Ministry of Urban Development, Government of India
6	S.M. Shiva Nagendra	Expert Member of Empowered Committee	Constituted by the Honorable Supreme Court of India

Awards obtained by faculty members

Sl. No.	Name of Faculty Member	Name of Award	Awarded by	Awarded for	Date of Award
1	K.P. Sudheer	Visiting Research Scientist Fellowship	Purdue University, USA	To conduct advanced research in eco-hydrology and water quality	17 May to 18 July 2012
2	Balaji Narasimhan	Distinguished Achievement Award	International SWAT Conference 2012	Recognition of professional achievements and dedicated services to the worldwide Soil and Water Assessment Tool (SWAT) user community	19 July 2012
3	Ravindra Gettu	RILEM Fellow	RILEM International Union of Laboratories and Experts in Materials, Structures and Systems, France	Scientific contributions in the area of materials and structures	5 September 2012
		Best paper published in the ICI journals	Indian Concrete Institute	Paper on corrosion of rebars in reinforced concrete	22 September 2012
4	Ashwin Mahalingam	Young Faculty Recognition Award (YFRA)	IIT Madras	Outstanding achievements in teaching, scholarship and creative research work	5 September 2012
5	V. Lelitha Devi	Volvo Sustainable Mobility Award 2012	Volvo Buses India Pvt. Ltd., Karnataka	The project 'Bus Arrival Prediction System for Indian Cities'	29 October 2012
6	R.G. Robinson and Bushra I.	IGS-ONGC Biannual Prize	Indian Geotechnical Society, New Delhi	Best paper on marine geotechnical engineering	13 December 2012
7	A. Boominathan, jointly with R. Krishna Kumar (IGS, formerly M.S. Scholar)	Prof. C.S. Desai Biannual Prize	Indian Geotechnical Society, New Delhi	Best paper on constitutive modelling for geologic materials	
8	Koshy Varghese	PMI (India) Distinguished Scholar Award	PMI (India)		31 January to 2 February 2013
9	K. Rajagopal	IGS Achievement Award	International Geosynthetics Society, USA	Distinguished service to geosynthetics-related activities in India	December 2012

Books, monographs authored/co-authored

Sl. No.	Name of Faculty Member	Title	Publisher	Author/ Co-author
1	Ligy Philip, B.S. Murty and S. Sundaramoorthy (lead authors)	<i>Guidelines for Decentralized Waste-water Management</i>	Ministry of Urban Development	Author
2	C.V.R. Murty, R. Goswami, A.R. Vijayanarayanan, K. Iyer, S.M. Kulkarni and S. Subramaniam	<i>Build a Safe House with Confined Masonry</i>	Gujarat State Disaster Management Authority, Gandhinagar, India	Author
3	C.V.R. Murty, R. Goswami, A.R. Vijayanarayanan, R. Pradeep Kumar and V.V. Mehta	<i>Introduction to Earthquake Protection of Non-structural Elements in Buildings</i>		Author
4	C.V.R. Murty, R. Goswami, A.R. Vijayanarayanan and V.V. Mehta	<i>Some Concepts in Earthquake Behaviour of Buildings</i>		Author
5	K. Rajagopal	<i>Geosynthetics and Reinforced Soil Structures</i> , consisting of 40 lectures	NPTEL video course	Author
6	A.S. Balu and B.N. Rao	<i>Structural Reliability Bounds: Under Mixed Uncertainties</i> (ISBN 978-3-8484-0488-9)	LAP Lambert Academic Publishing	Co-author
7	Dali Naidu Arnepalli	Chapter on “Earth Dams” in the Hand Book of Geosynthetic Engineering	Institute of Civil Engineers, UK	Author

Fellowships of academies and professional societies

Details	Name of Faculty Member	Year of Admission
IGS—Life Fellow	S.R. Gandhi	1982
Institute of Engineers (India)—Life Fellow	S.R. Gandhi	2001
DFI—Member	S.R. Gandhi	1995
Institute of Engineers (India)—Fellow	C.V.R. Murty	2012

Journal editorial boards

Sl. No.	Name of Faculty Member	Position (Editor/Member)	Journal
1	K. Rajagopal	Editorial Board Member	<i>Journal of Geotextiles and Geomembranes</i>
		Editorial Board Member	<i>Indian Geotechnical Journal</i>
		Editorial Board Member	<i>Journal of Ground Improvement and Geosynthetics</i>

4.6.4. Design and Development Activities

New facilities added or major equipment procured

Sl. No.	Name of Equipment	Value (in lakhs of Rs.)
1	MTS Model 311 Dynamic High Force System	148.50
2	Ultra Violet Aerodynamic Particles Size Sensor	67.30
3	MGC+HBM Amplifier	11.89

Patents filed

Sl. No.	Name of Faculty Member	Topic
1	K. Rajagopal	A Novel Method for Making Gabion Box-Mediated Reinforcement System

4.6.5. Research and Consultancy

Sponsored research projects

Number of projects: 15

Value of projects: Rs.973.03 lakhs

Sl. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co-ordinators
1	Development of Performance Specifications for Concrete Construction of India	14 May 2012 to 13 May 2016	Department of Science and Technology	50.00	Manu Santhanam
2	Probabilistic Service Life Prediction of Prestressed Concrete Structures	6 June 2012 to 5 June 2015	Department of Science and Technology	18.42	Radhakrishna G. Pillai
3	Cyclic Properties and Constitutive Model of Chennai Marine Clay	25 May 2012 to 24 May 2015	Department of Science and Technology	17.88	Subhadeep Banerjee
4	Development of Earthquake Displacement and Velocity Hazard Maps of India	20 July 2012 to 19 July 2015	Department of Science and Technology	17.50	Raghu Kanth S.T.G.
5	Study of Polymer Modified Cement (PMC)-Based Materials for Repair and Waterproofing of Concrete Structures	24 August 2012 to 23 August 2015	Department of Science and Technology	19.35	Ravindra Gettu
6	Development of Warrants for the Use of Modified Binders for Improved Performance of Flexible Pavements	27 July 2012 to 26 July 2015	Department of Science and Technology	177.66	Veeraraghavan A.
7	Study of Self-Healing Ability of Advanced Fibre-Reinforced Cement-Based Materials	11 September 2012 to 10 September 2015	Department of Science and Technology	4.50	Ravindra Gettu
8	Re-use of Waste Water (Industry and Domestic) for Irrigation in Kancheepuram Municipality		Public Works Department, Tamil Nadu	20.17	Indumathi M. Nambi
9	Supporting Consolidation, Replication and Up-scaling of Sustainable Wastewater Treatment and Reuse Technologies for India (SARASWATHI)		Department of Science and Technology	66.32	Ligy Philip
10	Study on Economization of Prefab Structures	18 January 2013 to 17 January 2016	National Buildings Construction Corporation Limited	36.00	Appa Rao G.
11	Evaluation of Strategies for the Environmental Restoration of Pallikaranai Marsh	1 January 2013 to 31 March 2014	Tamil Nadu Forest Department	5.00	Indumathi M. Nambi
12	Experimental and Analytical Studies on Two-Way Hollow Core Slabs	20 March 2013 to 19 March 2016	Department of Science and Technology	38.50	Nageswara Rao B.
13	Characterizing 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	Department of Science and Technology	42.00	Sachin S. Gunthe
14	Integrated Closed-Loop Controlled Testing Facility for the Mechanical Characterization of the Nonlinear Response of Civil Engineering Materials (FIST)		Department of Science and Technology	460.00	Head of the Department
15	Investigating the Behaviour of Suspended Cohesive Sediments in an Annular Flume: An Experimental Study	30 January 2013 to 29 January 2016	New Faculty Scheme	20.00	Venu Chandra

Industrial consultancy projects

Number of projects: 172

Value of projects: Rs.791.48 lakhs

Sl. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
1	Meher Prasad A.	Structural Proof Checking for High Rise Residential Project	True Value Homes (I) Pvt. Ltd.	18.02
2	Devdas Menon	Tension Test on Bare Bars and Fatigue Test	Shakthi Commodities Pvt. Ltd.	3.31
3	Alagusundaramoorthy P.	Proof Checking the Foundation Designs of PEB Building for HAL	Potential Semac Consultants Pvt. Ltd.	2.21
4	Dali Naidu Arnepalli	Evaluation of Geotechnical Characteristics of Geomaterials and GCLs	Common Code	0.17
5	Devdas Menon	Proof Checking of Residential Complex for Add Albatross	Add-Albatross Properties Pvt. Ltd.	25.01
6	Meher Prasad A.	Testing of Axial Compressive and Water Absorption and Flexure Test	FACT-RCF Building Products Ltd.	2.12
7	Robinson R.G.	Vetting of PVD Design and Testing for CMRL Depot Site	Larsen and Toubro Limited	2.48
8	Boominathan A.	Site-Specific Seismic Studies at IOCL LNG Plant at Ennore	Foster Wheeler India Private Limited	8.99
9	Arul Jayachandran S.	Testing of Gas Pressure-Welded Reinforcement Bar Splices	Lanco Infratech Ltd.	15.40
10	Thamizh Arasan V.	Material Testing Mix Design and Quality Check for Air-Field Pavement Works	Airports Authority of India	1.98
11	Appa Rao G.	Concrete Mix Design for Angular Taxi Track (F1) at Chennai Airport	Airports Authority of India	1.16
		Determination of In-Situ Concrete Strength from Cylindrical Cores	National Building Construction Corporation Ltd.	1.60
12	Meher Prasad A.	Testing of Heavy Commercial Vehicle Drive Axle Housing	Axles India Limited	2.76
13	Thamizh Arasan V.	Evaluation of Materials for Flexible Pavement	Prathyusha Resources and Infra Private Limited	1.80
14	Rajagopal K.	Recommendation of Geosynthetic and Connection Strength Properties for Reinforced Soil Retaining Walls	Gareware-Wall Ropes Ltd.	5.52
15	Ligy Philip	Water, Wastewater and Soil Sample Analyses	Common Code	0.22
16	Dodagoudar G.R.	Consulting Services in Foundation Engineering	Common Code	0.50
17	Arul Jayachandran S.	Design Verification of PEB for Nematik Aluminum Castings India Pvt. Ltd., at Maraimalai Nagar	Lloyd Insulations (India) Ltd.	1.70
		Design Verification of PEB for Warehouse for Ashok Leyland John Deere Construction Equipment Co. Pvt. Ltd., Gummidipoondi	Lloyd Insulations (India) Ltd.	1.10
18	Boominathan A.	Provision of OTM Accomodation for Officers at Bunniyard	Military Engineering Services	2.21
		Investigation on Rock Profile at 20 Storey Residential Building Project Site, Kottivakkam	Ambojini Property Developers Limited	5.06
19	Gandhi S.R.	Assesment of Dyke Safety of the Pond of NALCO, CPP, Angul	State Pollution Control Boad	3.37

20	Satish Kumar S.R.	Proof Checking of PEB Design	Tiger Steel Engineering	2.21
21	Ligy Philip	Evaluation of Trail Run of CETPs ZLD System	Veerapandi Common Effluent Treatment Plant (P) Ltd.	5.62
22	Alagusundaramoorthy P.	Proof Checking the Design of Substructure of the Proposed Rail Flyover Bridge Across NH5	OPG Power	3.65
23	Nageswara Rao B.	Vetting of Structural Design Calculations and Drawings for 15 MLD Water Treatment Plant at HAL	Megha Engineering and Infrastrure Ltd.	3.37
24	Devdas Menon	Testing of Elastomeric Bearing	Common Code	0.66
25	Satish Kumar S.R.	Proof Checking of PEB for Vikram Cement Working	Pennar Engineered Building Systems Ltd.	2.25
26	Meher Prasad A.	Testing of Calibration (5 nos.) and Mechanical Relaxation	Soma Enterprise Limited	1.41
27	Arul Jayachandran S.	Design Verification of Multi-Storey Cold Formed Steel Housing Systems for JSPL	Jindal Steel & Power Ltd.	2.25
28	Alagusundaramoorthy P.	Analysing and Testing of Strands, Bearing Pads and Structural Elements for Civil Infrastructure Applications	Common Code	2.30
29	Boominathan A.	Evaluation of Dynamic Pile Stiffness	Reliance Industries Limited	7.87
30	Veeraraghavan A.	Development of Charts for Design of Pavements with RBI—81 in India	Alchemist Technology	10.67
31	Manu Santhanam	Evaluation of DEF in Concept Sleepers	Rayalaseema Concrete Sleepers Pvt. Ltd.	2.70
32	Devdas Menon	Proof Checking of Detailed Design and Drawing of Proposed Road Over Bridge Along Multai–Chhindwara–Seoni	National Highways Authority of India	21.74
33	Veeraraghavan A.	Assessment of Quality of the Restoration of Thane Cyclone-Affected Road Works in Villupuram District	Highways Department	5.62
34	Appa Rao G.	Design of Various Grades Of Concrete For Construction of Airport Metro Rail Station at Chennai	Airports Authority of India	2.30
35	Thyagaraj T.	Recommendations for Soil Treatment for Foundations at Godrej Palm Grove Residential Project	Godrej Sea View Properties Pvt. Ltd.	1.10
		Recommendations for Dolochor, Mixed Dolochor, Coal Black Dust and Its Mixtures for Its Suitability for Internal Road Works at Gummidipoondi	Tulsyan Nec Ltd.	1.69
36	Gandhi S.R.	Stability Analysis for Starter Dyke for Stage II	National Thermal Power Corporation Ltd.	3.03
		Raising of Ash Dyke for Mejia Thermal Power Station	Damodar Valley Corporation	6.74
37	Alagusundaramoorthy P.	Testing and Analysing of POT-CUM-PTFE Bearings for Bridge Applications	GMR Infrastructure Ltd.	2.36
38	Shiva Nagendra S.M.	Air Dispersion Modeling Study at HEGCPL Proposed 2650 MW Gas-Based Combined Cycle Power Plant	Hindustan Electricity Generation Co. Pvt. Ltd.	5.34
39	Rupen Goswami	Design Checking of SARE Meadow Ville Township at Kolathur	SARE Jubilee Kolathur Pvt. Ltd.	6.74
40	Gandhi S.R.	Soil Investigation in the Outer Channel	Cochin Port Trust	1.12
41	Appa Rao G.	Proof Checking of Structural Design and Drawings (Implementation and Operation of Zero Liquid Discharge Systems in DINTEC CETP)	ECO Production Engineers Pvt. Ltd.	1.12

42	Devdas Menon	Proof Checking of Tindivanam to Krishnagiri on NH-66-ROB-1 at KM 38+474	Transstroy Krishnagiri–Tindivanam Highways Pvt. Ltd.	3.71
43	Alagusundaramoorthy P.	Repairing of Structure in Tuticorin	Tuticorin Alkali Chemicals and Fertilizers Ltd.	10.17
44	Devdas Menon	Structural Design And Drawings of GFRG 3rd and 4th floor for EDU-CARE Institute of Dental Science, Malappuram—Ladies Hostel Extension	N.M. Salim & Associates	6.28
45	Meher Prasad A.	Static Test and Dynamic Load Test	Madras Engineering Industries Pvt. Ltd.	2.81
		Testing of Pullout	Consolidated Construction Consortium Ltd.	1.80
46	Thyagaraj T.	Recommendations for Foundations of the Proposed Multistory Residences	Larsen and Toubro Limited	1.12
47	Veeraraghavan A.	Vetting of Circulation Network for North and South T.T. Nagar in Bhopal	Bhopal Development Authority	3.93
48	Meher Prasad A.	Proof Checking and Consultancy Services for Guindy Railway Crossing Spans—Chennai Metro ECV 03 Package	Larsen and Toubro Limited	3.71
49	Alagusundaramoorthy P.	Proof Checking the Structural Design of Pre-engineered Buildings	Supertech (India) Pvt. Ltd.	1.52
50	Devdas Menon	Testing of Bearing and Mechanical Properties	Common Code	2.56
51	Ravindra Gettu	Inspection of LIC Building in Relation to Cracking on the Façade	Gammon India Ltd.	2.24
52	Robinson R.G.	Evaluation and Remedial Measures for the Sinkage of Track Near Vadippatti Station	Southern Railway	3.31
53	Murty C.V.R.	Structural Safety Peer Review of North Eye High Tower at Noida	AT Technolegal Combine Private Limited	28.09
54	Shiva Nagendra S.M.	Environmental Compliance Audit for Hyundai Motor India	Hyundai Motor India Ltd.	4.49
55	Alagusundaramoorthy P.	Analysing and Testing of Strands, Bearing Pads and Structural Elements for Civil Infrastructure Applications	Common Code	0.74
56	Ravindra Gettu	Testing of FRC Segments for Metro Tunnel Linings and Characterization of the Concrete Used	N.V. Bekaert S.A.	5.00
57	Robinson R.G.	Foundation of Housing Complex	Mahindra Lifespace Dev. Ltd.	1.12
58	Alagusundaramoorthy P.	Analysing and Testing of Glass Fibre Fabric Composites for Bridge Applications	Corporation of Chennai	1.50
		Analysing and Testing the Relaxation Properties of Strands for Prestressed Concrete Structures	Common Code	1.09
59	Appa Rao G.	Proof Checking of RC Buildings, Bridges and Material Testing	Common Code	0.65
60	Ravindra Gettu	Testing of Construction Materials for DGEN Mega Power Project in Gujarat	VME Precast Pvt. Ltd.	1.35
61	Shiva Nagendra S.M.	Preparation of Detailed Project Report for Red Hills Rice Millers Common Effluent Treatment Plant (CEPT)	Redhills Ricemillers CETP Ltd.	5.62
62	Alagusundaramoorthy P.	Analysing and Testing of POT-CUM-PTFE Bearings And Neoprene Bearing Pads	Dilip Buildcon Ltd.	2.02
63	Arun Menon	Investigations on CSEB Masonry	World Haus Incorporation	2.25
64	Meher Prasad A.	Fatigue Testing of Subframe	Wheels India Ltd.	3.40

65	Murty C.V.R.	Review of Structural Safety-Related Provisions in DCRs of Dholera SIR	Gujarat Infrastructure Development Board	1.50
66	Arul Jayachandran S.	Experimental Verification of the Stability of the ROB Superstructure Girders at Samayanallur, on NH7 Madurai—Kanyakumari Section	IRCON International Ltd.	9.38
67	Appa Rao G.	Proof Checking of Proposed Hotel Building for A.K. Das Associates at Bhuvaneswar	A.K. Das Associates Ltd.	11.89
68	Arul Jayachandran S.	Evaluation of (i) Bending and (ii) Shear Capacities of Aluminium Beam for Hi-Lite Systems India Pvt. Ltd.	SAPA Profiles India Pvt. Ltd.	1.80
		Simulated Wind Load Testing of Lysaghi FLEXLOK Profiles Supported on Pulins	Tata Blue Scope Steel	6.74
		Design Checking of the Designs of Sub and Super Structures of a Two-Lane ROB at Railway km 76.9-10 at Theni Yard	Transstroy (India) Ltd.	2.25
		Design Checking of the Launching Girderto Carry Out Segmental Construction of PSC Box Girder Bridge Across Gandak River Near Patna	Vijay Nirman Company P. Ltd.	2.25
69	Devdas Menon	Proof Checking for Bharat Nagar ROB and Chikalguda ROB of Hyderabad Metro Rail Project	Larsen and Toubro Ltd.	13.48
		Proof Checking of Structural Designs and Drawings Prepared by Consultant CPG Consultant, Bangalore—Laboratory Block (G+6) for IITD&M Melakottaiyur	Central Public Works Department	12.88
		Load Transfer Test	Freyssinet Menard India Pvt. Ltd.	1.35
70	Ravindra Gettu	Testing of Shotcrete Panels for the Chennai Nashri Tunnel Project	Leighton Welspun Contractors Pvt. Ltd.	1.35
71	Devdas Menon	Testing of Bearing and Mechanical Test and Relaxation Test	Common Code	2.87
72	Nageswara Rao B.	Design Proof Checking of Steel Hanger and Foundation	Vardhman Precision Profiles & Tubes Pvt. Ltd.	4.00
73	Alagusundaramoorthy P.	Stability Check of CP Aquaculture Building in Bangalore	CP Aquaculture India Pvt. Ltd.	1.69
74	Veeraraghavan A.	Roughness Test on NH-45—Tambaram—Tindivanam Section	GMR Highways	2.25
75	Appa Rao G	Vetting of Design Drawings for Foundation And Sub-Structure of Major Bridge No. EAK 221 and Superstructure	C.T. Ramanathan Infrastructure Pvt. Ltd.	1.69
		Testing of Strand Locking Plate and Wedge Locks, etc.	D.E.C. Infrastructure Ltd.	2.08
76	Ravindra Gettu	Testing of Shotcrete Panels for Tunnel in NH-1A from Quazigund to Banihal	Navayuga Engineering Company Ltd.	2.70
77	Meher Prasad A.	Testing of Jack Calibration	Common Code	0.73
78	Arul Jayachandran S.	Proof Checking the Designs of Elliptical Bridge, Vertical Garden, Taxi Stand and Entrance Canopy at the Chennai Airport Extension	Construction Catalysers Pvt. Ltd.	4.94
79	Murty B.S.	Vetting for Hydraulic Designs	Common Code	0.70

80	Ashwin Mahaligam	Independent Review of Urban Water Supply Project in Mysore	ICRA Management Consulting Services Ltd.	3.37
81	Devdas Menon	Proof Checking of Proposed RUB & ROB (Railway Span P7-P8) in Chaibasa–Kandra Section (48 km) of SH-40 in the State of Jharkhand	Pragati Consultants	3.15
		Construction of Bridge Across Upputeru Connecting Chinnagollapalem Village of Krishna District and Kalipatnam Village of West Godavari District	Roads and Building Division	2.19
82	Arul Jayachandran S.	Design and Adequacy of Steel Structural Components and Systems	Common Code	1.34
83	Alagusundaramoorthy P.	Testing and Analysing Elastomeric and POT-CUM-PTFE Bearings for Chennai Metro Rail Limited	Chennai Metro Rail Limited	3.15
		Analysing and Testing of Strands, Bearing Pads and Structural Elements for Civil Infrastructure Applications	Common Code	1.36
84	Satish Kumar S.R.	Proof Checking of PEB Design for SMCC AISIN Takaoka	Tiger Steel Engineering	3.93
85	Gandhi S.R.	Soil Slope Stability Along the Main Access Road at JSWJPL	JSW Jaigarh Port Ltd.	1.12
86	Satish Kumar S.R.	Proof Checking of Design and Drawings for HAL Campus Buildings	CRN Architects & Engineers	2.25
87	Meher Prasad A.	Testing of Load Bearing Tower and Props Testing	Doka India Pvt. Ltd.	1.69
88	Devdas Menon	Mechanical and Relaxation Test	Common Code	4.67
89	Rajagopal K.	Testing and Recommendation of Properties of Different Types of Geosynthetics	Common Code	5.00
90	Satish Kumar S.R.	Proof Checking of Hanger Design for INS Rajali	Common Code	0.70
91	Thyagaraj T.	Recommendation for Foundation of the Proposal Multilevel Residences at Ghaziabad	Larsen and Toubro Ltd.	1.12
92	Alagusundaramoorthy P.	Soil and Structural Analysis for Gamesa Wind Turbines Pvt. Ltd.—Repairing and Rehabilitation of Concrete Flooring	Pishon Concrete Test	4.49
93	Koshy Varghese	Checking of Design and Drawings for Enabling Structures for RVNL Kolkata Metro Project	Larsen and Toubro Ltd.	8.43
		Proof Checking of Guindy ROB Construction Enabling Structures	Larsen and Toubro Ltd.	13.48
		CAD Model and Checking of Segmental Hinged Launching Girder	Larsen and Toubro Ltd.	7.87
94	Boominathan A.	Geotechnical Investigation at Mangalagiri Temple	Sri Lakshmi Narasimha Swamy Temple	4.49
95	Alagusundaramoorthy P.	Raft Foundation Design for Caterpillar India Pvt. Ltd. at Chennai	Pishon Concrete Test	0.67
		Stability Check of Vidyodaya Matriculation Academy (VMA) Block in Vidyodaya Matriculation School	Vidyodaya Schools Society	2.81
96	Appa Rao G.	Proposed Construction of Road Over Bridge	Omega Construction	1.25
97	Veeraraghavan A.	Mix Design for Cold-Inplace Recycling Technology for Six Laning of Chennai–Tada Section of NH-5	L&T Infrastructure Development Projects Limited	8.43

98	Gandhi S.R.	Design of Suitable Foundation for RCC Lighthouse at Vembar	Directorate of Lighthouses & Lightships	2.24
99	Alagusundaramoorthy P.	Analysis and Design of IBIS and NOVOTEL Hotel Buildings as per the Architectural Drawings and Tender Specifications	SSPDL Intersperse Pvt. Ltd.	8.93
		Testing and Analysing Elastomeric and POT-CUM-PTFE Bearings for Chennai Metro Rail Limited	Chennai Metro Rail Ltd.	1.40
		Analysis and Design of a Multistoreyed RCC Commercial Building	Rasha Machinery Ltd.	10.04
100	Appa Rao G.	Condition Assesment and Repair Procedure for RCC Reservoir at CPCL	Chennai Petroleum Corporation Ltd.	7.90
101	Dali Naidu Arnepalli	Stability Analysis of Ash Pond A from RL 202m to 205m at ITPS	Orissa Power Generation Corporation Ltd.	3.03
102	Alagusundaramoorthy P.	Vetting of the Design and Drawings of 10.0 MLD Sewage Treatment Plant at Bodhgaya	Bihar Urban Infrastructure Development Corporation Ltd.	13.76
		Vetting of the Design and Drawings of 16.0 MLD Sewage Treatment Plant at Buxar	Bihar Urban Infrastructure Development Corporation Ltd.	21.07
		Vetting of the Design and Drawings of 17.0 MLD Sewage Treatment Plant at Begusarai	Bihar Urban Infrastructure Development Corporation Ltd.	21.07
103	Meher Prasad A.	Design of Pile and Pile Capacity	Nirmal Kumar Swain	11.24
104	Alagusundaramoorthy P.	Analysis and Testing of Tranmission Line Tower Foundations	OPG Power Generation Pvt. Ltd.	3.93
105	Gandhi S.R.	Pile Foundation Design for Product Tanks at Irimpanam Installation	Bharat Petroleum Corporation Ltd.	3.93
106	Manu Santhanam	Evaluation of Silica Fume	Rockfit Corporation	2.25
107	Shiva Nagendra S.M.	Modelling of Air Pollutants Dispersion Emitted from Stack	KTV Health Food Pvt. Ltd.	2.25
108	Ravindra Gettu	Testing of Shotcrete for the Rampur Hydroelectric Project	Rampus Hydroelectric Project	25.17
109	Robinson R.G.	Consultancy Services for the Construction of Ramp Near Adriyala Project Area	The Singareni Collieries Company Ltd.	5.62
110	Satish Kumar S.R.	Proof Checking of PEB for Wipro at Devanahalli	Tata Blue Scope Steel	1.12
111	Boominathan A.	Foundation Recommendation and Liquefaction Analysis for VHFL-Fujairah Project	Larsen and Toubro Ltd.	2.81
112	Satish Kumar S.R.	Checking PEB Designs for 2TT Cables and SriCity	Common Code	0.90
		Proof Checking of PEB	Tata Blue Scope Steel	1.12
113	Devdas Menon	Proof Checking of Four Laning of Walayar–Vadakancherry Section in Kerala	KNR Construction Ltd.	3.82
114	Robinson R.G.	Outer Ring Road Project—Direct Shear Test for Pond Ash	GMR Infrastructure Ltd.	1.40
115	Gandhi S.R.	Consultancy Services for Design of Ash Dyke for Dry Pump for CGP	Jindal Steel & Power Ltd.	2.25
		Consultancy Services Towards Preliminary Visit, for Suggesting Suitable Remedial Measures	Maithon Power Ltd.	1.12
		Deepening and Strengthening of Q6 and Q7 Berths of Ernakulam Wharf	Cochin Port Trust	2.25

116	Devdas Menon	Proof Checking of Proposed Construction of Major Bridge NH-45A	VAX Consultants Pvt. Ltd.	2.30
117	Thyagaraj T.	Ground Treatment for Railway Embankment on the Approaches of Venduruthy Railway Bridge	Southern Railway	2.13
118	Koshy Varghese	Proof Checking of Design and Drawings of enabling structures for Balanced Cantilever Spans at Kathipara for CMRP	Larsen and Toubro Ltd.	7.87
119	Alagusundaramoorthy P.	Proof Checking the Design and Drawings of a MLCP Building at Bangalore	B.L. Kashyap & Sons Ltd.	9.07
120	Devdas Menon	Proof Checking of Proposed Doubling Between Villupuram and Dindigul	Rail Vikas Nigam Ltd.	8.27
121	Gandhi S.R.	Foundation Design for Solar Water Pumps	Sun Edison Energy Pvt. Ltd.	2.25
122	Devdas Menon	Proof Checking of Residential Apartment of Ground + 7 Floors at Thirumudivakkam	Amarprakash Developers Ltd.	2.75
123	Meher Prasad A.	Testing of Load Test and Cycle Fatigue Test and Push Out	Daimler India Commercial Vehicles Pvt. Ltd.	13.26
124	Devdas Menon	Proof Checking of Proposed Construction of ROB in Lieu of Level Crossing No. 268 at km 801.09-10 with 1 × 33.9 m Composite Girder and 1 × 11.5 m RCC 'AT' Beam Slab at Charvattur Station Yard	Skilled Construction Company Ltd.	2.02
125	Meher Prasad A.	Proof Checking of Stability of the Berthing Structures—EQ-8 and EQ-9 Subsequent to Surcharge Overload	Vizag Seaport Pvt. Ltd.	2.02
126	Devdas Menon	Testing of HT Strands and Elastomeric Bearings	Common Code	4.26
127	Manu Santhanam	Laboratory and Field Investigations on Concrete	Common Code	0.50
		Evaluation of PCE Superplasticizer	Balmer Lawrie and Co. Ltd.	3.37
128	Meher Prasad A.	Testing of Jack Calibration and Efficiency Test	Utracon Structural System Pvt. Ltd.	1.18
129	Satish Kumar S.R.	Proof Checking of PCB	Pennar Engineering Building Systems Ltd.	5.55
		Checking Design and Drawings	Pennar Engineering Building Systems Ltd.	8.99
130	Meher Prasad A.	Proof Checking of Precast Design Detailing for Rehab Housing of Bhoiwada Project, Mumbai	Larsen and Toubro Ltd.	6.64
		Proof Checking of Vetting of Structural Design and Drawings—Cognizant Technology Solutions, Pune (Canteen Building)	Larsen and Toubro Ltd.	5.06
		Engaging the Independent Technical Body to Analyse the Reasons for the Dislodging of Superstructure (Box Girder)	Mumbai International Airport Pvt. Ltd.	2.25
131	Devdas Menon	Proof Checking and Consultancy Services for Lakdikapul ROB and Malakpet ROB of Hyderabad Metro Rail Project	Larsen and Toubro Ltd.	16.85
		Proof Checking and Consultancy Services for Alugaddabavi ROB and Begumpet ROB of Hyderabad Metro Rail Project	Larsen and Toubro Ltd.	13.48
		Testing of HT Strands and Elastomeric Bearing	Common Code	3.10
132	Satish Kumar S.R.	Proof Checking of Hangar and Annex Design at IMS Dega	VRK & Company	1.35

133	Devdas Menon	Proof Checking the Substructure and RCC Superstructure for ROB-I of NH77	Sheladia Associates and Consultants (I) Pvt. Ltd.	3.48
134	Appa Rao G.	STP and Rain Water Conservation—Civil Structural Design Vetting	Aqua Designs India Pvt. Ltd.	5.06
		Vetting of Design and Drawings in Construction of Major Bridge	Roads and Building Division	2.25
		Verification of Safety of Post-Tensioned Prestressed Concrete Bridge Deck Panel	CEO Turbo Industries Pvt. Ltd.	2.25
135	Arul Jayachandran S.	Design Checking of a New PEB Hangar for Navy at Nedumbassery	Naval Project	2.25
136	Gandhi S.R.	Retainer Consultancy	Lanco Infratech Ltd.	2.40
137	Manu Santhanam	Advice on Superplasticizers	Balmer Lawrie and Co. Ltd.	2.70
138	Appa Rao G.	Studies on Behaviour of RC Shear Walls with Various Aspect Ratios	Board of Research in Nuclear Sciences	4.49

RBIC projects

Number of projects: 20

Value of projects: Rs.230.18 lakhs

Sl. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
1	Appa Rao G.	Characterisation of Behaviour and Structural Properties of 3D Panels for Low-Cost Building	Beardsell Ltd.	7.93
2	Alagusundaramoorthy P.	Conditional Assessment and Repairing of BPCL Liquid Cargo Jetty at JNPT	Bharat Petroleum Corporation Ltd.	30.44
3	Arun Menon	In-Situ Load and Stress Tests on Ariyankuppam and Chunnambar Arch Bridges at Puducherry	VAX Consultants Pvt. Ltd.	8.57
4	Murty C.V.R.	Development of Design Methodologies for Blast Resistant Design of Structures	EON Designers	2.69
5	Raghu Kanth S.T.G.	Seismic Hazard of Himachal Pradesh	Taru Private Ltd.	27.87
6	Radhakrishna G. Pillai	Performance Evaluation of Special Corrosion Resistant Cement	Sree JayaJothi Cements Ltd.	5.00
7	Muralikrishnan J.	Bituminous Material Characterization and Mechanistic–Empirical Design of Bituminous Pavements in India	VR Techniche	4.49
8	Veeraraghavan A.	Monitoring Mechanism of Eco-friendly Technology by Using RBI Grade 81	Ministry of Environment and Forests	7.50
9	Meher Prasad A.	Centre for Finite Element Analysis and Design(CFEAD)	Tata Consultancy Services	30.00
10	Koshy Varghese	Formulation of Contract Specification and Evaluation for NSPCL, Rourkela Applying the Latest Project Management Concepts	Bharat Heavy Electricals Ltd.	19.11
11	Arul Jayachandran S.	Design Philosophy Migration of CFBC Boiler Supporting Steel Structures to Limit State Design	Bharat Heavy Electricals Ltd.	17.30
12	Ramamurthy K.	Studies on Reuse of Masonry, Concrete Demolition Wastes in Construction and Durability Studies on Flyash Bricks	Neyveli Lignite Corporation Ltd.	5.50
13	Satish Kumar S.R.	Development of Biplane Damper Blade Design with Modified Blade-to-Blade Stiffeners	Bharat Heavy Electricals Ltd.	4.49
		Design & development of stiffened guillotine gate blade	Bharat Heavy Electricals Ltd.	5.62
		Design and Verification of Seismic Stopper for Disaster-Resistant Adequacy of APH	Bharat Heavy Electricals Ltd.	1.80

	Satish Kumar S.R.	Design for ESP Structure Using High-Strength Steel	Bharat Heavy Electricals Ltd.	8.99
14	Ravindra Gettu	Characterization of Glass Fibre Reinforced Concretes	OCV Reinforcements Alcala	7.00
15	Satish Kumar S.R.	Research on Suitability of NSHYPER BEAM and HCL for Steel Construction in India	Nippon Steel & Sumitomo Metal Corporation	7.67
16	Ligy Philip	Feasibility Study for Design Investment and Management Models for Public Sanitation Facilities Mangement in Tirupati	Institute for Financial Management and Research	5.73
17	Koshy Varghese	Development of Project Management System for ESP R&M Works at NSPCL Rourkela	Bharat Heavy Electricals Ltd.	22.47

Retainer consultancy

Number of projects: 3

Value of projects: Rs.9.59 lakhs

Sl. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
1	S.R. Gandhi	Retainer Consultancy to Lanco, Gurgoan	Lanco Infratech Ltd.	2.40
2	Manu Santhanam	Advice on Superplasticizers	Balmer Lawrie and Co. Ltd.	2.70
3	Appa Rao G.	Studies on Behaviour of RC Shear Walls with Various Aspect Ratios	Board of Research in Nuclear Sciences	4.49

Exchange programmes with other universities including institutions/universities under MoUs

- Prof. A. Veeraragavan visited Accra, Ghana during 2–8 February 2013 to deliver lectures in a training programme, Road Safety and Traffic Management, as an activity of the MoU between Kwame Nkrumah University of Science and Technology, Ghana and IIT Madras.
- Dr. Sachin Gunthe visited Max Planck Institute for Chemistry, Mainz, Germany (MPIC) to carry out collaborative scientific work from 3 to 24 May 2012.
- Dr. Indumathi M. Nambi visited Veolia Water Systems in Brussels from 29 May to 1 June for collaboration/interaction and future possibilities.
- Dr. K.P. Sudheer visited Purdue University, USA from 17 May to 18 July 2012 to conduct advanced research in eco-hydrology and water quality.
- Prof. Ravindra Gettu visited Italy for presenting the research work within a collaborative Indo-Italy project from 4 to 14 March 2013.

Faculty members' participation with other institutions under MoUs

Sl. No.	Name of Faculty	Participation Details	Name of University/ Institution which has MoU
1	Arul Jayachandran S.	For establishing the Building Envelope Centre for Excellence on Structural Glass Research and Testing Facility (SGRT Facility)	Glazing Society of India
		To carry out collaborative and advanced research and consultancy in the areas as identified	Power Grid Corporation of India Ltd.

Research publications of the faculty members and research scholars

Total number of papers published in refereed national journals: 25

Total number of papers published in refereed international journals: 39

Total number of papers presented at national conferences: 20

Total number of papers presented at international conferences: 50

Total number of chapters in books: 4

(a) Refereed national journals

1. M. Corigliano, C.G. Lai, A. Menon and T. Ornthammarath (2012) Seismic input at the archaeological site of Kancheepuram in southern India. *Natural Hazards* (published online: 24 April 2012).

2. S. Banerjee and A.K. Sengupta (2012) A methodology to assess the degradation in the structural response of the deck of a reinforced concrete road bridge due to corrosion of reinforcing steel. *Journal of The Institution of Engineers (India) – Series A, The Institution of Engineers (India)* 93(1): 87–93.
3. S. Banerjee and A.K. Sengupta (2012) A computational analysis of the time-variant structural response of the deck of a reinforced concrete road bridge due to corrosion of reinforcing steel. *Journal of Structural Engineering* 39(1): 20–28.
4. S. Dharanidaran and A.K. Sengupta (2012) Modelling of tall shear walls for non-linear analysis of RC buildings under cyclic lateral loading. *The Indian Concrete Journal* 86(6): 32–40.
5. G. Kaliyaperumal and A.K. Sengupta (2012) Modelling of the behaviour of reinforced concrete columns retrofitted for flexure using concrete jackets. *Journal of Structural Engineering* 39(2): 161–170.
6. A.K. Sengupta and I. Jojy. (2012) Effect of heavy roof-top water tanks on the seismic forces in a typical multistoried building. *ICI Journal* 13(3): 29–34.
7. K.R. Rajagopal and U. Saravanan (2012) Extension, inflation and circumferential shearing of an annular cylinder for a class of compressible elastic bodies. *Journal of Mathematics and Mechanics of Solids* 17(5): 473–499.
8. U. Saravanan (2012) The use of linear viscoelastic constitutive relations to model asphalt. *Journal of Pavement Engineering* 13(4): 360–373.
9. A. Bhasi and K. Rajagopal (2012) A comparative study on the performance of piled embankments with and without the geosynthetic reinforcement. *Geosynthetics and Grounds Improvement* 1(2): 2–7.
10. S. Karthikeyan and K. Rajagopal (2012) Influence of rock socketing on the lateral response of single pile. *Indian Geotechnical Journal* 42(1): 49–55.
11. T. Thyagaraj, S.M. Rao, P.S. Suresh and U. Salini (2012) Laboratory studies on stabilization of an expansive soil by lime precipitation technique. *ASCE Journal Materials in Civil Engineering* 24(8): 1067–1075.
12. R.G. Robinson, B. Indraratna and C. Rujikiatkamjorn (2012) Final state of soils under vacuum preloading. *Canadian Geotechnical Journal* 49(6): 729–739.
13. R. Sundaresan and G. Appa Rao (2012) How uniformly the Indian codes predict the shear strength of reinforced concrete beams? *Journal of Structural Engineering* 39(2): 243–253.
14. G. Appa Rao and M. Gangaram (2012) Non-invasive protection of shear critical nonseismically detailed RC beam-column joints against seismic loading. *Journal of Structural Engineering* 39(3): 309–317.
15. G. Appa Rao, B.S.R.K. Prasad and K. Ramamohan Rao (2012) Influence of beam size and distribution of horizontal reinforcement on shear strength of RC deep beams. *Journal of Structural Engineering* 39(3): 347–354.
16. K. Pandurangan and G. Appa Rao (2012) Bond strength of epoxy coated bar splices confined with nominal lateral reinforcement. *Central European Journal of Engineering* 3(1): 145–155.
17. S.S. Chandrasekaran, A. Boominathan and G.R. Dodagoudar (2012) Dynamic response of laterally loaded pile groups in clay. *Journal of Earthquake Engineering* 17(1): 33–53.
18. N. Roy, J. Muralikrishnan and A. Veeraragavan (2012) Mechanical characterisation of bituminous concrete mixtures using asphalt mixture performance tester (AMPT). *Indian Highways Journal* 40(6).
19. K. Chopra, S. Anjan Kumar Rajib Basu Mallick and A. Veeraragavan (2012) Investigations on laboratory performance of bituminous mixes with reclaimed asphalt pavement materials: A step towards sustainable road infrastructure in India. *Journal of the Indian Roads Congress* 73(3): 339–352.
20. M.S. Harshitha, S. Agarwal and L. Vanajakshi (2012) Headway analysis at signalised intersections:—with and without countdown timer. *Highway Research Journal, Indian Roads Congress* 5(1): 33–40.
21. D. Prabhakar Reddy and R. Sivanandan (2012) Travel time based congestion analysis of urban roads with side friction. *Journal of Road Transport* 5: 32–47.
22. S.B. Khedkar and R. Sivanandan (2012) Modelling the influence of cross roads and fringe conditions on travel time. *Urban Transport Journal* 11(1): 78–88.
23. D.H.H. Rohit, P. Narahari, A.K. Jaiswal and C.V.R. Murty (2012) Superposition principle invalid in IS:13920 design of slender RC walls with boundary elements. *Indian Concrete Journal* 86(3): 43–52.
24. D. Mukherjee, B.N. Rao and A.M. Prasad (2012) Cut-HDMR based fully equivalent operational model for analysis of unreinforced masonry structure. *Sadhana* 37(5): 609–628.
25. A. Kalanad and B.N. Rao (2012) Two-dimensional elasto-plastic cracked finite element for fracture applications. *Indian Journal of Engineering & Materials Sciences* 19: 95–106.

(b) Refereed international journals

1. N.K. Sharma, L. Philip and M. Bhallamudi (2012) Aerobic degradation of phenolics and aromatic hydrocarbons in presence of cyanide. *Bioresources Technology* 121: 263–273.
2. J. Senthil Nathan and L. Philip (2012) Elimination of pesticides and their formulation products from drinking water using thin film continuous photoreactor under solar radiation. *Solar Energy Journal* 86(9): 2735–2745.
3. A. Datta and L. Philip (2012) Biodegradation of volatile organic compounds from paint industries. *Applied Biochemistry and Biotechnology* 167(3): 564–580.
4. P. Balasubramanian, L. Philip and M. Bhallamudi (2012) Biotrickling filtration of VOC emissions from pharmaceutical industries. *Chemical Engineering Journal* 209: 102–112.
5. P. Balasubramanian, L. Philip and M. Bhallamudi (2012) Biotrickling filtration of complex pharmaceutical VOC emissions along with chloroform. *Bioresources Technology* 144: 149–159.
6. J. Senthil Nathan and L. Philip (2012) Photo degradation of methyl parathion and dichlorvos from drinking water using (1-1) N-doped TiO₂ under solar radiation. *Journal of Chemical Engineering* 172(2–3): 678–688.
7. A. Sharma, L. Vanajakshi, V. Girish and M.S. Harshitha (2012) Impact of signal timing information on safety and efficiency of signalized intersections. *Journal of Transportation Engineering* 138(4): 467–478. doi:10.1061.(ASCE)TE.1943-5436.0000343.
8. A. Padiath, L. Vanajakshi and S.C. Subramanian (2012) Spatial traffic state estimation using location based traffic data under heterogeneous conditions, transportation research record. *Journal of the Transportation Research Board* 2291(12): 72–79.
9. V. Kumar and L. Vanajakshi (2012) Bus travel time pattern identification and prediction. *Proceedings of the Institution of Civil Engineers, Transport* 165 (TR1): 1–10. [http://dx.doi.org/10.1680.tran.12.00001](http://dx.doi.org/10.1680/tran.12.00001).
10. S.P. Anusha, R.A. Anand and L. Vanajakshi (2012) Data fusion based hybrid approach for the estimation of urban arterial travel time. *Journal of Applied Mathematics*. Article ID 587913. doi:10.1155.2012.587913.
11. A. Thankappan, L. Vanajakshi and S.C. Subramanian (2012) A multi-class non-continuum traffic flow model for congestion analysis. *International Journal of Engineering Studies* 4(3): 207–229.
12. S. Anjan Kumar and A. Veeraragavan. 2012. Rheological and rutting characterization of asphalt mixes with modified binders. *ASTM Journal of Testing and Evaluation* 40(1).
13. V.S. Punith, S.N. Suresha, S. Raju, S. Bose and A. Veeraragavan (2012) Laboratory investigation of open-graded friction-course mixtures containing polymers and cellulose fibers. *ASCE Journal of Transportation Engineering* 138(1): 67–74.
14. V. Sunitha, A. Veeraragavan, K.K. Srinivasan and S. Mathew (2012) Cluster based pavement deterioration models for low volume rural roads. *ISRN Civil Engineering* Article ID 565948. doi:10.5402.2012.565948.
15. G. Asaithambi, V. Kanagaraj, K.K. Srinivasan and R. Sivanandan (2012) Mixed traffic characteristics on urban arterials with significant motorized two-wheeler volumes: Role of composition, intra-class variability, and lack of lane discipline. *Journal of the Transportation Research Board*. Accepted for publication.
16. I. Bushra and R.G. Robinson (2012) Shear strength behaviour of cement treated marine clay. *International Journal of Geotechnical Engineering* 6(4): 455–465.
17. R.G. Robinson, B. Indraratna and C. Rujikiatkamjorn (2012) Final state of soils under vacuum preloading. *Canadian Geotechnical Journal* 49(6): 729–739.
18. A. Bhasi and K. Rajagopal (2012) Numerical investigation of the time dependent behavior of geosynthetic reinforced piled embankments. *International Journal of Geotechnical Engineering*.
19. A.S. Balu and B.N. Rao (2012) Membership function of failure probability using multicut-high dimensional model representation. *International Journal of Reliability, Quality and Safety Engineering* 19(4): 1-26.
20. V. Anand, B.S.V. Patnaik and B.N. Rao (2012) Efficient extraction of vortex structures by coupling proper orthogonal decomposition (POD) and high dimensional model representation (HDMR) techniques. *Numerical Heat Transfer, Part B Fundamentals* 61: 229-257.
21. A.S. Balu and B.N. Rao (2012) Multicut-high dimensional model representation for structural reliability bounds estimation under mixed uncertainties. *Computer-Aided Civil and Infrastructure Engineering* 27(6): 419-438.
22. M.V.N. Sivakumar, B.N. Rao and S.R. Satishkumar (2012) The effect of pressure induced hoop stress on bi-axially loaded through wall cracked cylindrical structures: A strain based method. *Applied Mechanics and Materials* 110–116(4): 1525-1530.
23. A. Kalanad and B.N. Rao (2012) Improved two-dimensional cracked finite element for crack fault diagnosis. *Computer Assisted Mechanics and Engineering Sciences* 19: 213-239.

24. A.S. Balu and B.N. Rao (2012) High dimensional model representation based formulations for fuzzy finite element analysis of structures. *Finite Elements in Analysis and Design* 50: 217-230.
25. A.S. Balu and B.N. Rao (2012) Inverse structural reliability analysis under mixed uncertainties using high dimensional model representation and fast Fourier transform. *Engineering Structures* 37: 224-234.
26. M. Chaitali, S.T. Manikandan, S. Murthy Bhallamudi and S. Panday (2012) A dynamic sub-timing based implicit non-oscillating scheme for contaminant transport modeling. *Journal of Hydrologic Engineering* 17(6): 694-703.
27. P. Balasubramanian, L. Philip and S. Murthy Bhallamudi (2012) Biotricking filtration of complex VOC emissions along with chloroform. *Bioresources Technology* 114-159.
28. P. Balasubramanian, L. Philip and S. Murthy Bhallamudi (2012) Biotricking filtration of complex VOC emissions from pharmaceutical industries. *Chemical Engineering Journal* 209: 102-112.
29. T. Thyagaraj and P.S. Suresh (2012) In-situ stabilization of an expansive soil in desiccated state. *International Journal of Geotechnical Engineering* 6: 287-296.
30. N.K. Sharma, L. Philip and S. Murthy Bhallamudi (2012) Aerobic degradation of phenolics and aromatic hydrocarbons in presence of cyanide. *Bioresources Technology* 121: 263-273.
31. M.Z. Belayneh and S. Murthy Bhallamudi (2012) Multi-objective management model for waste load allocation in a tidal river using archived multi objective simulated annealing algorithm. *Civil Engineering and Environmental Systems* 29(4): 222-230.
32. U. Saravanan (2012) On the use of linear viscoelastic models to model asphalt. *International Journal of Pavement Engineering* 13(4): 360-373.
33. K.R. Rajagopal and U. Saravanan (2012) Extension, inflation and circumferential shearing of an annular cylinder for a class of compressible elastic bodies. *Mathematics and Mechanics of Solids* 17(5): 473-499.
34. K.S. Reddy, S. Umakanthan and J.M. Krishnan. 2012. Constant strain rate experiments and constitutive modeling for a class of bitumen. *Mechanics of Time Dependent Materials* 16(3): 251-274.
35. A. Kandya, S.M. Shiva Nagendra and V.K. Tiwari (2012) Forecasting the tropospheric ozone using artificial neural network modelling approach: A case study of megacity Madras, India. *Journal of Civil and Environmental Engineering* S1: 006. doi:10.4172.2165-784X. (Open access)
36. B. Srimuruganandam and S.M. Shiva Nagendra (2012) Source characterization of PM₁₀ and PM_{2.5} mass using a chemical mass balance model at an urban roadside. *Science of the Total Environment* 433: 8-19. [IMF: 3.190].
37. B. Srimuruganandam and S.M. Shiva Nagendra (2012) Application of positive matrix factorization in characterization of PM10 and PM2.5 emission sources at urban roadside. *Chemosphere* 88(1): 120-130. [IMF: 3.155].
38. V.S. Chithra and S.M. Shiva Nagendra (2012) Characteristics of particulate matter concentrations inside a naturally ventilated school building located adjacent to urban roadway. *Building and Environment* 54: 159-167. [IMF: 2.4].
39. M. Kang, S. Banerjee, F.-H. Lee and H.P. Xie (2012) Dynamic soil-pile-raft interaction in normally consolidated soft clay during earthquakes. *Journal of Earthquake and Tsunami* 6(4):1250031.

(c) Proceedings of national conferences

1. P. Ragagopalan and L. Philip (2012) Interaction of dichloromethane with other VOCs from pharmaceutical wastewater. *Recent Advances in Civil Engineering (RACE 2012)* (29 November to 1 December 2012), School of Engineering, Cochin University of Science and Technology, Kerala.
2. V. Arya and L. Philip (2012) Development of an environmentally friendly water treatment system using N-doped TiO₂. *Recent Advances in Civil Engineering (RACE 2012)* (29 November to 1 December 2012), School of Engineering, Cochin University of Science and Technology, Kerala.
3. L. Philip (2012) Bioremediation of endosulfan contaminated soil and water. LAKE 2012. *National Conference on Conservation and Management of Wetland Ecosystems* (6-8 November 2012), School of Environmental Science, Mahatma Gandhi University, Kottayam, Kerala. (Keynote address)
4. S.P. Anusha, L. Vanajakshi and A. Sharma (2012) Analysis of vehicular tailpipe emissions under heterogeneous traffic conditions. *International Conference on Recent Innovations in Technology (ICRIT) 2012*, Kottayam, Kerala, pp. 5-9.
5. M. Ali, B. George and L. Vanajakshi (2012) Advanced inductive loop detector system for lane less traffic. *National Conference on Urban Mobility—Challenges, Solutions and Prospects*.
6. V. Kumar, L. Vanajakshi and S.C. Subramanian (2012) Bus travel time prediction using state space models. *National Conference on Urban Mobility—Challenges, Solutions and Prospects*.

7. M. Ali, B. George and L. Vanajakshi (2012) Development of a vehicle counting and classification system for heterogeneous and lane less traffic. *47th Annual National Convention of Computer Society of India* (December 2012) Kolkata.
8. L. Vanajakshi, L. Deepa and S.P. Anusha (2012) Estimation of urban arterial travel time under Indian traffic conditions. *International Conference on Transportation Planning and Implementation Methodologies for Developing Countries (TPMDC)* (December 2012), Mumbai.
9. N. Agarwal, S.P. Anusha and L. Vanajakshi (2012) Travel time estimation in urban arterials using location based data. *5th Urban Mobility Conference* (December 2012), Delhi.
10. V. Ramesh, J. Raj, L. Vanajakshi, S. Wang, A. Sharma and L. Rilett (2012) Performance comparison of a radar based traffic sensor—smartsensor HD for Indian and American traffic conditions. *5th Urban Mobility Conference* (December 2012), Delhi.
11. J. Raj, S.R. Varma, V. Ramesh and L. Vanajakshi (2012) Evaluation and application of image processing sensors under Indian conditions. *5th Urban Mobility Conference* (December 2012), Delhi.
12. L. Vanajakshi (2012) Advanced traveler information system under development and deployment in Chennai. *National Seminar on New Horizons in Vehicle Tracking and ITS* (November 2012), Bangalore.
13. P. Firodiya, D. Menon, A.K. Sengupta and R.G. Pillai (2012) A probabilistic assessment of the deterioration of flexural capacity of a reinforced concrete bridge deck due to corrosion of steel bars. *Proceedings, 8th Structural Engineering Convention*, (19–21 December 2012), S.V. National Institute of Technology, Surat, pp. 407–413. (CD ROM)
14. R.B. Mallick, A. Regimond and Veeraragavan (2012) A rational and practical test procedure for evaluation of moisture damage potential of hot mix asphalt (HMA). *Proceedings, National Get-Together on Road Research and Its Utilization* (1–2 March 2012), New Delhi.
15. R.B. Mallick and Veeraragavan (2012) A use of cold mix technology for rehabilitation of rural roads. *National Workshop on Non-Conventional Materials/Technologies* (February 2012), New Delhi.
16. R.V. Yogesh Kumar, A. Gowri and R. Sivanandan (2012) Influence of vehicular composition and lane discipline on delays at signalised intersections under heterogeneous traffic conditions. *Proceedings (Extended Abstracts), National Conference on Urban Mobility—Challenges, Solutions and Prospects* (13–14 July 2012), IIT Madras, pp. 79–80.
17. J. Rohit, V.S. Chithra, M. Kishore Kumar, S.M. Shiva Nagendra and R. Sivanandan (2012) Influence of traffic on indoor air quality of naturally and mechanically ventilated building located near an urban roadway. *Proceedings (Extended Abstracts), National Conference on Urban Mobility—Challenges, Solutions and Prospects* (13–14 July 2012), IIT Madras, pp. 100–102.
18. G. Ramadurai, L. Devi, K.K. Srinivasan, R. Sivanandan, A. Anand, C. Mitchanagatla, D. Das, K. Selvam, V. Ravi and S. Dubey (2012) Advance traveller information systems (ATIS) for Indian cities. *Proceedings (Extended Abstracts), National Conference on Urban Mobility—Challenges, Solutions and Prospects* (13–14 July 2012), IIT Madras, pp. 116–117.
19. M. Vinoth, L. Varalakshmi, S. Murugesan and R.G. Robinson (2012) Case study on the use of PVDs for ground improvement for the depot area of Chennai Metro Rail. *Proceedings of the Indian Geotechnical Conference, IGC-2012*, Mumbai, Vol. 1, pp. 269–272.
20. J. Rohit, V.S. Chithra, M. Kishore Kumar, S.M. Shiva Nagendra and R. Shivanandan (2012) Influence of traffic on indoor air quality of naturally and mechanically ventilated building located near an urban roadway. *Proceedings of the National Conference on Urban Mobility—Challenges, Solutions and Prospects* (13–14 July 2012), IIT Madras.

(d) Proceedings of international conferences

1. P.S. Reashma, K.S. Reddy, A. Veeraragavan and J. Murali Krishnan (2012) Dynamical mechanical analysis of bitumen processed in India. *Seventh International Conference on Maintenance and Rehabilitation of Pavements and Technological Control (MAIREPAV7)* (August 2012) University of Auckland Business School, New Zealand.
2. N. Roy, J. Muralikrishnan and A. Veeraragavan (2012) Effect of confinement pressure on creep and recovery response of asphalt concrete mixtures. *Seventh International Conference on Maintenance and Rehabilitation of Pavements and Technological Control (MAIREPAV7)* (August 2012) University of Auckland Business School, New Zealand.
3. P. Ram Mohan Rao, V.R. Sheela and A. Veeraragavan (2012) Effect Of commercial traffic overloading enforcement on pavement performance. *4th EPAM, European Pavement and Asset Management Conference*, (5–7 September 2012), Malmö, Sweden.

4. V.T. Badari Narayanan, A.K. Sengupta and S.R. Satish Kumar (2012) Seismic retrofit of beams in buildings for flexure using concrete jacketing. *Proceedings, 15th World Conference on Earthquake Engineering*, Lisbon, Portugal (24–28 September 2012), paper number 20. (CD-ROM)
5. A. Datta and L. Philip (2012) Biodegradation kinetics of toluene, ethyl benzene and xylene in a mixture of VOCs. *ENSURE 2012: Environmentally Sustainable Urban Ecosystems* (24–26 February 2012), IIT Guwahati, Assam, India.
6. A. Datta and L. Philip (2012) Inhibitory effect of toluene on methyl iso-butyl ketone biodegradation. *3rd International Chemical and Environmental Engineering Conference* (21–23 December 2012), Kuala Lumpur, Malaysia.
7. N.K. Sharma, L. Philip and B.S. Murty (2012) Aerobic degradation of complex organic compounds and cyanides in coke oven wastewater in presence of glucose. *ENSURE 2012: Environmentally Sustainable Urban Ecosystems* (24–26 February 2012), IIT Guwahati, Assam, India.
8. L. Philip (2012) Purification of water using photocatalytic methods. *First International Conference on Emerging Technologies for Clean Water* (14–16 September 2012), IIT Madras, Chennai, India. (Invited talk)
9. L. Philip (2012) Bioremediation of hexavalent chromium contaminated soil and aquifers. *3rd Sede Boqer Conference on Water Technologies 2012, Advanced Technologies in Water Management* (15–16 October 2012), Ben Gurion University-Blaustein Institutes for Desert Research, Sede Boker, Israel. (Invited talk)
10. L. Philip (2012) Appropriate interventions and technologies for providing safe drinking water to rural and under-privileged communities. *Recent Advances and Innovations for Sustainable Water Management* (3–6 December 2012), *Indo-French Seminar, CEFIPRA, IFCPAR*, IIT Delhi. (Invited talk)
11. L. Philip (2012) Decentralized wastewater treatment systems: Issues and way forward. *India Water Impact Summit (IWIS)* (3–5 December 2012), India Habitat Centre. (Invited talk)
12. V. Kumar and L. Vanajakshi (2012) Application of multiplicative decomposition and exponential smoothing techniques for bus arrival time prediction. *Transportation Research Board Conference*, National Research Council, Washington, D.C., 2012.
13. A. Koppineni, K. Chaitanya, Sidharth and L. Vanajakshi (2012) Development of an automated bus arrival time prediction system under Indian traffic conditions. *Transportation Research Board Conference*, National Research Council, Washington, D.C., 2012.
14. A. Thankappan and L. Vanajakshi (2012) Development of optimized traffic stream models under heterogeneous traffic conditions. *Transportation Research Board Conference*, National Research Council, Washington, D.C., 2012.
15. S. Sheik Mohammed Ali, B. George and L. Vanajakshi (2012) A magnetically coupled inductive loop sensing system for less-lane disciplined traffic. *IEEE International Instrumentation and Measurement Technology Conference*, Austria, pp. 827–832.
16. S. Mohammed Ali Shajahan, B. George, L. Vanajakshi and N. Joshi (2012) Application of random forest algorithm to classify vehicles detected by a multiple inductive loop system. *IEEE Conference on Intelligent Transportation Systems (ITSC)* (September 2012), USA.
17. L. Vanajakshi (2012) Data collection and modeling for APTS and ATIS under Indian conditions: Challenges and solutions. *Indo-American Frontiers of Engineering Symposium* (March 2012), Maryland, USA.
18. S.V. Sivapriya, R. Sundaravadivelu, S.R. Gandhi and K. Murugadoss (2012) Static and dynamic slope stability analysis after dredging in Kandla Port. *8th International Conference on Coastal and Port Engineering in Developing Countries (COPEDC)*, pp. 1520–1529.
19. R. Sivanandan and H.V. Sardar (2012) Evaluation of network aggregation on traffic assignment. *Proceedings (Abstracts), 10th International Conference on Transportation Planning and Implementation Methodologies for Developing Countries (TPMDC 2012)* (12–14 December 2012), Mumbai.
20. S.V. Kumar and R. Sivanandan (2012) Congestion quantification measures and their applicability to Indian traffic conditions. *Proceedings, International Conference on Advances in Architecture and Civil Engineering (AARCV 2012)* (21–23 June 2012), Bangalore, pp. 526–533.
21. A. Gowri and R. Sivanandan (2012) Traffic data collection and processing for calibration of simulation model. *Proceedings, International Conference on Advances in Architecture and Civil Engineering (AARCV 2012)* (21–23 June 2012), Bangalore, pp. 521–525.
22. G. Asaithambi, V. Kanagaraj, K.K. Srinivasan and R. Sivanandan (2012) Mixed traffic characteristics on urban arterials with significant motorized two-wheeler volumes: Role of composition, intra-class variability, and lack of lane discipline. *Compendium of Papers, 91st Transportation Research Board (TRB) Annual Meeting* (22–26 January 2012), Washington, D.C., USA.

23. A.R. Vijayanarayanan, R. Goswami and C.V.R. Murty (2012) Determining levels of seismic shaking effects in buildings for securing non-structural elements. *4th International Conference on Structural Stability and Dynamics* (4–6 January 2012), Jaipur, India, paper 63. (CD ROM)
24. C.V.R. Murty, D.C. Rai, H. Kumar, K. Mitra, A. Bose, H.B. Kaushik, P.K. Ramancharla and A.K. Jaiswal (2012) A methodology for documenting housing typologies in the moderate-severe seismic zones. *Proceedings of the 15th World Conference on Earthquake Engineering (15WCEE)* (24–28 September 2012), Lisbon, Portugal, paper ID 0081.
25. A. Menon, R. Goswami, A.R. Vijayanarayanan, C.V.R. Murty, A.K. Jaiswal and A.R. Sheth (2012) Buddhist monasteries in grave danger in Himalayan region. *Proceedings of the 15th World Conference on Earthquake Engineering (15WCEE)* (24–28 September 2012), Lisbon, Portugal, paper ID 0623.
26. A.R. Vijayanarayanan, R. Goswami and C.V.R. Murty (2012) Performance of RC buildings along hill slopes of Himalayas during 2011 Sikkim earthquake. *Proceedings of the 15th World Conference on Earthquake Engineering (15WCEE)* (24–28 September 2012), Lisbon, Portugal, paper ID 0621.
27. C.V.R. Murty, A. Menon, R. Goswami, A.R. Vijayanarayanan, S.R. Gandhi, K.N. Satyanarayana, S.T.G. Raghukanth, A. Jaiswal and A. Sheth (2012) Observations for damages sustained in India during 2011 (India-Nepal) Sikkim earthquake. *Proceedings of the 15th World Conference on Earthquake Engineering (15WCEE)* (24–28 September 2012), Lisbon, Portugal, paper ID 0625.
28. K. Dasgupta and C.V.R. Murty (2012) Conceptual improvement in seismic design of slender reinforced concrete structural walls on isolated footings: A summary. *Proceedings of the 15th World Conference on Earthquake Engineering (15WCEE)* (24–28 September 2012), Lisbon, Portugal.
29. B. Soundara and R.G. Robinson (2012) Swelling pressure and uplift of piles in expansive soils. *Proceedings of the First Asian Workshop on Physical Modelling in Geotechnics, Asiafuge 2012* (14–16 November 2012), Mumbai, B.V.S. Viswanadham and C. Gaudin. (eds.), pp. 219–227.
30. K. Rajagopal and T. Sanyal (2012) Sustainable infrastructure development including limited life geosynthetics. *Proceedings of the 5th Asian Regional Conference on Geosynthetics* (13–15 December 2012), *Geosynthetics Asia*, Bangkok, pp. 143–146. (Theme lecture)
31. S.G. Kumar, R.G. Robinson and K. Rajagopal (2012) Stabilisation of soft clays using geosynthetic encased stone columns with vacuum application. *Proceedings of the 5th Asian Regional Conference on Geosynthetics, Geosynthetics Asia* (13–15 December 2012), Bangkok, pp. 201–206.
32. K. Rajagopal, A. Veeraragavan and S. Chandramouli (2012) Studies on geocell reinforced road pavement structures. *Proceedings of the 5th Asian Regional Conference on Geosynthetics, Geosynthetics Asia* (13–15 December 2012), Bangkok, pp. 497–502.
33. K. Rajagopal, R. Vijaya, R. Rautela and Kartheek (2012) Investigations on geosynthetic based environmentally sustainable coastline stabilization techniques. *Proceedings of 2nd Pan American Conference on Geosynthetics, GeoAmericas* (2–4 May 2012), Lima, Peru.
34. B.N. Rao and A.S. Balu (2012) Possibility distribution of structural reliability using high dimensional model representation. *The Fourth International Congress on Computational Mechanics and Simulation (ICCMS 2012)* (9–12 December 2012), IIT Hyderabad.
35. A.S. Balu and B.N. Rao (2012) Estimation of failure probability bounds using MHDMR. *The Fourth International Congress on Computational Mechanics and Simulation (ICCMS 2012)* (9–12 December 2012), IIT Hyderabad.
36. K.S. Rao and B.N. Rao (2012) An efficient matrix method for non-linear analysis of Euler–Bernoulli beam frames. *The Fourth International Congress on Computational Mechanics and Simulation (ICCMS 2012)* (9–12 December 2012), IIT Hyderabad.
37. M.V.N. Sivakumar and B.N. Rao (2012) Reference strain based fracture analysis of through wall cracked pipes subjected to bi-axial loading. *The Fourth International Congress on Computational Mechanics and Simulation (ICCMS 2012)* (9–12 December 2012), IIT Hyderabad.
38. A.S. Balu and B.N. Rao (2012) Inverse reliability analysis for confidence bounds on design variables using HDMR. *6th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS)* (10–14 September 2012), Vienna, Austria.
39. B.N. Rao and A.S. Balu (2012) Bounds on design variables using HDMR based inverse reliability analysis. *Network for Integrating Structural Analysis, Risk and Reliability (ASRANet Conference)* (2–4 July 2012), London.
40. A.S. Balu and B.N. Rao (2012) Failure probability bounds using multicut-high dimensional model representation. *International Symposium on Engineering Under Uncertainty: Safety Assessment and Management (ISEUSAM 2012)* (4–6 January 2012), Bengal Engineering and Science University, Shibpur, Howrah, India.

41. P. Pandi, U. Saravanan and R. Goswami (2012) An algorithm to determine the current state of a statically determinate bridge from strain measurements. *7th International Workshop on Advanced Smart Materials and Smart Structures Technology (ANCRiSST)*, IISc, Bangalore.
42. U. Saravanan (2012) Mechanical experiments to identify bodies that can be approximated by homogeneous models. *International Congress on Computational Mechanics and Simulation (ICCMS)*, IIT Hyderabad.
43. S.M. Shiva Nagendra, M. Khare, V. Prince, V.S. Chithra and S. Gulia (2012) Application of ADMS and AERMOD models to study the dispersion of vehicular pollutants in urban areas of India and United Kingdom. *WIT Air Pollution 2012 Conference* (May 2012), Coruna, Spain.
44. Mu. Khare, S.M. Shiva Nagendra and S. Gulia (2012) Performance evaluation of air quality dispersion models at urban intersection of an Indian city: A case study of Delhi city. *WIT International Conference on Air Pollution* (May 2012), Coruna, Spain.
45. S.M. Shiva Nagendra and B. Srimuruganandam (2012) Source characterization of PM₁₀ and PM_{2.5} mass concentrations in an urban environment. *Proceedings of the Asia Oceania Geosciences Society (AOGS)—AGU (WPGM) Conference* (13–17 August 2012), Singapore.
46. R. Charan and R. Goswami (2012) Connection rotation demand in special moment frame buildings under seismic action. *Proceedings of the 15th World Conference on Earthquake Engineering (15WCEE)* (24–28 September 2012), Lisbon, Portugal, paper ID 0629.
47. P. Firodiya, R.G. Pillai, A.K. Sengupta and D. Menon (2012) Corrosion rates of plain mild steel and cold-twisted deformed steel reinforcement. *Proceedings, UK-India Education and Research Initiative (UKIERI) Concrete Congress* (5–8 March 2013), NIT Jalandhar, Punjab, paper 334.
48. S. Palaniappan, H. Bashford, K. Li, J. Crittenden, A. Fafitis, L. Stecker and S. Hay (2012) Carbon emissions of on-site equipment use in post-tensioned slab foundation construction. *Proceedings of ASCE Construction Research Congress* (21–23 May), pp. 1662–1671.
49. L. Pinky, S.M. Reddy and S. Palaniappan (2012) Application of life cycle assessment for a residential building construction. *Proceedings of the International Symposium on Life Cycle Assessment and Construction* (10–12 July) pp. 213–222.
50. A. Krishnan, P.S. Nair and R. Gettu (2012) Effect of weathering on polymer modified cement mortars used in the repair and waterproofing of concrete. *Concrete Repair, Rehabilitation and Retrofitting III* Alexander et al. (eds) 335–336: 928–931.

(e) Chapters in books

1. C.V.R. Murty and R. Goswami. Seismic design of concrete building structures. In *Structural Engineering and Geomechanics*, UNESCO, EOLSS Publishers, Oxford, UK.
2. D.N. Arnepalli. Earth dams. *Hand Book of Geosynthetic Engineering Engineering*, Institute of Civil Engineers, UK.
3. S.K. Nayar and R. Gettu (2012) On the design of steel fiber reinforced concrete pavements and slabs-on-grade fiber reinforced concrete: Challenges and opportunities. J.A.O. Barros et al. (eds), 239–240, RILEM Publications, Bagneux, France.
4. K. Rajagopal and S. Murugesan (2012) Analysis and design methods for encased stone columns. Chapter 30, *Advances in Geosynthetics*, Sai Master Environmental Services Pvt. Ltd., Hyderabad, pp. 437–458.

Distinguished visitors to the department

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1	Prof. Patrick Fitzpatrick, Dr. Christopher Shepard, Dr. Vikram Pakrashi, Ms. Carmel Jordan, delegation from University College Cork, Ireland (UCC)	10 May 2012	Delivered lecture, Engineering in UCC—Research Opportunity
2	Mr. D. Jebaselwin Gladson, Deputy General Manager, Chennai Metro Rail Limited	12 April 2012	Delivered lecture, A Brief Overview of Planning and Construction of Underground Sections of Chennai Metro Rail Project
3	Mr. K.N. Varadarajan, Retired Director of Lighthouses and Lightships	16 April 2012	Delivered lecture, Soft Skills for Engineers
4	Dr. Ravi Srinivasan, Asst. Prof., Rinker School of Construction, University of Florida	16 May 2012	Delivered a talk on his research and industry-based work on sustainable building energy management
5	Mr. R. Subramanian, Chairperson and G.N. Gokul Deepak, Director, Glazing Society of India, Chennai	17 May 2012	Discussions with HOD for possible MoU for Glass Testing Facility

6	Dr. Sudhir Krishna, IAS, Secretary to GoI, MoUD and Mr. K. Rajaraman IAS, Managing Director, CMRL	23 May 2012	Review of ITS Laboratory with CE faculty
7	Motohide Takeda, Akira Kozu, Yoshihiko Tamemoto from Mitsubishi Corporation, Japan and Yoshino, Director, the University of Tokyo	24 June 2012	Visited the department and held discussions with faculty and HOD
8	Sri Bhattacharjee, Member, NDMA (Union Minister of State, Government of India)	6 July 2012	Visited the department for a meeting with the co-ordinators
9	Prof. Hussain Bahia, Department of Civil and Environmental Engineering, University of Wisconsin-Madison, USA	24 July 2012	Delivered lecture on modified asphalt
10	Prof. Paulo B. Lourenco, Professor, Department of Civil Engineering, University of Minho, Guimarães, Portugal and Head of the Institute in Sustainability and Innovation in Structural Engineering	23–25 August 2012	Delivered keynote address at ASI-IITM National Symposium on Safety and Conservation of Heritage Structures
11	Dr. Liberato Ferrara, Associate Professor, Politecnico di Milano, Italy	7–13 October 2012	Collaborative research under Indo-Italy programme, co-funded by DST (project on self-healing in concrete)
12	Prof. Karen Scrivener, ETFL, Switzerland	16 October 2012	Exploratory visit for collaborative research project on new types of cements
13	Dr. Marc Desmet, professor and Director of Continental Geohydrosystem Department, University of Tours, France and Prof. Sebastien Salvador	9 December 2012	Visited the department and interacted with the faculty of Environmental and Water Resources Engineering to develop academic collaboration with IIT Madras.
14	Prof. Lance Perez, Associate Vice Chancellor for Academic Affairs, Dr. David Jones, Associate, College of Engineering and Dr. Jeffrey E. Shield, Chair and Professor, Mechanical & Materials Engineering, University of Nebraska Lincoln, USA	11 December 2012	Visited the department for interaction and possible collaboration

4.6.6. Other Activities of the Department

Interdisciplinary group achievements of the department

Sl. No.	Coordinator(s)	Title	Period
Workshop			
1	B.S. Murty, Ligy Philip and T Pradeep (CY)	Indo-US Workshop on Water Quality and Sustainability	7-11 January 2013

Sponsored research projects

Sl. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co-ordinators
1	Building an International Research Network on Sustainability to Enhance Strategic Knowledge for Climate Change	3 years	Department of Science and Technology	533.74	Sudhir Chella Rajan (HSS), B.S. Murty (CE) and Ligy Philip (CE)
2	Evaluation of Strategies for the Environmental Restoration of Pallikaranai Marsh Land	15 months	Tamil Nadu Forest Department	5.0	Indumathi M. Nambi (CE), R. Ravikrishna (CH) and T. Swaminathan (CH)

International collaboration achievements by the department

Student visits

Mr. A.R. Vijayanarayanan (CE12D065), Mr. Jacob Alex Kollerathu (CE11D018), Ms. Nibedita Sahoo (CE12S023) and Mr. Viyas N.A. (CE11M049) visited Japan from 3 to 13 February 2013 under the Kizuana (Bond) Project. The aim of the project was to get firsthand information on the scale of damage and status of recovery from the earthquake cum tsunami of 11 March 2011. It was also intended to develop a bond with the people of the disaster-affected area and the international community.

Faculty visits

Dr. S.R. Satish Kumar visited Japan from 3 to 13 February 2013 for the Kizuana (Bond) Project. The aim of the project was to get first hand information on the scale of damage and status of recovery from the earthquake-cum-tsunami of 11 March 2011. It was also intended to develop a bond with the people of the disaster-affected area and the international community.

Major infrastructure development in the department

The FIST Project, with a value of Rs.4.6 crores and duration of 5 years, has been sanctioned in the department. In this project, a unique facility will be set up in the department to determine the behaviour of practically all materials used in the construction of infrastructure, housing and other essential services. The equipment comprises servo-controlled systems having digital closed-loop controllers and data acquisition, with different and specific capabilities. The principal components are the following:

1. a 50 kN capacity electromechanical, dual-column tabletop testing system with digital closed-loop control and data acquisition, with a high-temperature chamber, with a maximum displacement of 1 metre;
2. a 1 MN axial servohydraulic dynamic, four-column testing system with adjustable hydraulic crosshead with an actuator, a fatigue-rated load cell and a digital closed-loop controller, for compression and flexural tests for characterization of material and structural component responses (concrete, reinforced concrete, composites, bricks, stone and masonry), including fracture and fatigue (up to 10 Hz) behaviour;
3. a tensile testing system with a daylight space of at least 3 metres, a dynamic actuator mounted on a platten, full-capacity hydraulic grips and suitable extensometers for tests on cables and coupons of metal and composites;
4. a hydraulic power pack (water cooled) to supply oil at rates of up to 118 l/min at 200 bar pressure with a noise level less than 70 dB; and
5. a triaxial cell with digital closed-loop control with a confining pressure capacity of 140 MPa and an additional actuator for axial loading for tests on rocks and concrete.

This new setup will promote, for the first time in a single Indian facility, the characterization of material responses ranging from elastic to post-cracking regimes, from dynamic to static to nonlinear creep loading rates, over a range of temperatures, under both monotonic and cyclic loading and under atmospheric and hydrostatic confining pressure. The materials that could be studied range from highly deformable polymer fibres, geotextiles and bitumens to quasi-brittle concretes, rocks and ceramics and to high-strength steels and fibre-reinforced composites.

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, M.Tech., M.S., Ph.D.

New courses introduced

Sl. No.	Course No.	Title
1	CS6851	Distributed Algorithms
2	CS6868	Concurrent Programming

New lab(s) established

Sl. No.	Title
1	Algorithms and Complexity Theory (ACT) Lab
2	Programming Languages Architecture Compilers Education (PACE) Lab
3	Yahoo Grid Lab

Students on roll

Programme	I year	II Year	III Year	IV Year	V Year and Others	Total
B.Tech.	33	33	33	26	7	132
Dual Degree	29	28	29	21	23	130
M.Tech.	57	61	3	0	0	121
M.S.	34	23	15	11	3	86
Ph.D.	17	9	10	13	22	71
Total	170	154	90	71	55	540

Names of students/scholars who attended conferences/workshops/seminars and 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
Abroad					
1	C.S. Ganesh (M.S.)	CS10S015	ONDM Conference	April 2012, Essex, UK	IIT Madras and HCL
2	Kashyap Garimella (Dual Degree)	CS07B004	FASPP Workshop of ISCA Conference	6–15 June 2012, Portland, USA	IIT Madras
3	B.S. Shajee Mohan (Ph.D.)	CS09D022	International Conference on Image Analysis and Recognition	25–27 June 2012, Aveiro, Portugal	IIT Madras
4	Raghavendra K. (Ph.D.)	CS10D003	UKIERI Project—Power Efficient and High Performance Data Prefetching Techniques for Multi-Core Processors	18 June to 14 July 2012, University of Edinburgh	IIT Madras
5	Sarang Bhardwaj (M.S.)	CS09S022	ICCCN 2012	30 July–2 August, 2012, Germany	IIT Madras
6	Yash Kamat (B.Tech.)	CS10B029	Harvard Asia Conference—(HPAIR-2012)	24–28 August 2012, Taipei, Taiwan	IIT Madras
7	Preethi Chandur (M.S.)	CS10S006	Technical Meeting for India-UK Research Project (IU-ATC)	30–31 August 2012, University of Cambridge, UK	IIT Madras

8	C.S. Ganesh (Ph.D.)	CS12D008	Technical Meeting for India-UK Research Project (IU-ATC)	30–31 August 2012, University of Cambridge, UK	IIT Madras
9	Saad Yunus Sait (Ph.D.)	CS10D015	Technical workshop	28 August to 2 September 2012, University of Cambridge, UK	IIT Madras
10	Mehta Hemang K. (M.S.)	CS10S011	2nd Symposium on Computer Languages, Implementation and Tools	16–28 September 2012, Kos, Greece	IIT Madras
11	Anuja Agrawal (Dual Degree)	CS09B028	Grace Hopper Celebration of Women in Computing Conference	3–6 October 2012, Baltimore, Maryland, USA	IIT Madras
12	Chiranjoy Chattopadhyay (Ph.D.)	CS10D009	IEEE International Symposium on Multimedia	10–12 December 2012, Irvine, California, USA	IIT Madras
13	John Jose (Ph.D.)	CS09D008	DATE Conference	18–22 March 2013, Germany	IIT Madras

India

1	Biswabandan Panda (Ph.D.)	CS10D019	CHEW'12 Workshop	25 March to 1 April 2012, IIT Kharagpur	IIT Madras
2	Balagopal (Ph.D.)	CS11D003	Workshop on complexity theory	17–19 August 2012, IIT Kanpur	IIT Madras
3	R. Golda Brunet (Ph.D.)	CS09D012	International Conference on Signal Processing and Communications	22–25 July 2012, IISc, Bangalore	IIT Madras
4	R. Subashini (Ph.D.)	CS10D013	3rd Annual Mysore Park Workshop	10–12 August 2012, Mysore	IIT Madras
5	Joshi Anup Shirish (M.S.)	CS11S012	3rd Annual Mysore Park Workshop	10–12 August 2012, Mysore	IIT Madras
6	Sajin K. (Ph.D.)	CS11D006	Workshop on complexity and logic	17–19 August 2012, IIT Kanpur	IIT Madras
7	Chiranjoy Chattopadhyay (Ph.D.)	CS10D009	3rd International Conference on Engineering Applications of Information Technology	29 November to 3 December 2012, ISI, Kolkata	IIT Madras
8	R. Golda Brunet (Ph.D.)	CS09D012	Workshop, Linguistic Data Consortium for Indian Languages	4–10 December 2012, Mysore	IIT Madras
9	Ashwin Bellur (Project Officer)		Workshop, Linguistic Data Consortium for Indian Languages	4–10 December 2012, Mysore	IIT Madras
10	Aswin Shanmugam S. (Project Associate)		Training programme organized by IIT Madras at CIIL	8 December 2012	IIT Madras
11	Sangeetha (Ph.D.)	CS10D016	International Conference on Management of Data	12–18 December 2012, Pune	IIT Madras
12	Vinu E.V.	CS12D019	International Conference on Management of Data	12–18 December 2012, Pune	IIT Madras
13	Ajeesh Ramanijan	CS09D007	BIC-TA at Gwalior	14–16 December 2012	IIT Madras
14	Nitin Gupta (Project Associate)		ICVGIP-2012 Conference	14–18 December 2012, Mumbai	IIT Madras
15	Narendran Krishnan (M.S.)	CS08S016	IEEE ANTS 2012 Conference	16–19 December 2012, Bangalore	IIT Madras
16	Santosh Kumar K.V.S. (M.S.)	CS12S010	Mobile device security project meeting and workshop	3 January 2013	IIT Madras
17	Marella Aditya (Project Associate)		Mobile device security project meeting and workshop	3 January 2013	IIT Madras
18	Tanmoy Das	CS10M065	Conference, COMSNETS 2012	8–10 January 2013, Bangalore	IIT Madras
19	Sangeetha Jose (Ph.D.)	CS10D017	Short-term training programme, Computer and Network Security	1 February 2013, Government Engineering College, Idukki, Kerala	IIT Madras
20	Rajeev Rajan (Ph.D.)	CS10D014	National Communication Conference	15–18 February 2013, IIT Delhi	IIT Madras

21	Ashwin Bellur (Project Officer)	National Communication Conference	15–18 February 2013, IIT Delhi	IIT Madras
22	Akshay Bhandari (Project Associate)	WISSAP-2013	22–25 February 2013, IIT Madras	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	Satya Nunna Mounika	CS12B020	Selected as an Aditya Birla Scholar under the Science Stream	Aditya Birla Management Corporation Pvt. Ltd.
2	Biswabandan Panda (Ph.D.) and R. Krithika (Ph.D.)	CS10D019 CS12D005	Selected for the TCS Research Scholar Program	TATA Consultancy Services

Names of students/scholars who won Institute Convocation/Institute Day prizes

Sl. No.	Name of the Student/Scholar	Roll No.	Name of Prizes	Name of Donor
1	Akshay Dhananjai Degwekar	CS10B056	Institute Day Prize	Sri. V. Ramachandran
2	Vijay Karthick M.	CS09B050	Institute Day Prize	Computer Age Management Services Pvt. Ltd.
3	Vijay E.	CS10M067	Best M.Tech. Project Award and the convocation prize for highest GPA	

4.7.3. Faculty and Their Activities

Faculty

Name and Qualifications	Major Areas of Specialization
Professors	
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
Kalyana Krishnan R., Ph.D. (Yale)	Computer architecture, computer system design, microprocessors, digital electronic systems, computer graphics, statistical signal processing
Kamakoti V., Ph.D. (IIT Madras)	Software for VLSI design, computational geometry, high performance computing
Kamala Krithivasan, Ph.D. (University of Madras)	Theoretical computer science, formal languages and automata, algorithms, computational geometry, unconventional models of computing
Krishna Moorthy Sivalingam, Ph.D. (SUNY Buffalo)	Wireless networks, optical networks
Pandu Rangan C., Ph.D. (IISc)	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
Siva Ram Murthy C., Ph.D. (IISc)	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 visualization

Associate Professors	
Anurag Mittal, Ph.D. (University of Maryland)	Computer vision
Madhu Mutyam, Ph.D. (IIT Madras)	Computer architecture
Narayanaswamy N.S., Ph.D. (IISc)	Algorithms and complexity theory
Ravindran B., Ph.D. (University of Massachusetts, Amherst)	Machine learning, reinforcement learning, data/text mining
Assistant Professors	
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. (Institute of Mathematical Sciences, Chennai)	Computational complexity theory, Boolean and arithmetic circuits, algebraic complexity, smoothed analysis of algorithms
Shankar Balachandran, Ph.D. (UT, Dallas)	CAD for VLSI, reconfigurable computing, computer architecture
Sutanu Chakraborti, Ph.D. (The Robert Gordon University, UK)	Information retrieval, memory-based reasoning and machine learning

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

Sl. No.	Coordinator(s)	Title	Period
Workshops			
1	Hema A. Murthy	ASR Workshop	16–21 June 2012, IIT Madras
2	Sukhendu Das	A 2-day workshop, Digital Video Analytics and Processing (DVAP-12)	21–22 December 2012, at IC&SR Auditorium, IIT Madras
3	John Augustine	Workshop, Big Data Algorithms	10–16 January 2013, at Tata Research Development and Design Centre
4	Ravindran	Workshop on Understanding Big Data Analysis at Mysore, sponsored by ACM IKDD	15 February 2013
Short-term courses			
1	Hema A. Murthy	Basic Computers for Visually Challenged	15 May to 20 June 2012
2	Madhu Mutyam	Quality Improvement Programme, Recent Trends in Computer Architecture	17–21 December 2012, IIT Madras
3	Hema A. Murthy, Chandra Sekhar, S. Umesh (EE) and Ramalingam (EE)	Winter School on Speech and Audio Processing: Statistical Parametric Speech Synthesis	22–25 February 2013
4	Krishna Moorthy Sivalingam and V. Krishna Nandivada	Architecture Readiness Programme (ARP) for senior employees of Verizon (3-year MoU signed jointly by Department of Computer Science and Engineering and DoMS; each batch of students from Verizon will undergo a 3-month certificate course)	22 February to 17 May 2013

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
Workshops				
1	Jayalal Sarma M.N.	Workshop on Complexity and Logic (speaker)	IIT Kanpur	17 July 2012
2	Hema A. Murthy	International Conference on Signal Processing and Communications	IISc, Bangalore	22–25 July 2012

3	Janaki Ram	Indo-US Workshop on Big Data	Cochin	16 August 2012
4	V. Kamakoti	Adaptive Computing Workshop (invited talk)	IISc, Bangalore	14 September 2012
5	V. Krishna Nandivada	IMPECS Workshop	Bangalore	17–20 September 2012
6	Kamala Krithivasan	Workshop on Advanced Topics in Theoretical Computer Science (invited talk)	Anna University	18 November 2012
7	Sukhendu Das	Workshop on Web-enabled Sensor and Social Networking	IIT Delhi	9 December 2012
8	Deepak Khemani	24th International Conference on Computational Linguistics	IIT Bombay	9–16 December 2012
9	V. Kamakoti	International Conference on Advanced Computing and Communication Society	Bangalore	13–17 December 2012
10	P. Sreenivasa Kumar	International Conference on Management of Data (COMAD)	Pune	14–16 December 2012
11	Krishna Moorthy Sivalingam	6th IEEE International Conference on Advanced Networks and Telecommunication Systems	Bangalore	16–19 December 2012
12	Anurag Mittal	The Eighth Indian Conference on Vision, Graphics and Image Processing	Bombay	16–19 December 2012
13	Janakiram	International Conference on Big Data Analytics	Delhi	25–26 December 2012
14	C. Pandu Rangan	Workshop on Real-World Cryptography	Stanford University, USA	9–12 January 2013
15	Sukhendu Das	DST–WSE Workshop	New Delhi	18–19 January 2013
16	N.S. Narayanaswamy	WALCOM 2013 Workshop (invited speaker)	Kolkata	14 February 2013
17	C. Chandra Sekhar	Winter School on Speech and Audio Processing (WiSSAP 2013)	IIT Madras	22–25 February 2013

Conferences

1	D. Janakiram	PMI Cloud Computing	Hyderabad	13 April 2012
2	C. Chandra Sekhar	International Conference MMASC (talk)	Coimbatore	12 July 2012
3	Hema A. Murthy	SPCOM conference	IISc, Bangalore	22–25 July 2012
4	V. Krishna Nandivada	International Conference on Communication Computing and Security (ICCCS)	NIT Rourkela	5–11 October 2012
5	Madhu Mutyam	International Conference on Computer-Aided Design (ICCAD)	San Jose, USA	5–9 November 2012
6	V. Kamakoti	Freescall Engineering Conference (attended and gave a keynote address)	New Delhi	5 December 2012
7	Shankar Balachandran	International Conference on VLSI Design 2013	Pune	7–9 January 2013
8	Kamala Krithivasan	International Conference of Women in Computing	Anna University	9–11 January 2013
9	V. Krishna Nandivada	International Conference on Distributed Computing and Networking (tutorial co-chair)	Tata Institute of Fundamental Research	3–6 January 2013
10	Madhu Mutyam	International Conference on Architecture of Computing Systems (ARCS)	Prague, Czech Republic	19–22 February 2013
11	Jayalal Sarma M.N.	Symposium of Theoretical Aspects for Computer Science (STACS)	Kiel, Germany	27 February to 2 March 2013
12	Kamala Krithivasan	National Conference on Emerging Trends in Information and Communication Technologies (chaired a session)	Chennai	14 March 2013
13	Kamala Krithivasan	National Conference on Advanced Computing and Technology (talk)	VIT University	15 March 2013
14	Krishna Moorthy Sivalingam	National Conference on Networking and Communication	Puttaparthi, A.P.	14–17 March 2013

Special lectures delivered by faculty members at other institutions

Sl. No.	Name of Faculty Member	Topic	Institution	Date
1	B. Ravindran	Parametric Control of Sample Complexity and Regret for Bandit Problems	IISc, Bangalore	17 April 2012
2	B. Ravindran	Learning in a Small World	IIT Kharagpur	18 April 2012
3	P. Sreenivasa Kumar	Semantic Web Technology	UVCE, Bangalore	20 April 2012
4	Madhu Mutyam	Application Aware Eviction Policies for Multicore Shared Caches	IIT Delhi	26 April 2012
5	C. Pandu Rangan	Invited talks	National Institute of Informatics, Tokyo, Japan	20–29 June 2012
6	C. Chandra Sekhar	Expert lectures	MEPCO Engineering College, Sivakasi	14–15 September 2012
7	Kamala Krithivasan	DNA Computing	Tapar University, Patiala	1 October 2012
8	V. Krishna Nandivada	International Conference on Communication, Computing and Security (keynote)	NIT Rourkela	6–8 October 2012
9	Anurag Mittal	Contour-Based Methods for Object and Image Understanding	Yahoo Winter School	6 December 2012
10	Kamala Krithivasan	Trends and Methodologies in Research	Fomra College of Engineering	12 December 2012
11	Krishna Moorthy Sivalingam	Internet of Things: Recent Trends and Research Issues	B.S. Abdur Rahman University, Chennai	13 December 2012
12	V. Krishna Nandivada	Invited talk	Kozhikode	17–19 December 2012
13	Krishna Moorthy Sivalingam	Networking Architectures for Smart Grid	IGCAR, Kalpakkam	21 December 2012
14	John Augustine	Mini-course and research seminar	Tata Research Development and Design, Pune	9 January 2013
15	John Augustine	Churn Resistant Algorithms for Peer-to-Peer Networks	Tata Research Development and Design, Pune	10–16 January 2013
16	Shankar Balachandran	High Performance Computing	Tata Research Development and Design, Pune	January 2013
17	Shankar Balachandran	Auto-parallelization for GPUs	NVIDIA, Pune	January 2013
18	Sukhendu Das	Research Issues in Visual Perception	CSE Department, SRM University	21–22 January 2013
19	Kamala Krithivasan	Membrane Computing	VIT University	8 February 2013
20	V. Krishna Nandivada	Turing Centenary Lecture	NIT Calicut	

Visits abroad by faculty

Sl. No.	Name of Faculty Member	Country Visited	Date	Purpose of Visit	Funding from
1	D. Janakiram	Hawaii, USA	16–25 April 2012	Network Operations and Management Symposium	IIT Madras
2	John Augustine	Nanyang Technological University, Singapore	5 May to 26 June 2012	Summer research visit	IIT Madras
3	B. Ravindran	Minnesota, USA	14–18 May 2012	IEEE International Conference on Robotics and Automation	IIT Madras

4	B. Ravindran	Marco Island, Florida, USA	23–25 May 2012	25th International Conference of the Florida AI Research Society, Marco Island, Florida, USA	IIT Madras
5	John Augustine	Honk Kong University of Science and Technology, Hong Kong	27 May to 8 June 2012	Technical collaborative visit	IIT Madras
6	Krishnamoorthy Sivalingam	Department of Computer Science, National Chiao Tung University, Taiwan	2–10 June 2012	Networking research at Don Lab at IIT Madras	IIT Madras
7	Madhu Mutyam	University of Edinburgh, UK	18 June to 14 July 2012	UKIERI Project work	British Council
8	C. Pandu Rangan	National Institute of Informatics, Tokyo, Japan	20–29 June 2012	To deliver invited talks	IIT Madras
9	B. Ravindran	Wakeforest University, USA	28 June 2012	Discussions on research collaborations	IIT Madras
10	Hema A. Murthy	Istanbul, Turkey	12–13 July 2012	2nd International Computer Music Workshop	IIT Madras
11	Sukhendu Das	Los Angeles, USA	6–9 August 2012	SIGGRAPH-2012, international conference	IIT Madras
12	Krishna Moorthy Sivalingam	Cambridge, UK	28 August 2012	DST-funded IU-ATC Project technical meeting	IIT Madras
13	Krishna Moorthy Sivalingam	Cambridge, UK	3 September 2012	INDO-UK Project review meeting	IIT Madras
14	D. Janakiram	Korea	21–24 October 2012	Invited talk at 2012 International Forum: Changes in Industrial Landscape Conference	Korean government
15	C. Pandu Rangan	Fukuoka, Japan	3–9 November 2012	To present papers at IWSEC2012 and MIST 2012 Workshop and to participate in technical discussions	IIT Madras
16	Krishnamoorthy	Tainan City, Taiwan	4–9 November 2012	To present a paper at IEEE Smart Grid Comm Conference	IIT Madras
17	Madhu Mutyam	California, USA	5–8 November 2012	To present a paper at International Conference on Computer Aided Design	DST
18	John Augustine	Nanyang Technological University, Singapore	3–14 December 2012	Technical collaborative visit	IIT Madras
19	C. Pandu Rangan	Stanford University, USA	9–11 January 2013	Technical discussions and attending workshop	IIT Madras
20	Madhu Mutyam	Prague, Czech Republic	19–22 February 2013	To present a paper at International Conference on Architecture of Computing Systems	IIT Madras
21	Jayalal Sarma M.N.	Germany	25–27 February 2013	Technical collaborative visit to University of Saarland, Saarbrücken	IIT Madras
22	Jayalal Sarma M.N.	Denmark	3–9 March 2013	Technical collaborative visit to Aarhus University	IIT Madras

Honours and awards obtained by faculty

Sl. No.	Name of Faculty Member	Name of Award
Honours		
1	C. Siva Ram Murthy	INAE Chair Professorship Award for the years 2012–2014 (April 2012 to March 2014)
2	Shankar Balachandran	First prize in a contest held by TAU Workshop in Reno, Nevada, USA
Awards		
1	Hema A. Murthy	The GE India Innovation Award and the first prize in the research expo, SHASTRA 2013, were given to the team led by Hema Murthy for their work in conversion of text to speech. Prof. Rais Ahmed Memorial Lecture Award, Acoustical Society of India Manthan Award (Asia Pacific Region)—top 74 finalists out of 460 projects
2	T.T. Mirnalinee, Sukhendu Das and Koshy Varghese	Best Paper Award for their paper titled “An Integrated Multi-Stage Framework for Automatic Road Extraction from High Resolution Satellite Imagery”, published in the <i>Journal of the Indian Society of Remote Sensing</i>
3	Sukhendu Das	Award for the best paper at the inaugural session of the national symposium on “Space Technology for Food and Environment Security”

Books, monographs authored/co-authored

Sl. No.	Name of Faculty Member	Title	Publisher	Author/ Co-author
Books				
1	Kamala Krithivasan	<i>Introduction to Formal Languages, Automata and Computation</i>	Pearson Education (the same publishers have translated the work into Chinese and published it)	R. Rama
2	Kamala Krithivasan (adaptation author)	<i>Discrete Mathematics</i>	Tata McGraw Hill (India)	

Fellowships of academies and professional societies

Sl. No.	Name of Faculty Member	Year of Admission
INSA		
1	C. Siva Ram Murthy	2012

Journal editorial boards

Sl. No.	Name of Faculty Member	Position (Editor/Member)	Name of Journal
1	Kamala Krithivasan	Editor	<i>International Journal of Communication Networks and Distributed Systems</i>
2	Sukhendu Das	Editor	<i>CSI Journal of Computing</i>
3	Krishna Moorthy Sivalingam	Editor-in-Chief (with Byrav Ramamurthy) Member (2003–2013)	<i>Photonic Network Communications</i> <i>ACM Wireless Networks Journal (WINET)</i>
4	D. Janakiram	Associate Editor	<i>IEEE Transactions on Cloud Computing</i>

4.7.4. Research and Consultancy

Sponsored research projects

Sl. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co-ordinators
1	CSE1213131DEITDJAN	4 July 2012 to 3 July 2015	Department of Electronics & Information Technology	232.00	D. Janakiram
2	CSE1213132UPFXHEMA	1 April 2012 to 31 March 2017	University of P Fabra, Spain	83.00	Hema A. Murthy
3	CSE1213134INAECSIV	1 April 2012 to 31 March 2014	Indian National Academy of Engineering	3.60	C. Siva Ram Murthy

4	CSE1213138DRDOANUA	NULL	Defence Research and Development Organisation	22.82	Anurag Mittal
5	CSE1213133DEITDJAN	9 May 2012 to 8 May 2015	Department of Electronics & Information Technology	79.20	D. Janakiram
6	CSE1213136DSTESKRS	1 November 2012 to 30 April 2015	Department of Science & Technology (Indo-UK)	0.00	Krishna Moorthy Sivalingam
7	CSE1213137DSTXNSNA	27 March 2013 to 26 March 2018	Department of Science & Technology	7.00	N.S. Narayanaswamy
8	CSE1112129DITXHEMA	24 January 2012 to 23 January 2015	Department of Information Technology	100.00	Hema A. Murthy (PI), C. Chandra Sekhar and S. Umesh (EE)

Industrial consultancy projects

Sl. No.	Name of Faculty Member	Title	Industry
1	Krishna Moorthy Sivalingam	Consultancy in Computer Network and Systems	Common Code

RBIC projects

Sl. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
1	B. Ravindran	Robotics Intern Program	Microsoft Research Lab India	0.81
2	V. Kamakoti	Instruction Set Design for a 32-bit RISC Core	Defence Research & Development Organization	9.83
		Development of ARM Compatible Tablet	Defence Research & Development Organisation	9.90
3	B. Ravindran	Consumer Behaviour Analysis	Ericsson India Pvt. Ltd.	30.00
4	Krishna Moorthy Sivalingam	Simulation Based Platform for Tactical Communication System	Tata Power Company Ltd.	47.38
5	P. Sreenivasa Kumar	Extensible Automotive Ontology Re-engineering	Ford Motor Company	28.00
6	V. Kamakoti	Secure Anupama Microcontroller Development	Defence Research & Development Organisation	24.21
7	C. Pandu Rangan	Studies in Proxy Re-encryption	NETAPP India	6.18
8	V. Krishna Nandivada, Deepak Khemani and Sutanu Chakraborty	Model-Based Testing of GUI Applications	Altair Engineering India Pvt. Ltd.	13.48
9	Krishna Moorthy Sivalingam	Network Technologies for Smart Grid	IBM	16.4

Research publications of faculty members and research scholars

Total number of papers published in refereed international journals: 29

Total number of papers presented in national conferences: 2

Total number of papers presented at international conferences: 57

(a) Refereed international journals

1. A. Antony Franklin, A. Balachandran, C. Siva Ram Murthy. Online reconfiguration of channel assignment in multi-channel multi-radio wireless mesh networks. *Computer Communications*.
2. V. Mahendran, C. Siva Ram Murthy. Buffer dimensioning of DTN replication-based routing nodes. *IEEE Communications Letters*
3. J. Augustine, S. Das, A. Maheshwari, S.C. Nandy, S. Roy, S. Sarvottamananda. Localized geometric query problems. *Computational Geometry—Theory and Applications*.
4. L. Kuppusamy, A. Mahendran, K. Krithivasan. On the trade-off between ambiguity and complexity in contextual languages. *Fundamenta Informaticae*.
5. M. Sakthi Balan, Kamala Krithivasan. Binding-blocking automata. *International Journal of Computer Mathematics*.

6. Susan Elias, Vanaja Gokul, Kamala Krithivasan, Marian Gheorghe and Gexiang Zhang. A variant of distributed P systems for real time cross layer optimization. *Journal of Universal Computer Science*.
7. V.K. Nandivada and R. Barik. Improved bitwidth-aware variable packing. *ACM Transactions on Architecture and Code Optimization*.
8. V.K. Nandivada, J. Shirako, J. Zhao and V. Sarkar. A transformation framework for optimizing task-parallel programs. *ACM Transactions on Programming Languages and Systems*.
9. Y.-M. Qiao, M.N. Jayalal Sarma, B.-S. Tang. On isomorphism testing of groups with normal hall subgroups. *Journal of Computer Science and Technology*.
10. B. Venkataramana Kini and C. Chandra Sekhar. Bayesian mixture of AR models for time series clustering. *Pattern Analysis and Applications*.
11. B.V. Kini, C. Chandra Sekhar. Large margin mixture of AR models for time series classification. *Applied Soft Computing*.
12. A.D. Dileep and C. Chandra Sekhar. Speaker recognition using pyramid match kernel based support vector machines. *International Journal of Speech Technology*.
13. C. Chattopadhyay, A.K. Maurya. Genre-specific modeling of visual features for efficient content based video shot classification and retrieval. *International Journal on Multimedia Information Retrieval*.
14. R.K. Pasumarthi, V.R. Devanathan, V. Visvanathan, S. Potluri, V. Kamakoti. Thermal-safe dynamic test scheduling method using on-chip temperature sensors for 3D MPSoCs. *Journal of Low Power Electronics*.
15. S.A.V. Satya Murty, B. Raj, K.M. Sivalingam, S.Sridhar, J. Ebenezer, K.R. Kuchipudi. Wireless sensor network in fast breeder test reactor. *Journal of Nuclear Engineering & Technology*.
16. T.P. Michalak, K.V. Aadithya, P.L. Szczyptański, B. Ravindran, N.R. Jennings. Efficient computation of the Shapley Value for game-theoretic network centrality. *Journal of Artificial Intelligence Research*.
17. S. Potluri, N. Chandrachoodan, V. Kamakoti. Interconnect aware test power reduction. *Journal of Low Power Electronics*.
18. S. Srinivasan, V. Kamakoti, A. Bhattacharya. A novel algorithm for fast synthesis of DNA probes on microarrays. *ACM Journal on Emerging Technologies in Computing Systems*.
19. M. Mutyam. Fibonacci codes for crosstalk avoidance. *IEEE Transactions on Very Large Scale Integration Systems*.
20. A. Kumar, K. Sivalingam, A. Kumar. On reducing delay in mobile data collection based wireless sensor networks. *Wireless Networks*.
21. G. Namboothiri, K.M. Sivalingam. Throughput analysis of multiple channel based wireless sensor networks. *Wireless Networks*.
22. A. Sivakumar, C.S. Ganesh, K.M. Sivalingam. Performance analysis of ONU-wavelength grouping schemes for efficient scheduling in long reach-PONs. *Optical Switching and Networking*.
23. B. Ashwinkumar, A. Patra, A. Choudhary, K. Srinathan, C. Pandu Rangan. On the trade-off between network connectivity, round complexity, and communication complexity of reliable message transmission. *Journal of the ACM*.
24. M. Nizar, P. Sreenivasa Kumar. Order-aware twigs: Adding order semantics to twigs. *Information and Data Management*.
25. P. Vipin Balachandran, P. Deepak, Deepak Khemani. Interpretable and reconfigurable clustering of document datasets by deriving word-based rules. *Knowledge and Information Systems*.
26. R. Krithika, N.S. Narayanaswamy. Parameterized algorithms for (r,l)-partitioning. *Journal of Graph Algorithms and Applications*.
27. D. Janakiram, G. Iyer, S. Kailasam. Generate-map-reduce: An extension to map-reduce to support shared data and recursive computations. *Concurrency and Computation: Practice and Experience*.
28. M. Maya, V.S. Chakravarthy, B. Ravindran. An oscillatory neural network model for birdsong learning and generation: Implications for the role of dopamine in song learning. *International Journal of Mind, Brain and Cognition*.
29. B. Ravindran. Relativized hierarchical decomposition of Markov decision processes. *Progress in Brain Research*.

(b) Proceedings of national conferences

1. R. Rajan, H.A. Murthy. Melodic pitch extraction from music signals using modified group delay functions. *National Conference on Communications*, 15–17 February 2013.
2. A. Bellur, H.A. Murthy. A cepstrum based approach for identifying tonic pitch in Indian classical music. *National Conference on Communications*, 15–17 February 2013.

(c) **Proceedings of international conferences**

1. K. Preetha Mathew, S. Vasant, S. Venkatesan, C. Pandu Rangan. A code-based 1-out-of-N oblivious transfer based on McEliece assumptions. *International Conference on Information Security Practice and Experience*, 9–12 April 2012.
2. C.S. Ganesh, K.M. Sivalingam. Reporting in ONUs with reduced buffers. *International Conference on Optical Network Design and Modeling*, 17–20 April 2012.
3. A. Kumar, H. Chauhan, D. Janakiram. REGSOP: A registry for service oriented programming with behavior based discovery across SOAP and REST services. *IEEE/IFIP Network Operations and Management Symposium (NOMS)*, 5–9 May 2012.
4. J. Nunez-Varela, B. Ravindran, J.L. Wyatt. Where do I look now? Gaze allocation during visually guided manipulation. *IEEE International Conference on Robotics and Automation*, 14–18 May 2012.
5. K.M. Mulay, P. Sreenivasa Kumar. SPOVC: A scalable RDF store using horizontal partitioning and column oriented DBMS. Semantic web information management workshop, satellite event of *ACM SIGMOD*, 20 May 2012.
6. K.V.N. Pradyot, S.S. Manimaran, B. Ravindran. Instructing a reinforcement learner. *Florida AI Research Society Conference*, 23–25 May 2012.
7. N.S. Narayanaswamy, G. Ramakrishna. Characterization of minimum cycle basis in weighted partial 2-trees. *Cologne-Twente Workshop (CTW)*, 29–31 May 2012.
8. N. Banerjee, D. Chakraborty, A. Joshi, S. Mittal, A. Rai, B. Ravindran. Towards analyzing micro-blogs for detection and classification of real-time intentions. *International AAAI Conference on Weblogs and Social Media*, 4 June 2012.
9. A. Chaganty, P. Gaur, B. Ravindran. Learning in a small world. *International Conference on Autonomous Agents and Multiagent Systems*, 4–8 June 2012.
10. J. Dharanipragada, H. Haridas. Stabilizing peer-to-peer systems using public cloud: A case study of peer-to-peer search. *International Symposium on Parallel and Distributed Computing*, 5–29 June 2012.
11. H. Haridas, S. Kailasam, P. Dhawalia, P. Shrivastava, S. Kumar, J. Dharanipragada. V-cloud: A peer-to-peer video storage-compute cloud. *International ACM Symposium on High-Performance Parallel and Distributed Computing*, 18–22 June 2012.
12. C. Ganesh, C. Pandu Rangan. Optimal parameters for efficient two-party computation protocols. *International Workshop on Information Security Theory and Practice*, 20–22 June 2012.
13. V. Rajani, H. Mehta, S.J. Balaji, D. Janakiram. KAAS: Kernel as a service. *IEEE World Congress on Services*, 24–29 June 2012.
14. B.S. Shajee Mohan, C. Chandra Sekhar. Class-specific Mahalanobis distance metric learning for biological image classification. *International Conference on Image Analysis and Recognition*, 25–27 June 2012.
15. G. Rajkishan, V. Mahendran, C.S.R. Murthy. Performance modeling of delay tolerant network routing via queueing Petri nets. *IEEE WoWMoM Workshop on Autonomic and Opportunistic Communications*, 25–28 June 2012.
16. K. Preetha Mathew, S. Vasant, S. Venkatesan, C. Pandu Rangan. An efficient IND-CCA2 secure variant of the niederreiter encryption scheme in the standard model. *17th Australasian Conference on Information Security and Privacy*, 9–11 July 2012.
17. Sharmistha, M. Amilkanthwar, S. Balachandran. Augmentation of programs with CUDA streams. *International Symposium on Parallel and Distributed Processing with Applications*, 10–13 July 2012.
18. A. Bellur, V. Ishwar, X. Serra, H.A. Murthy. A knowledge based signal processing approach to tonic identification in Indian classical music. *2nd CompMusic Workshop*, 12–13 July 2012.
19. V. Ishwar, A. Bellur, H.A. Murthy. Motivic analysis and its relevance to raga identification in Carnatic music. *2nd CompMusic Workshop*, 12–13 July 2012.
20. P. Sarala, V. Ishwar, A. Bellur, H.A. Murthy. Applause identification and its relevance to archival of Carnatic music. *2nd CompMusic Workshop*, 12–13 July 2012.
21. D. Janakiram, H. Mehta, S.J. Balaji. Dhara: A service abstraction-based OS kernel design model. *International Conference on Engineering of Complex Computer Systems*, 18–20 July 2012.
22. R. Golda Brunet, H.A. Murthy. Impact of pronunciation variation in speech recognition. *International Conference on Signal Processing and Communications*, 22–25 July 2012.
23. S. Madikeri, H.A. Murthy. Effect of feature warping and decorrelation on Mel Filterbank Slope for speaker recognition. *International Conference on Signal Processing and Communications*, 22–25 July 2012.
24. P. Deepak, S. Chakraborti. Finding relevant tweets. *International Conference on Web-Age Information Management*, 18–20 August 2012.

25. S. Dey, H.A. Murthy. Unsupervised clustering of syllables for language identification. *European Signal Processing Conference*, 27–31 August 2012.
26. J. Nunez-Varela, B. Ravindran, J.L. Wyatt. Gaze allocation analysis for a visually guided manipulation task. *International Conference on the Simulation of Adaptive Behavior*, 27–30 August 2012.
27. R. Gopalakrishnan, D. Kanoulas, N.N. Karuturi, C. Pandu Rangan, R. Rajaraman, R. Sundaram. Cache me if you can: Capacitated selfish replication games. *10th Latin American Symposium on Theoretical Informatics*, August 2012.
28. D. Kar, S. Chakraborti, B. Ravindran. Feature weighting and confidence based prediction for case based reasoning systems. *International Conference on Case Based Reasoning*, 3–6 September 2012.
29. B.P. Priyadarshini, B. Ravindran, V.S. Chakravarthy. Understanding the role of serotonin in basal ganglia through a unified model. *International Conference on Artificial Neural Networks*, 11–14 September 2012.
30. K. Raghavendra, T. Warriar, M. Mutyam. SkipCache: Miss-rate aware cache management. *ACM International Conference on Parallel Architecture and Compilation Techniques, ACM SRC Abstracts*, 19–23 September 2012.
31. B. Panda, S. Balachandran. Hardware prefetchers for emerging parallel applications (Poster). *ACM SRC Session of International Conference on Parallel Architectures and Compiler Techniques, ACM SRC Abstracts*, 19–23 September 2012.
32. H. Mehta, S.J. Balaji, D. Janakiram. A g++ extension to support nontrivial designated initializers. *International Conference on Numerical Analysis and Applied Mathematics*, 19–25 September 2012.
33. A. Gautham, K. Korgaonkar, S. Pathanjali, S. Balachandran, V. Kamakoti. The implications of shared data synchronization techniques on multi-core energy efficiency. *Usenix Workshop on Power-Aware Computing and Systems*, 7 October 2012.
34. S. Kar, V. Deepak, B. Ravindran, A.V. Tendulkar. Functional site prediction by exploiting correlations between labels of interacting residues. *ACM Conference on Bioinformatics, Computational Biology and Biomedicine*, 7–10 October 2012.
35. P.P. Krishna and C.S.R. Murthy. On bounding the number of mobiles sharing a slot in a point-to-multi-point network. *15th ACM International Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems*, 21–25 October 2012.
36. M. Chaitanya, V. Mahendran and C.S.R. Murthy. Message-driven based energy-efficient routing in heterogeneous delay-tolerant networks. *1st ACM Workshop on High Performance Mobile Opportunistic Systems*, 21–25 October 2012.
37. C. James, H.A. Murthy. Decoupling non-stationary and stationary components in long range network time series in the context of anomaly detection. *IEEE Conference on Local Computer Networks*, 22–25 October 2012.
38. B. Panda, S. Balachandran. CSHARP: Coherency and sharing aware replacement policy for parallel applications. *International Symposium on Computer Architecture and High Performance Computing*, 24–26 October 2012.
39. J. Jose, K.V. Mahathi, J. Shiva Shankar, M. Mutyam. TRACKER: A low overhead adaptive NoC router with load balancing selection strategy. *IEEE/ACM International Conference on Computer-Aided Design*, 5–8 November 2012.
40. K. Kumar, M. Radhakrishnan, K.M. Sivalingam, D.P. Seetharam, M. Karthick. Comparison of publish-subscribe network architectures for smart grid wide area monitoring. *IEEE SmartGridComm 2012 Symposium—Wide Area Protection and Control*, 5–8 November 2012.
41. C. Chattopadhyay, S. Das. A novel hyperstring based descriptor for an improved representation of motion trajectory and retrieval of similar video shots with static camera. *International Conference on Emerging Applications of Information Technology*, 29 November to 1 December 2012.
42. S. Hingmire, S. Chougule, G.K. Palshikar, S. Chakraborti. Almost unsupervised content filtering using topic models. *Sixth Workshop on Analytics for Noisy Unstructured Text Data*, 9 December 2012.
43. C. Chattopadhyay, S. Das. Enhancing the MST-CSS representation using robust geometric features, for efficient content based video retrieval. *IEEE International Symposium on Multimedia*, 10–12 December 2012.
44. C. Chattopadhyay, S. Das. A motion-sketch based video retrieval using MST-CSS representation. *IEEE International Symposium on Multimedia*, 10–12 December 2012.
45. S.Y. Sait, M.S. Kumar, H.A. Murthy. User traffic classification for proxy-server based internet access control. *International Conference on Signal Processing and Communication Systems*, 12–14 December 2012.
46. A. Ramanujan, K. Krithivasan. Control words of transition P systems. *International Conference on Bio-Inspired Computing: Theories and Applications*, 14–16 December 2012.

47. N. Krishnan, R.M. Karthik, K.M. Sivalingam. Link data rate based admission control in wireless networks. *IEEE International Conference on Advanced Networks and Telecommunication Systems*, 16–19 December 2012.
48. A. Kagliwal, S. Balachandran. Measuring area complexity using Boolean difference. *International Conference on VLSI Design*, 5–10 January 2013.
49. V.K. Chaithanya Manam, G. Gurav, C.S.R. Murthy. Performance modeling of message-driven based energy-efficient routing in delay-tolerant networks with individual node selfishness. *Energy in Communication, Information, and Cyber-Physical Systems (E6) Workshop*, 7–10 January 2013.
50. T. Das, K.M. Sivalingam. TCP improvements for data center networks. *International Conference on Communication Systems and Networks*, 7–10 January 2013.
51. R. Bharuka, P. Sreenivasa Kumar. Finding skylines for incomplete data. *24th Australasian Database Conference*, 29 January to 1 February 2013.
52. P. Kumar, J. Sarma, S. Sawlani. On directed tree realizations of degree sets. *International Workshop on Algorithms and Computation*, 14–16 February 2013.
53. T. Warriar, B. Anupama, M. Mutyam. An application-aware cache replacement policy for last-level caches. *International Conference on Architecture of Computing Systems*, 19–23 February 2013.
54. B. Komarath and M.N. Jayalal Sarma. Entropy, pebbling and branching program lower bounds. *International Symposium on Theoretical Aspects of Computer Science*, 27 February to 2 March 2013.
55. B. Kundu, S. Chakraborti, S.K. Choudhury. Combining confidence score and mal-rule filters for automatic creation of Bangla error corpus: Grammar checker perspective. *International Conference on Intelligent Text Processing and Computational Linguistics*, 11–17 March 2012.
56. J. Jose, B. Nayak, D. Kranthi Kumar, M. Mutyam. DeBAR: Deflection based adaptive router with minimal buffering. *IEEE/ACM International Conference on Design, Automation & Test in Europe*, 18–22 March 2013.
57. B.N.B. Ray, S. Balachandran. An efficient wirelength model for analytical placement. *IEEE/ACM International Conference on Design Automation and Test in Europe*, 18–22 March 2013.

Distinguished visitors to the department

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1	Dr. Shweta Agarwal, Post-Doctoral Researcher at UCLA, USA	11 April 2012	Seminar talk: Functional Encryption Systems from Hard Lattice Problems
2	Prof. Peter Jorg, University of Florida, USA	22 June 2012	Seminar talk, “Pixel-Accurate Display of Spline Patches”, and visit to VP Lab for technical discussions
3	Prof. Suresh Subramaniam, George Washington University, USA	26 July 2012	Visit to Don Lab
4	Prof. P.P Chakrabarty, Dean SRIC, IIT Kharagpur	10–11 July 2012	Visit to VP Lab
5	Dr. Lakshmi Varahan, University of Oklahoma, Norman, USA	17 August 2012	Seminar Talk: Dynamic Data Assimilation
6	Dr. Yogeshsimhan, University of Southern California, USA	21 August 2012	Seminar Talk: Scalable Platforms for “Big Data”
7	Dr. Mausam, University of Washington, USA	28 August 2012	Seminar Talk: Recent Advances in Open Information Extraction
8	Dr. Shivnath Babu, Duke University, USA	3 September 2012	Seminar Talk: MADDER and Self-Tuning Data Analytics on Hadoop with Starfish
9	Dr. Vadapalli Ravi, Texas Tech. University, USA	4 September 2012	Seminar Talk: Projects and Opportunities in High Performance Computing
10	Dr. Kaushik Sinha, University of California, San Diego	17 September 2012	Seminar Talk: Unsupervised Learning in High Dimension
11	Dr. R. Manmatha, Department of Computer Science, University of Massachusetts, Amherst	24 September 2012	Seminar Talk: Mining a Million Scanned Books—Finding Partial Duplicates, Translation and OCR Errors

12	Dr. Christopher Chao, Dr. Jogesh Muppala, Ms. Margaret Cahu, Dr. David Banfield, Dr. Micheal Loy, Hong Kong University of Science & Technology	17 October 2012	Exploring possibilities of collaborative research
13	Dr. Yusuke Kawakami, Dr. Kohki Ebitani, Dr. Ryo Maezono, Japan Advanced Institute of Science and Technology	26 October 2012	Exploring possibilities of collaborative research
14	Dr. Raghupathy Sivakumar, Professor, School of Electrical and Computer Engineering at Georgia Tech., Atlanta, USA	11 December 2012	Seminar talk: Asymmetric Seminar talk: Caching—Improved Network Deduplication for Mobile Devices
15	Prof. Rama Chellappa, University of Maryland at College Park	12 December 2012	Discussions with VP Lab members
16	Dr. Vijayanand Nagarajan (University of Edinburgh, UK)	10–23 December 2012	UKIERI Project discussions
17	Prof. Alan C. Bovik, University of Texas at Austin, USA	23 December 2012	Discussions with VP Lab members
18	Prof. Suresh Jagannathan	23–24 December 2012	Seminar talk on memory models
19	Petru Valicov (LRI Paris)	7 January 2013	Seminar talk: Packing Rectangles into a Rectangle
20	Sridhar Mahadevan, School of Computer Science, University of Massachusetts, Amherst	15 January 2013	Seminar talk: Reinforcement Learning by Mirror Descent
21	Prof. Soumen Chakrabarti, IIT Bombay	23 January 2013	Seminar talk: Compressed Data Structures for Annotated Web Search
22	Prof. Wendy Hall, Southampton University	24 January 2013	Seminar talk: The Development of Web Science—A Global Enterprise
23	Amitabha Mukerjee, IIT Kanpur	25 January 2013	Seminar talk: Visual Motion Planning for an Unknown Robot with Unknown Obstacles
24	Gaurav Aggarwal, Yahoo Labs, Bangalore	28 January 2013	Seminar talk: Visual Content Seminar talk: Analysis—A Few Challenges and Solutions

4.7.5. Other Activities of the Department/Centre

Socially relevant activities carried out by the department

Prof. Hema Murthy organized a 6-week workshop titled “Basic Computers for Visually Challenged” during the summer in 2012. It taught visually challenged persons to learn to use the Internet, e-mail, Word and spreadsheets using a screen reader. In 2012 it was conducted for the fifth time. The participants (students) are evaluated at the end of the course. The year 2012 was unique in that stenographers from IIT Madras were asked to evaluate the students. Out of 30 students, 11 passed the exam successfully.

International collaboration achievements

Faculty visits

Sl. No.	Name of the Faculty Member	Purpose of Visit	Date and Venue
1	Krishna Moorthy Sivalingam	Visited Prof. Ying-Dar Lin and his lab and gave an invited talk	Department of Computer Science, National Chiao Tung University, Taiwan, June 2012

Major infrastructure developments in the department

- Departmental computing facility

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 Analogue 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 visualizer
- Special-purpose AC supply generators
- Measurement storage oscilloscopes
- Microprocessor-based drive systems
- Simulation software for power electronic systems, PSIM
- 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 mask making
- E-beam metallization unit
- Furnaces for oxidation and diffusion
- Double-sided mask aligner and exposure systems
- PECVD system for silicon dioxide and silicon nitride deposition
- LPCVD system for poly silicon deposition
- Reactive ion etching system
- Substrate bonder

Characterization

- Autogain ellipsometer
- Interferometric 3-D surface profiler
- Four point probe
- Contact angle measurement system
- DLTS system
- Manual wafer probe station
- Semiconductor parametric analyser
- Multifrequency LCR meters
- Lock-in amplifier and chopper
- Device simulation

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-23-5 axis robot
- Eshed ERIII, Eshed E&V: 5 axes 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, optical spectrum analyser
- Fibre grating fabrication
- Fibre Laser Laboratory
- Integrated Optoelectronics Laboratory

4.8.2. Academic Programmes

New courses introduced

Sl. No.	Course No.	Title
1	EE5346	Introduction to Plastic Electronics
2	EE6450	Optical Sensors

New lab(s) established

Networks and Stochastic Systems Lab

Students on roll

Programme	I year	II Year	III Year	IV Year	V Year	Total
B.Tech.	73	53	54	43	9	232
Dual Degree	58	76	69	59	60	322
M.Tech.	67	60	1	0	0	128
M.S.	57	56	40	14	5	172
Ph.D.	30	24	26	19	30	129
Total	285	269	190	135	104	983

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

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposia/Workshop	Date and Venue	Financial Assistance from
1	Guru Venkat	EE11S035	International Conference on Microwave Magnetic (IEEE ICMM 2012)	23–27 August 2012, Kaiserslautern, Germany	IIT Madras
2	C.S. Nikhil Kumar	EE11S011	International Conference on Microwave Magnetic (IEEE ICMM 2012)	23–27 August 2012, Kaiserslautern, Germany	IIT Madras
3	Venkatesh C.	EE10D036	44th North American Power Symposium (NAPS)	9–11 September 2012, University of Illinois at Urbana Champaign	IIT Madras
			INDICON 2012	7–9 December 2012, Kerala	IIT Madras
			17th National Power Systems Conference (NPSC)	12–14 December 2012, IIT-BHU, Varanasi	IIT Madras
4	Sunil S. Damodhar	EE09D006	8th Mediterranean Conference on Power Generation, Transmission, Distribution and Energy Conversion	1–3 October 2012, Italy	IIT Madras
			2012 IEEE Fifth Power India Conference	17–19 December 2012, Delhi NCR	IIT Madras
5	Paramanand C.	EE07D004	Workshop on Color and Photometry in Computer Vision (held in conjunction with European Conference on Computer Vision ECCV 2012)	7–13 October 2012, Florence, Italy	IIT Madras
6	Manas Srivastava	EE10S044	International Conference ACP 2012	7–10 November, Guangzhou, China	IIT Madras
7	Noel Augustine	EE10S050	IEEE International Conference on Electronic Devices and Solid State Circuits	3–5 December 2012, Bangkok, Thailand	IIT Madras

8	V. Jayadev	EE12S005	INDICON 2012	7–9 December 2012, Kerala	IIT Madras
9	S. Karthik	EE12S007	INDICON 2012	7–9 December 2012, Kerala	IIT Madras
10	Devika Jay	EE10S034	17th National Power Systems Conference (NPSC)	12–14 December, IIT-BHU, Varanasi	IIT Madras
11	Sudharsan P.	EE12D027	COMSNETS 2013	7–10 January 2013, Bangalore	COMSNETS
12	Ravi Kumar Kolla	EE12D024	Conference on Limit Theorems in Probability	9–11 January 2013, IISc, Bangalore	IMI, IISc
13	Bharath L.R.	EE10S029	9th International ITG Conference on Systems, Communication and Coding	21–24 January 2013, Munich, Germany	IIT Madras
14	V.P. Sreekanth	EE10S060	National Conference on Communications	15–17 February 2013, IIT Delhi	IIT Madras
15	Sujith Chandran		OECC 2012—OptoElectronics Communication Conference	2–6 February 2012, Bexco, Busan, Korea	IIT Madras
16	Harish Sasikumar		SPIE Photonics West 2013	2–7 February 2013, San Francisco, CA, USA	IIT Madras
17	P. Sakthivel		SPIE Photonics West 2013	2–7 February 2013, San Francisco, CA, USA	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	Date
1	Anish Bekal	EE08D022	Best Poster Award	OSA consists of citation and Rs.10,000 cash award	November–December 2012
2	Suman Kumar	EE10D040	Best Paper Award	IARIA	June 2012
3	Aravind P.A.	EE10D037	Best Paper Award	International Symposium on Nonlinear Optics—NLO50, Spain	October 2012

Names of students/scholars who won Institute Convocation/Institute Day prizes

Sl. No.	Name of the Student/Scholar	Roll No.	Names of Prizes
1	Joseph Joseph Cherukara	EE07B083	Governor's Prize, Motorola's Prize, Institute Merit Prize
2	Shailesh Bojja Venkatakrishnan	EE08B029	Siemens Prize
3	Ananda Narayanan	EE07B058	Philips India Prize
4	K. Sri Ramya	EE10M051	Siemens Prize
5	R. Sneha Raj	EE07B079	Bhagyalakshmi and Krishna Ayengar Award (joint winner)

4.8.3. Faculty and Their Activities

Faculty

Name	Major Areas of Specialization (Only 5 Areas)
Professors	
Enakshi Bhattacharya [Head]	
EE1—Communications, Signal, Speech and Image Processing, Wireless and Optical Networks	
Aravind R.	Communications, video, estimation theory
Ashok Jhunjunwala	Fibre-optic communication, communication networks, computer networking, microprocessor-based systems, SAW
Bhaskar Ramamurthi	Digital communication systems, DSP, wireless networks
David Koilpillai R.	Cellular and broadband wireless systems, DSP applications in wireless, cognitive radio
Devendra Jalihal	Statistical signal processing, estimation theory
Giridhar K.	Communication Systems, Adaptive Signal Processing

Prabhu K.M.M.	Algorithms for digital signal processing, DSP for communications, non-uniform sampling, acoustic noise control
Rajagopalan A.N.	Image processing and computer vision
Umesh S.	Speech and signal processing
EE2—Power Systems, Power Electronics, High-Voltage Machines and Drives	
Krishna Vasudevan	Electrical Machines, Industrial Drives and Power Electronics
Mahesh Kumar	Custom power devices, power quality monitoring, analysis and interpretation
Sarathi R.	High voltage engineering
Shanthi Swarup K.	Power systems, computational intelligence, energy management systems
EE3—Analogue and Digital Circuits, VLSI Design, Micro Electronics and MEMS	
Amitava DasGupta	Silicon and gallium arsenide devices, technology modeling and simulation, MEMS
Enakshi Bhattacharya	Amorphous, porous and polycrystalline silicon material and devices; MEMS; biosensors
Karmalkar S.	Modeling and fabrication of semiconductor devices, MEMS/microfluidics, nano technology, education
Nandita DasGupta	Silicon and III–V semi-conductor devices, technology and modeling, MEMS
Shanthi Pavan	Analogue and mixed-signal VLSI, RF and microwave IC design
Vinita Vasudevan	Statistical and noise analysis of circuits, VLSI design
EE4—Control, Robotics, Measurements and Instrumentation	
Jagadeesh Kumar V.	Electrical and electronic measurements, sensors and signal conditioning, instrumentation and biomedical devices
Jayashankar V.	High voltage, power system and biomedical instrumentation
Sridharan K.	Robotics, vision, architectures for transforms, FPGA-based system design
EE5—Photonics	
Anil Prabhakar	Lasers, quantum optics, nonlinear systems, magnetic and magnetic–semiconductor devices, sensor networks, metrology
Harishankar Ramachandran	Nonlinear optics, computational plasma physics and optics, edge plasma physics
Associate Professors	
EE1—Communications, Signal, Speech and Image Processing, Wireless and Optical Networks	
Andrew Thangaraj	Error control coding, information theory
Ramalingam C.S.	Signal processing; speech recognition, synthesis, and coding
Srikrishna B.	Wireless communications, information theory, signal processing for communication systems
EE3—Analogue and Digital Circuits, VLSI Design, Micro Electronics and MEMS	
Nitin Chandrathoodan	Digital systems, microprocessors, VLSI design
Nagendra Krishnapura	Analogue VLSI; RF and microwave IC
EE5—Photonics	
Balaji Srinivasan	Fibre lasers, distributed fibre sensors, fibre Bragg gratings
Bijoy Krishna Das	Silicon photonics; optical interconnects; integrated optics; optoelectronics devices and circuits
Shanti Bhattacharya	Fibre interferometry, diffractive optics, optical MEMS
Assistant Professors	
EE1—Communications, Signal, Speech and Image Processing, Wireless and Optical Networks	
Arun Pachai Kannu	Wireless and cellular communications
Manivasakan R.	Performance analysis of communication networks in general—optical and computer networks
Venkatesh R.	Stochastic modeling, queuing theory, wireless communication
Venkatesh T.G.	Stochastic modeling, computer networks, computer architecture, multimedia applications using the Java Media Framework
Krishna P. Jagannathan	Communication networks, stochastic modeling, queuing theory, wireless networks

Radha Krishna Ganti	Wireless communication and networking
Gaurav Raina	Performance modeling of communication networks, control theory and non-linear systems
Pradeep Sarvepalli	Quantum information, coding theory, quantum cryptography, algorithms
Sheetal Kalyani	Estimation theory, robust statistics, extreme value theory
EE2—Power Systems, Power Electronics, High-Voltage Machines and Drives	
Kalyan Kumar B.	Power system stability, facts, power quality
Krishna S.	Power system stability analysis and control
Lakshmi Narasamma	Power electronics and drives, switched mode power converters, resonant converters
Srirama Srinivas	Electrical machines, power electronics and industrial drives
Kamalesh Hatua	Power electronics and motor drives
EE3—Analog and Digital Circuits, VLSI Design, Micro Electronics and MEMS	
Aniruddhan S.	Analogue and RF integrated circuit design
Anjan Chakravorty	Compact modeling of SiGe HBTs, LDMOS, nanoFETS, inductors
Deleep R. Nair	Semiconductor devices—design, fabrication and characterization
Mathiazhagan C.	Telematics, RF communication, analogue circuits
Soumya Dutta	Printable electronic, optoelectronic, chemical sensor devices based on organic/inorganic semiconductors, hybrid structures, grapheme, etc.
EE4—Control, Robotics, Measurements and Instrumentation	
Arun D. Mahindrakar	Nonlinear and robust control with application to underactuated systems
Bharath Bhikkaji	Identification algorithms for resonant systems, vibration control of resonant and active structures, control and actuation of mechatronic systems
Boby George	Sensors and signal conditioning, measurements, instrumentation, biomedical devices
Mohanasankar S.	Biomedical instrumentation, implantable devices
Ramkrishna Pasumarthy	Modeling and control of physical systems
EE5—Photonics	
Ananth Krishnan	Nanophotonics, plasmonic devices, nanofabrication, material science, optical MEMS, characterization
Deepa Venkitesh	Nonlinear optics, fibre amplifiers and fibre lasers, optical components for communication, components/devices for all-optical signal processing/switching
Adjunct Faculty	
Ravishankar A.	Digital VLSI, CAD
Ravikumar C.P.	Digital VLSI design and testing
Rashmin Gandhi	Neuro-ophthalmology (ophthalmologist)
Emeritus Professors	
Srinivasan S.	Digital systems, computer architecture, digital signal processing, VLSI design
Scientific Officers/Instrumentation Engineers/Technical Officers	
EE1—Communications, Signal, Speech and Image Processing, Wireless and Optical Networks	
Prabhakar Rao P.	Communications
EE2—Power Systems, Power Electronics, High Voltage Machines and Drives	
Jayasudha Avudai Thangam	Power electronics and drives
EE3—Analogue and Digital Circuits, VLSI Design, Micro Electronics and MEMS	
Ponnuraju K.	Semi-conductor devices and technology
Departmental Computer Facility	
Dhanabalan S.	Computer System Administrator

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

Sl. No.	Coordinator(s)	Title	Period
Conferences			
1	R. Sarathi	7th IEEE International Conference on Industrial and Information Systems (ICIIS)	6–9 August 2012
2	Balaji Srinivasan and Shanti Bhattacharya	International Conference on Fibre Optics and Photonics	9–12 December 2012
Workshops			
1	S. Karmalkar	ISTE Mega Workshop on Introduction to Research Methodologies, IIT Bombay	25 June to 4 July 2012
2	K. Shanti Swarup and K. Mahesh Kumar	Modern Power Systems	17 August to 22 September 2012
Lecture series			
1	Arun D. Mahindrakar	Control of Dynamical System	26–28 December 2012

Short-term Courses/Workshops/Meetings/Symposia/Conferences/Training attended by the faculty members in Academic institutions and Public Sector Undertakings:

Sl. No.	Name of Faculty Member	Title	Institution/Place	Period
Workshops				
1	Soumya Dutta	National Workshop on Polymer Solar Cells	IISER, Pune	21–22 April 2012
2	Mahesh Kumar	Smart Grids and Energy Storage	Bath, UK	27–29 June 2012
3	A.N. Rajagopalan	Color and Photometry in Computer Vision (CPCV)	Italy	8–12 October 2012
		Digital Video and Analytics Workshop (Technical Co-Chair)	IIT Madras	21–22 December 2012
		Digital Video and Analytics Workshop (invited speaker)		
4	Ravinder David Koilpillai	International Policy Dialogue on Regional Collaboration in Science and Technology in Asia (IPDCSTA) 2012	Tokyo, Japan	17–21 October 2012
5	Andrew Thangaraj	DIMACS Workshop on Information-Theoretic Network Security, Alcatel–Lucent Bell Labs	Rutgers University, New Jersey, USA	12–16 November 2012
6	Amitava DasGupta	Winter Workshop 2012 (invited talk, Multiple Gate MOSFETs)	IIT Indore	10–12 December 2012
		Indo-German Winter Academy	CMERI, Durgapur	13–17 December 2012
7	Nandita DasGupta	11th Indo-German Winter Academy	IIT Kharagpur and University of Erlangen, Germany	11–17 December 2012
8	Krishna Jagannathan	Workshop on Limit Theorems in Probability Stochastic Processes in Engineering	IISc, Bangalore IIT Bombay	2–7 January 2013 11–13 March 2013
9	Enakshi Bhattacharya	International Workshop for the Development of Handheld Biosensors for Point-of-Care Diagnostics	Bangalore	15–16 January 2013
Meetings				
1	Ashok Jhunjunwala	4th Annual Sankalp Summit—The Grand Jury Meeting	Intellicap, Mumbai,	11 April 2012
		3rd meeting of the committee constituted to review the NIT system under the chairmanship of Dr. Anil Kakodkar, BOG, IIT Bombay	MNIT, Jaipur	13 April 2012

Ashok Jhunjunwala	Advisory committee meeting on TV 2035–ICT sector TIFAC–student interaction	TIFAC, New Delhi	16 April 2012
	Technology Information, Forecasting and Assessment Council (TIFAC)—Advisory Committee Meeting	TIFAC, New Delhi	16 April 2012
	Technical Advisory Committee Meeting of Securities and Exchange Board of India (SEBI)	Securities and Exchange Board of India, Mumbai	25 April 2012
	19th Scientific Advisory to the Prime Minister Meeting (SAC-PM)	JNCASR, Bangalore	28 April 2012
	3rd Meeting of the Empowered Task Force under the chairmanship of Dr. Anil Kakodkar	IIT Delhi, MHRD, New Delhi	30 April 2012
	2nd meeting of the Risk Management Review Committee (RMRC), chaired by Prof. J.R. Varma, of Securities and Exchange Board of India (SEBI)	Mumbai	4 May 2012
	Meeting with IIT Mandi faculty members; meeting with students (theme—entrepreneurship)	Kullu, IIT Mandi	5 May 2012
	4th NIT Review Committee meeting	NIT Calicut	7 May 2012
	9th General Body Meeting of the Mobile Payment Forum of India (MPFI)	Mumbai	14 May 2012
	Meeting of the committee constituted to review the NIT system	NIT Silchar, Assam	18 June 2012
	4th meeting of Empowered Task Force—MHRD	MHRD, IIT Bombay	26 June 2012
	Faculty recruitment meeting —University of Hyderabad	University of Hyderabad, Hyderabad	27 June 2012
	20th meeting of SAC-PM	Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore	30 June 2012
	Meeting of the Expert Group on Radiation from Cell Towers	DST, New Delhi	3 July 2012
	3rd meeting of the National Apex Committee of National Mission on Education Through Information and Communication Technology (NMEICT)	MHRD, New Delhi	3 July 2012
	2nd meeting of the Finance Committee; Board of Governors meeting	PDPM-IIITDM Jabalpur, New Delhi	5 July 2012
	9th meeting of Management Advisory Committee (MAC)	Indian Statistical Institute, Kolkata	9 July 2012
	4th PRSG meeting for the project ‘Building Prototype of WLAN Manager’	IISc, Bangalore	11 July 2012
	Meeting of the committee constituted to review the NIT system under the chairmanship of Dr. Anil Kakodkar	MHRD, New Delhi	18 July 2012
	Meeting for Indian ATM Industry	DPS, New Delhi	
Meeting of Search-cum-Selection Committee, discussion with shortlisted candidates	DST, New Delhi	20 July 2012	
Policy-Framework on Technology-Based Education, NMEICT	MHRD, New Delhi	8 August 2012	
Meeting with Secretary, MHRD	MHRD, New Delhi	9 August 2012	
Meeting at Telecom Regulatory Authority of India	Telecom Regulatory Authority of India (TRAI), New Delhi		

Ashok Jhunjhunwala	21st SAC-PM meeting	CSIR Science Centre, New Delhi	11 August 2012
	Steering Committee Meeting; 5th meeting of the empowered task force constituted to implement the recommendations of the Dr. Anil Kakodar Committee	MHRD, New Delhi	14 August 2012
	Meeting of the committee constituted to review the NIT system under the chairmanship of Dr. Anil Kadokar	NIT, IIT Delhi	23 August 2012
	Meeting at Ministry of New and Renewable Energy	MNRE, New Delhi	
	Shanti Swarup Bhatnagar Selection Award 2012	CSIR, New Delhi	12 September 2012
	First Technical and Prelaunch Meeting of DOSTI-TCOE	TCOE, New Delhi	13 September 2013 2012
	Meeting of High Level Committee for CSIR Diamond Jubilee Technology Award	CSIR, New Delhi	
	Policy Framework on Technology Based Education—NMEICT—MHRD Committee	MHRD, Gurugaoan	18 September 2012
	28th Governing Council meeting of LNMIT-Jaipur	LNMIT-Jaipur	19 September 2012
	British High Commission—Science and Innovation Network with UK Creative Industries Knowledge Transfer Network	British High Commission, Mumbai	25 September 2012
	MHRD meeting on NMEICT	MHRD, New Delhi	5 October 2012
	Meeting of committee constituted to review the NIT system under the chairmanship of Dr. Anil Kakodkar	IIT Bombay	8 October 2012
	6th meeting of the empowered task force constituted for implementation of the recommendations of the Dr. Anil Kakodkar Committee	IIT Bombay	9 October 2012
	Telecom Regulatory Authority of India (TRAI)	TRAI, New Delhi	11 October 2012
	Sub-committee meeting to study the self-sustainability aspect of TCOEs and emerging collaborations of TCOE with other departments: Brainstorming session to work out the emerging collaborations of TCOE with other departments	TCOE, New Delhi	16 October 2012
	Technical Advisory Committee Meeting—Securities and Exchange Board of India (SEBI)	SEBI, Mumbai	17 October 2012
	TRAI—Use of USSD for mobile banking	TRAI, New Delhi	19 October 2012
	22nd meeting of the SAC to PM	JNCASR, Bangalore	29 October 2012
	ICT in Education meeting	Ministry of Human Resource Development, New Delhi	5 November 2012
	4th Society Meeting of Translational Health Science and Technology Institute (THSTI)	THSTI, New Delhi	
	Meeting of the committee constituted to review the NIT system—MHRD	MHRD, IIT Bombay	9 November 2012
	MHRD committee for creating 50 R&D centers of excellence in frontier area of technology	MHRD, IIT Delhi	27 November 2012
	Meeting of National Committee on ICT in Education	MHRD, New Delhi	3 December 2012

Ashok Jhunjunwala	SERIIUS meeting on Indo-US energy project	IIT Bombay	8 December 2012
	TCoE co-ordinators meeting	Telecom Centers of Excellence, IIT Delhi	14 December 2012
	7th meeting of the empowered task force to implement the Kakodkar Committee recommendation for IITs—MHRD	MHRD, IIT Delhi	24 December 2012
	Arbitration between CSIR and Encore Software Ltd.	CSIR, Bangalore	1 January 2013
	Research Advisory Committee Meeting NIF—IIMA	IIM Ahmedabad	2 January 2013
	Interdisciplinary Initiatives: Technology & Culture Interface Workshop—MHRD	MHRD, New Delhi	3 January 2013
	NMEICT meeting	NMEICT, IIT Delhi	3 January 2013
	Meeting of the Committee constituted to review the NIT System—MHRD	MHRD, IIT Guwahati	4 January 2013
	SEBI Technical Advisory Committee meeting	SEBI, Mumbai	11 January 2013
	Dot Committee “Expert Group on Telecom R&D Fund”	Department of Telecommunications (Investment Policy Cell), New Delhi	19 January 2013
	27th National Institute of Advanced Studies Programme (NIAS)	NIAS, Bangalore	20 January 2013
	23rd SAC—PM meeting	CSIR, New Delhi	30 January 2013
	Meeting with the Hon’ble Minister of S&T and Earth Sciences		
	8th meeting of the empowered task force constituted for implementation of the recommendations of the Dr. Anil Kakodkar Committee	IIT Bombay	2 February 2013
	DOT Committee—2nd meeting of the Expert Group on Telecom R&D Fund	DOT Committee, New Delhi	16 February 2013
	SEBI—Technical Advisory Committee meeting	SEBI, Mumbai	18 February 2013
	NIT review meeting of Dr. Anil Kakodkar Committee	IIT Bombay, Mumbai	28 February 2013
	Management Advisory Committee meeting of the Center for Soft Computing, ISI, Kolkata	ISI, Kolkata	2 March 2013
	Joint meeting of the Indian and UK co-ordinators of the project IUATC	IIT Mandi	9–10 March 2013
	Meeting with Minister of MHRD as part of “Pawar Committee on ICT”	MHRD, New Delhi	11 March 2013
	37th board meeting of National Internet Exchange of India (NIXI)	NIXI, New Delhi	11 March 2013
	1st meeting of the MHRD committee for reforms in technical education in institutes other than IITs and NITs	MHRD, New Delhi	15 March 2013
	9th empowered meeting of Dr. Anil Kakodkar Committee for IIT	IIT Bombay	16 March 2013
	5th PRSG closure meeting for the project “Building a Prototype of WLAN Manager (WM) Device for Performance Management of a WLAN-Phase-II”	IISc Bangalore/ Bangalore	18 March 2013
	Meeting of Dr. Anil Kakodkar MHRD Committee constituted to review the NIT system	MHRD, New Delhi	26 March 2013
	6th Governing Council Meeting of TCoE India	TCoE, New Delhi	

2	Srirama Srinivas	BioCPV kick-off meeting as part of the Indo-UK collaborative research projects	Heriot-Watt University, Edinburgh, UK	18–20 July 2012
3	Balaji Srinivasan	Working group meeting of the Department of Electronics & Information Technology	DeitY, New Delhi	26 November 2012
4	Srikrishna B.	Seventh meeting of “Lectures on Probability and Stochastic Processes”	Indian Statistical Institute, Delhi Centre	30 November to 4 December 2012
5	Krishna Jagannathan	ITRA Executive Committee meeting	Electronics Niketan, New Delhi	7 March 2013

Symposia

1	S. Aniruddhan	2012 IEEE International Symposium on Circuits and Systems	Seoul, South Korea	20–23 May 2012
2	Anil Prabhakar	4th Indo-German Frontiers of Engineering symposium	Merseberg, Germany	13–16 June 2012
3	Ravinder David Koilpillai			

Conferences

1	Ashok Jhunjhunwala	Renewable Energy Policy Intentions, Incentives, Implementation and Impact, IFMR	Chennai	5 April 2012
		World Information Technology Forum 12, IFIP & DST	New Delhi	17 April 2012
		8th Annual Pacific Health Summit—2012	London, UK	12–14 June 2012
		CPR Africa 2012/CPR South Conference	Mauritius	3–7 September 2012
		OMIDYAR—On Haat 2013	Bangalore	18–19 March 2013
2	Gaurav Raina	24th Chinese Control and Decision Conference (2012 CCDC)	Taiyun, China	23–25 May 2012
		IEEE International Conference on Cyber Technology in Automation, Control and Intelligent Systems (CYBER)	Bangkok	27–31 May 2012
3	Srirama Srinivas	21st IEEE ISIE—2012	Hangzhou, China	28–31 May 2012
		International Conference on Industrial Technology	Cape Town, South Africa	25–27 February 2013
4	B. Srikrishna	JTG Summer School in Signal Processing, Telecommunication, and Networking	IIT Bombay	29 May to 1 June 2012
		International Conference on Signal Processing and Communications—SPCOM 2012	IISc, Bangalore	22–25 July 2012
		50th Annual Allerton Conference on Communication	USA	1–5 October 2012
		COMSNETS 2013	Bangalore	7–10 January 2013
5	Radhakrishna Ganti	JTG Summer School in Signal Processing, Telecommunication, and Networking	IIT Bombay	29 May to 1 June 2012
		International Conference on Signal Processing and Communications—SPCOM 2012	IISc, Bangalore	22–25 July 2012
		IEEE GLOBECOM 2012	USA	
6	Arun Pachai Kannu	ICC 2012	Ottawa, Canada	10–15 June 2012
7	Balaji Srinivasan	OSA Optical Sensors Conference	Monterey, USA	24–28 June 2012
		SPIE Opto Conference	San Francisco, USA	1–8 February 2013
8	Ramkrishna Pasumarthy	Mathematical Theory of Networks and Systems (MTNS 2012)	University of Melbourne, Australia	9–13 July 2012

9	Ravinder David Koilpillai	International Conference on Signal Processing and Communications—SPCOM 2012	IISc, Bangalore	22–25 July 2012
10	Andrew Thangaraj			
11	ShantiBhattacharya	IEEE Optical MEMS & Nanophotonics Conference	Banff, Canada	6–9 August 2012
12	Deepa Venkitesh	International Symposium on Nonlinear Optics NLO 50	Spain	7–10 October 2012
13	K. Gridhar	29th Conference of the Wireless World Research Forum (WWRF-29)	Berlin, Germany	23–25 October 2012
14	Mahesh Kumar	3rd IEEE International Conference on Sustainable Energy Technologies	Kathmandu, Nepal	24–27 September 2012
15	Nitin C.	Asilomar Conference on Signals, Systems and Computers	USA	4–7 November 2012
16	Vinita Vasudevan	International Conference on Computer Aided Design of Integrated Circuits	USA	5–8 November 2012
17	K.M.M. Prabhu	International Conference on Pattern Recognition—2012 (ICPR-2012)	Tsukuba, Japan	11–16 November 2012
18	Anjan Chakravorty	5th International Conference on Computers and Devices for Communications	Radiophysics and Electronics	17–19 December 2012
19	S. Krishna	2012 IEEE Fifth Power India Conference	India	17–19 December 2012
20	K.S. Swarup	17th National Power Systems Conference, IIT-BHU	India	13–15 December 2012
21	Krishna Jagannathan	COMSNETS 2013	Bangalore	7–10 January 2013
22	Venkatesh Ramaiyan	COMSNETS 2013	Bangalore	8 January 2013
23	Shanthi Pavan Y.	International Solid State Circuits Conference (ISSCC)	San Francisco, USA	17–20 February 2013
24	Soumya Dutta	International Conference on Advancements in Polymeric Materials	CIPET, Lucknow	1–3 March 2013
25	Deepa Venkitesh, Bijoy Krishna Das	SPIE—Photonics	San Francisco, USA	2–7 February 2013

Special lectures delivered by faculty members at other institutions

Sl. No.	Name of Faculty Member	Topic of Lecture	Event/Place	Date
1	Andrew Thangaraj	MIMO Dirty Paper Coding—An Idea Whose Time has Come	Alcatel–Lucent Bell Labs, Murray Hill, NJ, USA	16 November 2012
2	Ashok Jhunjhunwala	Powering the Remote Rural Base Station—Can It Make Indian Telecoms Profitable?	IISc–Bell Labs Workshop, Green Telecom and IT, Bangalore	4 April 2012
		India's Power Crisis & Potential of Decentralized Solar PV DC Power	Renewable Energy Policy Intentions, Incentives, Implementation and Impact, IFMR, Rain Tree Hotel, Chennai	5 April 2012
		Innovations Towards Rural Health Care	Workshop on Promoting Innovations, Planning Commission, New Delhi	16 April 2012
		Information-Gap in Modern Agriculture and ICT	World Information Technology Forum 12, IFIP & DST, New Delhi	17 April 2012
		India's Power Crisis and the Potential of Decentralized Solar PV DC Power (keynote address)	Industry–Academia Conclave, IIT Mandi	5 May 2012

	Ashok Jhunjhunwala	Innovative Product Design, by Indian Industry with IIT (panel discussion)		
		Leveraging Technologies for Healthcare in Rural Communities (keynote talk)	8th Annual Pacific Health Summit—2012, London, UK	12–14 June 2012
		Leveraging the Ecosystem for Industry Transforming Innovations (keynote talk)	Zinnov Globalization Summit, Bangalore	11 July 2012
		Rural Technology and Business Incubator: Can Incubated Companies make a Difference in Rural Areas? (presentation)	NSS-IITM Lecture Series, IIT Madras	2 October 2012
		Mobile Payment in India: Technologies, Bottlenecks and Solutions (presentation)	International conference on Mobile Payment and e-payments Trends—The India Perspective New Delhi	11 October 2012
		Mobile Payments in India: Coming to Grips (presentation)	INFOCOM-2012 Kolkata	6–7 December 2012
		Role of Cloud in Communication	NCC-2013, IIT Delhi	16 February 2013
3	Enakshi Bhattacharya	Silicon Based Biosensors and BioMEMS (panel discussion)	TIFR, Mumbai	19 April 2012
		Biomolecular Separation Using Silicon Nanoporous Membranes (keynote address)	Nanomaterials and Low-Dimensional Structures Track of ICCES 2012, Crete, Greece	30 April to 4 May 2012
		A Silicon MEMS Triglyceride Sensor	Fifth ISSS National MEMS Conference, Coimbatore	21–22 September 2012
		Nanoporous Silicon Membranes for Biomolecular Separation	Advanced Nanomaterials ANM 2012, IIT Madras	17–19 October 2012
		MEMS and Sensors Activity	Indo-French Workshop on Micro/Nanotechnologies for Harsh Environments, Mumbai	5 February 2013
4	Gaurav Raina	Interoperability and Security For Mobile Payments	Cards, Transactions and Payments in India, Mumbai	16–17 April 2012
		Interoperability and Security for Mobile Payments	General Body Meeting of Mobile Payment Forum of India, Mumbai	14 May 2012
		Mobile Financial Services for Supply Management	SPECTRUM 2013, Indian Institute of Materials and Management (IIMM), Chennai	2 February 2013
5	Radhakrishna Ganti	HetNets: A New Frontier in Cellular Communications	Sri Venkateswara College of Engineering, Pennalur, Sriperumbudur	4 April 2012
		Stochastic Geometry: A New Tool for Wireless Network Analysis (tutorial)	International Conference on Signal Processing and Communications SPCOM 2012, IISc Bangalore	22 July 2012
6	K. Shanti Swarup	Smart Grids, Renewable Energy and Distributed Generation	IEEE Power Engineering Society (PES), students chapter, Vellore Institute of Technology	14 April 2012
		Electricity Load and Price Forecasting Using Artificial Neural Networks	National Workshop on Computational Intelligence in Power Apparatus, Department of EE, SRM University	18 April 2012
		Energy Management and Automation	Department of EE, Amrita University, Coimbatore	21 April 2012
		Sliding Operation in Grid Connected Photo-Voltaic Systems in Large Scale Grid Connected Solar Photo Voltaic Power Plants	IIT Madras	26 April 2012

K. Shanti Swarup	Energy Management Systems Research in Electric Power Systems	LRBR College of Engineering, Mylavaram (A.P.)	4 August 2012	
	Smart Grid Energy Management Systems	Anna University, Chennai	26 August 2012	
	Energy Management Systems with Smart Metering, short-term course on advanced techniques in smart grid for TNEB	EEE, Anna University, Chennai	7 September 2012	
	Energy Management System (EMS) with Smart Metering	National Systems Conference (NSC), Annamalai University, Tamil Nadu	7 December 2012	
	Optimization Techniques on Real Time Implementation	National Workshop, EE Dept. RMK-College of Engineering & Technology (GET), Chennai	8 December 2012	
	Evaluation and Management of Transmission System in Deregulated Power Markets	National Workshop on Operations of Restructured Power Systems, Department of EE, NIT Warangal	14 February 2013	
	Smart Grid Energy Management Systems	National Conference on Power Electronics and Power Systems, SSN University, Chennai	1 March 2013	
	Recent Developments in Power Engineering Research	Department of EE, Sri Venkateswara College of Engineering(SVCE), Chennai	2 March 2013	
	MicroGrids	Department of EE, Vellore Institute of Technology (VIT), Chennai	9 March 2013	
	Smart Micro Grids: The Power Grids of the Future	2nd National Conference on Energy Systems and Control (NCESC'13), Department of EE, Hindustan University, Chennai	14 March 2013	
	Circuits and Computations in Electrical Power Engineering	IEEE International Conference on Circuit Power and Computing Technologies(ICCPCT), Noorul Islam Center for Higher Education, Kumaracoil	21 March 2013	
7	Nitin Chandrachoodan	Riding the “Energy Consumption Horse”—From System-Level Design to Silicon Implementation (tutorial)	26th International Conference on VLSI Design, Pune, India	5–9 January 2013
		Power Reduction During VLSI Test	National Conference on VLSI & Embedded Systems, SRM University, Kattankulathur, Chennai	14 February 2013
8	Srikrishna Bhashyam	Two-Way Relaying: Protocols and Performance	Short Term Training Program(STTP) on MIMO Communications and Networks, SRM University, Chennai	23 January 2013
9	Sheetal Kalyani	Receiver Techniques for MIMO OFDM Systems		24 January 2013
10	Balaji Srinivasan	Development of a Fibre-Based Dynamic Interrogator for Elastic Wave Sensing	IGCAR, Kalpakkam	22 January 2013
		Sensing the World Around Us—Distributed Sensing Using Optical Fibres	NIT Trichy	22 February 2013
		Elastic Wave Sensing Using Fiber Bragg Gratings (invited lecture)	International Workshop on Nano-Science and Technology, NIST, Behrampur	28 February 2013
		Distributed Strain/Temperature Sensing	Invited lecture at NIT Goa	10 March 2013

11	A.N. Rajagopalan	Motion Blur: Then and Now!	International Conference on Communication, VLSI, Signal Processing (ICCVSP), SIT, Tumkur	25–27 February 2013
12	Y. Shanthi Pavan	Continuous Time Delta Sigma Modulators with Enhanced Linearity and Reduced Clock Jitter Sensitivity Using the Switched-Capacitor Return-to-Zero DAC (Silicon Laboratories Distinguished Faculty Lecture)	Silicon Laboratories Inc., Austin, Texas, USA	1 March 2013
		IEEE Circuits and Systems and Solid State Circuits Society Austin Chapter: Continuous Time Delta Sigma Modulators with Enhanced Linearity and Reduced Clock Jitter Sensitivity Using the Switched-Capacitor Return-to-Zero DAC	University of Texas at Austin	1 March 2013
		IEEE Circuits and Systems Chapter Silicon Valley: Continuous Time Delta Sigma Modulators with Enhanced Linearity and Reduced Clock Jitter Sensitivity Using the Switched-Capacitor Return-to-Zero DAC	Qualcomm Corp, San Jose	11 March 2013

Visits abroad by faculty members

Sl. No.	Name of Faculty Member	Country Visited	Date	Purpose of Visit	Funding from
1	A.N. Rajagopalan	University of Maryland, College Park, USA	5 May to 31 July 2012	For conducting research in image processing and computer vision	–
2	Boby George	Graz, Austria	12–17 May 2012	IEEE IMTC 2012 (to present paper)	IIT Madras (CPDA)
3	Anil Prabhakar	Bangkok	16–17 May 2012	Western Digital -Manufacturer of hard disk drives	–
		Bangkok	19 July 2012	Fabrinet, contract manufacturer of optoelectronics	–
		Germany	30 November to 7 December 2012	To explore collaborations in photonics. Alexander von Humboldt Foundation (CONNECT programme)	–
4	Nagendra Krishnapura	Seoul, South Korea	20–23 May 2012	2012 International Symposium on Circuits and Systems	DIT
		Pavia, Italy	7 June to 7 July 2012	Visit to the University of Pavia for research collaboration	–
5	B. Srikrishna	Ottawa, Canada	10–15 June 2012	IEEE ICC 2012 (paper presentation)	CPDA
6	Gaurav Raina	Ipswich, UK	11–15 June 2012	Technical Workshop of Indo-UK Advanced Technology Consortium	Project funds
		Cambridge, UK	29–31 August 2012	IU-ATC Technical Workshop— Fitzwilliam Conference Centre— University of Cambridge	–
7	Balaji Srinivasan	Monterey, California, USA	24–28 June 2012	Optical Sensors Conference (paper presentation)	–
		USA	1–8 February 2013	SPIE Opto Conference (presentation of invited paper)	–
8	K. Giridhar	Venice, Italy	24–29 June 2012	International Conference on Wireless Mobile Communications (ICWMC—2012)	–

	K. Giridhar	Cambridge, UK	29–31 August 2012	IU-ATC Technical Workshop— Fitzwilliam Conference Centre— University of Cambridge	–
9	Ashok Jhunjunwala	Belgium	4 June 2012	ATOS India strategic meeting	–
		UK	8–11 June 2012	Indo–UK project meetings	–
		UK	12–14 June 2012	8th Annual Pacific Health Summit—2012	–
		Cambridge, UK	29–31 July 2012	ATOS Meetings	–
		Cambridge, UK	29–31 August 2012	IU-ATC Technical Workshop— Fitzwilliam Conference Centre— University of Cambridge	–
		New York, USA	11–12 February 2013	Tata Communications—AOP Capex meeting	–
		Poughkeepsie, USA	12–13 February 2013	IBM visit	–
10	Srirama Srinivas	UK	18–20 July 2012	To attend BioCPV kick-off meeting	–
		Cape Town, South Africa	25–27 February 2013	To present two papers at International Conference on Industrial Technology	–
11	Devendra Jalihal	Cambridge, UK	29–31 August 2012	IU-ATC Technical Workshop— Fitzwilliam Conference Centre— University of Cambridge	–
12	Krishna Jagannathan				
13	K.M.M. Prabhu	Technical University Eindhoven (TU/c), the Netherlands	11–23 October 2012	Discussions with the members of the Signal Processing (SPS) Group of the EE Department	–
14	Nitin Chandrachoodan	Monterey, CA, USA	4–7 November 2012	Asilomar Conference on Signals, Systems and Computers, Monterey, CA, USA	–

Honours and awards obtained by faculty members

Sl. No.	Name of Faculty Member	Name of Award	Awarded by	Awarded for	Date of Award
Honours					
1	Y. Shanthi Pavan	Shanti Swarup Bhatnagar Prize—2012	–	DSIR Engineering Sciences Category	–
2	A.N. Rajagopalan	DAE-SRC Outstanding Investigator Award	Dept. of Atomic Energy	–	–
Awards					
1	Gaurav Raina	Best Paper Award	11th International Conference on Networks (ICN 2012)	Paper titled “Mitigating spoofing attacks in MPLS-VPNs using label- hopping”	June 2012
2	Andrew Thangaraj, Deepa Venkitesh	Young Faculty Recognition Award 2012	IIT Madras	Outstanding achievements in teaching, scholarship and creative research work	–
3	A.N. Rajagopalan	CMC Best Paper Award	International Conference on Biometrics, New Delhi	Paper titled “Combined face and gait recognition using alpha matte pre- processing”	April 2012

Books, monographs authored/co-authored

Sl. No.	Name of Faculty Member	Title	Publisher	Author/Co-author
Book chapters				
1	S. Karmalkar	A course for fostering research spirit, Chapter 13 in <i>Multiple Stakeholder Perspectives of Higher Education</i>	Macmillan	R. Natarajan and N.R. Shetty
2	Nandita DasGupta	Silicon MOS transistor from micro to nano, Chapter 18 in <i>A Textbook of Nanoscience and Nanotechnology</i>	Tata McGraw Hill	–
Books				
1	Ashok Jhunjhunwala	<i>Powering Cellular Base Stations: A Quantitative Analysis of Energy Options (Solar PV, Diesel Generators, Batteries and Electrical Grid)</i>	Telecom Centre of Excellence (RITCOE), IIT Madras	Sriram Narayanamurthy, Janani Rangarajan and Sneha Raj
2	Bhaskar Ramamurthy			

Journal editorial boards

Sl. No.	Name of Faculty Member	Position (Editor/Member)	Period	Journal
1	A.N. Rajagopalan	Associate Editor to the Editorial Board	Since April 2012	<i>IEEE Transactions on Image Processing</i> , a premier publication of the IEEE Signal Processing Society
2	K. Sridharan	Associate Editor	Since April 2012	<i>IEEE Transactions on Industrial Electronics</i>
3	Andrew Thangaraj	Associate Editor	Since December 2012	<i>IEEE Transactions on Communications</i>
4	Srikrishna Bhashyam	Member of Editorial Board	Since July 2009	<i>IEEE Transactions on Wireless Communications</i>
5	Y. Shanthi Pavan	Deputy Editor-in-Chief		<i>IEEE Transactions on Circuits and Systems: Part I—Regular Papers</i>
6	Enakshi Bhattacharya	Member of Editorial Board		<i>The Journal of ISSS</i>
7	Harishankar Ramachandran	Editor		<i>International Journal of Advances in Engineering Sciences and Applied Mathematics</i> , Springer, IIT Madras

4.8.4. Design and Development Activities

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

Balaji Srinivasan—Fiber-Based Dynamic Interrogator for Elastic Wave Sensing for IGCAR, Kalpakkam

Patents filed

Sl. No.	Name of Faculty Member	Topic
1	Kiran Kuchi, Bhaskar Ramamurthi	An Ordered Reduced Set Successive Detector for Low Complexity, Quasi-ML MIMO Detection

Patents awarded

Sl. No.	Name of Faculty Member	Topic
1	A.N. Rajagopalan	US patent awarded for Recovering 3D Structure Using Blur and Parallax US patent awarded for Method and System for Generating a High Resolution Image

4.8.5. Research and Consultancy

Sponsored research projects

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of Rs.)	Co-ordinators
1	Development of Aakash Platform	16 May 2012 to 31 March 2014	Telecom Centre of Excellence	10	Ashok Jhunjhunwala
2	Full-Duplex Wireless System	25 June 2012 to 24 June 2015	New Faculty Seed Grant	13	Radha Krishna Ganti
3	Indo-UK collaborative research initiative—Development of Biomass and Concentrating Photovoltaic System for Rural and Urban Energy Bridge: BioCPV	11 November 2011 to 10 November 2014	DST-India and EPSRC-UK	557	Srirama Srinivas
4	Design and Development of VLSI-Efficient Architectures for Video Stabilization and Stitching	1 year	ANURAG, DRDO, Hyderabad	9.6	K. Sridharan
5	Development of Automated SPICE Parameter Extraction Tool for SiGe HBTs Using Scalable Approach	3 years	DST	31.82	Anjan Chakravorty Amitava DasGupta
6	Understanding PD Activity In Aged Transformer Oil And Monitoring Sulphur Content in it by Optical Technique	2 May to 1 November 2012	CPRI	18	R. Sarathi and N.J. Vasa
7	Formation of PV Based DC Grid and Its Interaction with AC Grid	16 July 2012 to 15 July 2014	Nissan Research Support Program	9.13	N. Lakshmi Narasamma
8	Silicon Nanophotonics: Technology Development, Novel Device Design, Fabrication and Characterization	27 July 2012 to 26 July 2015	DRDO	299	Bijoy Krishna Das
9	Distributed Strain and Temperature Sensors	March 2010 to September 2013	DeitY	73	Balaji Srinivasan, Deepa Venkitesh, Anil Prabhakar and Nitin Chandrachoodan
10	High-Power Pulsed Fibre Lasers	January 2010 to December 2012	DRDO	44	Balaji Srinivasan, Deepa Venkitesh and Anil Prabhakar
11	Fiber Bragg Gratings in Polymer Fibres	January 2011 to December 2013	DST	6	Balaji Srinivasan
12	National Resource Centre for MEMS Design	2009–2014	NPMASS	44.6	Enakshi Bhattacharya and D. Chatterjee
13	Centre for NEMS and Nanophotonics at IIT Madras	2011–2016	MCIT	4946.50	Enakshi Bhattacharya and Nandita DasGupta with 15 co- investigators

Industrial consultancy projects

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of Rs.)
1	Balaji Srinivasan	Fibre Optic Current Sensor	ERDA	1.4

RBIC projects

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of Rs.)
1	Balaji Srinivasan	Reliability Studies in High-Power Pulsed Fibre Lasers	DRDO	6.95

Exchange programmes with other universities including institutions/universities under MOUs

Sl. No.	Name of Student	Name of the Exchange Programme	Name of University/Institution under MoU
1	Shree Krishnamoorthy	NCBS	BERI initiative between IIT Madras and NCBS
2	Prasanth Pahaladan (EE11M088)	DAAD	German Technical University
3	Saiveer Patnaik K. (EE11M090)	DAAD	German Technical University

Faculty members' participation with other institutions under MoUs

Sl. No.	Name of Faculty Member	Participation Details	Name of University/Institution Which has MoU
1	K.M.M. Prabhu	An MOU between EED, IIT Madras and EED, TU/e has been signed for a period of five years from October 2012	Technical University Eindhoven (TU/e), the Netherlands

Research publications of the faculty members and research scholars

Total number of papers published in refereed national journals: 2

Total number of papers published in refereed international journals: 67

Total number of papers presented at national conferences: 9

Total number of papers presented at international conferences: 68

(a) Refereed national journals

1. K. Shanti Swarup and S. Patra (2012) Comprehensive study on central management of a power distribution system. *Journal of Central Power Research Institute*.
2. K. Shanti Swarup and K. Jamuna (2012) Hybrid state estimator with SCADA and phasor measurements. *Journal of Central Power Research Institute (CPRI)* 8(4): 241–250.

(b) Refereed international journals

1. A. DasGupta, P.E. Braineard and D. Chaterjee (2012) An efficient numerical method for predicting the performance of valveless micropump. *Smart Materials and Structures* 21: article no. 115012.
2. A. Prabhakar, G. Venkat, D. Kumar, M. Franchin, O. Dmytriiev, M. Mruczkiewicz, H. Fangohr, A. Barman and M. Krawczyk (2013) Proposal for a standard micromagnetic problem: Spin wave dispersion in a magnetic waveguide. *IEEE Transactions on Magnetics* 49(1): 524–529.
3. R. Aravind, B. Senthil and K.M.M. Prabhu (2013) Interleaving-based cyclic delay diversity OFDM systems over spatially correlated channels. *Circuits, Systems and Signal Processing (Springer)* 32(1): 283–297.
4. B. Senthil and K.M.M. Prabhu (2013) An enhanced inter-carrier interference reduction scheme for OFDM system with phase noise. *Circuits, Systems, and Signal Processing (Springer)* 32: 931–943.
5. A. Jhunjunwala, M. Ganesan and S. Prashant (2012) Perception of mobile phone data submission in real time biosurveillance program by Indian health workers. *Indian Journal of Medical Informatics Beta, Blog Post*, Version: 4.1.
6. A. Jhunjunwala, M. Ganesan and S. Prashant (2012) Information and communication technologies (ICT). *The Encyclopedia of Sustainability* 7: 206–216. (Berkshire Publishing)
7. E. Bhattacharya and P. Kumar (2013) Digital microfluidics and its integration with a fluidic microreactor. *Journal of ISSS* 2(1): 10–19.
8. K. Giridhar, A. Ayyar, H.R. Balakrishnan, V. Nagarajan and A. Thangaraj (2012) Block modulation for interference management in heterogeneous wireless networks. *IEEE Journal of Selected Topics in Signal Processing* 6(3): 241–256.
9. K. Giridhar, R. Lakshminarayanan and S. Kalyani (2013) Biased estimators with adaptive shrinkage targets for orthogonal frequency division multiple access channel estimation. *IET Communications* 7(1): 13–22.

10. S. Karmalkar and Komail Badami (2012) A quasi-static compact model for coupling between aligned contacts on finite substrates with insulating/conducting backplanes. *IEEE Transactions on Computer Aided Design of Integrated Circuits and Systems* 31(6): 858–867.
11. S. Karmalkar, A. Ajoy, S.E. Laux and K.V.R.M. Murali (2013) Multiscale model for photon-assisted band-to-band tunneling in semiconductors. *Journal of Applied Physics* 113(6): 0645060–0645069.
12. Nandita DasGupta, K. Kalai Selvi and K. Thirunavukkarasu (2012) Effects of post oxidation annealing on electrical and interface properties of high pressure water vapor oxidized SiO₂/SiC metal-oxide-semiconductor capacitors. *Thin Solid Films*. doi:10.1016/j.tsf.2012.12.018.
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(c) Proceedings of national conferences

1. A. Jhunjhunwala (2013) Can we dream of 50% of India’s power in 2030 from solar PV? Decentralized approach: Game changer. *100th session of Indian Science Congress Conference*, Kolkata.
2. K. Shanti Swarup and E. Angeline (2012) Network partitioning of large scale power systems using Kernighan–Lin algorithm. *17th National Power Systems Conference (NPSC)*, IIT-BHU, Varanasi.
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4. K. Shanti Swarup and D. Jay (2012) Price based demand response of aggregated thermostatically controlled loads for load frequency control. *17th National Power Systems Conference (NPSC)*, IIT-BHU, Varanasi.
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6. A. Pachai Kannu, P. Sarath Kumar, B. Sai Kiran and S. Bhashyam (2013) Algorithms for change detections with unknown number of affected sensors. *Proceedings of National Conference on Communications (NCC-2013)*, IIT Delhi, India.
7. S. Krishna and S.S. Damodhar (2012) Generation rescheduling and shunt compensation planning for voltage stability improvement. *IEEE Fifth Power India Conference*.
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9. V. Ramaiyan, E.V. Mangipudi and S. Bhashyam (2013) Cross-layer strategies for throughput maximization in a data aggregating wireless network. *Proceedings of National Conference on Communications (NCC-2013)*, IIT Delhi, India.

(d) Proceedings of international conferences

1. A. Prabhakar, G. Venkat, M. Franchin and H. Fancohr (2012) Compact models for magnonic devices. *International Conference on Superconductivity and Magnetism*.
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3. A. Jhunjhunwala, T.A. Gonsalves, Y. Dittrich and L. Vaidyanathan (2012) Prototyping socio-technical systems for banking services for rural India. *Learning from Marginalized Users: Reciprocity in HCI4D*, Seattle, Washington, USA.

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5. R. David Koilpillai, R. Malladi and K. Kuchi (2012) Set-partitioning based forward/backward soft decision algorithms for MIMO detection. *International Conference on Signal Processing and Communications—SPCOM*.
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7. E. Bhattacharya, H.V. Balachandra Achar and S. Sengupta (2012) Biomolecular separation using silicon nanoporous membranes. *Nanomaterials and Low-dimensional Structures Track of ICCES 2012, Crete*.
8. V. Jagadeesh Kumar, C.S. Anoop and B. George (2012) A linear tunnelling magneto-resistance angle transducer. *IEEE International Instrumentation and Measurement Technology Conference, Graz, Austria, 2073–2077*.
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17. A. Thangaraj, R.K. Ganti and S. Bhashyam. 2012. Self-interference cancellation models for full-duplex wireless communications. *SPCOM 2012*.
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25. B. Srinivasan, M. Srivastava and D. Venkitesh (2013) Design and demonstration of a tunable Q-switched fiber laser. *Proceedings of SPIE Opto Conference*, San Francisco.
26. B.K. Das, S. Chandran and U. Karthik (2012) Silicon photonics and optical interconnect technology. *ICOE—International Conference on Optical Engineering 2012*, VTU, Belgaum, India.
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53. S. Krishna and S.S. Damodhar (2012) Comparison of participation factor method and selective eigenvalue computation for voltage stability analysis. *The 8th Mediterranean Conference on Power Generation, Transmission, Distribution and Energy Conversion*, Cagliari, Italy.
54. R. Manivasakan and U.R. Seshasayee (2012) Correlated M/G/1 queue modelling of jitter buffer in TDMoIP. *AICT 2012: The Eighth Advanced International Conference on Telecommunications*.
55. P. Sarvepalli, R. Raussendorf, T.C. Wei and P. Haghnegahdar (2012) Symmetry constraints on temporal order in measurement-based quantum computation. *Electronic Proceedings in Theoretical Computer Science (EPTCS)*.
56. R. Ganti, A.Thangaraj and S. Bhashyam (2012) Self-interference cancellation models for full-duplex wireless communications. *SPCOM 2012*.
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62. R. Pasumarthy and A.J. Van der Schaft (2012) Hamiltonian formulation of 2D shallow water equations with boundary energy flow. *MTNS*.
63. R. Pasumarthy, G. Gogte, V. Chinde, F. Kazi and N.M. Singh (2012) Passivity based control of underactuated 2-D spidercrane manipulator. *MTNS*.
64. S. Srinivas and K.R. Chandrasekhar (2012) Effect of a cmv elimination pwm on stator current ripple in a dual two-level inverter fed induction motor drive. *International Symposium on Power Electronics, Electrical Driver, Automation and motions—2012, SPEEDAM 2012*, Sorrento, Italy.
65. S. Srinivas and K.R. Chandrasekhar (2013) Current ripple analysis for an asymmetric dual two-level inverter drive with reduced common mode voltage PWM technique. *IEEE PEDES 2012*.
66. S. Srinivas and K. Jeyaraman (2013) Hybrid PWMs for shaft voltage reduction in a dual inverter fed induction motor drive. *IEEE-ICIT-2013*, Cape Town, South Africa.
67. S. Srinivas, N. Reddy and M.K. Mishra (2013) Integration of PV/battery hybrid energy conversion system to the grid with power quality improvement features. *IEEE-ICIT-2013*, Cape Town, South Africa.
68. S. Dutta (2013) Plastic electronics: An inexpensive alternative to traditional electronic applications. *Proceedings of International Conference on Advancements in Polymeric Materials*, CIPET, Lucknow.

Distinguished visitors to the department

Sl. No.	Visitor's Name and Designation	Affiliation	Purpose of Visit	Month and Date
1	Prof. P.R. Kumar, Distinguished Alumnus 2012	Texas A & M University, USA	Giving seminar talk, "The Coming Era of Cyber-Physical Systems"	12 April 2012
2	Dr. Sahoo and his team, EEE Department	BITS, Pilani-Hyderabad-Goa	Visiting each laboratory to learn about lab infrastructure, supporting staff, maintenance procedures, students-to-equipment ratio and other details	25-26 April 2012
3	Dr. Kannan Srinivasan, faculty member	Ohio University, USA	Meeting with faculty members	2 May 2012

4	Mr. Dan Wilkinson, Director	XMOS Ltd., Bristol, UK	Visiting labs and having discussions with the faculty	17 May 2012
5	Dr. Prassana Chaporkar, Assistant Professor	IIT Bombay	Giving a talk for the students, “Throughput Maximization in Renewable Energy Empowered Wireless Networks”	28–29 June 2012
6	Ms. Sowmya Varadarajan, Associate Director	Verizon	Giving a talk, “Evolution and Effectiveness of Machine-to-Machine Communications”	19 July 2012
7	Dr. Siddarth Jaggi	Department of Information Engineering, Chinese University of Hong Kong, Shatin, N.T., Hong Kong	Visiting Dr. Andrew Thangaraj and delivering a seminar talk in the department	20 July 2012
8	Wenyi Zhang, Assistant Professor	USTC, China	Seminar and research discussion	24–28 July 2012
9	Dr. P.P. Vaidyanathan	California Institute of Technology		26 July 2012
10	Dr. Krishna Balachandran, Director	Wireless Technologies and Systems Research, Bell Labs, Alcatel Lucent, USA	Seminar and research discussion	31 July 2012
11	Prof. R. Srikant	University of Illinois Urbana Champaign	Giving research talks and forming collaborations	8–14 August 2012
12	Dr. B. Sundar Rajan, Professor	Department of ECE, IISc, Bangalore	Seminar and research discussion	10 August 2012
13	Dr. G. Susinder Rajan	Qualcomm Inc.	Seminar	24 August 2012
14	Dr. Joachim Koeser	University of Applied Sciences, Muttenz, Switzerland	Giving a talk, “Cantilever Sensors—Principles and Applications”	30 August 2012
15	Dr. Aravinth Ganesh	IBM India Research Lab, Bangalore	Seminar	31 August 2012
16	Prof. Vivek S. Borkar	Department of EE, IIT Bombay	Seminar and research discussion	3 September 2012
17	G. Sreenivasa Reddy, Scientist F; N. Radhakrishna, Scientist F; Kiran J., Scientist D; Vijai Prakasah, Scientist C	ADE Bangalroe	Discussions regarding consultancy for LREO	8 October 2012
18	Subramanian S. Iyer, IBM Fellow and Chief Technologist	Microelectronics Division, IBM Systems & Technology Group	Department-seminar, “Microelectronics for a Smarter Planet”	27 December 2012
19	Mr. Pavan Tallapragada, Ph.D. student	University of Maryland, USA	Delivering a talk, “When and What to Communicate: Event-Triggered Control for Stabilization Tasks”	7 January 2013
20	Dr. Deok Ho Ha, Dr. Jong Rak Yoon, Dr. Seok Tae Kim, Dr. Yeon Ho Chung, Dr. Moon Gab Joo and Dr. Jee Youl Ryu	Pukyong National University, Korea	Exploring academic and/or technical collaboration for mutual benefit	23 January 2013
21	R. Balakrishnan, Chair, ECE and David Janes, Professor, ECE	Purdue University	Discussing future collaboration	28–29 January 2013
22	Dr. Rahul Vaze	TIFR, Mumbai	Giving research seminar and continuing collaboration with Dr. R.K. Ganti and Dr. K. Jagannathan	28 January to 1 February 2013
23	Dr. G. Jawhar, DGM (HRD), Rajendra Singh Director (HRD), A. Surendran DGM (Chennai)	PowerGrid India	Signing of MoU between IIT Madras and PowerGrid	12 February 2013

24	Prof. Rafiq Azzam, Mr. Martin Schnalfuss and Dr. Kaltenborn	IGCS, University of Aachen, Maschinenfabrik Reinhausen GmbH	For future collaboration	27–28 February 2013
25	Prof. Jagdutt Singh	La Trobe University, Melbourne, Australia	Giving a seminar talk	4 March 2013
26	Dr. Srivatsava Jandhyala	University of California, Berkeley, USA	Giving a seminar talk	5 March 2013

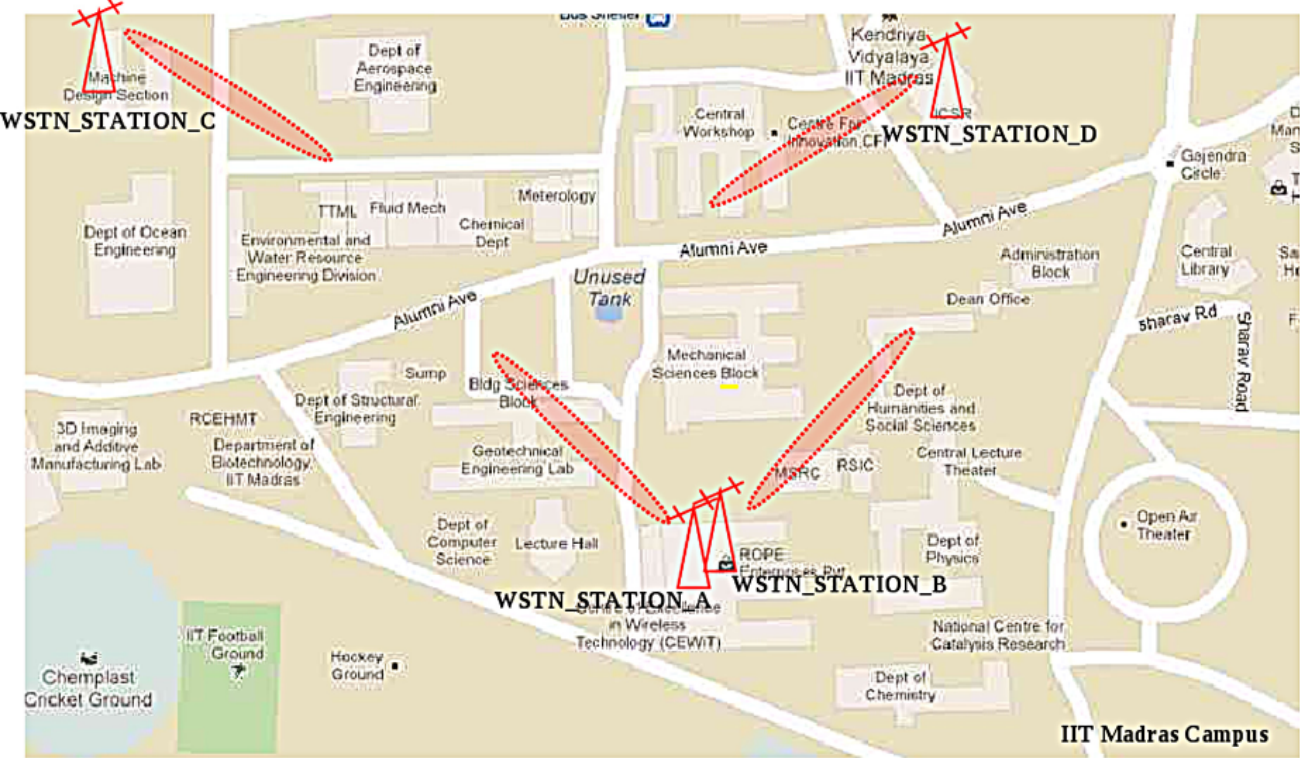
Staff

Designation	Names of Staff Members
Administrative	
Junior Superintendent	Rajendiran M.
Senior Assistant	Jayasankaran V., Tamil Selvi K., Vidya N.
Senior Attendant	Jayakumar K.
Attendant	Elangovan K.V., Mallika M., Sivakumar W., Sridhar T.
Technical	
Senior Technical Superintendent	Abdul Jaleel A., 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.

4.8.5. Other Activities of the Department/Centre

Sl. No.	Name	Activities
1	The team of Jobin Jacob Kavalam and V. Sudharsan, under the guidance of Shankar Balachandran (CS) and Nitin Chandrachoodan (EE)	The team was placed in the top 3 positions in the TAU 2013 CAD Contest (Variation Aware Timing Analysis) held as a part of the TAU workshop on timing analysis, Lake Tahoe, CA, USA, 27–29 March 2013

Network deployment showing Base Station coordinates

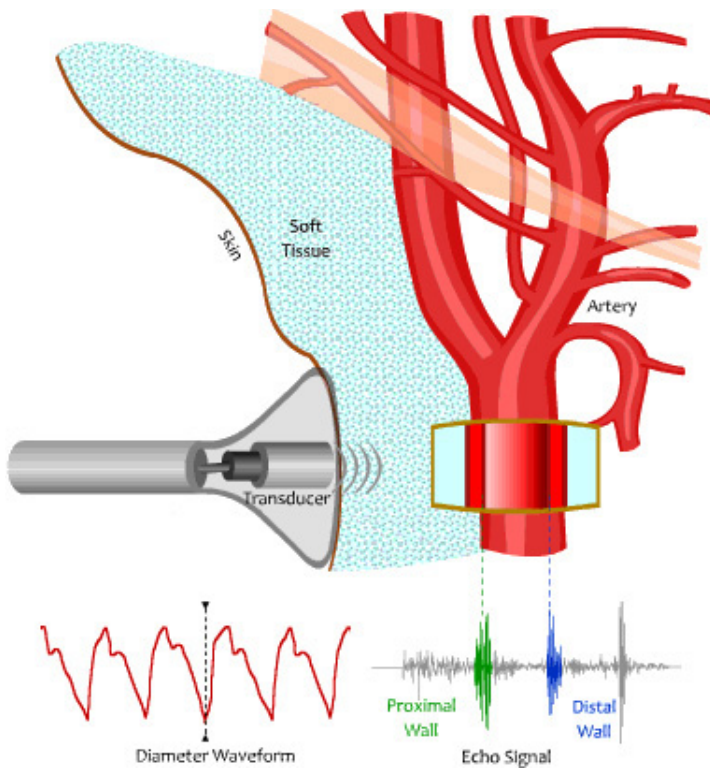


Scale: 100m

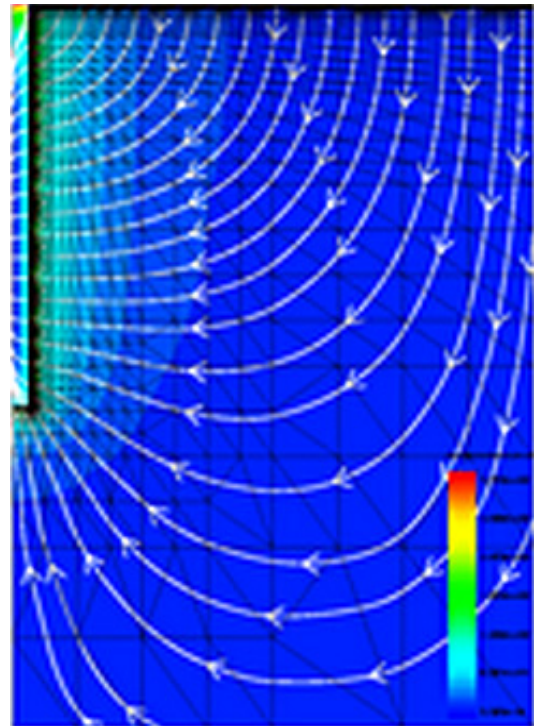
4-G test bed experiment being carried out at IITM by communications group



State-of-the-art Machines Lab, which has 40 sets of machines, each of which can handle almost all AC and DC machine experiments



A low-cost sensor developed to measure elasticity of arterial walls and hence give an early warning of coronary health problems



The electric field distribution around a vertical nano wire



A spherical robot that can navigate stably over uneven terrain



A vision aid that uses optical diffractive elements to help increase field of view for those with vision problems

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 sixteenth 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. specialization in engineering design and M.Tech. specialization in automotive engineering with a strong thrust on the modern practices of design.

“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 convert resources optimally to meet a stated objective.

Students are introduced to the design process in the first year 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 modeling, 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	ED 5315	Introduction to Field and Service Robotics
2	ED 3151	Industrial Automation and Robotics
3	ED 5316	Antenna Theory & Design
4	ED 5317	Strategies for Managing Innovation

New lab(s) established

The new Industrial Automation Laboratory was established in July 2012 under an MoU with the Automation Industries Association of India (AIA).

Students on roll

Programme	I year	II Year	III Year	IV Year	V Year and Others	Total
Dual Degree	57	53	55	44	45	254
M.S.	10	14	6	4	1	35
Ph.D.	12	12	7	6	9	46
Total	79	79	68	54	55	335

Names of students/scholars who attended conference/workshop/seminars and symposia in India/abroad

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposium/Workshop	Date and Venue	Financial Assistance from
Abroad					
1	Deepti Kannapan	ED08B007	23rd AAS/AIAA Spaceflight Mechanics Meeting	10–14 February 2013, Hawaii, USA	–
2	K. Kayatri	ED10S003	39th Annual Review of Progress in Quantitative Nondestructive Evaluation	15–20 July 2012, Hyatt Regency Denver Tech Centre, Colorado	IIT Madras
3	N. Kolagani	ED11D011	GIS in Empowering Rural Communities: A Framework for Iterative Development and Evaluation, 6th International Congress on Environmental Modelling and Software	1–5 July 2012, Leipzig, Germany	IIT Madras through alumni funds

	N. Kolagani	ED11D011	GIS in Empowering Rural Communities: Development and Field Trials, 3rd International Open Source GIS Conference Community Mapping and Empowerment: Case Study of Water Management in a South Indian Village, 3rd International Open Source GIS Conference	25–28 June 2012, Velp, the Netherlands	
4	Manecius Selvakumar, Umesh Neettiyath	ED08D001 ED10S007	9th ICINCO conference	28–31 July 2012, Rome, Italy	–
5	C.S. Nanda Kumar	ED09D008	ASME 2012 International Mechanical Engineering Congress & Exposition	November 2012, Houston, USA	–
6	K. Sulochana	ED09D007	9th International Symposium on Novel Carbon Resource Science	1–3 November 2012, Kyushu University, Fukuoka, Japan	Kyushu University, Fukuoka, Japan
7	B. Venkataramesh	ED10S008	International Conference on Intelligent Robotics, Automation and Manufacturing	28–30 November 2012, Monash University Sunway Campus, Kuala Lumpur, Malaysia	IIT Madras/Monash University
8	B. Venkataramesh	ED10S008	Kick-off meeting of Advanced Graduate Program in Global Strategy for Green Asia	25–26 January 2013, Kyushu University, Japan	Kyushu University, Fukuoka, Japan
9	G. Amutha	ED09S003			
India					
1	G. Amutha	ED09S003	The 3rd Asian Symposium on Materials and Processing (ASMP 2012)	30–31 August 2012, IIT Madras, Chennai	IIT Madras
2	Jobin K. Antony, N. Aparna, V. Sathiesh Kumar and B. Venkataramesh	ED08D002	Twenty-First DAE-BRNS National Laser Symposium, organized by Bhabha Atomic Research Centre, NLS-21	6–9 February 2013, Trombay, Mumbai	IIT Madras
3	R. Ragothaman	ED12S003	NDE2012, National Seminar & Exhibition on Non-Destructive Evaluation	10–12 December 2012, Delhi	IIT Madras
4	K. Sulochana	ED09D007	23rd International Conference on Raman Spectroscopy (ICORS 2012)	12–17 August 2012, IISc, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore	IIT Madras
5	M. Suresh	ED09D003	International Conference on Biomedical Systems, Signals and Images (BSSI 2012)	28 November to 1 December 2012, IIT Madras	Fluid Control Research Institute, India
6	Umesh Neettiyath (M.S. scholar)	ED10S007	National Workshop on Robotics	6–8 July 2012, IIT Delhi	IIT Madras
7	Sourav Chandra (Ph.D. scholar)	ED11D004			
8	B. Venkataramesh	ED10S008	1st National Conference on Micro and Nano Fabrication (MNF 2013)	21–23 January 2013, CMTI, 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	Harsit Agarwal, Binesh Babu and Nagendar V.	ED08B034 ED08B036	An award for inventing a method to easily identify used syringes to prevent reuse—cash award of US\$1000 as prize money	Intellectual Ventures, USA
2	Nigamaa Nayakanti	ED09B019	Innovative Student Proposal Award	ICSR, IIT Madras

3	Tarun Mehta, Swapnil Jain, Sri Ram Charan Chepyala, Jaideep Badduri, Sayantan Biswas	ED07B017 ED07B009 ED07B027 ED07B008 ED07B025	Felicitations for their proposal HuMotor: A Humane Way of Utilising Human Efforts for the Innovation Challenge to Reduce Worker Drudgery	National Innovation Council
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4.9.3. Faculty and Their Activities

Faculty

Name and Qualifications	Major Areas of Specialization (Only 3 Areas)
Professors	
Nilesh J. Vasa [Head]	Optomechatronics, remote sensing, laser-based sensing, MEMS
R. Krishna Kumar	Nonlinear finite elements, vehicle dynamics and tyre mechanics
Associate Professors	
T. Asokan	Robotics, mechatronics, control, electro hydraulic servo systems
Venkatesh Balasubramanian	Human factors and ergonomics, biomedical devices and implants, innovation in manufacturing
Sankara J. Subramanian	Digital image correlation, nano-indentation, mechanics of materials, finite element analysis
Srikanth Vedantam	Design with novel materials, mechanical behaviour of materials, wetting, microstructure evolution
Assistant Professors	
C.S. Shankar Ram	Model-based control and diagnostics, automotive systems, vehicle dynamics, analysis of transportation systems
Sandipan Bandyopadhyay	Robotics, dynamics of multibody systems, design
M. Ramanathan	Geometric and solid modeling, CAD, computer vision, computational geometry, computer graphics, computational biology, shape search
G. Saravana Kumar	CAD, computational geometry, reverse engineering, shape optimization, biomechanical modeling, biomedical imaging and reconstruction, biomimetic prosthetic and scaffold design, layered manufacturing and soft computing
Kavitha Arunachalam	Biomedical instrumentation, radio frequency and microwave antenna design, hyperthermia physics, non-destructive material evaluation, digital signal and image processing
Palaniappan Ramu	Optimization, application of statistical and probabilistic techniques for engineering design under uncertainties, risk/reliability based engineering design, surrogate based modeling and analysis
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
Visiting Professors	
Soma Guhathakurta	Human anatomy, physiology and biomechanics, design of surgical devices, design of implantable devices and life support systems

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

Sl. No.	Co-ordinator(s)	Title	Period
Conferences			
1	Venkatesh Balasubramanian	Joint Workshop of IITM and IRAI (Indian Radiological & Imaging Association), IIT Madras	13–15 July 2012
Workshops			
1	Venkatesh Balasubramanian	Excellence in Process Engineering, for Anand Automotive Ltd. (3 modules)	7 June to 14 December 2012
		Engineering and Radiology Opportunities for the Future	20 August 2012
2	C.S. Shankar Ram	CEP on Vehicle Dynamics and Control, Eaton Technologies Pvt. Ltd., Pune	September 2012

3	Venkatesh Balasubramanian	Disruptive Innovation in Healthcare	15–20 November 2012
4	T. Asokan	International Workshop on Autonomous Ground Vehicles	5–10 December 2012, IIT Madras Research Park (sponsored by CVRDE, Chennai)
5	Venkatesh Balasubramanian	Human Factors & Occupational Safety in Construction Industry, IIT Madras	17–21 December 2012
6	T. Asokan	Medical Device Innovation, GE Healthcare, Bangalore	19 December 2012
7	C.S. Shankar Ram	CEP on Mathematical Modelling of Automotive Systems, Mahindra and Mahindra, Chengalpattu	January 2013

Short-term courses

1	Palaniappan Ramu and G. Saravana Kumar	Optimization for Engineering Design	3–7 September 2012
2	T. Asokan and N.J. Vasa	Industrial Automation, supported by Industrial Automation Association	6–8 December 2012

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

Sl. No.	Name of Faculty Member	Title	Institution	Period
Workshops				
1	Palaniappan Ramu	Systems Engineering: Principles and Practices	Defence Institute of Advanced Technologies	7–11 May 2012
2	Soma Guhathakurta	Ingenious Biomaterials in GIT/MSK Imaging	BRACE CME 2012, organized by IRIA and hosted by Barnard Institute of Radiology	13–15 July 2012
		Tissue Engineering Innovations Presentation	Department of Engineering Design, IIT Madras	15–20 November 2012
3	T. Asokan	Neurobionics in Clinical Neurology	JIPMER, Pondicherry	15–17 February 2013
Seminars				
1	G. Saravana Kumar and Palaniappan Ramu	Emerging Fast Tract Technologies for Mass Housing, Chennai	BMTPC, New Delhi	18–19 December 2012
2	T. Asokan	Standardization in the Field of Manufacturing and Production Automation Systems and Robotics	Bureau of Indian Standards, at IIT Madras	6 March 2013
Symposia				
1	Venkatesh Balasubramanian	42nd National Safety Day	L&T, Chennai	4 March 2013
Conferences				
1	Venkatesh Balasubramanian	Session on emerging technologies in healthcare, bio-informatics, augmentative communication and assistive engineering at PanIIT 2012 (session chair)	Conferences & Incentives Management (I) Pvt. Ltd., Kolkata	7–9 December 2012
2	T. Asokan	Medical Devices	Indian Med Tech. Summit, New Delhi	20–21 December 2012
		Advances in Field and Service Robotics	ECTRANZ 2013, Janson Institute of Technology	1 March 2013
		Robotics for Medical Applications	PSG College of Technology, Coimbatore	22 March 2013
Short-term courses				
1	Nilesh J. Vasa	Short-Term School on Micromanufacturing (presentation)	IIT Kanpur	9 November 2012

Special lectures delivered by the faculty in other institutions

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
1	C.S. Shankar Ram	Evolution of Automobiles	Science Club, Chennai	April 2012
		Application of Dynamics to the Analysis of Road Vehicles	SAE India	May 2012
2	Sandipan Bandyopadhyay	Mathematics and Engineering of Parallel Manipulators	IIT Delhi	4 April 2012
3	G. Saravanakumar	Innovative Product Design and Rapid Manufacturing Strategies	NIT Trichy	13 April 2012
4	Palaniappan Ramu	Optimization Strategies in Design	BHEL, Trichy	4 May 2012
5	Palaniappan Ramu and Saravana Kumar	Discussion about challenges at SSTP	BHEL, Trichy	4 May 2012
6	T. Asokan	Advances in Research and Development of Autonomous Robots	Edayathangudy G.S. Pillay Engineering College, Nagapattinam	14 May 2012
7	Nilesh J. Vasa	Emerging Trends in Engineering	NITTE, Karnataka	15 May 2012
8	Sandipan Bandyopadhyay	Trajectory-Tracking Control of a Parallel Manipulator with Dual Control Loop, and Singularity Avoidance, at the Workshop on Advances in Robotics	IIT Delhi	5–7 July 2012
9	Nilesh J. Vasa	Mechatronics in Automobile Industry	S.N. College, Chennai	13 July 2012
10	Venkatesh Balasubramanian	Back Pain: Pain for Whom?	Harnam Singh CME and BRACE CME 2012	14 July 2012
11	Nilesh J. Vasa	Laser Assisted Micromachining for Functional MEMS Devices	Chennai Institute of Technology, Chennai	15 July 2012
12	R. Krishna Kumar	Motorcycle Dynamics	Hero Motor Corp	19–21 July 2012
13	Nilesh J. Vasa	Lecture on Mechatronics	Apollo Engineering College, Chettipedu	7 September 2012
14	T. Asokan	Introduction to Robotics	Vikram Sarabhai Space Centre	26–28 September 2012
		Robotic Club & Research, Medical Device Innovation	Vimal Jyothi Engineering College, Kannur and Pariyaram Medical College, Kannur	12 October 2012
15	Venkatesh Balasubramanian	Manufacturing Excellence–The Indian Way	Monash University, Malaysia	19 November 2012
		Understanding Disruptive and Sustaining Innovation, Workshop on Innovation in Manufacturing Excellence	Monash University, Malaysia	20 November 2012
16	Krishnakumar	Developing and Deploying Mobile Technologies for Healthcare	University of Sydney, Australia	27 November 2012
17	Venkatesh Balasubramanian	Translational Research in Biomedical Engineering in RBG, IIT Madras	PanIIT, 2012	8 December 2012
18	Nilesh J. Vasa	Advances in Joining Technologies	AMT 2013, DRDL, Hyderabad	3–5 January 2013
19	Soma Guhathakurta	Biological Myocardial Assist Device	STEM 2013, Society for Regenerative Medicine and Tissue Engineering (Mumbai), Bangalore	31 January to 1 February 2013
20	Venkatesh Balasubramanian	Limiting Occupational Hazards and Enhancing Operational Risk Management Using RBGRS	Regional Labour Institute (RLI), Chennai	2 February 2013
21	Sandipan Bandyopadhyay	Parallel Manipulators as Motion Platforms for Simulators: Potentials and Challenges	Simulator Development Division of the Indian Army, Secunderabad	11 February 2013

22	C.S. Shankar Ram	Automotive Brake Systems	Apollo Tyres	February 2013
23	Venkatesh Balasubramanian	Operational Risk Management Using RBG Risk Scale (RBGRS)	ENC, L&T Chennai	4 March 2013
24	G. Saravana Kumar	Multi Objective Optimization & Genetic Algorithm	MNIT, Jaipur	20–24 March 2013
25	Palaniappan Ramu	Multi Objective Optimization & Genetic Algorithm	MNIT, Jaipur	22 March 2013

Visits abroad by faculty

Sl. No.	Name of Faculty Member	Country Visited	Date	Purpose of Visit	Funding from
1	Nilesh Vasa	California, USA	6–11 May 2012	Conference on Lasers and Electro-optics, CLEO 2012, San Jose, California, USA	IIT Madras
2	Kavitha Arunachalam	Barcelona, Spain	10–12 May 2012	World Congress on Brachytherapy 2012, Barcelona, Spain	IIT Madras
3	M. Ramanathan	Canada	11–14 June 2012	CAD 2012 conference and exhibition	–
4	C.S. Shankar Ram	Germany	19–23 June 2012	4th Scientific Panel on Mobility	IIT Madras
5	Sandipan Bandyopadhyay	Austria	24–28 June 2012	Advances in Robot Kinematics, 13th international symposium	IIT Madras
6	T. Asokan	Rome, Italy	28–31 July 2012	9th International Conference on Informatics in Control, Automation and Robotics 2012	IIT Madras
7	Kavitha Arunachalam	Kyoto, Japan	28–31 August 2012	11th International Congress of Hyperthermic Oncology & 29th Japanese Congress of Thermal Medicine	IIT Madras
8	R Krishna Kumar	Belgium	13–14 September 2012	LMS International	JK Tyre
9	Palaniappan Ramu	Indiana, USA	17–19 September 2012	12th AIAA Aviation Technology, Integration, and Operations (ATIO) Conference and 14th AIAA/ISSMO Multidisciplinary Analysis and Optimization	IIT Madras
10	R. Krishna Kumar	Belgium	17–19 September 2012	International Conference on Noise and Vibration Engineering (ISMA 2012)	JK Tyres
		Germany	10–18 July 2012	RBIC project sponsored by JK Tyres	JK Tyres
11	Nilesh J. Vasa	Japan	1–3 November 2012	The 9th International Symposium on Novel Carbon Resource Sciences	Kyushu University, Fukuoka, Japan
12	Venkatesh Balasubramanian	Malaysia	14–21 November 2012	Workshop on Innovation in Manufacturing Excellence	IIT Madras
13	Nilesh J. Vasa	Malaysia	28–30 November 2012	Keynote lecture, “Recent Advances in Laser Assisted Surface Treatment of Thin Films for Photovoltaic Applications”, the 1st International Conference on Intelligent Robotics, Automation and Manufacturing (IRAM) 2012	Monash University, Malaysia
14	T. Asokan	Kuala Lumpur	28–30 November 2012	International Conference on Intelligent Robotics, Automation and Manufacturing (IRAM 2012)	PCF
15	Nilesh J. Vasa	Malaysia	9–10 December 2012	The 16th Asian Conference on Electrical Discharge (ACED 2012)	IIT Madras
16	Sandipan Bandyopadhyay	Vietnam	16–19 December 2012	9th International Conference on Simulated Evolution And Learning (SEAL 2012)	IIT Madras

17	Nilesh J. Vasa	Japan	25–26 January 2013	Kick-off meeting of “Advanced Graduate Program in Global Strategy for Green Asia”	Kyushu University, Fukuoka, Japan
18	Venkatesh Balasubramanian	Japan	15–27 February 2013	VLM programme	–
19	R. Krishna Kumar	Australia	20 February 2013	Project discussion	University of Sydney
20	T. Asokan	Australia	5–15 April 2013	Indo-Australia visiting fellowship programme 2012–2013	DST

Honours and awards obtained by faculty

Sl. No.	Name of Faculty Member	Name of Award	Awarded by	Awarded for	Date of Award
Awards					
1	Sandipan Bandyopadhyay, G. Saravana Kumar	Innovation Challenge to Reduce Worker Drudgery	National Innovation Council	Innovative Design	April 2012
2	C.S. Shankar Ram	INAE Young Engineer Award, 2012	Academy Annual Convention, Roorkee	Excellence in Academics & Research	6 December 2012
		IET Electrical Systems in Transportation Premium Award for the paper titled “Modelling an Electropneumatic Brake System for Commercial Vehicles”	The Institution of Engineering and Technology (IET), UK	Best Paper Award	2012

Fellowships of academies and professional societies

Sl. No.	Name of Faculty Member	Details
Others		
1	T. Asokan	Indo-Australian Senior Scientist Visiting Fellowship from INSA. Appointed as a Visiting Fellow of the University of New South Wales, Australia for a period of three months.
2	Soma Guhathakurtha	Selected as a member of the expert committee of DST, Technology Development Board, Government of India One of the panel judges of Indo-US endowment funding for DST One of the juries in BIG scheme, India Innovation Growth Programme (joint initiative of the Department of Science and Technology, GoI; Lockheed Martin Corporation; Indo-US Science and Technology Forum; Federation of Indian Chambers of Commerce and Industry; Stanford Graduate School of Business; and the IC2 Institute at the University of Texas) One of the evaluators of the IIGP scheme
3	C.S. Shankar Ram	INAE Young Associate, since 2012

Journal Editorial Boards

Sl. No.	Name of Faculty Member	Position (Editor/Member)	Journal
1	C.S. Shankar Ram	Associate Editor	<i>Journal of Dynamic Systems, Measurement, and Control</i>

4.9.4. Design and Development Activities

New facilities added or major equipment procured

Sl. No.	Name of Equipment	Value (lakhs of Rs.)
1	Lidar telescope with beam focusing and optical mount system	3.2
2	Electrometer	7.5
3	Nd ³⁺ :YAG laser (1064, 532, 355 nm)	25.0
4	Quarter-car active automotive suspension system test bench	14.2

Patents filed

Sl. No.	Name of Faculty Member	Topic of Patent
1	Sandipan Bandyopadhyay and Saravana Kumar G.	Human powered device, Indian Patent Application No. 3633/CHE/2012. A clutch assembly, Indian Patent Application No. 4252/CHE/2012.
2	T. Asokan	A non-destructive method to identify used syringes, 2012

4.9.5. Research and Consultancy

Sponsored research projects

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of Rs.)	Co-ordinators
1	Wake-adapted Analysis of Optimization of Propellers and Control Surfaces for High-Speed Applications	March 2013 to February 2016	NRB	64.5	Anantha Subramanian, T Asokan, Krishnankutty
2	Design and Development of a Tele-Surgical Robot Trainer	2012–2015	DST	53.0	T. Asokan
3	Development of Theory of Fractal Rational Splines and Applications in Computer-Aided Geometric Design	31 October 2011 to 30 November 2014	DST, India	15.1	A.K. Chand and Saravana Kumar G.
4	Design and Evaluation of X-band Performance of Frequency-Selective Characteristics of Planar Composites	January 2013 to April 2014	ADA	49.9	C.V. Krishnamurthy, Kavitha Arunachalam, Krishnan Balasubramaniam
5	Investigation on the Feasibility of Measuring Average Sodium Mist Concentration Using Microwaves	13 June 2011 to 12 May 2013	IGCAR	30.33	Kavitha Arunachalam, C.V. Krishnamurthy, Krishnan Balasubramaniam
6	Development of Advanced NDE Techniques for Enhanced Sensitivity, Reliability in Nuclear Components–Phase III	January 2012 to May 2015	BRNS	95	Krishnan Balasubramaniam, C.V. Krishnamurthy, Kavitha Arunachalam
7	Wide-Area Annealing and Texturing of Amorphous Silicon Films Using Nd ³⁺ :YAG Laser For Photovoltaic Applications	14 July 2012 to 13 July 2014	DST	48.5	Nilesh J. Vasa, M. Singaperumal, Ananth Krishnan
8	Pollution Performance of Wind Turbine Blades Adopting Laser Induced Breakdown Spectroscopy	18 April 2011 to 17 April 2013	DST	53.4	Nilesh J. Vasa, R. Sarathi
9	PP-GIS decision Support System for Farmers	26 February 2013 to 25 February 2014	SRP, IIT Madras	3.0	Palaniappan Ramu, M.S. Sivakumar
10	HuMotor: A Humane Way of Utilizing Human Efforts	24 January 2013 to 23 January 2014	IC&SR, IIT Madras	3.0	Palaniappan Ramu, Sandipan Bandyopadhyay, Saravana Kumar G.
11	Computation of Strain and Curvature from Digital Image Correlation Data	17 October 2012 to 16 October 2014	ISRO	13.4	Sankara J. Subramanian, Saravana Kumar G.
12	Bioreactor Development for Ex-Vivo Large-Scale Expansion of Human RBCs from Adult Hematopoietic Progenitor Cells	January 2013 to January 2015	DBT	45.3	Soma Guhathakurta, Venkatesh Balasubramanian
13	Identifying Real Time Physiological Parameters to Test Physical and Cognitive Fatigue While Driving In a Simulated Environment	16 July 2012 to 15 July 2015	Nissan Research Support Program	9.2	Venkatesh Balasubramanian

Industrial consultancy projects

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of Rs.)
1	Sankara J. Subramnaian	Deployment and Application of Digital Image Correlation at MRF—Phase II	MRF	6.7
2	Saravana Kumar G.	Model and Prototype Development for Jewellery	Unique Designs CAD CAM Solutions	5.0
		Computer-Aided Design and Rapid Prototyping for Product Design	Common Code Project for various industries	5.0

RBIC projects

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of Rs.)
1	Sandipan Bandyopadhyay, Palaniappan Ramu	Analysis and Design of Regulating Vane Control Mechanism	BHEL, Ranipet	7.7
2	Palaniappan Ramu, Saravana Kumar, Sandipan Bandyopadhyay	Alternate Drying Mechanisms for Washing Machines	Whirlpool	8.0
3	Venkatesh Balasubramanian	Innovative and Disruptive Products for Medical Applications	Sundaram Medical Devices Ltd.	13.48
		Innovative New Products Development and Process Improvement	Sundaram Brake Linings Ltd.	33.09

Faculty members' participation with other institutions under MoUs

Sl. No.	Name of Faculty Member	Participation Details	Name of University/Institution Which Has MoU
1	Nilesh J. Vasa	Green Asia Programme	Kyushu University, Japan

Research publications of the faculty members and research scholars

Total number of papers published in refereed national journals: 1

Total number of papers published in refereed international journals: 32

Total number of papers presented at international conferences: 6

(a) Refereed national journals

1. S. Guhathakurta, A. Chakrapani, S. Sasikumar, S.K. Venkatesan, S. Sivaram and K.M. Cherian (2012) Human epicardial lipid profile status in CAD patients: Correlation with age, diabetes and hypertension. *Biochemistry and Indian Journal* 6(4): 122–127.

(b) Refereed international journals

1. A. Mangalprakash, R. Krishna Kumar and K.R. Balakrishnan (2013) Effect of calcification on plaque stresses and vulnerability. *Mechanics of Advanced Materials and Structures* 20: 309–315 (IF: 0.926).
2. T. Asokan and S. Subramanian (2012) An improved guidance algorithm for smooth transition at way-points in 3D space for autonomous underwater vehicles. *International Journal of Ocean System Engineering* 2(3): 139–150.
3. T. Asokan and M. Santhakumar (2013) Power efficient dynamic station keeping control of a flat-fish type autonomous underwater vehicle through design modifications of thruster configuration. *Ocean Engineering* 58: 11–21 (Elsevier, IF: 0.9).
4. K. Arunachalam and K. Kayatri (2012) Evaluation of an electric field sensor for nondestructive material inspection. *American Institute of Physics (AIP) Conference Proceedings* 1511: 1555–1561.
5. K. Arunachalam, L. Udpa and S. Udpa (2012) Statistical analysis of array probe eddy current data from steam generator tubes. *Studies in Applied Electromagnetics and Mechanics* 36: 159–166.
6. K. Arunachalam, O.I. Craciunescu, E.J. Markewitz, P.F. Maccarini, J.L. Schlorff and P.R. Stauffer (2012) Preclinical assessment of comfort and secure fit of thermo brachytherapy surface applicator (TBSA) on volunteer subjects. *Journal of Applied Clinical Medical Physics* 13(5).
7. K. Arunachalam, C. Wyatt, B.J. Soher and J. Macfall (2012) Comprehensive analysis of the Cramer–Rao bounds for magnetic resonance temperature change measurement in fat–water voxels using multi-echo imaging. *Magnetic Resonance Materials in Physics, Biology and Medicine (MAGMA)* 25(1): 49–61.

8. K. Arunachalam, Y. Yuan, K.-S. Cheng, O.I. Craciunescu, P.R. Stauffer, P.F. Maccarini, Z. Vujaskovic, M.W. Dewhurst and S.K. Das (2012) Utility of treatment planning for thermochemotherapy treatment of nonmuscle invasive bladder carcinoma. *Medical Physics* 39(3): 1170–1181.
9. N.J. Vasa, K. Divya and K. Sulochana (2012) Superluminescent diode-based multiple-gas sensor for NH₃ and H₂O vapor monitoring. *IEEE Journal of Selected Topics in Quantum Electronics* 18(5): 1540–1545 (IF: 3.780).
10. N.J. Vasa, K. Sulochana, S.C. Eichmann, T. Seeger and M. Kumaravel (2013) Mixed trace gas sensing for environmental applications. *Journal of Novel Carbon Resource Sciences* 7: 42–46 (IF: N/A).
11. N.J. Vasa, G. Amutha, I.A. Palani, M. Singaperumal and T. Okada (2013) Investigations on nano- and pico-second laser based annealing combined texturing of amorphous silicon thin films for photovoltaic applications. *Journal of Solid Mechanics and Materials Engineering* 7(2): 206–216 (IF: N/A).
12. N.J. Vasa, J.K. Antony, V.L.N. Sreedhar Raja and A.S. Laxmiprasad (2012) Single laser based dual-wavelength ablation technique for emission enhancement during LIBS. *Journal of Physics D: Applied Physics* 45: 365401 (8pp) (IF: 2.544).
13. Y.S.R. Rajeev Kumar, D.B. Sonawane and S.C. Subramanian (2012) Application of PID control to an electro-pneumatic brake system. *International Journal of Advances in Engineering Sciences and Applied Mathematics* 4(4): 260–268 (IF: N/A).
14. M. Ramanathan and S. Bharath Ram (2013) Shortest path in a multiply-connected domain having curved boundaries. *Computer-Aided Design* 45(3): 723–732.
15. M. Ramanathan, A.V. Vishwanath and R. Arun Srivatsan (2013) Minimum area enclosure and alpha hull of a set of freeform planar closed curves. *Computer-Aided Design* 45(3): 751–763.
16. M. Ramanathan and A.V. Vishwanath (2012) Concave hull of a set of freeform closed surfaces in R³. *Computer-Aided Design and Applications* 9(6): 857–868.
17. C. Ravishankar and R. Krishna Kumar (2012) Stretchability of prior cold worked AISI type 304 stainless steel sheet. *Mechanics of Advanced Materials and Structures* 19: 336–349 (IF: 0.926).
18. C. Ravishankar and R. Krishna Kumar (2012) Finite element simulation of sheet stretched over a hemispherical punch: A parametric study. *Mechanics of Advanced Materials and Structures* 19: 663–675 (IF: 0.926).
19. G. Saravana Kumar and S.P. George (2013) Patient specific parametric geometric modelling and finite element analysis of cementless hip prosthesis. *Virtual and Physical Prototyping* (IF: 1.0).
20. S.C. Subramanian, A.S. Padiath and L. Vanajakshi (2012) Estimating spatial traffic states with location-based data under heterogeneous conditions. *Transportation Research Record: Journal of the Transportation Research Board* 2291: 72–79 (IF: 0.471).
21. S.C. Subramanian and S. Mahanty (2013) A nonlinear model based slip controller for electro-pneumatic brakes in heavy commercial vehicles. *International Journal of Heavy Vehicle Systems* 20(1): 35–60 (IF: 0.2).
22. S. Guhathakurta, S. Senthilkumar and K.M. Cherian (2012) Porcine endogenous retroviruses: An obstacle to cross during xenotransplantation. *BMC Infectious Diseases* 12(Suppl 1).
23. S. Guhathakurta and B. Ramesh (2013) Artificial cells, blood substitutes, and biotechnology. *Nanomedicines & Biotechnology* 1: 42–51.
24. S. Guhathakurta, K. Karthikeyan, R. Rajaram and P. Korrapati (2013) Large-scale in-vitro expansion of RBCs from hematopoietic stem cells. *Artificial Cells, Nanomedicine, and Biotechnology* 41(1): 42–51.
25. S. Guhathakurta, K. Karthikeyan, R. Rajaram and P. Korrapati (2012) Electrospun zein/eudragit nanofibers based dual drug delivery system for the simultaneous delivery of aceclofenac and pantoprazole. *International Journal of Pharmaceutics* 438(1–2): 117–122.
26. S. Guhathakurta, S. Mathapati, D.K. Bishi, K.M. Cherian, J.R. Venugopal, S. Ramakrishna and R.S. Verma (2013) Biomimetic acellular detoxified glutaraldehyde cross-linked bovine pericardium for tissue engineering. *Materials Science and Engineering: C* 33(3): 1561–1572.
27. S. Guhathakurta, R. Balasundari, D.K. Bishi, S. Mathapati, S.B. Naser and K.M. Cherian. (2012) Nanocoated botanical scaffold in salvage for human tissue regeneration. *Journal of Biomaterials and Tissue Engineering* 2: 330–335.
28. S. Guhathakurta, S. Mukherjee, V.J. Reddy, R. Ravichandran, S. Mathapati, M. Raghunath and S. Ramakrishna (2012) Practical considerations for medical applications using biological grafts and their derivatives. *Materials Research Proceedings* 1418.
29. S. Vedantam, S. Kumar Ranjith and B.S.V. Patnaik (2013) No-slip boundary condition in finite-size dissipative particle dynamics. *Journal of Computational Physics* 232(1): 174–188 (IF: 2.310).
30. S. Vedantam, B.R. Prabhala and M.V. Panchagnula (2013) Three-dimensional equilibrium shapes of drops on hysteretic surfaces. *Colloid and Polymer Science* 291(2): 279–289 (IF: 2.331).

31. S. Vedantam, S. Kumar Ranjith and B.S.V. Patnaik (2013) Hydrodynamics of the developing region in hydrophobic microchannels: A dissipative particle dynamics study. *Physical Review E* 87(3): 033303 (IF: 2.255).
32. V. Balasubramanian, M. Jagannath and K. Adalarasu (2012) EEG-based evaluation of viewer's response towards TV commercials. *International Journal of Industrial and Systems Engineering* 13(4): 480–495.

(c) Proceedings of international conferences

1. E. Arun Kumar, S.C. Subramanian and V. Gautam. Performance evaluation of an electro-pneumatic braking system for commercial vehicles. *International Conference on Power, Control and Embedded Systems*, course sponsored by IEEE, 17–19 December 2012, MNNIT, Allahabad.
2. D. Kannapan, A.D. Mahindrakar and S. Bandyopadhyay. Quaternion-based backstepping for line-of-sight tracking of satellites using only magnetorquers. *23rd AAS/AIAA Spaceflight Mechanics Meeting*, in Hawaii, 10–14 February 2013, USA.
3. P. Ramu, M. Krishna and H. Ganapathy. A variable-fidelity and convex hull approach for limit state identification and reliability estimates. *Proceedings of the 14th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference*, 17–19 September 2012, Indianapolis, Indiana.
4. P. Ramu and M. Ramanathan. Alpha shape based design space decomposition for island failure regions in reliability based design. *Proceedings of the 14th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference*, 17–19 September 2012, Indianapolis, Indiana.
5. S. Bandyopadhyay, J. Badduri, R.A. Srivatsan and G. Saravana Kumar. Coupler-curve synthesis of a planar four-bar mechanism using a genetic algorithm based optimisation method. *SEAL 2012*, Le Quy Don Technical University, 16–19 December 2012, Hanoi, Vietnam.
6. Shubhashisa Sahoo, Shankar C. Subramanian and Suresh Srivastava. *Proceedings of the 2nd International Conference on Power, Control and Embedded Systems*, pp. 247–252, December 2012.

Distinguished visitors to the department

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1	Dr. Arun Srinivasa, Professor of Mechanical Engineering, Texas A&M University, USA	5 July to 5 August 2012	Collaboration on design with smart materials
2	Dr. G.S. Bhuvaneshwar, Director, Innovation & Education, Trivitron Healthcare Pvt. Ltd., Chennai	August 2012 onwards	Collaboration on healthcare equipment design

4.9.6. Other Activities of the Department/Centre

Conducted the national level Autodesk Inventor Student Design Competition on 20 October 2012. The event was conducted by Dr. M Ramanathan and Dr. G. Saravana Kumar and sponsored by Autodesk India Pvt. Ltd.

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

Sl. No.	Name of the Scholar	Programme	Results
1	M. Lakshmi	M.S.	Improved electromagnetic communication for swarms of autonomous underwater vehicles
2	Subin P. George	M.S.	Design and analysis of subject-specific femoral implants
3	Vishwanath A.V.	M.S.	Algorithm for bounding hulls of a set of planar closed curves
4	Jobin K. Antony	Ph.D.	Study on laser-induced breakdown spectroscopy technique for elemental analysis of lunar soil
5	M. Jagannath	Ph.D.	Evaluation of multimodal analysis of driver fatigue in three different modes of transport

Interdisciplinary group achievements of the department

Sl. No.	Title	Department
1	Wake-Adapted Analysis of Optimization of Propellers and Control Surfaces for High-Speed Applications	Ocean Engineering
2	Development of Theory of Fractal Rational Splines and Applications in Computer-Aided Geometric Design	Mathematics
3	Design and Evaluation of X-Band Performance of Frequency-Selective Characteristics of Planar Composites	Physics, Mechanical Engineering

4	Investigation on the Feasibility of Measuring Average Sodium Mist Concentration Using Microwaves	Physics, Mechanical Engineering
5	Development of Advanced NDE Techniques for Enhanced Sensitivity, Reliability in Nuclear Components–Phase III	Physics, Mechanical Engineering
6	Wide-Area Annealing and Texturing of Amorphous Silicon Films Using Nd3+:YAG Laser for Photovoltaic Applications	Mechanical Engineering, Electrical Engineering
7	Pollution Performance of Wind Turbine Blades Adopting Laser Induced Breakdown Spectroscopy	Electrical Engineering
8	PP-GIS Decision Support System for Farmers	Civil Engineering

International collaboration achievements by the department

Faculty visits

Sl. No.	Name of the Faculty Member	Purpose of Visit	Date and Venue
1	T. Asokan	Indo-Australia visiting fellowship programme 2012–2013	5–15 April 2013, Australia
2	Venkatesh Balasubramanian	VLM programme	15–27 February 2013, Japan

Student visits

Sl. No.	Name of the Student	Purpose of Visit	Date and Venue
1	V. Sathiesh Kumar	6 months' research scholarship, Friendship Programme, Kyushu University, Japan	2 August 2012 to 31 January 2013, Kyushu University, Japan
2	G.N. Srinivas	IIT Madras–Paris Tech Exchange Programme, 6-month exchange at Paris Tech, Chalons-en-Champagne, France	20 June to 10 December 2012, France
3	Vani Damodaran	Research visit with Shastri Indo-Canadian Institute Scholarship	7–12 November 2012, Toronto University, Canada

Automotive Engineering Laboratories



Tyre and Vehicle Mechanics Laboratory



Vehicle Dynamics and Control Laboratory: Air Brake System

Biomedical Design Laboratories



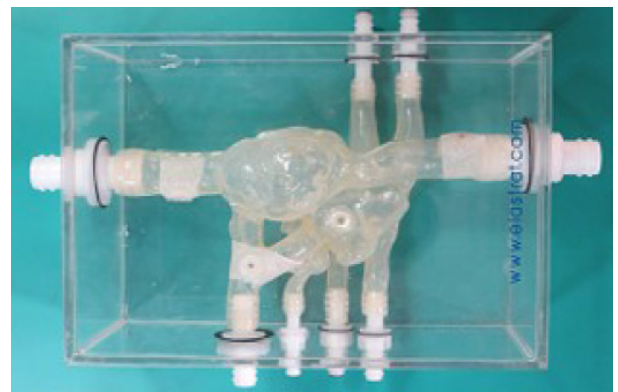
Robotics Laboratory: Bio-Medical Robotics



Electromagnetic Research Laboratory: Microwave Transceiver Setup



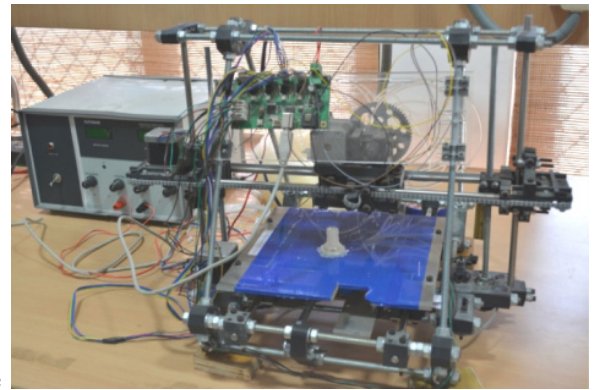
Rehabilitation Engineering/Ergonomics Laboratory: Neuro-Marking



Biomedical Instrumentation and Imaging Laboratory: MRI Compatible Heart Phantom

Materials and Design Laboratories

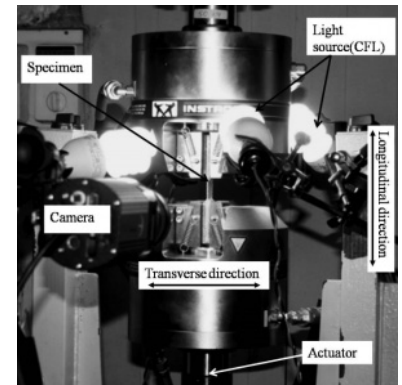
*3D Imaging and Additive Manufacturing Laboratory:
Development of a RP machine*



IITM-Autodesk Center of Excellence at ED



Development of HuMotor



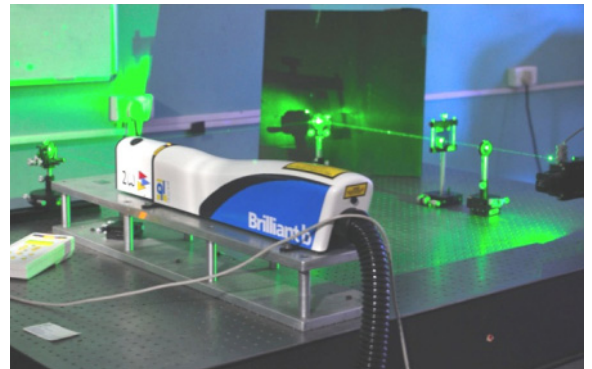
Mechanics of Materials and Structures Laboratory: Fast CCD Camera Based Test Setup

Materials and Design Laboratories

Sustainable Manufacturing Laboratory: Pedal Powered Water Filtration System



Materials and Design Laboratory: Fatigue test rated 15 kN UTM



Otpomechatronics Laboratory: Nd:YAG Laser Assisted Annealing and Texturing of a-Si Thin Film

Department Facilities



Graphic Arts: Clay Modeling Laboratory



Department Building: Outside



Department Building: Inside

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 a reputed faculty 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

Course No.	Title of Course
HS2011	Foundations of Social and Political Thought
HS2014	Environment and Society

Students on roll

Programme	I year	II Year	III Year	IV Year	V Year	Total
M.A.	46	41	44	39	28	198
Ph.D.	8	6	7	5	8	34
Total	54	47	51	44	36	232

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

Faculty	Country Visited	Duration	Purpose
S.C. Chaudhary	Singapore	9–10 July 2012	Annual International Conference on Language and Literature & Linguistics
Sudhir Chella Rajan	Berlin, Germany	9 July 2012	Summer School of the Indo-German Centre for Sustainability
	Berlin, Germany	10 July 2012	Freie University
Aysha Iqbal	Paris, France	24–28 July 2012	Paris International Congress of H&SS Research
Suresh Babu	KMITL, Bangkok, Thailand	25–27 July 2012	8th Asia-Pacific Productivity Conference
Umakant Dash	University of Cape Town, South Africa	10–14 September 2012	Second Annual Meeting of RESYST Consortium
V.R. Muraleedharan	University of Cape Town, South Africa	10–14 September 2012	Second Annual Meeting of RESYST Consortium
S.C. Chaudhary	Institute of Education, University of London	14–16 August 2012	19th International Conference on Learning
Sudhir Chella Rajan	New Orleans, USA	30 August to 2 September 2012	2012 Annual Meeting of American Political Science Association (cancelled on 31 August due to hurricane)
	IGIDR, Mumbai	27–28 October 2012	Chaired panel on renewable energy at 8th Biennial International Workshop on Advances in Energy Studies
N. Sreekumar	Thrissur District, Kerala	19–20 November 2012	Two seminar talks on “Corporate Ethical Responsibility”
K. Srilata	Seoul, South Korea	29 October to 2 November 2012	Poetry at the 2012 Seoul International Writers’ Festival
R. Swarnalatha	VIT, Vellore	5 November 2012	To evaluate a Ph.D. thesis titled “Ecofeminism: A Study of Alice Walker’s Novels”

R. Swarnalatha	Panayur, Chennai	15–17 November 2012	A session on writing skills at the research methodology workshop at the Asian Centre for Cross-Cultural Studies
Jyotirmaya Tripathy	Berry College, Georgia	11–13 October 2012	To presented a paper, “Development as Cartographic Imagination”, at the Annual Conference of Association of Third World Studies
	University of North Texas	14 October 2012	To deliver a lecture, “Media and Hegemony: The Indian Experience”
K. Srilata	Seoul, South Korea	October–November 2012	To present her work at the Seoul International Writers Festival
Binitha V. Thampi	Istanbul	19–22 April 2012	12th IWID International Forum on Women’s Rights and Development
	Brown University, USA	28 March to 17 April 2012	Visiting Fellow under Graduate Program in Development
Subash S.	The Philippines	28–29 January 2013	Workshop, AIM Manila
Mugur Zlotea	France	4–8 September 2012	Conference
Sonika Gupta	Taiwan	December 2012	Conference, NTHU, Taiwan

4.10.3. Faculty and Their Activities

Faculty

Name and Qualifications	Major Areas of Specialization
Sudhir Chella Rajan, Ph.D. [Head]	Environment, energy and climate policy, political theory, development
V.R. Mureedharan, Ph.D. (IIT Madras)	Healthcare economics, public policy, history of healthcare in south India
Shreesh Chaudhary, Ph.D. (CIEFL, Hyderabad)	Theoretical linguistics, ELT, need-based courses in English
Evangeline Manickam, Ph.D. (Madras University)	American literature, English/french
Malathy Duraisamy, Ph.D. (Madras University)	Applied economics, labour economics, economics of the social sector, science and technology
Aysha Iqbal Viswamohan, Ph.D. (Vikram University)	American studies, world drama, intercultural communication
Binitha V.Thampi, Ph.D. [ISEC, Bangalore]	Development studies
Devaki Reddy, Ph.D. (JNU, New Delhi)	English, sociolinguistics, ELT
John Bosco Lourdasamy, D.Phil. (Oxford University)	History of science; science, technology and society
Jyotirmaya Tripathy, Ph.D. (IIT Kharagpur)	Literary theory, American studies, cultural studies
Kalpana K., Ph.D. (MIDS)	History, economics
Milind Brahme, Ph.D. (JNU, New Delhi)	German studies, comparative literature, modern Marathi literature
Mohan S., M.A. (Madras University)	English, science fiction, technical report writing, Indian writing in English
Prema Rajagopalan, Ph.D. (IIT Kanpur)	Sociology of science and technology, development, women in science and technology
Sabuj Kumar Mandal, Ph.D. (ISEC, University of Mysore)	Economics
Santhosh R., Ph.D. (ISEC, University of Mysore)	Sociology
Satya Sundar Sethy, Ph.D. (Central University of Hyderabad)	Philosophy
Shireen Mirza, Ph.D. (School of Oriental & African Studies, UK)	Sociology
Sonika Gupta, Ph.D. (JNU, New Delhi)	Chinese foreign policy and politics, international relations theory, human security, nuclearization of South Asia
Sreekumar N., Ph.D. (University of Hyderabad)	Philosophy of language, hermeneutics, Indian philosophy

Srilata K., Ph.D. (University of Hyderabad)	African literature, cultural studies, creative writing
Subash S., Ph.D. (IIT Bombay)	Economics
Sudarsan Padmanabhan, Ph.D. (University of South Florida)	Social and political philosophy, Indian philosophy and culture
Suresh Babu M., Ph.D. (JNU, New Delhi)	Industrial economics, applied macro economics
Swarnalatha R., Ph.D. (Madras University)	Eco-philosophy, American literature
Tabraz S.S., Ph.D. (JNU, New Delhi)	International relations theory, Israel–Palestinian conflict
Umakant Dash, Ph.D. (IIT Kanpur)	Energy economics, healthcare economics
Santhosh Abraham, Ph.D. (University of Hyderabad)	Legal history, courts, trials and punishment in history, police and prisons in India, colonial subjects, indigenous resistances to colonialism
Anup Kumar Bhandari, Ph.D. (Indian Statistical Institute)	Microeconomics, statistics, econometrics
Mathangi Krishnamurthy, Ph.D. (University of Texas at Austin)	Anthropology of work, globalization, virtuality, affective labour, gender and work, media studies, South Asia
Rajesh Kumar, Ph.D. (University of Illinois)	Language in education, sociolinguistics, linguistic theory, language and cognition
Zlotea Mugurel Dan, Ph.D. (University of Bucharest)	Chinese studies

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

Faculty	Programme	Date and Venue
Sudhir Chella Rajan	Third Annual Conference of Indian Climate Research Network	3–4 November 2012, IISc, Bangalore
P. Sudarsan and Jyotirmaya Tripathy	Interdisciplinary Bridges in Indo-European Studies (IBIES)	19–20 November 2012, IIT Madras
Sudhir Chella Rajan and Mathangi Krishnamurthy	1-day workshop, organized jointly with University of Queensland, Australia, “Land Development Challenges in India—Ideas and Research Relevant to the Chennai–Pondicherry Corridor”	19 January 2013, IIT Madras
Muraleedharan V.R. and Umakant Dash	One-week national workshop, “National Health Accounts Methodology” (the workshop was jointly organized by HSS, IIT Madras and PHFI, DELHI)	21–25 January 2013, IIT Madras
Sudarsan Padmanabhan	Corporate Social Responsibility (CSR): What, Why and How?	18 January 2013, IIT Madras
Sreekumar N.	Organized a 10 day workshop, “Qualitative Research Methodology in Social Sciences”	IIT Madras
Aysha Iqbal	Imaging Cinema: Film-Making Workshop	1–10 June 2012, IIT Madras
	Resource person for Workshop on English for Academic Purposes, CCE	October 2012 to March 2013, IIT Madras, 3 phases
Binitha V. Thampi	State and Social Movements: Violence, Health and Food Security, jointly with Purdue University (organized with two colleagues)	12–14 March 2013, IIT Madras
	2 hours workshop conducted for students at Watson Institute for International Studies under Graduate Development Program on Digital Spaces and Communities	10 April 2012
Sudarsan Padmanabhan	First Steering Committee meeting of the IBIES Erasmus Mundus Consortium (Joint Coordinator IIT Madras)	18–20 November 2012
S.C. Chaudhary	Two-day Faculty Development Workshop for the NIT Trichy faculty	5–6 October 2012, Thanjavur
Swarnalatha R.	Session on writing skills at the research methodology workshop at the Asian Centre for Cross-Cultural Studies	15–17 November 2012

Sonika Gupta	DGMT Chinese Language Workshop	6–18 August 2012, IIT Madras
	Examining the South China Sea Conflict in Context of Recent Developments	4 March 2013, IPCS, New Delhi
	Internet in China: Examinations Of Censorship, Market and Political Trajectory in China	3–5 December 2012, IIT Madras
Mugur Zlotea and Sonika Gupta	The Internet in China: Study of Microblogging in China Leading Up to the 18th Party Congress	8–9 October 2012, Indian Council for World Affairs, New Delhi
Mugur Zlotea	Appeal to Confucianism in the Current Elite Discourse on Legitimacy in China	3–5 December 2012, IIT Madras
	From Victim to Victor: Changes in the Chinese Political Discourse	4–8 September 2012
Kalpana K.	Symposium, “State and Social Movements: Health, Food Security and Violence” (co-organized with two colleagues)	13–14 March 2013, HSS Department, IIT Madras and the Department of Sociology, Purdue University, at IIT Madras

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

Faculty Member/ Scholar	Programme/Title of Paper	Conference, Venue & Date
Sudarsan Padmanabhan	IBIES Consortium review meetings	Visited Pondicherry University, Pondicherry; Delhi University, New Delhi; and Banasthali Vidyapith, Banasthali, Rajasthan, December 2012
Sudhir Chella Rajan	Lecture on energy sustainability	Chennai Petroleum Corporation Limited, Chennai, 21 January 2013
Subash S.	Seminar on foreign direct investment in india and its impact	Meenkashi College of Women, Chennai, 22 January 2013
Sudarsan Padmanabhan	Special lecture—UGC-sponsored national seminar on social justice and sustainable development	Madura College, Madurai, 23 January 2013
Swarnalatha R.	External examiner for the Ph.D. viva voce examination of Mr. Anurag Bhattacharya in the Department of Humanities and Social Sciences	IIT Guwahati, 28 January 2013
Subash S.	Enterprise Performance in Asia Workshop	Asian Institute of Management, Manila, 28–29 January 2013
Rajesh Kumar	Linguistic Theory and Form Vs. Function (invited talk)	Aligarh Muslim University, Uttar Pradesh, 10–11 February 2013
Swarnalatha R.	Environmental Concerns and Contemporary Literature	Asian Centre for Cross Cultural Studies, Panayur, Tamil Nadu, 14–15 February 2013
Sudhir Chella Rajan	Meetings with Swiss Development Corporation, Ministry of Environment and Forests, Department of Science and Technology	New Delhi, 21–22 February 2013
Kalpana K.	State-level workshop, Research and NGO Strategies and Action Plan to Halt the Declining Child Sex Ratio in Tamil Nadu	Workshop organized by the Campaign Against Sex Selective Abortion (CASSA), 17 November 2012
	Workshop to discuss key findings of research study on commercial surrogacy in India	Workshop organized by Sama: Resource Group for Women and Health, Chennai, 10 December 2012
Sudhir Chella Rajan	Round table at the Prime Minister’s Economic Advisory Council on assessment of the National Action Plan on Climate Change	New Delhi, 7 June 2012
	Meeting with civil society organizations to launch report on the assessment of the National Action Plan on Climate Change	New Delhi, 27 July 2012
Rajesh Kumar	e-Pathshala project, “A Course on Applied Linguistics”	New Delhi

Sudarsan Padmanabhan	International Research Network on Religion and Democracy (IRNRD), launch and discussion of Routledge books on aspects of religion and democracy (invited discussant)	Sponsored by Routledge (India), 12 December 2012
Aysha Iqbal	Getting Papers Published in Journals	Half-day workshop, SSN Engineering College, 12 April 2012
	Ethnic Representation in Cinema	UGC refresher course, University of Madras, 3 September 2012
K. Srilata	Coimbatore Literary festival (plenary speaker)	Coimbatore, February 2013
	Conference on Indian women poets (plenary speaker)	Central University, Thiruvavur, March 2013
Binitha V. Thampi	Decentralisation and the Changing Geographies of Political Marginalization in Kerala, India	Watson Institute for International Studies, Brown University, 4 April 2012
	Lecture on feminist theories as part of UGC refresher course, "Women's Studies"	Academic Staff College, Kerala University, 4 December 2012
Sudarsan Padmanabhan	UGC-Sponsored national seminar, "Economic Upliftment and Social Inclusion"	Thyagaraja College, Madurai, 8 March 2013
	Marginalized Groups and Electoral Reforms—9th National Conference on Electoral and Political Reforms (panelist)	Jaipur, Rajasthan, 23–24 March 2013
N. Sreekumar	On the question of authority: K.S. Murthy and others	<i>Philosophy of K.Sachidananda Murty</i> , national seminar organized by the Indian Council of Philosophical Research, New Delhi and Department of Philosophy, University of Madras
	The family's rights	Centre for Biomedical Ethics, National University of Singapore, 1–2 February 2013
S.C. Chaudhary	Teaching Spoken English	Academic Staff College, University of Hyderabad, Hyderabad, 25 June 2012
	Classroom Communication	Academic Staff College, University of Hyderabad, Hyderabad, 25 June 2012
Kalpana K.	Challenges of Equity and Sustainability in Microfinance, South India, in course titled "Sustainable Development and Non-Governmental Organizations" (via Skype)	School of Public Service, DePaul University, Chicago, 3 May 2012
	Conceptual and Methodological Issues in Research on Gender and the State in India	Centre for Development Finance, Institute for Financial Management and Research (organized by Transparent Chennai Research Team), 14 December 2012
	Sexual Violence: In the Shadow of State Power and Class and Caste Power, in seminar titled "Sexual Assault and Sexual Cultures"	Centre for Women's Studies (UCG-funded), Ethiraj College for Women and Pengal Santhippu (an independent forum), 2 February 2013
	Prevention of Abuse and Violence Against Women (lecture in panel discussion)	Centre for Social Initiative and Management (CSIM), Chennai, 19 February 2013
	A Critical Review of National Policies to Combat Declining Sex Ratios (lecture at National Consultation on Strategies to Halt Declining Child Sex Ratios)	Campaign Against Sex Selective Abortion (CASSA), Chennai, 20–21 February 2013
	Women as Agents and Actors in Empowerment: The Role of the State and Voluntary Sector, at thematic seminar, Health, Education and Women's Empowerment	Annual conference, Tamilnadu Foundation (TNF), Raj Bhavan, Chennai, 23 February 2013
	The Enforcement and Judicial Process: Gaining Justice Using the Law (lecture at seminar, Stopping Violence Against Women: Socio-Cultural and Politico-Legal Challenges)	Human Rights Advocacy and Research Foundation, 27 March 2013

S.C. Chaudhary	Endangered Languages in India, invited talk at the national seminar organized by the Sahitya Akademi, Government of India	BNR Heritage Hotel, Ranchi, 26 November 2012
	Politics of English: Will Indian English Become the Global Standard? (invited talk)	XLRI, Jamshedpur, 30 March 2013
	Band Descriptors for Evaluating Spoken and Written English (resource person at the workshop)	XLRI, Jamshedpur, 29–30 March 2013
Swarnalatha R.	National conference, Unfolding Indigenous Knowledge Systems, conducted by the Asian Centre for Cross-Cultural Studies (invited speaker) and Indigenous Knowledge Through Regional Literatures (paper presentation)	Panayur, 23–24 August 2012
	National seminar, Rethinking Nature: The Relevance of Green Studies, held at Department of English, Ravenshaw University (resource person) and The Ecological Imperative in Literature (paper presentation)	Ravenshaw University, 12–13 January 2013
Subash S.	Foreign Direct Investment in India's Retail and Aviation Sector	Central University of Tamil Nadu, 9 November 2012
	Foreign Direct Investment in Retail Sector: Challenges and Opportunities	Meenakshi College, Chennai, 22 January 2013
	Knowledge, Technology Transfer and Multinational Corporations	Madras University, 14 September 2012

Books, monographs authored/co-authored

Name of Faculty Member	Title	Publisher	Author/Co-author
Books			
Aysha Iqbal	<i>Postliberalization Indian Novels in English</i>	Anthem, London (UK), 2013	Editor
	<i>English for the Hotel Industry</i>	Pearson Education, New Delhi, 2013	Editor

Research publications

Name of Faculty Member	Title	Publisher
Mugur Zlotea and Sonika Gupta	Internet in China: A study of microblogging in China leading up to 18th Party Congress, in <i>CCP and Internal Dynamics of China</i>	Indian Council of World Affairs (ICWA), New Delhi
Sonika Gupta	EU weapons ban on China: Implications for regional and global security, in Donovan Chau and Thomas Kane (eds.), <i>China and International Security: History, Strategy, and 21st Century Policy</i>	Praeger, California
Mugur Zlotea	Transferul si echivalarea conceptelor de "drepturi" si "libertate" in discursul modernitatii chineze de la inceputul secolului XX	Editura Universitatii din Bucuresti.
Sudarsan P. and J. Tripathy	The democratic predicament: Cultural Diversity in Europe & India	Routledge: New Delhi/Abingdon, 2013

Journal editorial boards

Name of Faculty Member	Position (Editor/Member)	Journal
Sonika Gupta and Mugur Zlotea	Co-editors	<i>China: An International Journal</i> (special issue, August 2014)

Faculty members' participation with other institutions under MoUs

Name of Faculty Member	Participation Details	Name of University/Institution Which has MoU
Aysha Iqbal	With the Department of Contemporary Arts, Simon Fraser University	Simon Fraser University, Vancouver, Canada

Student visits

Name of Student	Purpose of Visit	Date and Venue
S. Rajasulochana	5th batch of short-term training, Qualitative Research Methods in Health & Medical Research	25–27 April 2012, Indian Institute of Public Health, Gandhinagar, Gujarat.
Veena R.	Inside China, second annual conference organized by Institute of Peace and Conflict Studies	8 September 2012, Institute of Peace and Conflict Studies, New Delhi
	International conference, Participation, Contestation, Legitimation in Chinese Politics	3–5 December 2012, IIT Madras China Studies Centre
	Fifth All India Conference of China Studies, organized by Institute of Chinese Studies, New Delhi	15–16 December 2012, Santiniketan, Visvabharati University

4.10.4. Research and Consultancy

Sponsored research projects

Project Number	Start Date	Close Date	Value (in lakhs of Rs.)	Title	Co-ordinators
HSS0910027IMRFSUDH	13 January 2010	12 January 2015	25.00	Indo-German Centre for Sustainability	Sudhir Chella Rajan
HSS1011031INSANSRE	9 December 2010	30 June 2013	0.70	A Study of the History of the Traditional Ayurveda Parambarya Vaidyas in Kerala and Their Unique Ethical Outlook	Sreekumar N.
HSS1112034ICSSMSUR	1 March 2012	31 August 2013	5.94	Human Capital, Innovations and Firm Performance in Unorganized Manufacturing Industries	Suresh Babu M.
HSS1213035AARHPSUD	16 January 2013	31 July 2016	25.29	Interdisciplinary Bridges in Indo-European Studies (IBIES)—Erasmus Mundus Partnership	Sudarsan P.
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
HSS0910028IITMPREA	18 January 2010	31 May 2012	1.50	Alternate Water Technology	Prema Rajagopalan
HSS1011518NFSCSATA	29 September 2010	28 September 2013	5.00	Truth Conditional Semantics Vs. Meaning Holism: A Study In Philosophical Semantics	Satya Sundar Sethy
HSS1011519NFSCCKAL	29 September 2010	28 September 2013	5.00	Exploring Pro-Poor Practice: Women and Microfinance in India	Kalpana K.
HSS1112032IITMSONI	3 October 2011	31 March 2014	5.00	China Studies Centre	Sonika Gupta
HSS1112033IITMHODX	8 November 2011	30 June 2013	29.55	Effects of Soil Organic Carbon Redistribution Upon Green House Gas Fluxes	Sudhir Chella Rajan
HSS1112555NFSCBINI	11 August 2011	10 August 2014	5.00	Digital Communities and the Politics of Cyber Activism	Binitha V. Thampi
HSS1112564NFSCRSAN	1 December 2011	30 November 2014	5.00	Voluntarism, Charity and Religion: A Study on the Palliative Care Movement in Kerala	Santhosh R.

HSS1112565NFSCSSUA	13 December 2011	12 December 2014	5.00	Impact of New Patent Regime on the Technology And Trade Behaviour of Indian Pharmaceutical Industry	Subash S.
HSS1112566NFSCSABU	16 January 2012	15 January 2015	5.00	Impact of Environmental Regulation on the Performance of Indian Cement Firms	Sabuj Kumar Mandal
HSS1112574NFSCSHIR	21 March 2012	20 March 2015	4.90	Circulating Ritual Geographies: Islam, Community Aspirations and Urban Space in Mumbai City	Shireen Mirza
HSS1213594NFSCSANO	29 November 2012	28 November 2015	5.00	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 IVF Clinics in India	Mathangi Krishnamurthy
HSS1213602NFSCRAJK	31 January 2013	30 January 2016	5.00	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
HSS1314037AIMSSSUA	17 April 2013	30 November 2013	9.28	Barriers to Growth among Informal Sector Enterprises in India	Subash. S

Consultancy projects

Project Number	Start Date	Close Date	Value (in lakhs of Rs.)	Title	Co-ordinators
RB1011HSS003CLIMSUDH	1 September 2010	30 September 2013	23.28	Collaborative Process to Determine Long-Term Energy Pathways	Sudhir Chella Rajan
RB1011HSS004MHRDMILL	1 October 2010	30 November 2012	20.00	Monitoring SSA Implementation in 13 Districts of Tamil Nadu	Brahme Milind
RB1112HSS001LONDVRMU	1 August 2011	31 December 2016	55.97	Resilient and Responsive Health Systems (RESYST) Consortium	Muraleedharan V.R.
RB1112HSS002WELOJBLO	1 March 2012	28 February 2015	80.67	Medical Ideas, Tools, Ethics and Pluralism in South India	John Bosco Lourdasamy
RB1213HSS001RENUSUDH	1 April 2012	31 December 2012	9.90	A Sustainable Energy Vision for India	Sudhir Chella Rajan
RB1213HSS002LKISISUDH	1 March 2013	31 August 2013	11.91	Social Survey of Cooum River	Sudhir Chella Rajan
RB1213HSS003MHRDMSUR	1 March 2013	31 December 2013	8.76	Evaluating ICT @ School in TN	Suresh Babu M.

Research publications

Publications

1. B.R. Allenby and S. Chella Rajan (2012) *Theory and Practice of Sustainable Engineering* Prentice-Hall (International edition).
2. S. Padmanabhan and J. Tripathy (2013) *Democratization and Cultural Diversity: Contestation and Consensus* Routledge.
3. S. Padmanabhan and J. Tripathy (2013) Cultural diversity and the European Union. In J. Amiin (ed.), *European Union in Changing International Order* Kaveri Publishers, New Delhi.

4. S. Padmanabhan and J. Tripathy (2013) The paradox of doctrinaire violence and non-violence. In M. Thapa, J. Zajaczkowski and J. Schottli (eds.), *India in the Contemporary World* Routledge.
5. R. Kumar and K.V. Subbarao (2013) Aspects of agreement in Hmar. In B. Slade (ed.), *Hans Hock Festschrift* Beech Stave Press, Ann Arbor, MI.
6. S.C. Chaudhary (2012) The data and the theory: The difficult art of balancing. In R.K. Agnihotri and R. Singh (eds.) *Indian English: Towards a New Paradigm*, Orient Blackswan, New Delhi, pp. 118–125.
7. U. Dash and S.U. Rajasulochana (2011) Private partners in the public health system: Selected cases from Tamil Nadu. *Journal of Health Studies* 3(1).
8. S.D. Reddy and N. Kumari (2012) Are young people less polite than old people? A study of request forms used in Hindi. *Aligarh Journal of Linguistics* 2: 1–2.
9. A.I. Viswamohan and V. John. Fathers, sons and dubious brothers: Masculinities in the films of Paul Thomas Anderson. *Families: A Journal of Representation* 9(2) & 10(1): 166–179.
10. S. Gupta. Internet in China: Examinations of censorship, market and political trajectory. *China: An International Journal*.
11. M. Zlotea. Appeal to Confucianism in the current elite discourse on legitimacy. *China: An International Journal*.

4.10.5. Other Activities

- Milind Bramhe has been appointed as Member, Board of Studies in German, Kerala University for a 3 year term from 11 May 2012 to 10 May 2015.
- R. Swarnalatha. Awarded the Charles Wallace Fellowship to Cambridge University for 2013.
- The 2nd Biennial Academic Conference—Negotiating Conflict in Nation, Economy, and Indian Literature in English was organized by HSS students and conducted on 21 and 22 September 2012. The following lectures were organized in connection with the conference.

On 21 September 2012

- Inaugural session—Sri Gopalkrishna Gandhi, Distinguished Faculty, Department of HSS and Former Governor of West Bengal
- Dr. Shail Mayaram, Senior Fellow, Centre for Studies of Developing Societies delivered a lecture, Negotiating Ethnicity and Nationalism.

On 22 September 2012

- Dr. Partha Gangopadhyay, University of Western Sydney, delivered a lecture, Economics of Conflict—Its Uses and Abuses.
- Prof. S. Subramian, Madras Institute of Development Studies, delivered a lecture, Aspects of Growth and Inclusiveness—The Indian Experience.
- Dr. G.J.V. Prasad, Jawaharlal Nehru University, delivered a lecture, Fractured Boundaries in Indian Writing in English.

Academic exchange programme

The following M.A. students were permitted to spend one semester, i.e. July–November 2012, undergoing courses at Hochschule Bremen, Germany under a student-exchange programme.

1. Chetana A. Sabnis (HS09H015)
2. Suraj R. Nair (HS09H035)
3. Oviya M.G. (HS09H025)

4.10.6. IIT Madras China Studies Centre: Activities Report

Events

Date	Event
15 March 2012	China's Approach to South and South East Asia, Ravi Boothalingam, Founder, Manas Advisory
21 July 2012	Prof. Martin Jacques, author, <i>When China Rules the World</i>
6–18 August 2012	Chinese language workshop for the DGMT
13 August 2012	Water, Wildlife and Woods: An Introduction to Chinese Environmental History, Policy and Culture, Prof. Scott Slovic

27 September 2012	China and the Wages of Uni-Dimensional Strategies, T.C.A Raghavan, Senior Associate Editor, <i>Business Line</i> , <i>The Hindu</i>
5 November 2012	The 18th Party Congress and China's Political Reforms, Madhu Bhalla, Professor, Delhi University
6 November 2012	The Road to China's 18th Party Congress, Former Ambassador C.V. Ranganathan, Chairman, CSC
8 November 2012	1962: A War to Remember or Forget? Avinash Godbole, Research Assistant, IDSA
20 November 2012	China Under One Decade of Hu-Wen Empire: 2002–2012, Yuktेशwar Kumar

Online analysis

- The Ouster of Bo Xilai, R.S. Kalha, Former Secretary, Ministry of External Affairs, Government of India, New Delhi, 27 March 2012.
- BRICS New Delhi Summit: Context and Significance, Avinash Godbole, Research Assistant, Institute for Defence Studies and Analyses, 28 March 2012.
- The “New” Tibetan Struggle, Gunjan Singh, Research Assistant, Institute for Defence Studies and Analyses, 29 March 2012.
- China–Japan Relations: One Step Forward, Two Steps Back, Ashish Kashyap, B.Tech. student, computer engineering, 2 April 2012.
- The Coup that Never Was—Or Was It?, Anshul Rana, master’s student, SAIS, John Hopkins University, 11 April 2012.
- China’s Future in a “Transition Trap”, Geeta Kochhar, Assistant Professor, JNU, 12 April 2012.
- Deploying Chinese Private Security Forces in Africa, R. Veena, research scholar, CSC IIT Madras, 16 April 2012.
- North Korea Does It Again, Gunjan Singh, Research Assistant, IDSA, 18 April 2012.
- Sacking of Bo-Xilai—The Sequel, R.S. Kalha, Former Secretary, Ministry of External Affairs, Government of India, 19 April 2012.
- Agni-V and Chinese Reaction, Aditi Rao, Project Associate, CSC IIT Madras, 26 April 2012.
- China Scoffs at PM Manmohan Singh’s Myanmar Visit, R.S. Kalha, Former Secretary, Ministry of External Affairs, Government of India, New Delhi, 7 June.
- Afghanistan: US Withdrawal and China’s Involvement, R. Veena, research scholar, CSC IIT Madras, 12 June.
- China’s Telecommunication Companies Under Pressure, Aditi Rao, Project Associate, CSC IIT Madras, 21 June.
- Do the Chinese “Bite the Hand That Feeds Them?” Geeta Kochhar, Former Secretary, Assistant Professor, JNU, New Delhi, 9 July.
- India, China and Naval Cooperation, R. Bhanu Krishna Kiran, independent researcher, International Law and Strategic Affairs, 10 July.
- Situation and Policies—China’s White Paper on Rare Earths, Nabeel Mancheri, Ph.D., National Institute of Advanced Studies, IISc, 19 July.
- China’s Space Capabilities, Gunjan Singh, Research Assistant, IDSA, New Delhi, 24 July.
- Enduring India–China Boundary Question, C.V. Ranganathan, Former Ambassador to China, Chairman of the IIT Madras CSC Board, 29 July.
- Revival of Chinese Nationalism, Avinash Godbole, Research Assistant, IDSA, New Delhi, 14 August.
- Trial of Gu Kailai, R.S. Kalha, Former Secretary, Ministry of External Affairs, 24 August.
- China–Japan: Senkaku Dispute, Gunjan Singh, Research Assistant, IDSA, New Delhi, 14 August.

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), research programmes leading to M.S. and Ph.D. degrees and an M.S. (Entrepreneurship) programme. The department moved to new premises with infrastructure such as state-of-the-art classrooms and a laboratory on February 2006, provided by the Institute. This has helped the department make all-round development in its teaching and research programme and interface with industries and other initiatives, both on the academic and placement fronts. 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 placement offered to the students by globally and nationally reputed companies provides 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, including a high proportion of working professionals. The work of the research scholars is regularly published in reputed international and national journals and is presented in 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 continue to make significant contributions to the organizations and institutions they work for. Many among them have won prizes, awards, honours and promotions in their organizations even within their first year of work. They have also played a central role in making their organizations earn laurels from various quarters.

The full-time and visiting faculty members have excellent academic and professional backgrounds, and they collectively work for realizing 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 its M.B.A. programme curriculum, expanded its research activities, re-launched the M.S. (Entrepreneurship) programme with a new structure and worked for establishing long-term relationships with globally reputed institutions and organizations. The sections below present an outline of the department’s work.

Some major areas of research at the department are:

- Production and operations management
- Finance
- Marketing
- Human resource management
- Information systems
- Strategy
- Technology management
- Project management
- Quality management
- Services management
- Knowledge management
- Combinatorial optimization
- Quantitative models in supply chain management

4.11.2. Academic Programmes

New courses introduced

Sl. No.	Course No.	Title
1	MS 3590	Decision Models
2	MS 3840	Information Systems for Analytics

Students on roll

Programme	I year	II Year	III Year	IV Year	V Year and Others	Total
M.B.A.	102	52	0	0	0	154
M.S.	18	14	13	5	0	50
Ph.D.	14	19	11	20	20	84
Total	134	85	24	25	20	288

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

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposium/Workshop	Date and Venue	Financial Assistance from
Abroad					
1	P. Kalpana	Ph.D. Research Scholar	23rd Production and Operations Management Society (POMS) annual conference	April 2012, Chicago, Illinois, USA	Institute
2	Christy Angeline R.	MS10S013	6th Asian Business Research Conference	8–10 April 2012, Novotel Hotel, Bangkok, Thailand	Institute
3	R. Rajkanth	MS09D016	23rd POMS annual conference	20–23 April 2012, Chicago, USA	IIT Madras
4	Sathish Kumar	MS10S 021	Smart SysTech 2012	12–13 June 2012, Munich, Germany	IIT Madras
5	R. Sowmya	MS10S022	ANZMAC 2012	3–5 December 2012, Adelaide, Australia	IIT Madras
6	Archana Narayanan	MS11S007	ANZMAC 2012	3–5 December 2012, Adelaide, Australia	IIT Madras
7	Vinoth K.	MS11S005	IADIS International Conference Information Systems 2013 (IS 2013)	13–16 March 2013, Lisbon, Portugal	IIT Madras
8	Brinda M.R.	MS11S002	POMS annual conference 2013	3–6 May 2013, Denver, USA	IIT Madras
9	Deepthi U.	MS11S009	8th Asian Business Research Conference	1–2 April 2013, Bangkok, Thailand	IIT Madras
10	Bharathi R.	MS11S001	8th Asian Business Research Conference	1–2 April 2013, Bangkok, Thailand	IIT Madras
11	Sarlaksha Ganesh	MS09D013	10th International Conference on Occupational Stress and Health	16–19 May 2013, Los Angeles, California, USA	IIT Madras
12	V. Shalini	MS11D010	51st meeting of Euro Working Group on Commodities and Financial Modelling (EWCGFM)	16–18 May 2013, London, UK	IIT Madras
13	Vignesh J.	MS11S004	2013 Global Finance Conference	20–22 May 2013, Monterey Bay, CA, USA	IIT Madras
14	Mahalakshmi S.	MS11S012	2013 Global Finance Conference	20–22 May 2013, Monterey Bay, CA, USA	IIT Madras
15	Aravind S.	MS10D016	4th World Financial Conference	1–3 July 2013, Limassol, Cyprus, Europe	IIT Madras
16	Yamini S.	MS11S016	26th EURO-INFORMS Joint International Conference	30 June–4 July 2013, Rome, Italy	IIT Madras
17	John Mathew	MS11S006	2013 INFORMS MSOM Conference	28–30 July 2013, Fontainebleau, France	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	K. Gopalakrishnan & Priya Rajeev (DoMS alumni)	Highly Commended Award	Emerald Publications, UK
2	G.N. Sumathi, Ph.D. Scholar	Best Paper Award	TH Institute of Science & Technology, Arakkunna, Ernakulam District, Kerala at the 16th International Conference of the Indian Academy of Applied Psychology (IAAP)
3	Chirag Jain, M.B.A. student	Nissan Student Brand Manager Award	Nissan Motor Corporation
4	K. Venkataraghavan, (with R.P. Sundararaj)	Best Paper Award	16th Annual International Conference of the Society of Operations Management, IIT Delhi
5	Yamini Srinivasan (with Rahul Marathe)	Best Paper Award	16th Annual International Conference of the Society of Operations Management, IIT Delhi

6	Venkata Prasad Palakiti (with Usha Mohan and R.P. Sundarraj)	Best Paper Award	16th Annual International Conference of the Society of Operations Management, IIT Delhi
7	Sowmya Karunakaran	Best Paper Award	International Symposium on Cloud and Service Computing (ISCOS) Conference at NIT, Suratkal, Mangalore
8	Ranjitha Ajay	Highly Commendable Paper Award	Conference on Global Strategies for an Emergent India, organized by IIM Kozhikode and University of Sydney and held at IIM Kozhikode
9	Vijayalakshmi Rangarajan	First Prize	ELIXIR-2013, the 3rd International Conference on Challenges and Strategies in the Global Scenario for Business and Societal Excellence (IABCTF), Datta Meghe Institute of Management Studies, Nagpur
10	K. Sowmya (with R.P. Sundarraj)	Best Paper Award	International Simulation Conference of India (ISCI 2013), IIT Madras Research Park
11	R. Bharathi (with Rupashree Baral)	Best Paper Award	3rd National Conference on Human Resource Management (NCHRM 2013), India International Centre, New Delhi

Names of the students/scholars who won the Institute Convocation/Institute Day prizes

Sl. No.	Name of the Student/ Scholar	Roll No.	Name of Prize	Awarded for
1	Preetdeep Kaur	MS10A040	Shri Coka Parthasarathy Memorial Prize	For highest CGPA in the batch
2	Avinash Kumar Sinha	MS10A011	Shri K.V. Arunkumar Memorial Prize	Best student award for overall performance
3	Himakshi Gupta	MS09S009	Shri N. Kannan Memorial Prize	For best research thesis in marketing
4	Neha Sharma	MS09D024	Shri R.N. Rajendran Memorial Prize	For best M.S. (by research) thesis in the area of organizational behaviour/HRM
5	Anish Kumar Gala	MS11A022	Shri V. Kumar Memorial Prize	For best performance in marketing area
6	Preetdeep Kaur	MS10A040	Prof. T.N. Govindarajan Memorial Prize	For best all-round M.B.A. student
			Swathi Jayalakshmi Memorial Prize	For highest-CGPA girl M.B.A. student

4.11.3. Faculty and Their Activities

Faculty

Name and Qualifications	Major Areas of Specialization
Professors	
Ganesh L., B.E. (Hons.), M.Tech, Ph.D.	Systems Thinking and Applications, Project Management, Technology Management, Data and Decision Analysis, Forecasting
Jayachandran S., M.A., M.B.A., Ph.D.	Marketing Management & Research, Advertisement and Publicity, Management of Finance/Personal/Marketing
Kamalanabhan T.J., M.A., M.Phil., Ph.D.	Organizational Behaviour, Human Resource Management and Training & 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. [Head]	Fundamentals of Operations Research, Advanced Operations Research, Operations Management, Supply Chain Management, Manufacturing Systems Management, O. R. Applications, Services Operations Management

R.P. Sundarraj, Ph.D.	Information Systems, Supply Chain Management, e-Business, Computational Optimization, Decision Support System.
Thenmozhi M., M.Com., M.Phil., Ph.D.	Financial Management, Strategic Management Computational Finance
Vijayaraghavan P., B.E., M.B.A., Fellow—IIM Bangalore (TTK Chair Professor)	Strategic Marketing, Advertising & Sales Promotion, Brand Management, Industrial & Services Marketing
Associate Professors	
Arun Kumar G., M.Com., Ph.D.	Market Microstructure, IPOs, Mergers and Acquisitions, Joint Ventures and Multinational Business
Thillairajan A., B.E., M.Sc., Fellow—IIM Bangalore	Financial Management, Advanced Corporate Finance, Venture Capital and Private Equity, Infrastructure and Project Finance
Assistant Professors	
Amit R.K., M.Tech., Ph.D.	Game theory, operations research, decision theory, natural resources management
Arshinder Kaur, M. Tech, Ph. D.	Operations research, supply chain management, total quality management, services operations management
Ganesh M.P., M.A., M.Phil, Ph.D.	Organizational behaviour, human resources management, industrial psychology
Krishna Prasanna P., M. Com., Ph.D.	Financial accounting, fixed income securities, financial risk management, market microstructure
Lata Dyaram, M.A, Ph.D.	Leadership development, corporate sustainability, cognition in organizations, organizational behaviour, organizational development, industrial and organization psychology
Rahul R. Marathe B.E., M.S., Ph.D.	Simulation, industrial engineering, TQM, operations research, operations management
Richa Agrawal, M.B.A., Ph.D.	Customer relationship marketing, consumer behaviour and insight advantage
Rupashree Baral, Ph.D.	Strategic human resources management, organizational behaviour, work–life balance, employee engagement, diversity and inclusiveness, career exit and re-entry of women
Saji K. Mathew, Ph.D.	Management information systems, IT strategy, data mining and business intelligence, IT services and outsourcing, information systems development
Usha Mohan, M.Sc., Ph.D.	Quantitative models in operations management, probability and statistics, combinatorial optimization
V. Vijayalakshmi, M.Sc., Ph.D.	Positive organizational behaviour, social media and social design, neuro-linguistic programming
Visiting Assistant Professors	
Anantha Sundararajan, M.S., Ph.D. (Indl. Engg.)	Operations research, risk management

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

Sl. No.	Names of the Co-ordinators	Title	Period
Workshops/management development programmes/executive development programmes/conferences			
1	Rahul R. Marathe	2-day workshop, Manufacturing Systems Management, for engineers of TAFE Ltd., Chennai	4–5 June 2012
		2-day workshop, Manufacturing Systems Management, for engineers of TAFE Ltd., Chennai	21–22 August 2012
2	T.J. Kamalanabhan and M. Thenmozhi	Supervisory development programme for L&T engineers	15–20 October 2012
3	M.P. Ganesh, V. Vijayalakshmi and Rupashree Baral	Nurturing the Inner You—For Individuals, Group & Organisational Excellence, for corporations	2–3 November 2012
4	M.P. Ganesh	Teacher Leadership, for college teachers, Chennai	9–10 November 2012
5	Rahul R. Marathe	2-day executive development programme, Manufacturing Systems Management, for engineers of TAFE Ltd., Chennai	4–5 December 2012
6	Lata Dyaram and T.J. Kamalanabhan	Leadership development programme for senior executives of corporations	6–8 December 2012

7	Rahul R. Marathe	Fundamentals of Optimization (training programme for Caterpillar Ltd.)	10–15 December 2012
8	M. Thenmozhi	Management development programme, Enhancing Research Skills in Finance	7–9 January 2013
		Management development programme, Strategic Cost Management	23–25 January 2013
9	V. Vijayalakshmi	Short-term course, Research Methods in Management and Social Science	3–7 February 2013
10	Usha Mohan, Rahul Marathe, R.K. Amit and G. Srinivasan	International Simulation Conference of India 2013 (ISCI)	21–23 February 2013
11	Lata Dyaram and T.J. Kamalanabhan	Inauguration and launch of first module and first batch of Architect Readiness Programme (ARP) as part of MoU with Verizon India	22–23 February 2013

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

Sl. No.	Name of Faculty Member	Title	Institution	Period
Conferences				
1	Arshinder Kaur, Sandeep Menon	Case Study: Growth Drivers of the Indian Casting Industry	16th Annual International Conference of Society of Operations Management, IIT Delhi	21–23 December 2012
2	Sundarraaj R.P., Venkataraghavan K.	Cloud-Based Storage-as-a-Service Selection: A DEA and Goal Programming-Based Approach (Best Paper Award)	16th Annual International Conference of Society of Operations Management, IIT Delhi	21–23 December 2012
3	Saji Mathew, Vinodh K.	Web Personalization in e-Governance	16th Annual International Conference of Society of Operations Management, IIT Delhi	21–23 December 2012
4	Rahul Marathe, Yamini Srinivasan	Value of Information for Perfect Monitoring of the Contractor While Designing Contract in the Construction	16th Annual International Conference of Society of Operations Management, IIT Delhi	21–23 December 2012
		Model for Imperfect Monitoring of Contractor to Reduce Information Asymmetry on the Quality in Construction (Best Paper Award)	16th Annual International Conference of Society of Operations Management, IIT Delhi	21–23 December 2012
5	R.K. Amit, Peeyush Mehta, Neha Murad	Bayesian Nash Equilibria in the Competitive Newsboy Mode	16th Annual International Conference of Society of Operations Management, IIT Delhi	21–23 December 2012
6	Sundarraaj R.P., N. Ravi Kiran	An AHP Approach for the Selection of Business Partners in the Fields of Social Media and Business Intelligence: A Case Study	16th Annual International Conference of Society of Operations Management, IIT Delhi	21–23 December 2012
7	R.P. Sundarraaj, Usha Mohan, Venkata Prasad Palakiti	Improvement of Supply Chain Performance Using Negotiation (Best Paper Award)	16th Annual International Conference of Society of Operations Management, IIT Delhi	21–23 December 2012
8	Sundarraaj R.P., Venkataraghavan K.	On Integrating Time Preference and Concession Models into Cloud Computing Negotiations	International Symposium on Cloud and Services Computing 2012 (ISCOS 2012), NIT Karnataka, Surathkal	16–19 December 2012
9	Sundarraaj R.P., Sowmya Karunakaran	Strategic Bidding for Cloud Resources under Dynamic Pricing Schemes	International Symposium on Cloud and Services Computing 2012 (ISCOS 2012), NIT Karnataka, Surathkal	16–19 December 2012
10	G. Arun Kumar, Aravind Sampath	Do Intraday Volatility Patterns follow a ‘U’ Curve? Evidence from the Indian Market	XI UTI Capital Markets Conference, Mumbai	21–22 December 2012
11	G. Arun Kumar, Vignesh Janakiraman	Sector Index: Do They Tell the Right Story?	XI UTI Capital Markets Conference, Mumbai	21–22 December 2012

Special lectures delivered by the faculty in other institutions

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
1	L. Prakash Sai	Technology, Innovation and Prediction Markets: A New Understanding (NIAS–DST training programme, Technology Forecasting, Assessment and Management)	National Institute of Advanced Studies, Bangalore	17 December 2012
		Building World-Class Engineering Education Institutions	College of Engineering, Trivandrum (DTE, Government of Kerala training programme on e-governance)	28 December 2012

Visits abroad by faculty

Sl. No.	Name of Faculty Member	Country Visited	Date	Purpose of Visit	Funding from
1	Rupashree Baral, Aishwarya L.R.	Bangkok, Thailand	8–10 April 2012	Presenting a paper, “Comparing the Competencies of Indian Software Professionals Across Generations”, at the 6th Asian Business Research Conference	IIT Madras
2	Rupashree Baral, Christy Angeline	Bangkok, Thailand	8–10 April 2012	Role of Individual, Organizational and Technological Factors on the Adoption of ERP and Its Impact on the End Users’ Panoptic Empowerment and Performance, at the 6th Asian Business Research Conference	IIT Madras
3	T.J. Kamalanabhan, M. Thenmozhi, G.N. Sumathi	London, UK	17–18 May 2012	Presenting a paper, Impact of Work Experience on Perceived Organizational Support: A Study Amongst Healthcare Professionals, at the 2012 Emerging Markets Conference	IIT Madras
4	R. Madhumathi	Chicago, Illinois, USA	21–22 May 2012	Presenting a paper, Is There a Speculative Risk in the Indian Secondary Market?, at the 2012 Global Finance Conference, organized by the Global Finance Corporation	IIT Madras
5	Richa Agrawal	La Verne, CA, USA	20–24 June 2012	Presenting a paper, Customer Involvement and Behavioural Manifestations in Dissatisfying Consumption Situations, at the Biennial Conference of the Journal of Consumer Satisfaction/Dissatisfaction and Complaining Behaviour	IIT Madras
6	Lata Dyaram	University of Victoria, British Columbia, Canada	26 April to 6 May 2012	Under ‘Brief Visit’	Sponsored research project work
7	C. Rajendran	University of Passau, Germany	20 May to 20 June 2012	For joint research work	Self
		Phoenix, Arizona, USA	14–17 October 2012	Presenting a paper, Rationing Policy and Inventory Optimization Models for a Three-Stage Divergent Supply Chain, at the 2012 INFORMS (Institute for Operations Research and the Management Sciences) Annual Meeting	IIT Madras
		University of Passau, Germany	6–20 December 2012	For joint research work	Self
8	T.J. Kamalanabhan	Florida, USA	2–5 January 2013	Attending an International Academy of Business and Public Administration Disciplines (IABPAD) conference	IIT Madras

Honours and awards obtained

Sl. No.	Name of Faculty Member	Name of Award	Awarded by	Awarded for	Date of Award
Honours:					
1	T.T. Narendran	President	Case Research Society of India, India	By nomination	April 2012
2	R.P. Sundararaj	Member of the Editorial Review Board	<i>IEEE-TEM (Transactions on Engineering Management)</i> , UK	On invitation for a period of 3 years	August 2012

4.11.4. Research and Consultancy

Sponsored research projects

Sl. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co-ordinators
1	Financial Risk Governance Structure in India	December 2012 to June 2014	ICAI Accounting Research Foundation (ARF)	9.00	P. Krishna Prasanna
2	Study and Evaluation of Non-Performing Assets (NPA) of HUDCO	November 2012 to November 2013	Human Settlement Management Institute, HUDCO	6.48	P. Krishna Prasanna and M. Thenmozhi
3	India VIX and Risk Management	Ongoing	National Stock Exchange of India	0.50	M. Thenmozhi and Abhijeet Chandra
4	Recent Innovations in Infrastructure Financing: Role of Private Equity	April 2012 to October 2013	Indian Council of Social Science & Research	6.82	Thillai Rajan A.
5	Housing, Urban Development and Infrastructure: Study of the Impact of PPP and Private Equity Investments	April 2012 to December 2014	Human Settlement Management Institute, HUDCO	24.89	Thillai Rajan A.
6	Financing of Small And Early State Business: Impact, Evolution, Imperatives and Opportunities	Ongoing	All India Council for Technical Education	126.08	Thillai Rajan A.

RBIC projects

Sl. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
1	Thillai Rajan A.	India Venture Capital and Private Equity Annual Report Series	Alumni Association	2.40
2	T.T. Narendran and Venkatesh Balasubramanian	Visionary Leadership in Manufacturing (VLM)—Phase II	Indian Institute of Technology Madras	35.61
3	Usha Mohan and R.K. Amit	Improving Supply Chain Efficiency for Food Security	Socially Relevant Projects, Indian Institute of Technology Madras	2.50

Retainer consultancy

Sl. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
1	Arunkumar G. and Saji K. Mathew	Evaluation of 30 CCEs in Haveri District	Hand-in-Hand	1.685
2	Prakash Sai L.	Corporate Strategy Project	Jasmin Infotech Pvt. Ltd.	1.0
3	Rahul Ratnakar Marathe	Formulations of and Solutions to Optimization Problems for a Transportation Logistics Organization with Consideration for Production Planning, Scheduling and Facility Locations	Common Code	0.506

4	Saji K. Mathew and Arunkumar G.	Network Processing Infrastructure & Transaction Risk Services & Decisioning	Infosys Technologies	3.933
5	Rahul Ratnakar Marathe and Srinivasan G.	Periodic Review Multiple Resource Scheduling Problem	Jouve India	6.6614
6	Thillai Rajan A.	Impact and Relevance Of Venture Funding for Social Innovation	Villgro Innovations Foundation	4.0

Exchange programmes with other universities including institutions/universities under MoUs

Number of students who visited universities abroad:

M.B.A. students—MBS, Germany, 5; SSB, Canada, 2; EBS, Germany, 5

M.S./Ph.D. research scholars—6

Total number of students: 18

Number of casual/foreign students who visited IIT Madras: 21

Research publications

Total number of papers published in refereed international journals: 10

Total number of papers presented in national conferences: 4

Total number of papers presented at international conferences: 2

(a) Refereed international journals

1. T.J. Kamalanabhan, V. Teeroovengadum and A.K. Seebaluck. Towards a holistic and transformative approach to education: The emergence of a new paradigm in education. *The International Journal of Learning* 18(9): 1–12.
2. R.K.Amit, L. Devangan, P. Mehta, S. Swami, K. Shanker (2013) Individually rational buy back contracts with inventory level dependent demand. *International Journal of Production Economics* 142: 381–387.
3. C. Rajendran, J. Krishnaraj, S. Pugazhendi and S. Thiagarajan. A modified ant-colony optimization algorithm to minimise the completion time variance of jobs in flow shops. *International Journal of Production Research* 50(20): 5698–5706.
4. S. Rajendran, C. Rajendran and H. Ziegler (2012) An ant-colony algorithm to transform jobshops into flowshops: A case of shortest-common-supersequence stringology problem. *LNICST* 87: 413–424.
5. M.P. Ganesh and K.N. Rekha. Do mentors learn by mentoring others? *International Journal of Mentoring and Coaching in Education* 1(3): 205–217.
6. M. Malhotra, M. Thenmozhi and G. Arun Kumar (2012) Liquidity changes around bonus and rights issue announcement: Evidence from manufacturing and service sectors in India. *Wealth-IJMBF*, 1(1).
7. G.N. Sumathi, T.J. Kamalanabhan and M. Thenmozhi (2013) Impact of perceived organizational support on job performance among health care professionals. *International Journal of Business Innovation and Research* 7(3): 379–391.
8. M. Malhotra, M. Thenmozhi and G. Arun Kumar. Evidence on changes in stock prices and liquidity around rights issue announcement: Industry specific analysis. *International Journal of Business Insights and Transformation* 5(2): 11–28.
9. S.K. Nair and M. Thenmozhi. Macroeconomic factors and conditional bond volatility: Evidence from emerging and developed bond markets. *American Journal of Finance and Accounting* 2(4).
10. M. Kumar and M. Thenmozhi. A hybrid Arima-Egarch and artificial neural network model in stock market forecasting: Evidence for India and US. *International Journal of Business in Emerging Markets* 4(2): 160–178.

(b) Proceedings of national conferences

1. L. Dyaram and V. Rajagopal. Human resource management practices that pave the way for corporate social responsibility. *International Conference on Corporate Social Responsibility: Institute of Public Enterprise*, 6–7 December 2012, Hyderabad.
2. L. Anand, M. Thenmozhi and N. Varaiya. Corporate governance and firm's cash holdings: Evidence from India. *CMC XI Capital Markets Conference*, December 2012.
3. A. Chandra and M. Thenmozhi. Liquidity in currency options market in India. *CMC XI Capital Markets Conference*, December 2012.
4. P.C. Narayanan and M. Thenmozhi. Cross border acquisitions involving emerging market firms: Do country characteristics matter? *Midwest Finance Association Conference*, December 2012, New Orleans.

(c) Proceedings of international conferences

1. R.K. Amit. Anchoring bias in forecast information sharing in a supply chain. *FUR XV International Conference on the Foundations and Applications of Utility, Risk and Decision Theory held at Georgia State University*, 30 June to 3 July 2012, Atlanta, USA.
2. A. Thillairajan. Does private involvement in delivery of water, telecommunication and electricity services lead to improved access and quality of service in developing countries? *C2 Mini-Colloquium on Systematic Reviews in International Development*, 10–14 December 2012, Dhaka, Bangladesh.

Distinguished visitors to the department

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1	Dr. Colin Dodds, President of St. Marys, University, Sobey School of Business, Halifax, Canada	6 July 2012	Giving a talk, Global Finance, to our research scholars
2	Prof. Murugappa ‘Murgie’ Krishnan, Yeshiva University, USA	16 August 2012	Giving seminar talk (on invitation), Who Herds? Who Doesn’t?, to research scholars
3	Prof. Deepu Philip, IIT Kanpur and Prof. William Tracy, Lally School of Business RPI, USA	18 August 2012	Conducting “Strategic Innovation Game” for M.B.A. and research scholars
4	Mr. A.K.S. Chand, Research Scholar, Advanced School of Economics, Ca’ Foscari University of Venice, Italy	30 August 2012	Giving a lecture (on invitation), Strategic Information Transmission with Budget Constraint
5	Dr. Golaka C. Nath, Senior Vice President—Economic Research & Surveillance, Clearing Corporation of India, Mumbai	5 September 2012	Giving a lecture (on invitation), “Emerging Issues for Research in Finance”, to research scholars of DoMS
6	Mr. Ramakanth Desai, Co-CEO of Happiest Minds, Bangalore	14 September 2012	Addressing M.B.A. students (on invitation) on “Managing New Ventures, Mergers and Acquisitions”
7	Mr. Sriram Sanjeevi, Head, Retail Expansion in India and Global Markets, Royal Enfield India Ltd., Chennai	20 September 2012	Giving a lecture (on invitation), Indian and Global Markets, to M.B.A. students and scholars
8	Mr. Mohit Dubey, Co-Founder & CEO, CarWale.com, Mumbai	4 October 2012	Giving a lecture (on invitation by MILS team), Starting a Start-Up, to the M.B.A. students and research scholars
9	Mr. Sunil K. Vishnu, Founder & CEO, EVAM Entertainment, Chennai	25 October 2012	Giving a lecture, The Business of Drama, as part of the Start-Up Initiative
10	Mr. Badri Seshadri, an alumnus of our institute and founder of New Horizon Media, Chennai	31 October 2012	Giving a lecture, Experiences in Venture Financing: Managing the <i>Doosra</i> , as part of Venture Capital & Private Equity class
11	Mr. Dinesh Tiwari, Managing Director, Multiples Private Equity	14 November 2012	Giving a lecture, PE Investment Lifecycle, as part of the MS 6640 course, Venture Capital & Private Equity
12	Mr. Muthuraman, Director, Riverbridge Capital Advisors	19 November 2012	Giving a lecture (on invitation), Role and Value Addition by Investment Bankers in Venture Capital and Private Equity Investments (as part of Venture Capital & Private Equity class)
13	Dr. Lawrence G.J. Mueller, Assistant Dean, Global MBA for Executive Program, University of Virginia, Darden School of Business, USA	19 December 2012	Part of a delegation from their university and from industry; meeting the faculty members and discussing the possibility of joint research programmes
14	Prof. Longbing Cao, Professor, University of Technology, Sydney, Australia and Director, Advanced Analytics Institute, Sydney	4 February 2013	Giving a seminar talk (on invitation), Big Data and Advanced Analytics, to the research scholars of the department
15	Prof. Ratul Lahkar, Associate Professor at IFMR, Chennai	6 March 2013	Giving a lecture (on invitation) to M.B.A. students and research scholars, The Dynamics of Generalized Reinforcement Learning

4.11.5. Other Activities

1. Prof. T.T. Narendran, on invitation, delivered an inaugural address at the International Conference on Recent Advances in Mechanical Engineering (ICRAME 2012), held on 19 and 20 April 2012 at Dr. MGR University, Adayalampattu, Chennai.
2. Prof. T.T. Narendran gave an inaugural address at the ‘Participating-Centered Learning Seminar’ organized by IFMR in association with Harvard Business School and CRSI on 23 April 2012.
3. Twelve students were selected to pursue their summer fellowship at this department.
4. Twelve M.S. scholars and 7 Ph.D. scholars have successfully defended their theses and are eligible to be awarded their degrees in the ensuing convocation, being held in July 2012.
5. Fifty-two students have completed their 2-year MBA programme and are eligible to be awarded their degree in the ensuing convocation, being held in July 2013.
6. Chirag Jain, M.B.A. student, was honored with the High Commendation Award at the Health Summit–Chengalpattu 2012, conducted on 28 August 2012 by Chengalpattu Government Medical College. The award carried a trophy, a certificate and a Rs.2000 cash prize.
7. Disaster Management Committee, IIT Madras, in association with ALERT (Amenity Lifeline Emergency Response Team), organized the “Emergency Medical Care Workshop” at the department on 6 October 2012.
8. Samanvay 2012

The department’s flagship B-school event, Samanvay, was well organized, with participants from many B-schools/colleges. The following are some of the important events of this programme:

12 October 2012	<ul style="list-style-type: none">● Inaugural ceremony (keynote speaker—Mr. Anupam Pahuja, General Manager, Paypal India Development Centre)● BSA Hercules Fun Cyclone
13 October 2012	<ul style="list-style-type: none">● 5 Samurai (a challenging event in which students assume the roles of CEOs and leaders of a company)● Optio (an operations event)● Invitation lecture session—Mr. Ashok Lalla, Global Head of Digital Marketing, Infosys Ltd.● Time Turners (marketing competition)● Invitation lecture session—Corporate Storytelling—Mr. Narayan Hariharan, Founder, Effectworks
14 October 2012	<ul style="list-style-type: none">● Invitation lecture sessions Marketing in Luxury (Mr. Rajesh R., Contrabrand) Entertainment (Mr. Kandaswamy Bharathan, Kavithalayaa Productions) <i>and</i> Hospitality (Mr. Pankaj Katyal, Radisson Blu)● Finnix (finance event)● La Rascasse (flagship event)● Valedictory (Chief Guest—Mr. C. Jayaram, JMD, Kotak Mahindra Bank Ltd.)

9. Chirag Jain, of our department, won the Trophees Performance’2012 Award, given by Veolia Environnement, Paris. He defended his thesis in ‘Environment’ area and won the first prize. The prize will include a fully sponsored trip to Chicago.
10. Chirag Jain, of our department, and Student Head (Disaster Management Committee, IIT Madras), organized Vital’12, an emergency medical care session, in association with ALERT (Amenity Lifeline Emergency Response Team), on 3 November 2012 at SAC.
11. Dr. A. Thillairajan prepared the 2012 India Venture Capital and Private Equity Report, and the Director, IIT Madras released the report on 6 November 2012 at MRC. The Director gave the presidential address.
12. Debdutta Roy (MS11A020), 2nd year M.B.A. student, along with Vardhini Rajagopal (MS11S017), –M.S. research student, participated in a live CSR-cum-marketing case study competition, Parishram, organized by VGSOM, IIT Kharagpur on 4 November 2012 and won the 2nd prize (runner up).
13. A case study by Dr. A. Thillai Rajan, IBM India and Corporate Service Corps, has been declared as the winning case in the Business Ethics and Corporate Governance track at the International Case Study Conference 2012, held at Hyderabad on 15 December 2012.
14. Dr. Lata Dyaram, Prof. T.J. Kamalanabhan and Prof. R.P. Sundarraj jointly initiated an MoU between the Department of Management Studies and Computer Science Department of IIT Madras with Verizon Data Services Private Limited/Verizon Limited on 19 December 2012, for a training programme for their executives, spread over the next 3 years.

15. Prof. M. Thenmozhi, as a member of the Equity Derivatives Governing Council of the Madras Stock Exchange (MSE), attended their council meeting on 23 January 2013 to discuss their draft rules for trading in the NSE Futures & Options Segment, at the MSE office.
16. Dr. G. Arun Kumar was awarded a grant of USD 10,000 at the SANEI 14th Round Regional Research Competition for his study, Dynamic Linkages Between Foreign Direct Investment and Domestic Investment: Impact on India Post Euro Crisis.
17. Dr. G. Arunkumar represented the department at the alumni meet organized at Delhi and Bangalore between 16 September and 28 October 2012. More than 85 students who have passed out (from the first batch to the last batch) participated in the meet. Some photographs taken during these events (3 occasions) are provided below.

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, M.Tech. programme in Industrial Mathematics and Scientific Computing [IMSC] and Ph.D. programme. In addition, the department has taken the responsibility of teaching mathematics courses to B.Tech., M.Tech. (other than IMSC), 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 from 2009.

The major areas of research of the department are:

- | | |
|------------------------------------|---|
| 1. Algebra and its applications | 17. Mathematical logic and applications |
| 2. Applied probability | 18. Mathematical modeling |
| 3. Approximation theory | 19. Mathematical physics |
| 4. Computational fluid dynamics | 20. Nonlinear analysis |
| 5. Continuum mechanics | 21. Numerical analysis |
| 6. Coding theory | 22. Operations research |
| 7. Complex analysis | 23. Operator theory |
| 8. Data networks | 24. Queuing theory |
| 9. Differential equations | 25. Special functions |
| 10. Inverse and ill-posed problems | 26. Statistical quality control |
| 11. Fluid mechanics | 27. Stochastic processes and their applications |
| 12. Functional analysis | 28. Theoretical computer science |
| 13. Fuzzy sets and systems | 29. Wavelets and their applications |
| 14. Graph theory and combinatorics | 30. Algebraic geometry |
| 15. Harmonic analysis | 31. Fractal geometry and its applications |
| 16. Inventory and reliability | 32. Commutative algebra |

4.12.2. Academic Programmes

New courses introduced

Sl. No.	Course No.	Title
1	MA5311	Linear Systems Theory
2	MA5312	Stochastic Differential Equations
3	MA7830	Advanced Algebra
4	MA7840	Analysis
5	MA7850	Advanced Differential Equations
6	MA7860	Discrete Mathematics
7	MA5313	Introduction to Mathematical Statistics

Students on Roll

Programme	I Year	II Year	III Year	IV Year	V Year and Others	Total
M.Sc.	46	43	–	–	–	89
M.Tech.	12	8	1	–	–	21
Ph.D.	12	20	3	8	11	54
Total	70	71	4	8	11	164

Endowment prize instituted

Sl. No.	Endowment Prize	Purpose	To be awarded from
1	Smt. Lakshmikutty Amma and Shri A. Krishnakutty Nair Prize—instituted by Retired Professor Dr. P. Achuthan	For the best Ph.D. thesis in mathematics	From the 2013 convocation

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

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposium	Date and Venue
Conferences/Symposia				
1	Regin Thangaraj	MA11D005	National Programme on Differential Equations, Theory, Computation & Applications	9–30 June 2012, IIT Bombay, Mumbai
2	Ankita Sharma	MA10D002	National Programme on Differential Equations, Theory, Computation & Applications	9–30 June 2012, IIT Bombay, Mumbai
3	Suresh Badarla	MA11D024	International Conference on Mathematics and Mathematical Science ICMMS–2012	5–11 July 2012, India International Centre, New Delhi
4	Abhishek Kumar Singh	MA09D004	ASME 2012 Summer Heat Transfer Conference	6–12 July 2012, Puerto Rico, USA
5	P. Viswanathan	MA10D001	International Conference on Mathematics—A Global Scenario	13–14 December 2012, DD Govardhan Doss Vaishnav College, Chennai
6	Vijender Nallapu	MA09D012	International Conference on Mathematics—A Global Scenario	13–14 December 2012, DD Govardhan Doss Vaishnav College, Chennai
7	P. Viswanathan	MA10D001	National Conference on Frontiers in Analysis and Differential Equations	19–20 December 2012, Bharathidasan University, Thiruchirapalli
8	Vijender Nallapu	MA09D012	International Conference on Mathematical Sciences	26 December 2012 to 1 January 2013, Nagpur
9	P. Viswanathan	MA10D001	International Conference on Mathematical Sciences	26 December 2012 to 1 January 2013, Nagpur
10	Sukla Adak	MA11D022	International Conference on Numerical Linear Algebra and Its Applications	14–18 January 2013, IIT Guwahati
11	Mashetti Ravibabu	MA11D001	International Conference on Numerical Linear Algebra and Its Applications	14–18 January 2013, IIT Guwahati
Workshops				
1	A. Sairam Kaliraj	MA09D011	International Workshop on Complex Analysis and Its applications	11–15 June 2012, Walchand College of Engineering, Sangli.
2	S.V. Bharanedhar	MA08D009	International Workshop on Complex Analysis and Its Applications	11–15 June 2012, Walchand College of Engineering, Sangli
3	Sukhendu Ghosh	MA11D020	Instructional Workshop on FEM	1–14 July 2012, TIFR CAM, Bangalore
4	J. Mahipal	MA10D005	Instructional Workshop on FEM	1–14 July 2012, TIFR CAM, Bangalore
5	J. Bala Suyambu	MA11D002	National Workshosp on Cayptology	6–8 August 2012, VIT Vellore
6	Surendra Kumar Sharma	MA11D023	Workshop on Elliptic and Parabolic Partial Differential Equations and Related Topics: Theory and Numerical Methods	14–21 August 2012, IIT Gandhi Nagar
			DAAD Network International Workshop on Modeling, Computing and Optimization	3–12 September 2012, IIT Madras
7	Susobhan Mazumdar	MA10D010	Workshop on Almora Mathematical Surveys	3–6 October 2012, Kumaun University
8	Tanmay Sarkar	MA09D006	Advanced Workshop on Mathematical Theory of Control and Numerics—2012	21–30 November 2012, IIST, Thiruvananthapuram
9	Ankita Sharma	MA10D002	Advanced Workshop on Mathematical Theory of Control and Numerics—2012	21–30 November 2012, IIST, Thiruvananthapuram
10	Sushobhan Mazumdar	MA10D010	Workshop on Syzygies and Free Resolution	17–18 December 2012, CMI, Chennai

11	R. Balakrishnan	MA10D010	Workshop on Syzygies and Free Resolution	17–18 December 2012, CMI, Chennai
12	Suhas B.N.	MA11D020	Workshop on Syzygies and Free Resolution	17–18 December 2012, CMI, Chennai
13	R. Rajesh Kannan	MA08D007	Bhatia Fest & Workshop on Operator Algebras	27 December 2012 to 13 January 2013, IISc, Bangalore
14	Arundhathi Krishnan	MA12D007	Conference-cum-Workshop on Recent Advances in Operator Theory and Operator Algebra	27 December to 13 January 2013, IISc, Bangalore
15	Mashetti Ravibabu	MA11D001	ATM Workshop on Numerical Linear Algebra 2013	7–12 January 2013, IIT Guwahati
16	Sukhendu Ghosh	MA11D021		
17	Sukla Adak	MA11D022		
18	Susmita Agarwal	MA12D017		
19	Sumit Malik	MA11M011	Workshop on Recent Development on Numerical Methods for Evolution Equations	16–22 March 2013, IIT Bombay
20	Venkataramanarao S.	MA11M013	Workshop on Recent Development on Numerical Methods for Evolution Equations	18–22 March 2013, IIT Bombay
21	Susmita Agarwal	MA12D017	Numerical Simulation of Free Surface Wave Problems	18–19 March 2013

Instructional schools

1	Sanjeev Singh	MA12D004	Annual Foundation School on Advanced Training in Mathematical Schools	3–29 December 2012, Chennai Mathematical Institute, Taramani
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Summer/winter schools

1	J. Mahipal	MA10D005	ATM School of Differential Equations and Computing	1–13 June 2012, JUIT, WaknaghatSolan
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Short courses/science meets

1	Rajesh Kannan	MA08D007	Advanced Training in Mathematics Schools	31 December to 11 January 2013, ISI, Bangalore
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Research work/lectures

1	Sukendu Ghosh	MA11D021	Research discussion with Dr. Kirtia Sahu	11–18 March 2013, IIT Hyderabad
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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 Kumar Tyagi	MA12M002	DAAD Sandwich System for Master's Students for 2012–2013	DAAD, Germany
2	Nitin Kumar Yadav	MA12M007	DAAD Sandwich System for Master's Students for 2012–2013	DAAD, Germany
3	Ayushi Singh	MA12C009	Prakash Narayanan Scholarship, for the first-year M.Sc. (Mathematics) student who has scored the highest rank in JAM 2012	Prakash Narayanan, IIT alumnus

Institute Day prizes

Sl. No.	Name of the Student/Scholar	Roll No.	Name of Prize	Name of Donor
1	Vinay Prabhakar Katiyar	MA11M014	Best Academic Record	Institute Merit Prize
2	Jayakrishnan M.	MA11C017	Best Academic Record	Institute Merit Prize
3	Jyothi	MA11C018	Best Academic Record	L.V.K.V. Sarma Prize
4	Vinay Prabhakar Katiyar	MA11M014	Best Academic Record	L.V.K.V. Sarma Prize
5	Joythi	MA11C018	Girl Student—Best Academic Record	Swathi/Jayalakshmi Memorial Award

4.12.3. Faculty and Their Activities

Faculty

Name and Qualifications	Major Areas of Specialization
Professors	
Arindama Singh, Ph.D. (IIT Kanpur)	Logic, numerical analysis
Kamath S.G., Ph.D. (Delhi University)	Mathematical physics
Kulkarni S.H. [Head], Ph.D. (IIT Bombay)	Functional analysis and numerical analysis
Parthasarathy P.R., PhD. (Annamalai)	Applied probability and stochastic models, mathematical ecology, operations research
Ponnusamy S., Ph.D. (IIT Kanpur)	Complex analysis, function spaces, special functions and conformal geometry
Rama R., Ph.D. (Anna University)	Formal language & automata theory/molecular computing
Sanyasiraju Y.V.S.S., Ph.D. (IIT Madras)	Computational fluid dynamics
Satyajit Roy, Ph.D. (IISc, Bangalore)	Convective heat and mass transfer, computational fluid dynamics
Subrahmanyam P.V., Ph.D. (IIT Madras)	Non-linear analysis-fixed point theory & functional equations, fuzzy sets, summability theory
Sundar S., Ph.D. (IIT Madras)	Numerical analysis for partial differential equations, mathematical modeling
Thamban Nair M., Ph.D. (IIT Bombay)	Applicable functional analysis–spectral approximation, operator equations, inverse and ill-posed equations
Usha R., Ph.D. (IIT Madras)	Fluid dynamics
Veeramani P., Ph.D. (IIT Bombay)	Fixed point theorems and their applications to problems in optimization and best approximation, fuzzy set theory
Vetrivel V., Ph.D. (IIT Madras)	Non-smooth optimization, fixed point theory, complementarity problems
Associate Professors	
Radha R., Ph.D. (IMSC Chennai)	Harmonic analysis, wavelets, time–frequency analysis
Sivakumar K.C., Ph.D. (IIT Madras)	Functional analysis and mathematical programming
Srinivasa Rao Ch., Ph.D. (IISc, Bangalore)	Non-linear differential equations
Swaminathan K., Ph.D. (Agra University)	Fluid dynamics, ship hydrodynamics, mathematical problems related to naval architecture and ocean engineering
Assistant Professors	
Amitava Mukherjee, Ph.D. (University of Calcutta) (resigned on 17 December 2012)	Statistical inference, statistical quality control, geostatistics, nonparametric methods, sequential analysis
Arijit Dey, Ph.D. (CMI Chennai)	Algebraic geometry
Balaji R., Ph.D. (IIT Madras)	Linear algebra and optimization
Chand A.K.B., Ph.D. (IIT Kanpur)	Fractals, approximation theory and wavelets
Jayanthan A.V., Ph.D. (IIT Bombay)	Commutative algebra and algebraic combinatorics
Kalpana Mahalingam, Ph.D. (University of South Florida, Tampa)	Theory of codes, DNA computing, combinatorics of words
Kunal Krishna Mukherjee, Ph.D. (Texas A&M) (joined on 20 December 2012)	Operator algebras
Manam S.R., Ph.D. (IISc, Bangalore)	Applied mathematics
N. Narayanan, Ph.D. (IMSC Chennai) (joined on 21 November 2012)	Graph theory: graph colouring, structural and extremal graph theory, probabilistic combinatorics, discrete mathematics
Neelesh S. Upadhye, Ph.D. (IIT Bombay) (joined on 25 September 2012)	Probability theory and applications
Shaiju A.J., 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 Kolkota)	Discrete mathematics, approximation algorithm, combinatorial optimization
Uma V., Ph.D. (IMSc Chennai)	Topology and geometry of toric varieties and related spaces

Vasantha W.B., Ph.D. (RIASM Chennai)	Group theory, application of algebra, fuzzy algebra and linear algebra
Venkata Balaji T.E., Ph.D. (CMI, Chennai)	Algebraic geometry and commutative algebra
Visiting Faculty	
Xiantao Wang, Ph.D. (Hunan Normal University)	Complex analysis
Manzi Huang, Ph.D. (Hunan Normal University), PDF (IIT Madras)	Complex analysis
Shravan Kumar (till December 2012)	Harmonic analysis
Symphony Chakraborty (from 1 April 2013 till date)	Fluid dynamics

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

Sl. No.	Coordinator(s)	Title	Period
Conferences			
1	V. Vetrivel	National Symposium on Mathematical Methods and Applications	22 December 2012
2	T.E. Venkata Balaji, Suresh Nayak (ISI Bangalore), Srikantah Iyengar (University of Nebraska—Lincoln, USA)	International Conference of the ATM Advanced Workshop on Singularity Categories in Algebraic Geometry and Commutative Algebra	11–12 January 2013
Workshops			
1	A.V. Jayanthan, T.E. Venkata Balaji	ATM Workshop—Advanced Instructional School on Commutative Algebra	7–26 May 2012
2	S. Sundar	NBHM ATM Workshop on Differential Equations, held at Jaypee University, H.P.	1–14 June 2012
		DAAD Network International Workshop on Modelling, Computing and Optimization	3–12 September 2012
3	T.E. Venkata Balaji, Suresh Nayak (ISI Bangalore), Srikantah Iyengar (University of Nebraska—Lincoln, USA)	ATM Advanced Workshop on Singularity Categories in Algebraic Geometry and Commutative Algebra	1–10 January 2013
Short-term courses			
1	T.E. Venkata Balaji	Riemann Surfaces and Algebraic Curves—video course (10 video lectures under NPTEL support for Ph.D./M.Sc./B.Tech. students)	April 2012
		Introduction to Algebraic Geometry—video course (32 video lectures under NPTEL support for Ph.D./M.Sc./B.Tech. students)	January 2013 semester
		Advanced Complex Analysis—video course (32 video lectures under NPTEL support for Ph.D./M.Sc./B.Tech. students)	January 2013 semester

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

Sl. No.	Name of Faculty Member	Title	Institution	Period
Workshops				
1	P. Veeramani	One-Day Workshop for Faculty Members	Sai Ram Institute of Technology, Chennai	20 April 2012
2	S.H. Kulkarni	Workshop on Linear Algebra and Its Applications	S.G.G.S. Institute of Engineering and Technology, Vishnupuri, Nanded	21 May to 2 June 2012
3	S. Sundar	NBHM–ATM Workshop on DES and Computing	Jaypee Institute of Information Technology, Wagnaghat, Himachal Pradesh	5–9 June 2012

4	Y.V.S.S. Sanyasiraju	National Workshop-cum-Training Programme on Computational Technology	BHU, Varanasi	1–7 July 2012
5	Sounaka Mishra	Resource person in a Workshop on Advanced School of Graph Theory	BITS Pilani, K.K. Birla Goa Campus	23–27 July 2012
6	S.H. Kulkarni	Resource person at international workshop	Sacred Heart College, Vellore	28 August 2012
7	A.J. Shaiju	International Workshop on Modelling Computation and Optimization	IIT Madras	3–12 September 2012
8	P. Veeramani	International Workshop on Fixed Point Theory and Applications	Galatasaray University, Istanbul, Turkey	11–13 October 2012
9	Arijit Dey	ICMAT School of Conformal Blocks	Madrid, Spain	15–19 October 2012
10	R. Usha	DAAD Network International Workshop in Modelling, Computing and Optimization	IIT Madras	5–6 September 2012
11	A.V. Jayanthan	Pedagogical Training for Mathematical Teachers	St. Berchmans College, Changanassery, Kerala	19–24 November 2012
12	M. Thamban Nair	Advanced Workshop on Mathematical Theory of Control and Numerics 2012	IIST	28–29 November 2012
13	A.J. Shaiju	Winter School on Stochastic Analysis and Control and Fluid Flows	IISER, Thiruvananthapuram	3–20 December 2012
14	P.R. Parthasarathy	Workshop in Probability, Statistics and Stochastic Processes in Engineering Education	PSG College of Technology, Coimbatore	12 December 2012
15	S. Sundar	Research Scholars Workshop	IISST, Thiruvananthapuram	18 December 2012
16	Satyajit Roy	The 10th Mathematics-in-Industry Study Group Workshop	The University of Witwatersand, Johannesburg, South Africa	14–18 January 2013
17	N. Narayanan	National Workshop on Graph Colourings	ISI Chennai	26 January 2013
18	Y.V.S.S. Sanyasiraju	Workshop on the Recent Development on Numerical Methods for Evolution Equations	IIT Bombay	20–21 March 2013

Seminars

1	A.K.B. Chand	Natural Cubic Spline Coalescence Fractal Interpolation Surfaces	IIT Bhubaneswar	29 May 2012
2	S. Ponnusamy	Harmonic Mappings with Integer and Half Integer Co-efficients	Tokyo University, Sendai, Japan	23 October 2012
		Harmonic Mappings and Landau-Bloch Constants	Yamaguchi University, Ube, Japan	31 October 2012
3	S. Sundar	National Seminar on Mathematical Modelling, Approximate Analytical and Numerical Methods	K.L.N. College of Engineering, Madurai	27 December 2012

Symposia

1	K.C. Sivakumar	International Symposium on Applied Optimization and Game Theoretic Models	ISI Delhi Centre	8–10 January 2013
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Conferences

1	Amitava Mukherjee	6th International Workshop on Applied Probability (IWAP 2012)	Jerusalem, Israel	5–9 June 2012
2	S.G. Kamath	36th International Conference on High Energy Physics	Melbourne, Australia	4–11 July 2012
3	A.V. Jayanthan	National Conference on Algebra and Number Theory	Cochin University of S&T	16–19 August 2012
4	Amitava Mukherjee	International Conference on Statistics and Information Analytics	Loyola College, Chennai	23 August 2012

5	Y.V.S.S. Sanyasiraju	Indo-German Conference on Modelling, Simulation and Optimization in Applications	Darmstadt, Germany	5–7 September 2012
6	P. Veeramani	International Conference on Differential Geometry, Functional Analysis and Applications	Jamia Millia Islamia, New Delhi	8–10 September 2012
7	A.K.B. Chand	10th International Conference on Numerical Analysis and Applied Mathematics	University of Athens, Greece	19–25 September 2012
8	M. Thamban Nair	INSPIRE Programme	S.V. University, Thirupathi	16 October 2012
9	K. Swaminathan	8th International Conference on Marine Technology	Universiti Malaysia Terengganu, Malaysia	20–22 October 2012
10	S. Ponnusamy	International Conference on Conformal Mappings and Value Distribution Theory	Tokyo University, Sendai, Japan	22–27 October 2012
11	M. Thamban Nair	17th Ramanujam Symposium on Mathematical Analysis and Applications	Ramanujam Institute for Advanced Study in Mathematics, University of Madras	30 October 2012
12	R. Usha	International Mechanical Engineering Congress Exposition	Houston, Texas, USA	9–15 November 2012
		American Physical Society, 65th annual DFD meeting	San Diego, California, USA	18–20 November 2012
13	S. Ponnusamy	National Conference on Conformal Mappings	NIT Srinagar, Kashmir	18 November 2012
14	T.E. Venkata Balaji	International conference in algebraic geometry in honour of Prof. M.S. Narasimhan's 80th birthday	IISc, Bangalore	1–3 December 2012
15	P. Veeramani	National Conference on Evolution Equations—Theory Methods and Applications	IIT Kanpur	2–8 December 2012
16	S.H. Kulkarni	National Conference on Evolution Equations—Theory Methods and Applications	IIT Kanpur	7–8 December 2012
17	Shruti Dubey	National Conference on Evolution Equations—Theory Methods and Applications	IIT Kanpur	7–8 December 2012
18	A.K.B. Chand	International Conference on Frontiers of Mathematical Sciences with Applications	Calcutta Mathematical Society, Kolkata	7–9 December 2012
19	P.V. Subrahmanyam	21st International Conference of the Forum for Interdisciplinary Mathematics, Statistics and Computational Techniques	Punjab University, Chandigarh	15–17 December 2012
20	R. Balaji	National Conference on Analysis and Differential Equations	Department of Maths, Bharathidasan University	19–20 December 2012
21	Satyajit Roy	6th International Conference MSAST 2012	Institute for Maths, Kolkata	21–23 December 2012
22	K.C. Sivakumar	International Conference on Optimization Modelling and Its Applications	New Delhi	28–29 December 2012
23	P. Veeramani	National Conference on Mathematics Year 2012	Nallamuthu Gounder Mahalingam College, Pollachi	8 January 2013
24	K.C. Sivakumar	International Conference on Numerical Linear Algebra and Its Applications	IIT Guwahati	16–18 January 2013

25	P. Veeramani	78th Annual Conference of Indian Mathematical Society	Banaras Hindu University, Varanasi	22–25 January 2013
26	Arinidama Singh	78th Annual Conference of Indian Mathematical Society	Banaras Hindu University, Varanasi	22–25 January 2013
27	N. Narayanan	Indo-Slovenia Conference on Graph Theory and Applications	Thiruvananthapuram, Kerala	23 February 2013
28	Satyajit Roy	First International Conference on Dynamics of Differential Equations	Georgia Institute of Technology, Atlanta, USA	16–20 March 2013
29	V. Vetrivel	National Conference on Emerging Trends in Communication	Bishop, Catholic Diocese of Marthandam	20 March 2013
30	Y.V.S.S. Sanyasiraju	National Conference on Recent Trends in Mathematics	JNTU, College of Engineering, Anantapur, A.P.	21–22 March 2013
31	Arijit Dey	Conference of Bundles 2013	KSOM, Kozhikode	25–29 March 2013

Training programmes/schools

1	A.J. Shaiju	Winter school, for the newly set up International Centre for Theoretical Studies of TIFR	School of Mathematics, IISER, Thiruvananthapuram	5–8 December 2012
2	N. Narayanan	Faculty Development Programme on Applications of Mathematics	Rajagiri College of Engineering and Technology, Cochin	10–12 December 2012
		Nature and Significance of Eigen Value Problems	Government Engineering College, Sreekrishnapuram, Kerala	11 March 2013
3	Y.V.S.S. Sanyasiraju	Short-Term Training Programme on Numerical Methods for Fluid Dynamics	IISST, Thiruvananthapuram	19–20 December 2012
4	K.C. Sivakumar	Training Programme on Optimization and Its Applications	New Delhi	28 December 2012
5	S.H. Kulkarni	Instructional School for Lecturers in Functional Analysis	ISI, Bangalore	11 March 2013

Short-term courses

1	S.H. Kulkarni	Role of Compactness in Analysis at Refresher Course in Mathematics	Ramanujam Institute for Advanced Study in Mathematics, University of Madras	3 October 2012
2	N. Narayanan	How to Love And Learn Mathematics Through Puzzles	Reading Library, Sreekrishnapuram, Kerala	17 February 2013

Special lectures delivered by faculty members in other institutions

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
1	Arindama Singh	Godel's Incompleteness Theorem	Anna University	5 May 2012
2	T.E. Venkata Balaji	Research Science Initiative Chennai Lectures: Abstract Axiomatic Treatment of Vectors	RSIC Chennai, IIT-Madras	15 May 2012
3	M. Thamban Nair	Mearsure, Integration and L2-Theory for a postgraduate training programme under NPDE	IIT Delhi	17–19 May 2012
		Linear Equations, Matrices and Determinants for postgraduate teachers	KVV, CLRI, Chennai	24 May 2012
4	Y.V.S.S. Sanyasiraju	Higher Order Compact Schemes to Fluid Flow Problems in the faculty development programme	Karpagam University, Coimbatore	11 June 2012
5	M. Thamban Nair	Advanced Functional Analysis for an advanced training programme	IIT Bombay	18–19 June 2012
6	P. Veeramani	Compact Metric Spaces	UGC-Academic Staffs College, University of Kerala	9 September 2012

7	Y.V.S.S. Sanyasiraju	DAAD Network International Workshop on Modeling, Computing\Optimization	IIT Madras	10 September 2012
8	Arindama Singh	INSPIRE Camp	KIIT University, Bhubaneswar	15 September 2012
9	M. Thamban Nair	Least Square Solution for Matrix Equations Prof. Wazir Hasan Abdi Memorial Lecture	St. Paul College, Kalmassery, Kochi Cochin University of S&T	25 September 2012 25 September 2012
10	A.K.B. Chand	Natural Cubic Spline Coalescence Fractal Surfaces and Associated Convergence Results	University of Athens, Greece	28 September 2012
11	P.V. Subrahmanyam	Fuzzy Differential Equations and Functional Equations	Pondicherry University	4–5 October 2012
12	M. Thamban Nair	Bare’s Theorem and Arzela-Ascoli’s Theorem for post graduate teachers	Ramanujam Institute for Advanced study in Mathematics, University of Madras	9–10 October 2012
13	K.C. Sivakumar	One-point Compactification, Tietze’s Extension Theorem and Urysohn’s Metrization Theorem	Ramanujam Institute for Advanced study in Mathematics, University of Madras	12–13 October 2012
14	Arindama Singh	What Is Pi?	KIIT University	20 October 2012
15	M. Thamban Nair	A talk-cum-discussion on infinity and related problems for Class XI and XII students Backward Heat Conduction Problem	Association of Mathematics Teachers of India, Triplicane Ramanujam Institute for Advanced study in Mathematics, University of Madras	26 October 2012 30 October 2012
16	S.H. Kulkarni	Carrier Graph Topology	Ramanujam Institute for Advanced Study in Mathematics, University of Madras	30 October 2012
17	R. Radha	Shift Invariant Spaces on the Real Line and Compact Group	IISc, Bangalore	30 October 2012
18	Y.V.S.S. Sanyasiraju	Invited talk on RBF-based grid-free schemes	South Asian University, New Delhi	6 November 2012
19	M. Thamban Nair	Prof. Abraham Endowment Lecture on Use of Functional Analysis in Numerical Integration	SB College, Changanassery, Kerala	5 April 2013
20	N. Narayanan	Lecture on Graph Theory	Rajagiri School of Engineering & Technology, Cochin, Kerala	10–11 December 2012
21	Y.V.S.S. Sanyasiraju	Finite Volume Computations for Incompressible Flows	IISST, Thiruvananthapuram	20 December 2012
22	Arindama Singh	The Grammar of Mathematics	IIT Hyderabad	22 December 2012
23	S. Sundar	Recent Developments in Scientific Computing	K.L.N. College of Engineering, Madurai	27 December 2012
24	Y.V.S.S. Sanyasiraju	Differential Equations, in the faculty development programme conducted at the Department of Mathematics Incompressible Flow Computations Using Infinitely Smooth RBFs with Optimum Shape Parameter, 1st International Conference on Recent & Emerging Trends in Computer and Computational Sciences—RETCOMP 2013	College of Engineering, Guindy, Anna University, Chennai PESIT, South Campus, Bangalore	9 January 2013 11 January 2013
25	Arindama Singh	Elongated Diagonalization	BHU	25 January 2013

26	P.V. Subrahmanyam	Introduction to Spectral Theorem	NIT Surathkal	14–16 February 2013
27	P. Veeramani	Nonlinear Functional Analysis and Application	DST-Centre for IMS, BHU	7 March 2013
28	V. Vetrivel	Non-smooth Optimizaton	Sona College of Technology, Salem	8 March 2013
29	S. Sundar	Scientific Computing—State of the Art	Sona College of Technology, Salem	8 March 2013
30	Y.V.S.S. Sanyasiraju	Higher Order Computations with Finite Differences	College of Engineering, Anna University	14 March 2013
		RBF-Based Computations for the Incompressible Flows at the Advanced Level Workshop on Recent Developments in Numerical Methods for Evolution Equations	IIT Bombay	17–21 March 2013
31	P.R. Parthasarathy	Applied Birth and Death Models	ISI, Chennai	19 March 2013
32	S. Sundar	Numerical Solutions of Non-linear Diffusion Related to Image Compression	IIT Bombay	19 March 2013
33	T. E. Venkata Balaji	Forays 2013 lecture: The Mysteries Surrounding the Riemann Zeta Function	Forays 2013, IIT Madras	30 March 2013

Visits abroad by faculty members

Sl. No.	Name of Faculty Member	Country Visited	Date	Purpose of Visit	Funding from
1	Amitava Mukherjee	Hong Kong	4 June to 27 July 2012	Research	CPDA, IIT Madras
		Israel	5–9 June 2012	Presentation of paper at IWAP 2012	CPDA, IIT Madras
2	Amitava Mukherjee	USA	28 July to 2 August 2012	Research	CPDA, IIT Madras
3	S.G. Kamath	Melbourne, Australia	2–15 July 2012	Presentation of paper at 36th International Conference on High Energy Physics	CPDA, IIT Madras
4	S. Sundar	Germany	16 June to 15 August 2012	Visiting Professor	TU KL, Germany
5	Y.V.S.S. Sanyasiraju	Germany	5–7 September 2012	Presentation of paper at Indo-German Conference	CPDA, IIT Madras
6	A.K.B. Chand	Greece	19–25 September 2012	Presentation of paper at 10th International Conference	CPDA, IIT Madras
		Greece	26 September to 2 October 2012	Collaborative research work	CPDA, IIT Madras
7	P. Veeramani	Turkey	11–13 October 2012	Invited talk at international workshop	CPDA, IIT Madras
8	Arijit Dey	Spain	15–19 October 2012	Participation in the ICMAT School	CPDA, IIT Madras
9	K. Swaminathan	Malaysia	20–22 October 2012	Presenting paper at the 8th International Conference on Marine Technology	CPDA, IIT Madras
10	S. Ponnusamy	Japan	22–27 October 2012	Delivering a lecture at Tokyo University	CPDA, IIT Madras
		Japan	31 October 2012	Delivering seminar talk at Yamaguchi University, Ube, Japan	CPDA, IIT Madras
11	R. Usha	USA	9–15 November 2012	Presentation of paper at ASME 2012	CPDA, IIT Madras
		USA	18–20 November 2012	Presentation of paper at American Physical Society	CPDA, IIT Madras

12	Amitava Mukherjee	Finland	19 November to 17 December 2012	Delivering a series of lectures	CPDA, IIT Madras
13	Satyajit Roy	South Africa	13–18 January 2013	International workshop	Wits University, South Africa
		USA	15–23 March 2013	International conference	CPDA, IIT Madras

Honours and awards obtained by faculty members

Sl. No.	Name of Faculty Member	Name of Award	Awarded by	Date of Award
1	S. Sundar	Alumni Ambassador of City Kaiserslautern, Germany	TU Kaiserslautern Germany	7 December 2012

Books, monographs authored/co-authored

Sl. No.	Name of Faculty Member	Title	Publisher	Author/Co-author
Books				
1	S. Ponnusamy	<i>Foundations of Mathematical Analysis</i> (2011)	Birkhäuser, Boston	Author

Journal editorial boards

Sl. No.	Name of Faculty Member	Position (Editor/Member)	Journal
1	P.R. Parthasarathy	Advisory Editor	<i>Journal of Information and Optimization Sciences</i>
		Associate Editor	<i>International Journal of Computer Mathematics</i>
		Associate Editor	<i>American Journal of Mathematics and Management Sciences</i>
		Associate Editor	<i>Journal of Decision and Mathematika Sciences</i>
		Associate Editor	<i>Journal of Applied Statistical Sciences</i>
		Associate Editor	<i>Stochastic Modelling and Applications</i>
		Advisory Editor	<i>Journal of Statistics and Management Systems</i>
		Member, Editorial Board	<i>International Journal of Modern Mathematics</i>
		Member, Editorial Board	<i>Far Eastern Journal of Mathematics</i>
		Member, Reviewer Advisory Board	<i>ACM Computing Reviews</i>
		Member, Editorial Board	<i>Advances in Operations Research</i>
		Member, Reviewer Advisory Board	<i>ACM Computing Reviews</i>
2	S. Ponnusamy	Editor	<i>Journal of Classical Analysis</i> (http://jca.ele-math.com/submission)
		Editorial Member	<i>Conference Papers in Mathematics</i> (Hindawi Publishing Corporation)
3	Satyajit Roy	Member of Editorial Board/ Advisory Committee of the Academy	<i>Journal of the Indian Academy of Mathematics</i>
4	K.C. Sivakumar	Editor	<i>Journal of Applied Mathematics</i>
5	S. Sundar	Advisory Committee Member/Editorial Board Member	<i>Journal of Indian Academy of Mathematics</i>
6	M. Thamban Nair	Associate Editor	<i>Journal of Inverse Problems in Sciences and Engineering</i> (IPSE)
7	R. Usha	Member	<i>Physics of Fluids</i>
		Member	<i>Fluid Dynamics Research</i>

4.12.4. Research and Consultancy

Sponsored research projects

Sl. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co-ordinators
1	Distribution-Free Adaptive Control Charts for Robust Monitoring Of Statistical Processes	3 years from 2 April 2012	NFSC	12.00	Amitava Mukherjee (resigned on 17 December 2012)
2	A Network of Ferromagnetic Particles	3 years from 18 July 2011	IC&SR	5.00	Shruti Dubey
3	Development of Theory of Fractal Rational Splines and Applications in CAGD	3 years	DST	15.07	A.K.B. Chand and G. Saravana Kumar (ED)
4	Modeling of Microwave Passive Components for High-Power Applications	2007–2012	National Fusion Programme, Institute for Plasma Research	27.00	S. Sundar
5	Involution Codes: Application to DNA Strand Design	3 years from 7 February 2012	NFSC	5.00	Kalpna Mahalingam
6	Compound Negative Binomial Approximations and Its Applications	3 years from 4 December 2012	NFSC	5.00	Neelesh S. Upadhye
7	Analysis and Computation of Optimal Strategies in N-Person Differential Games	3 years	DST	To be finalized by DST (around 4.00)	A.J. Shaiji (PI) and Ch. Srinivasa Rao (Co-PI)

Exchange programmes with other universities including institutions/universities under MoUs

Sl. No.	Programme	University	Guide/Co-ordinator
1	DAAD Sandwich Ph.D.	AG Technomathematik, TU Kaiserslautern, Germany	S. Sundar
2	DAAD Network Exchange Programme	TU-Kaiserslautern, Germany; other participating universities are University of Witwatersrand, South Africa and ITB Bandung, Indonesia	S. Sundar

Faculty members participation with other institutions under MoUs

Sl. No.	Name of Faculty	Participation Details	Name of University/Institution Which has MoU
1	S. Sundar	DAAD Network Exchange Programme	TU Kaiserslautern, Germany (along with University of Witwatersrand, South Africa and ITB Bandung, Indonesia)

Research publications of faculty members and research scholars

Total number of papers published in refereed national journals: 4

Total number of papers published in refereed international journals: 44

Total number of papers presented at national conferences: 3

Total number of papers presented at international conferences: 8

(a) Refereed national journals

1. N.S. Upadhye and P. Vellaisamy (2013) Improved bounds for approximations to compound distributions. *Statistics & Probability Letters* 83(2): 467–473.
2. R. Usha and S. Naire. A thin films on a porous substrate: A two-sided model, dynamics and stability. *Chemical Engineering Science*
3. K.C. Sivakumar, A.N. Sushama and K. Premakumari (2012) Weak nonotonicity of interval matrices. *Electronic Journal of Linear Algebra* 25: 92–101.
4. A. Singh and B.V. Surya Prasath (2012) An adaptive anisotropic diffusion scheme for image restoration and selective smoothing. *International Journal of Image and Graphics* 12: 18 pages.

(b) Refereed international journals

1. A. Mukherjee and M.A. Grahma (2012) Distribution-free exponentially weighted moving average control charts for monitoring unknown location. *Computational Statistics & Data Analysis* 56(8): 2539–2561 (5 year Impact Factor: 1.373).

2. A. Singh (2012) A simple proof of Godel's incompleteness theorems. *Mathematics News Letter* 22(3): 1–3.
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21. S. Ponnusamy and A. Sairam Kaliraj (2012) On harmonic close-to-convex functions. *Computational Methods and Function Theory* 12(2): 669–685.
22. K. Rauf, S. Ponnusamy and J.O. Omolehin (2012) On generalization of Hardy-type inequalities. *The Australian Journal of Mathematical Analysis and Applications* 9(1): 1–21 (Article 14).
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36. A.J. Shaiju. Evolutionary stability against multiple mutations. *Dynamic Games and Applications*.
37. A.J. Shaiju. Discrete-time robust H-infinity control of a class of nonlinear uncertain systems. *International Journal of Robust and Nonlinear Control*.
38. S. Sundar and M. Panchatcharam (2012) Finite pointset method for 2D dam-break problem with GPU acceleration. *International Journal of Applied Mathematics* 25: 547–557.
39. S. Sundar and S. Matle (2012) A 2D finite element study on the flow pattern and temperature distribution for an isothermal spherical furnace with the aperture. *Open Journal of Applied Sciences* 2: 319–325.
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41. M. Thamban Nair (2012) Regularization of Fredholm integral equations of the first kind using Nystrom approximation. *Computational Methods for Applied Inverse Problems, De Gruyter* 65–82, Chap. 3.
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44. P. Chebotarev, R.B. Bagat and R. Balaji (2013) Simple expressions for long walk distances. *Linear Algebra and Its Applications* 439: 893–898.

Proceedings of national conferences

1. A.K.B. Chand and P. Viswanathan. Shape preserving fractal interpolation functions. *National Conference on Fourier Analysis and Differential equations*, 29–30 December 2012, Sambalpur University.
2. A.K.B. Chand and P. Viswanathan. C1 cubic spline fractal interpolation functions. *National Conference on Industrial Mathematics & Soft Computing*, 26–27 May 2012, KIIT University, Bhubaneswar.
3. P. Viswanathan and A.K.B. Chand. A new kind of rational cubic spline fractal interpolation function based on functional values. *National Conference on Frontiers in Analysis and Differential Equations*, 19–20 December 2012, Bharathidasan University, Trichirappalli.

Proceedings of international conferences

1. A.K.B. Chand and P. Viswanathan. Cubic hermite and cubic spline fractal interpolation functions. *10th international Conference on Numerical Analysis and Applied Mathematics*, Kos, Greece, 19–25 September 2012, *AIP Conference Proceedings* 1479: 1467–1470. (ISSN: 0094-243X)

2. A.K.B. Chand and P. Viswanathan. On rational cubic fractal splines with two families of shape parameters. *International Conference on Frontiers of Mathematical Sciences with Applications*, 7–9 December 2013.
3. P. Viswanathan and A.K.B. Chand. A rational cubic fractal spline model for a positive data. *International Conference on Mathematics—A Global Scenario*, 13–14 December 2012, D.G. Vaishnav College, Arumbakkam, Chennai., pp. 141–147. (ISSN: 978-81-925376-0-8)
4. N. Vijender and A.K.B. Chand. Positive blending cubic spline fractal interpolation surfaces. *International Conference on Mathematics—A Global Scenario*, 13–14 December 2012, D.G. Vaishnav College, Arumbakkam, Chennai, pp. 148–156. (ISSN: 978-81-925376-0-8)
5. P. Viswanathan and A.K.B. Chand. Coalescence hidden variable cubic hermite fractal interpolation functions. *International Conference on Mathematical Sciences*, 28–31 December 2012, Shri Shivaji Education Society, Amaravati’s Science College, Nagpur.
6. N. Vijender and A.K.B. Chand. Blending C1-cubic spline fractal interpolation surfaces. *International Conference on Mathematical Sciences*, 28–31 December 2012, Shri Shivaji Education Society, Amaravati’s Science College, Nagpur.
7. A.K.B. Chand. Natural bicubic spline coalescence fractal interpolation function. *Global Science and Technology Forum*, 30–31 January 2012.
8. A.V. Jayanthan. Depths and Hilbert coefficients of fiber cones of stretched m-primary ideals. *Japan-Vietnam Joint International Conference*, 12–16 December 2011, Hanoi, Vietnam.

Distinguished visitors to the department

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit/Title of Talk
1	Prof. M. Ganesh, Colorado School of Mines	2 August 2012	A Model Reduction Algorithm for Computational Electromagnetism
2	Prof. M. Ganesh, Colorado School of Mines	9 August 2012	Navier-Stokes Equations on Rotating Surfaces: Regularity, Algorithms, Analysis, Simulation
3	Prof. Mapundi Banda, Stellenbosch University, South Africa	3 September 2012	Relaxation Systems and High-Order Accurate Flow Computations
4	Prof. Mythily Ramaswamy, TIFR, Centre for Applicable Mathematics, Bangalore	3 September 2012	Introduction to Optimal Control Problems
5	Prof. A.K. Nandakumaran, IISc, Bangalore	4 September 2012	Various Imaging Techniques in Tomography: Inverse Problems, Analysis and Computations
6	Prof. Edy Soewono, ITB, Bandung, Indonesia	4 September 2012	PDE Modeling in Infectious Disease Transmission
7	Dr. Liulan Li, Associate Professor, Hengyang Normal University, China	20 August to 17 November 2012	Collaborative research work
8	Dr. Jiyuan Tao, Associate Professor, Department of Mathematics and Statistics, Loyola College of Maryland, USA	3–8 January 2013	Collaborative research work
9	Prof. M.R. Adhikari, President, Mathematical Sciences Section, 95th Indian Science Congress Honorary President, IMBIC, India and Vice President, Institute for Polymath, Nagoya, Japan	25 January 2013	Collaborative research work

4.12.5. Other Activities of the Department/Centre

Sl. No.	Name of Faculty Member	Title/Member/Programme	Institution	Period
1	Amitava Mukherjee	Faculty development programme	Sree Sastha Institute of Engineering and Technology	25 April 2012
2	S. Ponnusamy	Nominated as a Member, Fact-Finding Committee	University of Manonmanim Sundaranar	24 April 2012
3	P.V. Subrahmanyam	SAP Advisory Committee meeting (UGC-nominated member)	Pondicherry University	30 April 2012
4	S. Sundar	KUPY Summer Programme	IISER, Thiruvananthapuram	1 June 2012

	S. Sundar	Nominated as member of Board of Studies in Faculty & Science and Humanities	Anna University	3 years up to 2 March 2015
5	S. Ponnusamy	External expert for evaluation of research proposals of two Ph.D. scholars	NIT Srinagar	5–7 July 2012
6	S. Sundar	Nominated as a member, Programme Advisor Committee in Mathematical Sciences under Science & Engineering Research Board	DST	3 years from September 2012
7	A.V. Jayanthan	Invited as an eminent member of the Mathematics Training and Talent Search Programme	Sr. Berchmans College, Kerala	19–24 November 2012
8	S. Ponnusamy	Accepted the assignment as Head	ISI, Chennai Centre	2 years from October 2012
9	R. Rama	Accepted the temporary assignment as Professor in the Department of CS	IIT Bombay	Six months from 4 January 2013
10	M. Thamban Nair	Member, Post Graduate Board of Studies	Cochin University of Science and Technology	

Other activities

Sl. No.	Name of Faculty Member	Details		
1	S.H. Kulkarni	NPTEL video course “Real Analysis” has been uploaded in February 2012 and has been receiving very good response (more than 5000 visits). url: http://nptel.iitm.ac.in/courses/111106053/		
2	M. Thamban Nair	NPTEL—web course: Functional Analysis, August 2012		
3	P.V. Subrahmanyam	Nominated as President of Forum for Interdisciplinary Mathematics for a second consecutive term Nominated to the Nomination Committee for Infoys Science Prize		

Results obtained in research work

Sl. No.	Name of Faculty Member	Details		
1	N. Narayanan	Together with collaborators from France, Japan and Hungary, we obtained several results on k-intersection edge colouring, a generalized version of strong edge colouring. In another work, with collaborators from Japan and France, we proved a result on decomposition of graphs to highly connected components and settled a general version of a conjecture.		

Seminar talks

Sl. No.	Name of the Faculty Member	Title	Date
1	Dr. Neelesh S. Upadhye, Quantitative Researcher, Dolat Investments Ltd., Andheri (West), Mumbai	Compound Negative Binominal Approximation to Sums of Random Variables	2 April 2012
2	Dr. Ravi Srinivasan, Visiting Fellow, IMSC, Chennai	Liovillian Extensions and the Galois Theory of Linear Differential Equations	12 April 2012
3	Dr. T.S.S.R.K. Rao, Indian Statistical Institute, Bangalore	Intersection Properties of Balls and Projections of Norm One	18 May 2012
4	Prof. K. Parthasarathy, Ramanujam Institute of Mathematics, University of Madras	Groups with No Small Sub-Groups	16 August 2012
5	Prof. P.V. Subrahmanyam, Department of Mathematics	Some Remarks on a Theorem in Differential Calculus	23 August 2012
6	Prof. Hema Srinivasan, University of Missouri, Columbia	Gorenstein Determinantal Ideals	13 September 2012
7	Prof. R. Sahadevan, Ramanujam Institute of Applied Mechanics, University of Madras	Discrete Integrable Systems—An Introduction	27 September 2012
8	Prof. Rene Pinnau, TU Kaiserslautern, Germany	Optimization of Free Boundary Value Problems in Industry	5 September 2012

9	Prof. Thomas Goetz, Universitaet Koblenz, Germany	Optimization with PDEs	5 September 2012
10	Dr. Jean Medard T. Ngnotchouye, University of KwaZulu-Natal, South Africa	Macroscopic Models for Crowd Dynamics Modeling and Numerics	7 September 2012
11	Prof. H.P. Septorato Sireger, ITB, Bandung, Indonesia	Field Problems in Oil and Gas Industries and the Role of Mathematical Modeling	7 September 2012
12	Prof. Kuntjoro Adji Sidarto, ITB, Bandung, Indonesia	On Locating All Roots of Systems of Non-Linear Equations Inside Bounded Domain Using Spiral Dynamics Inspired Optimization	7 September 2012
13	Prof. Mohan K. Kadalbajoo, IIT Kanpur	Hyperbolic PDEs—An Introduction, Higher Order Schemes for Hyperbolic Conservation Laws	10 September 2012
14	Prof. Neela Nataraj, IIT Bombay	A Priori and A Posteriori Error Estimation in Finite Element Analysis	11 September 2012
15	Prof. Rama Bhargava, IIT Roorkee	Mesh-free Methods—Implementations and Limitations	11 September 2012
16	Prof. Narayanan Namboodiri, Cochin University	Korovkin Test Sets in Problems in Preconditioners	20 December 2012
17	Dr. Janos Flesch, Department of Quantitative Economics, Maastricht University, The Netherlands	Optimal Strategies in Matrix Games and Nash Equilibria in Bimatrix Games	28 December 2012
18	Dr. Janos Flesch, Department of Quantitative Economics, Maastricht University, The Netherlands	Absorbing Games	2 January 2013
19	Prof. Jiyuan Tao, Department of Mathematics and Statistics, Loyola University of Maryland, USA	On the Jordon Quadratic Strict Semi-Monotonicity and Related Properties on Symmetric Cones	3 January 2013
20	Dr. Surya Prasath, University of Missouri, Columbia	Adaptive Total Variation Regularization in Image Processing	10 January 2013
21	Dr. Mani Lakshminarayanan, Merck Research Laboratories, Pennsylvania, USA	Mere Coincidence or a Meaningful Discovery	17 January 2013
22	Prof. Suhas Pandit, Abdus Salam, ICTP, Trieste, Italy	The Complex of HNN-Extensions for Free Groups of Rank N	24 January 2013
23	Prof. D. Yogeshwaran, Technion-Israel Institute of Technology	On the Topology of Some Random Complexes Built Over Stationery Point Processes	31 January 2013
24	Prof. R. Usha, Department of Mathematics, IIT Madras	An Inverse Problem in Free-Surface Flows—Substrate Reconstruction	14 February 2013
25	Prof. S. Senthamarai Kannan, Chennai Mathematical Institute, Siruseri	Ring of Invariants Under a Finite Group Action	7 March 2013
26	Prof. Sukhendu Mehrotra, Chennai Mathematical Institute, Siruseri	Rationality of Varieties	14 March 2013
27	Dr. Neelesh S. Upadhye, Department of Mathematics, IIT Madras	Introduction to R	21 March 2013
28	Dr. M. Sundari, Chennai Mathematical Institute, Siruseri	Tangential Convergence of Bounded Harmonic Functions on Generalized Siegel Domains	28 March 2013

Ph.D. viva-voce examinations

Sl. No.	Name of the Scholar	Title of the Thesis	Date of Viva
1	Debashish Mishra	Least Elements, Matrix Splittings and Nonnegative Generalized Inverses	18 May 2012
2	G. Krishna Kumar	A Study of Pseudospectrum and Condition Spectrum of an Element in a Banach Algebra	21 December 2012
3	G. Sankara Raju Kosuru	Existence of Best Proximity Points for Certain Classes of Cyclic Mappings	8 October 2012
4	M. Panchatcharam	GPU Accelerated Finite Point Set Method for Fluid Flows	22 February 2013

PhD. seminar talks

Sl. No.	Name of the Scholar	Roll No.	Title	Date
1	Ramanababu Kaligatla	MA08D012	A Mild-Slope Model for Membrane-Coupled Gravity Waves	11 April 2012
2	G. Krishnakumar	MA07D005	Banch Algebra Techniques to Compute Spectra, Pseudo Spectra and Condition Spectra of Some Block Operators with Continuous Symbols	9 July 2012
3	D. Ramakrishna	MA10D004	Heatline Analysis of Natural and Mixed Convection Flows with Square Cavities	26 September 2012
4	Chirala Satyanarayana	MA08D013	Local RBF Grid-Free Scheme with Spatially Variable Optimal Shape Parameter	28 January 2013
5	Shani Jose	MA08D004	Moore-Penrose Inverse of Perturbed Operators on Hilbert Spaces and their Nonnegativity	18 March 2013
6	Chirala Satyanarayana	MA08D013	RBF-Based Grid-Free Local Schemes with Variable (Optimal) Shape Parameter for Convection Diffusion Type Equations	25 March 2013
7	K. Ramanababu	MA08D012	Effect of a Submerged Vertical Barrier on Flexural Gravity Waves	26 March 2013
8	D. Ramakrishna	MA10D004	Heat Flow and Entropy Generation Analysis for Natural Convection Within Trapezoidal Enclosures	27 March 2013
9	M. Rajesh Kannan	MA08D007	P-Matrices and Intervals of Certain Classes of Z-Matrices	27 March 2013

Socially relevant activities carried out by the department

The Department of Mathematics and AG Technomathematik, Technische Universitaet Kaiserslautern, Germany have mutually agreed to set up a network in the scientific area of applied mathematics and mathematical modelling. This will enable intensive collaboration between IIT Madras and TU-Kaiserslautern in terms of annual workshops, faculty/student exchange and joint modelling seminars.

National Symposium on Mathematical Methods and Applications

The department organized the “National Symposium on Mathematical Methods and Applications” on 22 December 2012, the day of the birth anniversary of Srinivasa Ramanujan, the great Indian mathematician. The day’s events were inaugurated by Prof. Bhaskar Ramamurthi, Director, IIT Madras.

There were four invited lectures, delivered by the following faculty members:

- Prof. B.V. Limaye, IIT Bombay
- Prof. Janos Flesch, Maastrich University, The Netherlands
- Prof. S. Sundar, IIT Madras
- Prof. K. Srinivasa Rao (Retd.) IMSC, Chennai

In the afternoon, four parallel paper presentation sessions were held on the following subjects:

- Analysis and topology
- Algebra
- Discrete mathematics
- Applied mathematics I (differential Equations and related topics)

There were about 60 participants, and out of them 35 have presented some of their work in four parallel sessions.

FORAYS 2013

The department organized its annual festival, FORAYS, on 29 and 30 March 2013. The programme was inaugurated by Prof. Sarit Kumar Das, Dean, Academic Research, IIT Madras.

There were three lectures, delivered by the following faculty members:

1. Prof. Tiru Arthanari, University of Auckland, New Zealand
2. Prof. T.E. Venkata Balaji, IIT Madras
3. Prof. K.N. Ranganathan (Retd.), Ramakrishna Mission Vivekananda College, Chennai

The following events were also conducted:

1. Three Olympiads (school, UG, PG levels)
2. Two quiz competitions
 - Math Quiz: Conducted by Mr. K.N. Viswesaran, Hexaware Technologies Ltd.
 - Q|maths: Conducted by Fathima Safikaa S.N. and Anupam Mondal (M.Sc. students)

The valedictory function was inaugurated by Prof. R. Nagarajan, Dean, International and Alumni Relations, IIT Madras.

FORAYS 2013 was attended by 150 participants from reputed schools, colleges and universities in Chennai. This was for the first time that school students were invited to FORAYS.

QS World University Ranking

Highlighting a few points about this ranking

1. In the rankings by subject, in Mathematics, the Department of Mathematics of IIT Madras ranks in the range 101–150.
2. Among the other mathematics departments in India, only one department appears in this range.
3. Three other mathematics departments are in the range 151–200.
4. There are only five mathematics departments in India that appear in this list.
5. The Mathematics Department is the only non-engineering department in IIT Madras that appears in this list.
6. Source: <http://www.topuniversities.com/subject-rankings>
7. Also, recently there was a report in *Times of India* (14 May 2013) mentioning some of the above statistics.

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.

The Thermal Engineering Stream comprises six laboratories, namely, Heat Transfer and Thermal Power, Hydro-Turbo Machines, I.C. Engines, Refrigeration & Air Conditioning, Thermal Turbomachines and Thermodynamics & Combustion.

The Design Stream consists of the Machine Design Section and the Machine Dynamics Laboratory.

The Manufacturing Engineering Stream consists of the Manufacturing Engineering Section and the Precision Engineering & Instrumentation laboratories.

4.13.2. Academic Programmes

New courses introduced

Sl. No.	Course No.	Title
1	ME7022	Droplet and Spray Dynamics
2	ME6180	Energy Minor—Energy and Environment
3	ME6590	Energy Minor—Renewable Energy Technology

Students on roll

Programme	I year	II Year	III Year	IV Year	V Year and Others	Total
B.Tech.	83	83	82	64	5	317
Dual Degree	77	68	73	64	53	335
M.Tech.	96	98	0	0	0	194
M.S.	53	29	23	14	3	122
Ph.D.	44	42	34	36	41	197
Total	353	320	212	178	102	1165

Names of Student/Scholar who attended Conference/Seminar and Symposia Abroad/India

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposium/Workshop	Date and Venue	Financial Assistance from
Abroad					
1	V. Sivaraman	ME08DO11	CIRP-2012	29–31 October 2012, Japan	IIT Madras
2	Finney Charles	ME07D001	ASME 2012–International Mechanical Engineering Congress & Exposition (oral Presentation: Influence of Stress on Nano-Clay Reinforced Polyamide 6 Subjected to Rolling Contact Fatigue. Poster: Influence of Stress on Nano-Clay Reinforced Polyamide 6 Subjected to Rolling Contact Fatigue)	9–15 November 2012, Houston, TX, USA	IIT Madras
3	A.S.S. Balan	ME09D032	37th MATADOR	25–27 July 2012, UK	IIT Madras
4	V. Sivaraman	ME08DO11	CIRP–WEB Conference	11–14 June 2012	IIT Madras
5	Deepak Lawrence K.	ME08D014	3rd International Conference on Production, Energy and Reliability	12–14 June 2012, Universiti Teknologi PETRONAS, Malaysia	—

6	Ravikumar Dumpala	ME09D026	TMS 2013	3–7 March 2013, San Antonio, Texas, USA	—
7	R. Srikanth	ME07D017	ASME 2012–IMECE2012	9–15 November 2012, Houston, Texas, USA	—
8	M. Boopalan	ME10S029	37th MATADOR	25–27 July 2012, UK	IIT Madras
India					
1	A.S.S. Balan	ME09D032	25th AIMTDR 2012	14–16 December 2012, Jadhavpur University	IIT Madras
2	D. Gridhar	ME06D014	25th AIMTDR 2012	14–16 December. 2012, Jadhavpur University	IIT Madras
3	V. Sivaraman	ME08DO11	ISRS 2012	13–15 December 2012, IIT Madras	IIT Madras
			IEEE-ICRDPET	29–30, March 2013, EGSP Engineering College, Nagapattinam	IIT Madras
4	Kumarasamy Udugu	ME10S035	AIMTDR	14–16 December 2012	—
5	A. Gridharan	ME09D028	AIMTDR	14–16 December 2012	IIT Madras
6	Deepak Lawrence K.	ME08D014	AIMTDR 2012	14–16 December 2012, Jadavpur University, Kolkata, India	—
7	Ravikumar Dumpala	ME09D026	ISRS 2012	13–15 December 2012	IIT Madras
			ANM-2012	17–19 October 2012	IIT Madras
8	R. Ramakrishnan	ME09D025	4th International & 25th AIMTDR Conference	14–16 December 2012, Jadhavpur University, Kolkata	IIT Madras
			International Conference on Advances in Manufacturing Technology (ICAMT)	15–17 June 2012, Chennai Institute of Technology, Chennai	IIT Madras
9	Lijo Paul	ME11D028	4th International & 25th AIMTDR Conference	14–16 December 2012, Jadhavpur University, Kolkata	—
			ICAMT	15–17 June 2012, Chennai Institute of Technology, Chennai	IIT Madras
			International Conference on Mechanical Engineering Technology (ICOMET)	21 January 2012, St. Joseph's College of Engineering & Technology, Kerala	—
10	R.K. Sahu	ME11D041	4th International & 25th AIMTDR Conference	14–16 December 2012, Jadhavpur University, Kolkata	—
			4th International Conference on Advanced Nano Materials (ANM)	17–19 October 2012, IIT Madras	IIT Madras
11	Gokul Balakrishnan	ME09S005	10th Jubilee IEEE International Symposium on Applied Machine Intelligence and Informatics (SAMI)	26–28 January 2012, Herl'any, Slovakia	—
12	C.S. Ajay	ME10S023	International Symposium on Recent Advances in Integrated Energy and Energy Conservation (RAIEEC-2012)	19–20 December 2012, Hyderabad	Self funding

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	V. Sivaraman	ME08DO11	Best Paper	EGSP Engineering College, Nagapattinam, Tamilnadu
2	R.Vairamuthu, M. Boopalan	ME11S016, ME10S029	First consolation prize	IMTMA, Bangalore

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	Saswat K. Rout	M.Tech.	Project in the field of energy	—
2	T.S.D. Karthik	ME08B105	Sri Sagar Pushpala Award Prof. Radhakrishnan Endowment Award	IIT Madras

4.13.3. Faculty and Their Activities

Faculty

Name of the Faculty Member	Areas of Specialization
Professors	
Sundararajan T. [Head]	Droplet combustion, supersonic reacting jet flows, computational fluid dynamics
Ajit Kumar Kolar	Fluidized bed combustion of coal and biomass, fuel cells, advanced power generation system analysis
Achintya Mukhopadhyay	Spray combustion, reactive flow modeling, combustion dynamics, atomization and spray formation, multiphase flow modelling
Babu Viswanathan	CFD, high-speed reacting flows, high-performance computing
Chakravarthy Balaji	Fundamental heat transfer, optimization of thermal systems, inverse problems in heat transfer, satellite meteorology, numerical weather prediction
Chandramouli P.	Non-linear dynamics, acoustics and fluid-structure interactions
Das S.K.	Heat exchangers, two-phase flow, nano-fluids, jet oscillations, nuclear heat transfer
Govardhan M.	Compressors, steam and gas turbines—cascade secondary flows—boundary layers— inlet flow distortion, tip clearance flows, Wells turbine, cross-flow fans, CFD
Krishnan Balasubramaniam	Nondestructive evaluation, materials characterization, online measurements
Maiya M.P.	Refrigeration (sorption systems and co-generation), air conditioning (desiccant and evaporative cooling and energy aspects), ventilation, drying and effluent evaporation, metal hydride energy conversion systems
Mani A.	Solar energy, refrigeration and air conditioning, cryogenic engineering, alternate working fluids, effluent treatment
Mayuram M.M.	Surface engineering, wear and wear control, thermal sprayed coatings, fatigue and fracture aspects in design and analysis
Muthuveerappan G.	Machine design, vibrations of structures in fluid environments, generation of gear teeth and fillet profiles for stress analysis and design
Pramod S. Mehta	Combustion modeling, fluid dynamics in IC engines, engine emission control
Prasad B.V.S.S.S.	CFD in turbo machines, turbine blade cooling, rotor–stator interactions, heat flux measurements, thermal hydraulics
Raju Sethuraman	Computational solid mechanics, fatigue and fracture of materials
Ramamoorthy B.	Metrology, machine vision applications, manufacturing and coating processes
Ramesh A.	IC engine combustion and emissions, electronic engine management, alternative fuels
Ramesh Babu N.	Laser beam machining (LBM), abrasive finishing process, abrasive waterjet machining (AWJM), process modeling, computer aided manufacturing, CNC, PLC
Raghu Prakash V.	Experimental fatigue analysis, structural integrity, test systems design
Seshadri Sekhar A.	Rotor dynamics, tribology, condition-monitoring
Shunmugam M.S.	Metrology, manufacturing—gear, BTA machining, reaming, centreless grinding, EDM, friction welding, manufacturing automation & robotics, computer application in manufacturing—process planning, inspection planning, quality control
Sitaram N.	Turbomachinery/end wall flows, computational fluid dynamics, compressors and turbines, boundary layers, tip clearance flows

Siva Prasad N.	Finite element analysis, computer aided design, stress analysis, machine design
Sujatha C.	Machine dynamics, vehicular vibration, instrumentation and signal analysis
Srinivasan K.	Jet flow and noise, active and passive flow control, measurement and instrumentation
Venkateshan S.P.	Heat transfer, instrumentation
Venkatarathnam G.	Refrigeration, cryogenic engineering, heat exchangers
Vijayaraghavan L.	Machining, CAD, surface engineering, grinding
Associate Professors	
Arunn Narasimhan	Heat transfer and fluid flow in porous media, phase change and convection
Dhiman Chatterjee	Fluid mechanics, turbomachines, cavitation
Krishna Kannan	Continuum mechanics, thermodynamics and constitutive modeling of polymeric materials
Mallikarjuna J.M.	Simulation of engine processes, data acquisition, design of engine components, in-cylinder flow analysis using PIV
Shankar Krishnapillai	Structural vibrations, design optimization, system identification
Srinivas Reddy K.	Renewable energies, solar energy, energy conservation, energy environment, heat transfer in two-phase systems
Sujatha Srinivasan	Biomechanics, mechanisms, prosthetics and orthotics
Raghavan V.	Combustion modeling, droplet combustion, laminar flames
Parag Ravindran	Viscoelastic fluids constitutive modeling
Shamit Bakshi	CFD in I.C. engines, liquid atomization and spray systems, fuel nozzle modeling
Somashekhar S. Hiremath	Micromachining, mechatronic system design
	Oil hydraulics, system simulation and modelling, FEM
Assistant Professors	
Abhijit Sarkar	Vibration, acoustics, asymptotic methods
Amitava Ghosh	Machining & grinding of advanced materials, development of abrasive tools, metal–ceramic joining
Anand T.N.C.	CFD simulations of I.C. engines processes, laser-based diagnostics of sprays and combustion
Arvind Pattamatta	Nanoscale energy transport, computational fluid dynamics and heat transfer, turbulence modeling
Ashis Kumar Sen	Microfluidics, microfabrication, micro electromechanical systems and fluid mechanics
Manivannan P.V.	Instrumentation and controls, mechatronic system design, microprocessor
Manoj Pandey	Finite element analysis, dynamics and MEMS
Narasimhan Swaminathan	Computational materials science and mechanics, radiation damage in materials, multiscale modelling of complex phenomenon in nuclear and fuel cell materials, finite element method, continuum mechanics, multiscale modeling, radiation damage in materials, computational materials science
Prabhu Rajagopal	Ultrasonic waves for nondestructive evaluation, health monitoring and process control, computational methods for modeling elastic wave phenomena
Ramkumar Penchaliah	Tribology, engine tribology, condition monitoring and nanolubrication
Ratna Kumar Annabattula	Finite element analysis, granular mechanics, buckle-driven de-lamination, fusion materials, mechanics of micro-systems
Ravikiran Sangras	Experimental fluid mechanics, combustion, turbulent flows
Samuel G.L.	Measurement and inspection of free form surfaces
	Evaluation of form errors, micro machining
Shaligram Tiwari	Refrigeration and air conditioning, flow transition, vortex dynamics, CFD, Marangonic convection
Sushanta Kumar Panigrahi	Friction stir processing and welding, superplasticity, advanced metal forming techniques for producing bulk nanostructured/UFG metals and alloys, thermo-mechanical processing of light weight structural metallic materials
Soundarapandian S.	Synthesis of structural materials, fabrication of bioimplants, laser applications in medical industry, laser-aided surface engineering

Viswanath K.	Turbomachinery noise
Professor Emeritus	
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
Ganesan N.	Finite element analysis, vibration and smart structures
Narayanan S.	Random and nonlinear vibration, smart structures, acoustics
Srinivasa Murthy S.	Refrigeration & air conditioning, energy conservation & heat recovery, solar & hydrogen energy utilization
Singaperumal M.	Mechatronic system design, oil hydraulics, system simulation and modeling
Visiting Professors	
Ramamurthi K.	Combustion, propulsion, explosions
B.P. Pundir	I.C. engine combustion

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

Sl. No.	Coordinator(s)	Title	Period
Conferences			
1	M.S. Shunmugam	Automation and Computer Applications in Manufacturing (ACAM)	6–10 February 2012
2	Raghu Prakash	4th International Conference on Research Design (ICORD' 13)	7–9 January 2013
Workshops			
1	N. Ramesh Babu	Sheet Metal Product Design And Manufacturing	14–15 September 2012
Short-term courses			
1	A. Ramesh, Shamit Bakshi, S.R. Chakravarthy	Automotive Engine Combustion	24–28 September 2012
2	G.L. Samuel	Automation and Computer Applications in Manufacturing (ACAM)	6–10 February 2012

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

Sl. No.	Name of Faculty Member	Title	Institution	Period
Workshops				
1	S. Srinivasa Murthy	Workshop on Clean and Sustainable Transportation	IIT Madras	25 February 2013
2	M.S. Shunmugam	Workshop in Advanced Manufacturing	Research Councils UK–India	30 January to 1 February 2012
3	B. Ramamoorthy	STTP on Robotics: Mechanics, Control, Sensing, Vision and Intelligence	IIT Madras	14–18 January 2013
		Erasmus Mundus Heritage Kick-off Meeting Workshop, involving 10 European universities and 9 Indian universities	IIT Madras	5–6 November 2012
		International Symposium on Metrology and Micro Machining	IIT Madras, Anna University	20 February 2013
4	N. Ramesh Babu	Curriculum development workshop	MPSTME, Mumbai	2–3 April 2012
5	P. Ramkumar	Faculty development programme	TCL, IIT Madras	10–12 December 2013
Seminars				
1	P. Ramkumar	Nanosurface Protection & Metrology Requirement	IIT Madras–AU-Taylor Hobson, UK	20 February 2013
Conferences				
1	J.M. Mallikarjuna	World Automotive Congress FISITA2012	SAE China, Beijing	27–30 November 2012

2	T.N.C. Anand	12th International Conference on Liquid Atomization and Spray Systems	Heidelberg, Germany	September 2012
3	L. Vijayaraghavan	CIRP-2012	Nagoya University, Japan	29–31 October 2012
4	M.S. Shunmugam	AIMTDR (won Conference Best Paper Award)	Jadhavpur University, Kolkata	12 December 2012
5	G.L. Samuel	All India Manufacturing Technology Design and Research Conference (AIMTDR)	Jadhavpur University, Kolkata	14–16 December 2012
		National Conference on Innovations in Mechanical Engineering	Gojan School of Business and Engineering, Chennai	31 January 2012
6	B. Ramamoorthy	International Conference on Advanced Nano Materials (ANM-2012).	IIT Madras	17–19 October 2012
		International Conference on Advances in Manufacturing	Anna University	6–8 February 2013
7	N. Ramesh Babu	Conference on Digital Manufacturing	Park Sheraton, Chennai	25 January 2012

Short-term courses

1	Somashekhar S. Hiremath, B. Ramamoorthy	Short-Term Training Programme (STTP) on Robotics: Mechanics, Control, Sensing, Vision and Intelligence for engineering college faculties, industries and R&D personnel	IIT Madras	14–18 January 2013
2	Somashekhar S. Hiremath, M. Singaperumal	In-house training programme, Advanced Hydraulic Control System, for scientists of Vikram Sarabhai Space Centre (VSSC), Thiruvananthapuram	VSSC, Trivandrum	28–30 May 2012
3	Somashekhar S. Hiremath, M. Singaperumal T. Asokan	In-house training programme, Fundamentals of Robotics, for scientists of VSSC, Thiruvananthapuram	VSSC, Trivandrum	27–29 September 2012
4	Somashekhar S. Hiremath, G Sarvanakumar	In-house training programme, Optimization Techniques, for scientists of VSSC, Thiruvananthapuram	VSSC, Trivandrum	21–23 November 2012

Special lectures delivered by faculty members in other institutions

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
1	Shamit Bakshi	Diffusion Flames	DRDL, Hyderabad	20 July 2012
2	Shaligram Tiwari	To Conduct Ph.D, Viva-Voice Examination	Knowledge Institute of Technology, Kakapalayam, Salem	10 April 2012
3	G. Venkatarathnam	Research and Development of Low-Temperature Refrigeration Systems at IIT Madras	Bhaba Atomic Research Centre, Mumbai	18–19 April 2012
4	M.P. Maiya	Conducting comprehensive viva voce examination	VIT, Vellore	4 May 2012
5	A. Mani	Discussing issues related to sago and rice husk	IIS, Bangalore	9–13 May 2012
6	Shaligram Tiwari	Conducting viva for M.Des. Mechanical Systems	Indian Institute of Technology Design and Manufacturing (IITD & M), Kanchipuram	21 May 2012
7	A. Mani	Conducting Ph.D. viva voce examination	Malaviya National Institute of Technology, Jaipur	28–29 June 2012
		Conducting Ph.D. viva voce examination	Malaviya National Institute of Technology, Jaipur	2 July 2012

	A. Mani	Giving lectures	IIT Rajasthan	20–22 September 2012
8	M.P. Maiya	Ph.D. viva voce examination NBA accreditation	NIT Kurukshetra Shri Ram Institute of Technology, Jabalpur, Madhya Pradesh	28 September 2012 11–12 October 2012
9	A. Mani	Attending annual progress seminar of Ph.D. scholar	Bhabha Atomic Research Centre (BARC), Mumbai	22–23 November 2012
10	M.P. Maiya	Presentation of project proposal to PAC at NIT Trichy 1st DC meeting	NIT Trichy VIT University, Chennai Campus	14 December 2012 19 December 2012
11	G. Venkatarathnam	International Workshop on Ionic Liquids—Alternative Benign Material for Renewable Energy and Its Applications	National Chemical Laboratory (NCL), Pune	17 January 2013
12	A. Mani	Inaugurating national-level CSIR- sponsored one-day seminar on heat and mass transfer	KPR Institute of Engineering & Technology, Coimbatore	1 February 2013
13	G. Venkatarathnam	Bry-Air Refrigeration and Aircon Awards jury meeting	New Delhi	7 February 2013
14	A. Mani	Technical bid evaluation committee meeting for solar refrigerator	IIT Rajasthan	22 February 2013
15	M.P. Maiya	Workshop on energy-efficient buildings	Pune	28 February 2013
16	L. Vijayaraghavan	High-Speed Machining Manufacturing Composites Grinding	Anna University, Villupuram Apollo Engineering College Institution of Engineers, Coimbatore Chapter WENDT, Hosur	28 February 2013 5 February 2013 21 July 2012 20 October 2012
17	M.S. Shunmugam	High-Speed End Milling	NIT, Warangal	17–18 May 2012
18	G.L. Samuel	FDP on Quantitative Research Techniques ARDB panel meeting on materials and manufacturing National Seminar on Micromachining Techniques	U.B.D.T. college of Engineering, Davangere, Karnataka IISc, Bangalore Karunya University, Coimbatore	26–27 March 2012 12 October 2012 4 December 2012
19	S. Soundarapandian	Laser in Medical Industry—Next- Generation Biomaterials	Aurolab, Madurai	11 January 2013
20	B. Ramamoorthy	Machine Vision Sensor Applications—STTP Course on Mobile Robots: Mechanics, Control, Sensing, Vision and Intelligence	IIT Madras	15 January 2013
21	N. Ramesh Babu	Keynote talk	Saveetha Engineering College, Chennai	16 March 2012
22	Raghu Prakash	Crash Assessment of Extruded Sections with and Without Foam Filling Life Extension Studies—Present Status, Opportunities and Challenges New Product Development— Opportunities and Challenges in Aerospace Engineering to Biomedical Engineering	Indo-US Symposium on Crash Safety, IISc, Bangalore (keynote lecture) Government College of Engineering, Barton Hill, Thiruvananthapuram (keynote lecture) Bannari Amman Institute of Technology, Sathyamangalam— Indo-UK Conference on Innovations in Engineering (keynote lecture)	March 2012 — September 2012

23	K.S. Reddy	Challenges, Innovations and Opportunities in Concentrated Solar Power Generation for Sustainable Energy Supply and Environment	Sathyabama University, Chennai	28 February 2013
		Concentrated Solar Power Technologies	St. Joseph College of Engineering, Chennai	12 February 2013
		Solar Thermal Power Generation	Anna University, Chennai	24–25 January 2013
		Nano-Engineering in Concentrated Solar Power (CSP) Generation for Performance Improvement	Brazil–India Workshop on Applications of Nano-Engineering in Renewable Energy Sources at Angra dos Reis, Rio de Janeiro, Brazil	9 October 2012
		Solar Power Generation Technologies	IGCS Summer School, Berlin, Germany	7–16 July 2012
		Energy Storage System in Solar Thermal Power Generation for Sustainable Energy Production	4th Indo-German Frontiers of Energy, Halle, Merseberg, Germany	14 June 2012
		Indigenous Technologies for Solar Power Generation	Uttam Devi Mohanlal College of Engineering, Jaipur	20–21 April 2012
		Solar Thermal Power Generation for Sustainable Energy Production	Amity Institute of Green Technology Research and Studies, Noida	14 March 2012
		Concentrating Solar Power Technologies for Sustainable Energy Production	Sathyabama University, Chennai	8 March 2012

Visits abroad by faculty members

Sl. No.	Name of Faculty	Country Visited	Date	Purpose of Visit	Funding from
1	T.N.C. Anand	Heidelberg, Germany	September 2012	Attending conference	—
2	J.M. Mallikarjuna	Beijing, China	27–30 November 2012	International conference	IIT Madras
3	A. Mani	Barcelona, Spain	23–26 April 2012	International Conference on Desalination and Environment—oral presentation, Effect of Flame Spray Coating on Falling Film Evaporation for Multi-Effect Distillation	IIT Madras
		Universitat of Rovira I Virgili Tarragona, Spain	26 April to 1 May 2012	Lectures: (1) Studies on Bubble Absorbers and (2) Studies on Compact Generator	IIT Madras
		University of Catholique, Brussels, Belgium and Centre for Urban Energy, Ryerson University, Toronto, Canada	8–15 July 2012	Visit to various universities	IIT Madras
		University of Catholique, Brussels, Belgium and Centre for Urban Energy, Ryerson University Toronto, Canada	20–22 July 2012	Visit to various universities	IIT Madras
		Centre for Urban Energy, Ryerson University Toronto, Canada	12 July 2012	Solar vapour absorption refrigeration systems	IIT Madras
		Centre for Urban Energy, Ryerson University Toronto, Canada	13 July 2012	Solar vapour jet refrigeration systems	IIT Madras

	A. Mani	Purdue University, USA	16–19 July 2012	14th International Refrigeration and Air-Conditioning Conference	IIT Madras
4	S. Srinivasa Murthy	Tarragona, Spain	12–16 December 2012	EU-sponsored Marie Curie Programme, NARILAR Project	NARILAR Project
5	G. Venkatarathnam	Tarragona, Spain	12–26 December 2012	EU-sponsored Marie Curie Programme, NARILAR Project	NARILAR Project
6	S. Srinivasa Murthy	Germany	26 May–24 June 2012	Solar Institute Julelich—Lectures	Achen University
		Germany	16–19 September 2012	Indo-German science and technology meeting	DST, Government of India
		Switzerland	21–28 October 2012	Leader of scientific delegation	DST, Government of India
		Spain	11–30 December 2012	NARILAR Project	Marie Curie Programme
7	L. Vijayaraghavan	Japan	29–31 October 2012, Japan	Conference	CPDA
8	B. Ramamoorthy	Belgium	19–22 September 2012	European Commission—project co-ordinators meeting	Heritage Erasmus Mundus Project
		Germany	25 November–4 December 2012	International Week at Technical University Munchen, Germany	DAAD
		France	20 February–4 March 2013	Project committee meeting	Heritage Erasmus Mundus Project
9	N. Ramesh Babu	Japan	1 June 2012	Keynote talk in Amada Innovation Fair 2012, Japan	Amada Co. Ltd., Japan
		USA	9–15 November 2012	Track organizer and session chair for 2 sessions at ASME 2012	IIT Madras project funding
10	Somashekhar S. Hiremath	Ho Chi Minh City, Vietnam	10–11 October 2012	GATE kick-off meeting	Erasmus Mundus Project
11	Raghu Prakash	Czech Republic	1–5 October 2012	Second International Conference on Small Specimen Test Methods (presenting paper)	IIT Madras (CPDA, PCF)
		Houston, TX, USA	13–19 November 2012	Organizing and chairing sessions and presenting papers at ASME IMECE 2012	IIT Madras (CPDA, PCF)
12	K.S. Reddy	Brazil	9 October 2012	Attending Brazil–India workshop	IIT Madras funding
		UK	17–21 November 2012	Attending project review meeting	DST–UKIERI funding
		Germany	16 November 2012	Visiting DLR, Koln	IIT Madras funding
		Spain	13–14 November 2012	Attending conference—CSP Today 2012	IIT Madras funding
		Germany	7–16 July 2012	Attending IGCS Summer School	IIT Madras funding
		Germany	13–16 June 2012	Attending 4th INDOGFOE symposium	IIT Madras funding

Honours and awards obtained by faculty

Sl. No.	Name of Faculty Member	Name of Award	Awarded by	Awarded for	Date of Award
Honours					
1	N. Ramesh Babu	Honorary Member	The Romanian Society of Mechanical Engineers	Promoting the arts and science in the field of mechanical engineering	2012
Awards					
1	N. Ramesh Babu	IIM–Binani Gold Medal	Indian Institute of Metals (IIM)	Best paper published in <i>Transactions of IIM</i> , August–October 2012	17 November 2012
2	C. Balaji	Marti Annapurna Gurunath Award for Excellence in Teaching	IIT Madras	Excellence in teaching	2013

Books, monographs authored/co-authored

Sl. No.	Name of Faculty Member	Title	Publisher	Author/Co-author
Books				
1	S. Soundarapandian	Laser surface hardening (book chapter)	ASM	Author
2	Raghu Prakash	ICoRD'13–Global Product Development Infrared Thermography	Springer-Verlag In-Tech Publishers	Author and Editor Editor

Fellowships of academies and professional societies

Sl. No.	Name of Faculty Member	Year of Admission	Awarded by
1	M. Prakash Maiya	2013	Institution of Engineers(India)
INAE			
1	C. Balaji	2013	Indian National Academy of Engineering
Others			
1	N. Sitaram	2013	American Institute of Aeronautics and Astronautics
2	N. Ramesh Babu	2012	IIM–Binani Gold Medal, Indian Institute of Metals, Kolkata
3	B. Ramamoorthy	2012	Distinguished Alumnus, PSG Institutions, Coimbatore
4	Sarit Kumar Das	2012	India Citation Award, Thomas Reuters

Journal editorial boards

Sl. No.	Name of Faculty Member	Position (Editor/Member)	Journal
1	S. Srinivasa Murthy	Member	Journal of Energy, Heat and Mass Transfer
		Member	Innovative AC&R
		Editor	Applied Thermal Engineering (Elsevier)
		Member	International Journal of Low Carbon Technologies (Oxford University Press)
2	M. Prakash Maiya	Member	International Journal of Low Carbon Technologies
		Member	International Journal of Sustainable Built Environment
3	M.S. Shunmugam	Reviewer	Precision Engineering
		Reviewer	International Journal of Machine Tools and Manufacture
		Reviewer	International Journal of Advanced Manufacturing Technology
		Reviewer	Journal of Intelligent Manufacturing Systems
		Reviewer	American Society of Mechanical Engineers
		Reviewer	Wear
		Reviewer	International Journal of Production Research
		Editorial Review Board	International Journal of Materials Forming and Machining Processes

	M.S. Shunmugam	Member on the Board	International Journal of Machine Tools and Manufacture
4	B. Ramamoorthy	Editorial Review Board	International Journal of Tribology and Surface Engineering
		Member on the Board	Optics and Lasers in Engineering Measurement
			Proceedings of the Institution of Mechanical Engineers, Part B:
			Journal of Engineering Manufacture
			Machine Vision and Applications
			Lasers in Engineering
			Journal of Alloys and Compounds

4.13.4. Design and Development Activities

New facilities added or major equipment procured

Sl. No.	Name of Equipment	Value (lakhs of Rs.)
1	Inverted metallurgical microscope	5.3775
2	Variable-speed double-disc polisher	6.53103
3	Self-pressurized cryogenic dewar	2.97
4	Mini CNC milling machine	2.993
5	Low-spced precision cutting machine	2.55132
6	OIM software with computer	2.65
7	Deep freezer	0.1399
8	Vernier caliper	0.09
9	Muffle furnace	0.45
10	Fume hood	0.6
11	Vacuum pump	0.12
12	Gas cylinder	0.164
13	Screw gauge	0.0945
14	Dynamometer—complete set	15.00
15	Inverted pendulum	1.75
16	Machine vision camera	0.8
17	Hand-held Perthometer	1.2
18	Conductivity meter	1.0
19	A creep testing unit was design in-house. It has been built and installed. The funding was from the lab funds. Jointly done by Krishnan Balasubramanian and Parag Ravindran	3.5
20	Double pulsed laser	20
21	CCD camera	4.5

Patents

Patents filed

Sl. No.	Name of Faculty Member	Topic of Patent
1	S. Soundarapandian	Laser-Assisted Machining (LAM) of Hard Tissues and Bones
2	K.S. Reddy	Solar Parabolic Trough Collector with Integrated Torque Tube—Box Support Structure Passive Cooling-Based Secondary Concentrator for Solar Concentrating Photovoltaic (CPV) System for Uniform Flux Distribution and Effective Cooling

4.13.5. Research and Consultancy

Sponsored research projects

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of Rs.)	Co-ordinators
1	Solar Absorption Refrigeration Systems Operating with Ionic Liquids as Absorbents and Ammonia as Refrigerant	21 May 2012 to 20 May 2015	DST/Indo-Spanish	48.91	G. Venkatarathnam, S. Srinivasa Murthy, R. Gardas

2	Thermodynamic Behaviour of IV Generation Working Fluids for Renewable Energy Technologies	18 December 2012 to 17 December 2015	DST/Indo-Ukraine	9.76	G. Venkatarathnam, S. Srinivasa Murthy
3	Low-Temperature ORC Storage and Hybridization	22 November 2012 to 15 January 2013	DST/Indo-US	71.0	G. Venkatarathnam, S. Srinivasa Murthy, R. Gardas
4	Optimal Thermal Design, Fabrication and Testing of Solid State Hydrogen Storage Devices	2012–2014	DST	25.0	S. Srinivasa Murthy, M. Prakash Maiya
5	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
6	Development of Solar Tri-generation System for Cooling, Heating and Potable Water	2013–2016	DST	88.59	K.S. Reddy, M. Prakash Maiya
7	Performance Analysis and Development of Compact Vapour Jet Refrigeration System	2012–2014	DST	88.0	A. Mani, Shaligram Tiwari
8	Measurement and Evaluation of Surface and Dimensional Features of Micro Components Using a Confocal Displacement Sensor	2012–2014	CSIR	17.92	G.L. Samuel
9	Development of Bi-metallic Joining Technique and Realization of Bi-Metallic Adaptor for Launch Vehicles	18 March 2013 to 17 March 2015	ISRO	25.032	S.K. Panigrahi (Principal Investigator), G.D. Janaki Ram (Co-Investigator), P.V. Venkatakrishnan (Co-Investigator)
10	Machinability and Mechanical Properties of Ultrafine Grained Aluminium Alloys	16 July 2012 to 15 July 2014	Renault Nissan	9.13	S.K. Panigrahi (Principal and Sole Investigator)
11	Development and Studies on Machinability and Mechanical Properties of Nanostructured/UFG Magnesium Alloys	12 June 2012 to 11 June 2015	NFSG-ICSR	23.00	S.K. Panigrahi (Principal and Sole Investigator)
12	Erasmus Mundus Heritage International Project	2013–2016	European Commission	Total budget 3 Million Euro for IIT Madras 12,500 Euro.	Co-ordinator, Bennis, ECN France & for IIT Madras—B. Ramamoorthy (Joint Coordinator of the project)
13	Development of Next-Generation High-Precision Grinding Machine Tool	January 2012 to December 2015	OPSA	284.9	N. Ramesh Babu (PI)
14	Investigation of Damage Mechanisms in Composite Material Under Cyclic Loading	6 February 2012 to 5 February 2015	ARDB	75.71	H.S.N. Murthy (PI), Parag Ravindran (Co-PI), P. Sriram
15	Development of Solar Trigenation System for Cooling, Heating and Potable Water	2012–2015	DST–SERI	109.02	K.S. Reddy, M.P. Maiya
16	Thematic Centre on Water Purification using Nanotechnology—Solar Desalination	2012–2017	DST	68.00	K.S. Reddy, S.K. Das
17	Development of Solar Collector Field for Solar Thermal Power Plant—Phase 1	2012–2015	DST	299.08	T. Sundararajan, K.S. Reddy
18	UK-India Project on Development and Integration of Biomass—Concentrated Photovoltaics System for Rural and Urban Energy Bridge	2012–2015	EPSRC-UK & DST, India	276.24	K.S. Reddy

19	Investigation of Heat Transfer Augmentation on Dimpled Surfaces Using Wall Jet and Impinging Jet Flows	2012–2015	DST	24.94	Arivind Pattamatta
20	A Development of a Plug-n-Play Microfluidic Research Platform and Novel Approaches to Mixing, Droplet, Particle Separation and Pumping at Microscale	2012–2015	DST	27.60	Ashis Kumar Sen
21	Theoretical and Experimental Studies on Crew Seat Impact Attenuation System	2013–2014	ISRO	10.70	P. Chandramouli
22	Non-Destructive Testing Technologies for Joints	2012–2014	TDB	43.70	Krishnan Balasubramaniam
23	Characterization of Evaporation and Burning Rates of Neat and Blended Biodiesel Fuels of Indian Origin	2012–2014	DST	26.27	Pramod S. Mehta
24	Numerical Simulation of Suppression of Residual Flames and Cooling of Solid Rocket Motors Using Water Injection	2013–2015	ISRO	17.75	V. Raghavan
25	Development of a Mode Switching Biogas–Biodiesel–Diesel HCCI Engine with a High Pressure Common Rail Injection System	2012–2014	DST	88.39	A. Ramesh
26	Optimization of Thermal and Shock Wave Damage During Selective Tissue Cell Removal Using Laser Pulse Shaping	2012–2015	DST	11.01	Sarit Kumar Das
27	The Vibration-Based Technique for Fatigue Shaft Crack Detection and Life Estimation of Rotors	2012–2015	CSIR	22.67	A. Seshadri Sekhar
28	Development of an Experimental Methodology for the Estimation of Anisotropic Conductivity of Plates Using the Inverse Heat Transfer Method	2013–2015	ISRO	25.98	S.P. Venkatesan

Industrial consultancy projects

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of Rs.)
1	J.M. Mallikarjuna	Evaluation of Scavenging Characteristics of a Different Port Configurations of a Two-Stroke Moped Engine Using Skip Fire, Jante's Method and PIV Technique	TVS Motors	12
2	Shamit Bakshi	Testing of AK 20 Engine as per BIS Standard	KTEC Agros Ltd.	1.98
3	Raghu Prakash	Stress Analysis of A-Frame Stillage	Saint-Gobain Ltd., Kanchipuram	1.9
		Failure Analysis of Kevlar Cable During Underwater Exploration	NIOT	1.6
4	P. Chandramouli, Parag Ravindran	Seismic Test on 33 kV Vacuum Circuit Breaker	Crompton Greaves Ltd.	2.13
5	Parag Ravindran	Seismic Test on 245 kV Isolator with 2 Earth Switches	GR Power Switchgear Ltd., Hyderabad	1.96
6	S. Swarnamani and Parag Ravindran	Seismic Test on 765 kV Disconnecter	HAPA	3.03

7	P. Chandramouli, Parag Ravindran	Seismic Test of 765 kV Disconnecter	ALSD	2.52
		Seismic Test of 800 kV CT and CVT	ARTE	10.36
8	S. Swarnamani, Parag Ravindran	Seismic Test on 220 kV 1600 A HCB Isolator (Open/Close)	GRPO	2.41
9	C. Sujatha, Parag Ravindran	Seismic Test on 245 kV Circuit Breaker	ABBL	2.35
10	P. Chandramouli, Parag Ravindran	Seismic Test of 765 kV CVT	ALST	4.49
11	S. Swarnamani, Parag Ravindran	Seismic Test on 765 kV Disconnecter (S&S)	SWIT	3.03
12	P. Chandramouli, Parag Ravindran	Seismic Test of 245/145 kV Gas Circuit Breakers	CROM	5.39
13	K.S. Reddy	Preparation of DPR for the Project Potable Water and Biomass Power Production for Kuttanad Region	Government of Kerala	5.50
		Common Code Project on Design of Solar Thermal Energy Systems & Thermal Conductivity of Two-Phase Materials	NGP Industries, New Delhi	5.0

RBIC projects

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of Rs.)
1	Shamit Bakshi, Anand T.N.C.	Experiments on Gas Atomization of Low Melting Point Metal for Powder Production	Sandvik Asia Pvt. Ltd.	24.00
2	Anand T.N.C., Shamit Bakshi	Study of Urea Droplet Evaporation and Spray Mixing	Caterpillar India Pvt. Ltd.	50.00
3	N. Ramesh Babu	Development of Analysis Tool for Prediction of Deformations in Sheet Metal Bending and its Integration into Existing Sheet Metal Bending Software	Amada Soft India Pvt. Ltd.	23.25
		Investigation on edge grinding quality of automotive glass	Saint Gobain Research, India	45.68
4	K.S. Reddy	Effect of shot content on the thermal conductivity of the LRB wool mattress	BHEL, Ranipet	9.71

Retainer consultancy

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of Rs.)
1	K.S. Reddy	Design & Developmental Activities and Evaluation Of Solar Parabolic Dish Collector Cavity Receiver System	Forbes Solar Pvt. Ltd., Pune	1.65
		Design and Development of Solar Power (PV) Solutions	Hild Energy Pvt. Ltd., Chennai	2.02

Faculty members' participation with other institutions under MoUs

Sl. No.	Name of Faculty Member	Participation Details	Name of University/Institution Which has MoU
1	Somashekhar S. Hiremath	GATE kick-off meeting	Johannes Kepler University, Linz

Research publications of the faculty members and research scholars

Total number of papers published in refereed international journals: 152

Total number of papers presented at national conferences: 1

Total number of papers presented at international conferences: 43

Total number of chapters in books: 1

(a) Refereed international journals

1. R. Gnanamoorthy and P. Ravindran (2013) The effect of nanoclay reinforcement on the rolling contact fatigue behavior of polyamide. *Journal of Engineering Tribology* 227(1): 84–95.
2. C. Balaji and K. Srinivasaramanujam (2012) On the effect of non-raining parameters in retrieval of surface rain rate using TRMM PR and TMI Measurements. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (JSTARS)* 5: 735–745.
3. C. Balaji (2012) An artificial neural network based fast radiative transfer model for simulating infrared sounder radiances. *Journal of Earth System Science* 121: 891–901.
4. C. Balaji (2012) Estimation of temperature dependent heat transfer coefficient in a vertical rectangular fin using liquid crystal thermography. *International Journal of Heat and Mass Transfer* 55: 3686–3693.
5. S. Bakshi (2012) Internal circulation in a single droplet evaporating in a closed chamber. *International Journal of Multiphase Flow* 42: 42–51.
6. S. Bakshi (2012) Evidence of oscillatory convection inside an evaporating multicomponent droplet in a closed chamber. *Journal of Colloid and Interface Science* 378(1): 260–262.
7. P.S. Mehta and S. Bakshi (2012) Phenomenological modeling of combustion and emissions for multiple-injection common rail direct injection engines. *International Journal of Engine Research* 13(4): 307–322.
8. S. Bakshi (2013) Noniterative interface reconstruction algorithms for volume of fluid method. *International Journal of Numerical Methods in Fluids* 73(1): 1–18.
9. T.N.C. Anand (2012) Modelling of mixture preparation in a small engine with port fuel injection. *Progress in Computational Fluid Dynamics* 12(6): 375–388.
10. T.N.C. Anand (2012) Spray characterization of gasoline–ethanol blends from a multi-hole port fuel injector. *Fuel* 102: 613–623.
11. T.N.C. Anand (2012) Spray characterization of straight vegetable oils at high injection pressures. *Fuel* 97: 879–883.
12. T.N.C. Anand (2013) Full chemical kinetic simulation of biogas early phase combustion in SI engines. *Energy & Fuels* 27(1): 197–207.
13. J.M. Mallikarjuna. 3D numerical study of effect of flow parameters upon the uniformity of NH₃ in Urea-SCR. *Advanced Material Research*.
14. J.M. Mallikarjuna (2013) Energy efficient piston configuration for effective air motion—A CFD study. *Applied Energy* 102: 347–354.
15. J.M. Mallikarjuna. Flow investigation on different combustion chamber configuration in a DI diesel engine—A CFD approach. *Advanced Materials Research*.
16. J.M. Mallikarjuna (2013) In-cylinder flow analysis in a two-stroke engine—A comparison of different turbulence models using CFD. *SAE Technical Paper* 2013-01-1085, doi:10.4271/2013-01-1085.
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18. L. Vijayaraghavan (2013) Temperature measurement during grinding of metal matrix composites. *International Journal of Machining and Machinability of Materials* 13(2/3): 253–261.
19. L. Vijayaraghavan (2013) Influence of minimum quantity lubrication on the high speed turning of aerospace material superalloy Inconel 718. *International Journal of Machining and Machinability of Materials* 13(2/3): 203–214.
20. L. Vijayaraghavan (2013) Theoretical analysis of thermal profile and heat transfer in grinding. *International Journal of Mechanical and Materials Engineering (IJMME)* 8(1): 21–31.
21. M.S. Shunmugam (2013) Mechanistic modeling and analysis of cutting forces in micro end slot milling. *International Journal of Machine Tools and Manufacture* 67: 18–27.
22. M.S. Shunmugam. Analysis of structural integrity of special purpose miniaturized machine tool and performance evaluation for micro machining applications. *International Journal of Computer Aided Engineering and Technology* (accepted for publication).
23. M.S. Shunmugam (2012) Analyses of forces and hole quality in micro-drilling of carbon fabric laminate composites. *Journal of Composite Materials* 47(9): 1129–1140.

24. M.S. Shunmugam (2012) Analytical modeling of micro end-milling forces with edge radius and material strengthening effects. *Machining Science and Technology* 16(2): 205–227.
25. M.S. Shunmugam (2012) CAD simulation and generation machining of discrete ring-involute spherical segment gear pair. *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science* 226(7): 1832–1844.
26. G.L. Samuel (2012) Machinability investigations on hardened AISI 4340 steel using coated carbide insert. *International Journal of Refractory Metals and Hard Materials* 33: 75–86.
27. G.L. Samuel (2013) Multi-objective optimization of material removal rate and surface roughness in wire electrical discharge turning. *The International Journal of Advanced Manufacturing Technology* 67(9–12): 2021–2032.
28. G.L. Samuel (2012) Machining of axisymmetric forms and helical profiles on cylindrical workpiece using wire cut EDM. *International Journal of Machining and Machinability of Materials* 12(3): 252–265.
29. G.L. Samuel (2012) Modeling, measurement, and evaluation of spindle radial errors in a miniaturized machine tool. *The International Journal of Advanced Manufacturing Technology* 59(5–8): 445–461.
30. G.L. Samuel (2012) Some studies on hard turning of AISI 4340 steel using multilayer coated carbide tool. *Measurement* 45(7): 1872–1884.
31. G.L. Samuel (2012) Predictive modeling of cutting forces and tool wear in hard turning using response surface methodology. *Procedia Engineering* 38: 73–81.
32. G.L. Samuel (2012) Harmonic-analysis-based method for separation of form error during evaluation of high-speed spindle radial errors. *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*.
33. S.K. Panigrahi (2012) Transition of deformation behavior in an ultrafine grained magnesium alloy. *Materials Science and Engineering A* 549: 123–127. (Impact Factor: 2.0)
34. S.K. Panigrahi (2012) Effects of grain size on the corrosion resistance of wrought magnesium alloys containing neodymium. *Corrosion Science* 58: 145–151. (Impact factor: 3.7)
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37. B. Ramamoorthy (2012) Some investigations on high speed dry machining of aerospace material Inconel 718 using multicoated carbide inserts. *Materials and Manufacturing Processes* 27(10): 1066–1072.
38. B. Ramamoorthy (2013) Influence of sputtering parameters on alumina coatings. *International Journal of Surface Tribology and Engineering* 2(1–2): 69–83.
39. B. Ramamoorthy (2013) Growth and characterization of integrated nano- and microcrystalline dual layer composite diamond coatings on WC–Co substrates. *Journal of Refractory Metals and Hard Materials* 37: 127–133.
40. N. Ramesh Babu (2013) Understanding of logic in ladder program with its transformation into sequential graph using state space based approach. *International Journal of Mechatronics and Manufacturing Systems* 6(2).
41. N. Ramesh Babu (2012) An efficient collision avoidance and neighborhood search algorithm for nesting of two-dimensional parts in two-dimensional sheets. *Journal of Advanced Manufacturing Systems* 11(1): 51.
42. N. Ramesh Babu (2013) A semi-discrete geometric representation for nesting problems. *International Journal of Production Research* 51(14): 4155–4174.
43. S.S. Hiremath. Parametric optimization of electro chemical spark machining using Taguchi based grey relational analysis. *International Organization Of Scientific Research (IOSR) Journal of Mechanical and Civil Engineering (IOSR-JMCE)* 46–52.
44. S.S. Hiremath (2012) Theoretical investigations on the effect of system parameters in series hydraulic hybrid system with hydrostatic regenerative braking. *Journal of Mechanical Science and Technology (JMST)* 26(5): 1321–1331.
45. R.V. Prakash (2012) Modification of fatigue strain-life equation for sheet metals considering anisotropy due to crystallographic texture. *Fatigue & Fracture of Engineering Materials & Structures* 35(5): 458–465.
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53. R.V. Prakash (2012) Evaluation of tensile properties of pressure vessel materials by shear punch test method. *Applied Mechanics and Materials* 187: 53–57. doi:10.4028/www.scientific.net/AMM.187.53
54. R.V. Prakash. Fatigue crack growth rate behavior of a Mn–Ni–Cr steel in air and 3.5% NaCl solution. *Materials Science and Engineering: A* (accepted for publication).
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62. C. Balaji (2013) Convection heat transfer from aluminium and copper foams in a vertical channel—An experimental study. *International Journal of Thermal Sciences* 64: 1–10.
63. C. Balaji (2013) Development of a porous body model for decay heat removal studies in a pool type sodium cooled fast reactor. *International Journal of Advances in Engineering Sciences and Applied Mathematics* 4(3): 202–216.
64. C. Balaji (2013) Thermal optimization of PCM based pin fin heat sinks: An experimental study. *Applied Thermal Engineering* 54(1): 65–77.
65. C. Balaji (2013) Heat transfer studies in a vertical channel filled with porous medium. *Journal in Fluid Dynamics and Materials Processing* 9(2): 111–126.
66. K.S. Reddy. (2012) 4-e(energy-exergy-environment-economic) analysis of stand-alone solar thermal power plants and solar–coal hybrid power plants. *Journal of Fundamentals of Renewable Energy and Applications* doi:10.4303/jfrea/R120308.
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68. K.S. Reddy (2013) An optical analysis of a static 3D concentrator. *Solar Energy* 88: 57–70.
69. K.S. Reddy (2012) Feasibility analysis of megawatt scale solar thermal power plants. *Journal of Renewable and Sustainable Energy* 4(6): 063111.
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72. A. Narasimhan (2013) Non-Fourier bio heat transfer modelling of thermal damage during retinal laser irradiation. *International Journal of Heat and Mass Transfer* 60: 591–597.

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85. A. Mani (2012) Experimental studies on heat and mass transfer in tubular generator for R134a–DMF absorption refrigeration system. *International Journal of Thermal Sciences* 61: 118–128.
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139. K. Balasubramaniam (2012) Automatic defect identification using thermal image analysis for online weld quality monitoring. *Journal of Materials Processing Technology* 212(7): 1557–1566.
140. N. Swaminathan (2012) Role of recombination kinetics and grain size in radiation-induced amorphization. *Physical Review B—Condensed Matter and Materials Physics* 86(21): 214110.
141. N. Swaminathan (2012) Radiation interaction with tilt grain boundaries in β -SiC. *Journal of Applied Physics* 111(5): 054918.
142. A. Sarkar (2012) A computational model to determine the effect of interconnecting hydrogen bonds in DNA deformation. *International Journal of Micro-Nano scale Transport* 2: 187–198.
143. S.K. Das (2013) Superparamagnetic nanoparticle assisted hyperthermia and cooling protocol for optimum damage of internal carcinoma using computational predictive model. *Heat and Mass Transfer* 49(9): 1217–1229.
144. S.K. Das (2009) Probing nanoantenna-directed photo thermal destruction of tumors using noninvasive laser irradiation. *Applied Physics Letters* 95(23): 233701.
145. A. Pattamatta and S.K. Das (2013) The role of percolation and sheet dynamics during heat conduction in poly-dispersed grapheme nanofluids. *Applied Physics Letters* 102(16): 163114 (5 pages).
146. S.K. Das (2013) Electrical conductivity of ceramic and metallic nanofluids. *Colloids and surfaces A: Physicochemical and Engineering Aspects* 417: 39–46.
147. T. Sundararajan and S.K. Das (2012) The effect of flow distributors on the liquid water distribution and performance of a PEM fuel cell. *International Journal of Hydrogen Energy* 37(22): 17158–17171.
148. S.K. Das (2012) Robust compensation of discrete-time plant using 2-periodic controller. *Robust Control Design* 7(1): 696–700.
149. S.K. Das (2012) Logarithmic mean pressure difference—A new concept in the analysis of the flow distribution in parallel channels of plate heat exchangers. *Heat Transfer Engineering* 33(8): 669–681.

150. S.K. Das (2012) Decentralized adaptive robust stabilization of uncertain interconnected time-delay systems. *International Journal of Adaptive Control and Signal Processing* 26(1): 13–29.
151. S.K. Das. 2013. Investigation of bubble behavior in subcooled flow boiling of water in horizontal annulus using high speed flow visualization. *Heat Transfer Engineering* 34(10): 838–851.
152. S.K. Das (2013) Numerical indices for quantification of hydrogen mixing and deflagration potential in the nuclear reactor containment. *Nuclear Engineering and Design* 259: 137–149.

(b) Proceedings of national conferences

1. P. Ravindran. A study on a multilayer viscoelastic cylinder and a homogenized approximation. In M. Mahalingam, P. Ravindran and S.S.R. Akella (eds.), *Third Asian Conference on Mechanics of Functional Materials and Structures (ACMFMS 2012)*, 6–9 December 2012, IIT Delhi, New Delhi.

(c) Proceedings of international conferences

1. M.M. Avulapati, T.N.C. Anand and R.V. Ravikrishna. Experimental spray characterisation of air-assisted impinging jets. *12th International Conference on Liquid Atomization and Spray Systems*.
2. J.M. Mallikarjuna. Spray characteristics of a fuel injector—A CFD study(F2012-A02-003). *Proceedings of World Automotive Congress—FISITA 2012*.
3. J.M. Mallikarjuna. Effect of combustion chamber geometry on in-cylinder flows and equivalence ratio spread in a direct injection engine—A CFD analysis. *4th International Conference on Mechanical, Industrial, and Manufacturing Technologies (MIMT 2013)*.
4. L. Vijayaraghavan (2012) Machinability of multiphase microalloyed steel. *Procedia CIRP*, Vol. 2, pp. 55–59.
5. L. Vijayaraghavan (2012) The effect of cutting parameters on cutting force during turning multiphase microalloyed steel. *Procedia CIRP*, Vol. 4, pp. 157–160.
6. L. Vijayaraghavan. Study on microstructure evolution in the chips during machining multiphase microalloyed steel. *ISRS 2012*, 13–15 December 2012, IIT Madras.
7. L. Vijayaraghavan. Effect of microstructure on the surface finish during machining of V-microalloyed steel: Comparison between ferrite-bainite-martensite and ferrite-pearlite microstructures. *IEEE ICRDPET*, 29–30 March 2013, Nagapattinam, Tamilnadu.
8. L. Vijayaraghavan. Evaluation of micro-grooving process of alumina ceramic by contact stress evaluation. *AIMTDR 2012*, pp. 1160–1165, December 2012, Jadhavpur University, Kolkata.
9. L. Vijayaraghavan. Experimental study on the applicability of minimum quantity lubrication in grinding of Inconel 751 alloy. *AIMTDR 2012*, pp. 390–395, December 2012, Jadhavpur University, Kolkata.
10. L. Vijayaraghavan. Computational fluid dynamics analysis for predicting the droplet size in MQL during grinding of superalloy. *37th MATADOR Conference*, pp. 161–164, July 2012, Manchester, England.
11. M.S. Shunmugam. Adaptive sampling strategies for measurement of freeform surfaces using continuous scanning coordinate measuring machines. *Proceedings of the 4th International & 25th All India Manufacturing Technology, Design and Research Conference AIMTDR 2012*, pp. 739–744, Jadhavpur University, Kolkata, India.
12. M.S. Shunmugam. Analysis of manufacturing tolerances on the performance of planar mechanisms—An approach using screw theory. *Proceedings of the 4th International & 25th All India Manufacturing Technology, Design and Research Conference AIMTDR 2012*, pp. 739–744, Jadhavpur University, Kolkata, India.
13. G.L. Samuel. Investigation into heat affected zone during machining of silicon wafer using wire electrical discharge machining (WEDM) process. *International Conference on Advances in Materials & Processing Technologies (AMPT 2012)*.
14. G.L. Samuel. Investigation into material removal rate (MRR) of cylindrical components machined using wire electrical discharge turning (WEDT). *International and 25th All India Manufacturing Technology, Design and Research Conference (AIMTDR 2012)*.
15. G.L. Samuel. Predictive modeling of cutting forces and tool wear in hard turning using response surface methodology. *International Conference on Modeling Optimization and Computing (ICMOC-2012)*.
16. G.L. Samuel. Force prediction model of multilayer coated carbide tool in hard turning of AISI 4340 steel using response surface methodology. *International Conference on Materials Processing and Characterization (ICMPC-2012)*.
17. G.L. Samuel. Tool life, wear behavior and surface roughness in turning of hardened AISI4340 steel with ceramics and coated carbide cutting tools. *International Conference on Recent Trends in Advanced materials (ICRAM-2012)*.

18. G.L. Samuel. Influence of process parameters on surface, subsurface deformation and through thickness residual stress distribution in hard turning of AISI 4340 steel. *International Conference on Operational Excellence for Global Competitiveness (ICOEGC-2011)*.
19. B. Ramamoorthy. Multi-response optimization of honing process using grey relational analysis. *3rd International Conference on Production, Energy and Reliability*.
20. B. Ramamoorthy. Structure function based fractal characterization of cylinder liner surface using profile and vision data. *4th International and 25th AIMTDR (All India Manufacturing Technology, Design and Research Conference)*.
21. B. Ramamoorthy. Growth and microstructural studies on nanocrystalline and microcrystalline diamond coatings deposited by hot filament chemical vapour deposition. *ISRS 2012*.
22. B. Ramamoorthy. Effect of methane concentration, chamber pressure and deposition time on the quality and surface morphology of the CVD diamond coatings. *International Conference on Advanced Nano Materials (ANM-2012)*.
23. B. Ramamoorthy. Growth and structural characterization of dual layer nano–microcrystalline composite diamond coatings deposited on WC–Co substrates. *TMS (The Minerals, Metals & Materials Society) 2013 Annual Meeting and Exhibition*.
24. N. Ramesh Babu. An improved setup for precision polishing of metallic materials using ice bonded abrasive tool. *37th MATADOR Conference*, pp. 201–204, July 2012, Manchester, England.
25. N. Ramesh Babu. A strategy for generating contoured surface with abrasive water jet milling on ductile materials. *ASME–IMECE 2012*, Texas, USA.
26. S.S. Hiremath. Power bond graph modeling, simulation and parametric design optimization of series hydraulic hybrid system. *4th International & 25th AIMTDR (All India Manufacturing Technology Design and Research)*.
27. S.S. Hiremath. Prediction of closed-loop behavior in series hydraulic hybrid system from open loop response using frequency domain analysis. *International Conference on Advances in Manufacturing Technology—ICAMT*.
28. S.S. Hiremath. Experimental investigation and response surface modeling of metal removal rate in electrochemical discharge machining. *4th International & 25th AIMTDR (All India Manufacturing Technology Design and Research)*.
29. S.S. Hiremath. Characterisation of micro holes machined using electrochemical discharge machining. *International Conference on Advances in Manufacturing Technology—ICAMT*.
30. S.S. Hiremath. Optimisation of process parameters using electrochemical discharge machining. *International Conference on Mechanical Engineering Technology (ICOMET)*.
31. S.S. Hiremath and P.V. Manivannan. Generation and characterization of copper nanoparticles using micro electrical discharge machining. *25th AIMTDR (All India Manufacturing Technology Design and Research)*.
32. S.S. Hiremath. Autonomous sensor networks for process monitoring and automation. *10th Jubilee IEEE International Symposium on Applied Machine Intelligence and Informatics (SAMI)*.
33. K. Anandavel and R.V. Prakash. Extension of Ruiz criterion for evaluation of 3-D fretting fatigue damage parameter. *Proceedings of International Conference on Creep, Fatigue, Creep-Fatigue Interactions, CF-6*, January 2012, Kalpakkam.
34. A.H. Ghouse and R.V. Prakash. Estimation of fractal dimension by image processing techniques. *Proceedings of the International Conference on Electrical, Electronics and Computer Engineering, ICEECE-2012*, Ahmedabad, India.
35. V. Joshi, R.V. Prakash and K. Balasubramaniam. The thermomechanical behaviour of friction stir welded AA 5083 under uniaxial loading by infrared thermography. *Proceedings of the QIRT Conference-2012*, Paper ID: QIRT 2012 ID–235.
36. T. Kathirvel, R.V. Prakash and K. Balasubramaniam. Thermographic assessment of tensile response of metals subjected to varying levels of plastic deformation. *Proceedings of the QIRT Conference-2012*, Italy, Paper ID: QIRT-2012-ID: 253.
37. T. Ramesh, R.V. Prakash, S. Suresh and N. Raju. Evaluations of tensile properties of pressure vessel materials by shear punch test method. *Proceedings of the 3rd International Conference on Mechanical, Industrial and Manufacturing Technologies (MIMT 2012)*, Shenzhen, China.
38. R.V. Prakash, T. Ramesh, S. Suresh and N. Raju. Correlation of tensile properties of pressure vessel steels by shear punch and small punch methods. *ASME IMECE 2012-87691*.
39. M. John, R.V. Prakash and R. Velmurugan. The interlaminar fracture and mechanical behavior of nano-alumina modified glass fiber/epoxy composite. *ASME IMECE 2012-87791*.

40. S. Kumar and R.V. Prakash. Investigation of size scale on the fatigue crack growth characteristics of an aluminium alloy. *ASME IMECE 2012-87717*.
41. K. Hariharan, R.V. Prakash and M. Satya Prasad. Fatigue life prediction of sheet metal components considering anisotropy and residual stress. *IDDRG Conference on Sheet Metal Forming*, November 2012, IIT Bombay.
42. K.S. Reddy. Design of solar parabolic trough collector with influence of declination on reflector surface accuracy. *International Symposium on Recent Advances in Integrated Energy and Energy Conservation (RAIEEC-2012)*, 19–20 December 2012, Hyderabad.
43. K.S. Reddy. Design of support structure–Mechanism for automated tracking of 1 kWe solar PV power system. *International Conference on Research into Design (ICORD 2013)*, 7–9 January 2013, IIT Madras.

(d) Chapters in books

1. K. Balasubramaniam, K. Thiyagarajan and R.V. Prakash (2012) Characterization of pulsed eddy current NDE in metallic materials through in-situ monitoring of tensile testing. In B.P.C. Rao, T. Jayakumar, K. Balasubramaniam and B. Raj (eds.), *Studies in Applied Electromagnetics and Mechanics*, Vol. 36: *Electromagnetic Nondestructive Evaluation (XV)*, ISBN 978-1-60750-967-7

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 and metal forming). 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 research interests of the faculty have diversified into various new areas of materials science and engineering. The department hosts excellent research infrastructure in the broad areas of materials and metal processing (forming, joining, casting, particulate processing, nanostructured materials), characterization (X-ray diffraction, electron microscopy, thermal analysis, scanning probe microscopy), mechanical testing, environmental degradation/corrosion, surface engineering and computational materials science. The department continues to strive for excellence and realizing its vision of becoming 'a pioneering department in the country for teaching, research and consultancy in emerging areas of materials science and engineering, while consolidating the strength in traditional areas of metallurgical engineering.' The activities for the year 2012–2013 corroborate the department's progress in keeping with its vision.

4.14.2. Academic Programmes

New courses introduced

Sl. No.	Course No.	Title
1	MT 4110	Computational Techniques in Materials Engineering
2	MM 5016	Introduction to Multiscale Modeling of Materials

Students on roll

Programme	I year	II Year	III Year	IV Year	V Year and Others	Total
B.Tech.	32	31	36	21	5	125
Dual Degree	11	12	12	14	10	59
M.Tech.	25	11	1	0	0	37
M.S.	9	6	2	3	1	21
Ph.D.	13	22	14	15	20	84
Total	90	82	65	53	36	326

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

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposium/Workshop	Date and Venue	Financial Assistance from
Abroad					
1	Ratna Sunil	MM10D004	4th Symposium on Biodegradable Metals (BIOMETAL 2012)	27 August to 1 September 2012, Maratea, Italy	IIT Madras
2	Sujith Ravindran	MM09D017	Materials Science and Engineering Conference—2012 (MSE-2012)	25–27 September 2012, Darmstadt, Germany	
3	N. Raghu Kiran	MM09D007	Materials Science and Engineering Conference—2012 (MSE-2012)	25–27 September 2012, Darmstadt, Germany	
4	J.P. Arul Mozhi Varman	MM11S001	TMS Annual Meeting and Exhibition—2013 3–7 March 2013, San Antonio, USA		
5	Praveen S.	MM09D025	TMS Annual Meeting and Exhibition—2013 3–7 March 2013, San Antonio, USA		
India					
1	Madhumathi K.	MM12D005	Seminar on Recent trends in Biomaterials for Tissue Engineering (RTBTE'12)	27–28 July 2012, Chennai	Sponsored research project

2	Preetham Kumar	MM05D003	16th International Conference on Strength of Materials (ICSMA16)	19–24 August 2012, IISc, Bangalore	
3	A. Muthuchamy	MM11D005	5-day school, Surface Engineering Technologies: Research and Applications	27–31 August 2012, ARCI, Hyderabad	Sponsored research project
4	N. Naveen Kumar	MM11D010	5-day school, Surface Engineering Technologies: Research and Applications	27–31 August 2012, ARCI, Hyderabad	Sponsored research project
5	B. Ratna Sunil	MM10D004	Workshop on Destructive Innovations in Healthcare	4–19 October 2012, IITM, Chennai	
6	N. Raghu Kiran	MM09D007	NMD-ATM 2012	16–19 November 2012, Jamshedpur	
7	R. Sujith	MM09D017	NMD-ATM 2012	16–19 November 2012, Jamshedpur	
8	G.M. Karthik	MM11D021	NMD-ATM 2012	16–19 November 2012, Jamshedpur	Sponsored research project
9	S. Devaraj	MM09D020	NMD-ATM 2012	16–19 November 2012, Jamshedpur	
10	Niraj Chawake	MM09D023	NMD-ATM 2012	16–19 November 2012, Jamshedpur	
11	N.S. Karthiselva	MM11D019	NMD-ATM 2012	16–19 November 2012, Jamshedpur	Department
12	Praveen S.	MM09D025	NMD-ATM 2012	16–19 November 2012, Jamshedpur	
13	Venkateswara Rao M.	MM11D003	NMD-ATM 2012	16–19 November 2012, Jamshedpur	
14	P. Gerald Tennyson	MM07D012	ICSSP5	19–22 November 2012, Bhubaneswar	
15	Ekta Jain	MM11S009	International Deep Drawing Research Group	25–28 November 2012, IIT Bombay	
16	Mitun Das	MM09D006	XXIII National Conference of the Society at the International Conference on Design of	Biomaterials (BIND-12) 9–12 December 2012, IISc, Bangalore	
17	Venkateswara Rao M.	MM11D003	International Symposium for Research Scholars (ISRS-2012) on Metallurgy, Materials Science & Engineering	13–15 December 2012, IIT Madras	
18	Praveen S.	MM09D025	5th ISRS 2012	13–15 December 2012, IIT Madras	
19	R.K. Rayudu	MM06D014	5th ISRS 2012	13–15 December 2012, IIT Madras	
20	Bobu M. Jolly	MM10D007	5th ISRS 2012	13–15 December 2012, IIT Madras	
21	Razia Asheek	MM11D004	5th ISRS 2012	13–15 December 2012, IIT Madras	
22	B. Ratna Sunil	MM10D004	5th ISRS 2012	13–15 December 2012, IIT Madras	
23	R. Jayasree	MM11D018	5th ISRS 2012	13–15 December 2012, IIT Madras	
24	Devinder Yadav	MM10D008	4th International Conference on Recent Advances in Composite Materials (ICRACM)-2013	18 February to 13 March 2013, Goa	
25	Mangesh Lodhe	MM10D010	4th ICRACM-2013	18 February to 21 March 2013, Goa	
26	K. Vasanthakumar	MM12D013	4th ICRACM-2013	18 February to 21 March 2013, Goa	
27	N.S. Karthiselva	MM11D019	4th ICRACM-2013	18 February to 21 March 2013, Goa	

28	S.L. Pramod	MM11D011	4th ICRACM-2013	18 February to 21 March 2013, Goa
29	Praveen S.	MM09D025	National Conference on Advances in Naval Materials (ADNAM-2013)	22–23 February 2013, Chennai
30	B. Ratna Sunil	MM10D004	Corrosion Symposium for Research Scholars (CORSYM-2013)	28 February to 2 March 2013, Chennai

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	P. Gerald Tennyson	MM07D012	Best poster award	ICSSP5, held during 19–22 November 2012, at Bhubaneswar, India
2	Mitun Das	MM09D006	2nd best poster award	XXIII National Conference of the Society at the International Conference on Design of Biomaterials (BIND-12), held during 9–12 December 2012, at IISc, Bangalore
3	R.K. Rayudu	MM06D014	Best paper award (Materials Processing Session)	International Symposium for Research Scholars (ISRS-2012) on Metallurgy, Materials Science & Engineering
4	Niraj Chawake	MM09D023	Best poster award (Powder Metallurgy Session)	International Symposium for Research Scholars (ISRS-2012) on Metallurgy, Materials Science & Engineering
5	A. Muthuchamy	MM11D005	Best poster award (Processing of Materials and Modeling)	National Conference on Advances in Naval Materials, held at NIOT, 22–23 February 2013, Chennai, India
6	Praveen S.	MM09D025	Best poster award (Structural Materials)	National Conference on Advances in Naval Materials, held at NIOT, 22–23 February 2013, Chennai, India

Names of students/scholars who won Institute Convocation/Institute Day prizes

Sl. No.	Name of the Student/Scholar	Roll No.	Name of Prize
1	Pranav Vrat	MM09B017	Ratna Award
2	Karthik A.	MM10B021	Sri Satish Pai

4.14.3. Faculty and Their Activities

Faculty

Name and Qualifications	Major Areas of Specialization (Only 3 Areas)
Professors	
M. Kamaraj [Head], Ph.D. (IIT Madras)	Creep deformation and fracture mechanisms of titanium aluminides, superalloys and welded joints, development of wear surfacing materials, tribological tests on weld deposits (plasma transferred arc, plasma spray, HVOF processes, etc.), studies of the relationships between processing, microstructure, deformation and fracture processes in advanced materials, fretting fatigue of structural materials, development of marine propeller materials
M. Balasubramanian, Ph.D. (IIT Madras)	Advanced ceramics and composites, nanocomposites processing, materials characterization
S.S. Bhattacharya, Ph.D. (IIT Madras)	Nanocrystalline and nanostructured Materials, superplasticity of materials (analytical and experimental) superplastic forming, high-temperature deformation behaviour of materials, metal forming, advanced materials testing
S. Ganesh Sundara Raman, Ph.D. (IIT Madras)	Fatigue, fracture mechanics, fretting fatigue, fretting wear, mechanical behaviour of materials and weldments, thermal spray processing, coatings, wear
P. Kesavan Nair, Ph.D. (IIT Madras)	X-ray diffraction, residual stress analysis, electroless coatings, synthesis and characterization of carbon nanotubes
B.S. Murty, Ph.D. (IISc Bangalore)	Thermodynamics and kinetics of phase transformations, mechanical alloying and rapid solidification processing, nanocrystallization of bulk metallic glasses, nanocrystalline metals, alloys and intermetallic compounds, nanocomposites, grain refinement of Al alloys, in-situ composites, transmission electron microscopy

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, metal matrix composites, mechanical alloying, metallic foam and warm compaction, powder metallurgy, powder characterization
K. Prasad Rao, Ph.D. (IIT Madras)	Welding, surface engineering (corrosion and wear)
T.S. Prasanna Kumar, Ph.D. (IIT Madras)	Process modeling, CAD/CAM, finite element analysis, higher level automation, establishment of mathematical modeling techniques related to steel plant technology
V. Sampath, Ph.D. (IISc Bangalore)	Shape memory alloys and smart materials, composite materials, powder metallurgy, sol-gel processing, physical metallurgy, structure-property correlations
T.S. Sampath Kumar, Ph.D. (IISc Bangalore)	Regenerative nanobiomaterials for hard tissue applications, electro spinning of bioceramic nanofibers, antimicrobial materials and drug delivery systems, ultra fine grained metallic implants, innovative bio-ceramics by waste recycling
G. Sundararajan, Ph.D. (Ohio State University, Columbus, USA)	Tribiological behaviour of metallic materials, composites, ceramics and coatings, static and dynamic indentation behaviour of metallic materials, thermal spray coatings (detonation spray and cold spray), novel coating technologies (micro arc oxidation, boronizing, EB-PVD, pulsed electrodeposition), laser surface modifications and processing (transformation hardening, cladding, surface alloying and cutting), ceramics processing and characterization (oxide and non-oxide), nano dispersion strengthened steels
Uday Chakkingal, Ph.D. (Rensselaer Polytechnic Institute, USA)	Metal forming and materials processing, severe plastic deformation processes, aluminium alloys, fatigue
Associate Professors	
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
K.C. Hari Kumar, Ph.D. (IIT Delhi)	Computational thermodynamics, CALPHAD: computer coupling of phase diagrams and thermo chemistry, thermodynamic database for technology important materials, process metallurgy, physical metallurgy, ab initio methods, microstructure simulation
G. Phanikumar, Ph.D. (IISc Bangalore)	Solidification using electromagnetic levitation and melt spinning, transport phenomena in manufacturing processes, microstructure simulation and characterization
Prathap Haridoss, Ph.D. (U. Wisconsin–Madison, USA)	Production and characterization of carbon nanotubes, synthesis of CdS nanocrystals, CO-tolerant PEM fuel cell catalysts
N.V. Ravi Kumar, Ph.D. (MPI-Stuttgart, Germany)	Polymer-derived ceramics, silicon carbide/silicon nitride ceramics, nanostructured materials, 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, characterization and microstructure—mechanical properties correlations in engineering materials
Assistant Professors	
Ajay Kumar Shukla, Ph.D. (IIT Kanpur)	Process modeling, control and optimization of iron and steel making, computational thermodynamics and its application to high temperature metallurgical processes, application of artificial Intelligence (ANN, GA) to metallurgical processes, heat and mass transfer, microwave-assisted metal extraction
Anand K. Kanjrala, 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 & CPFFT, plastic anisotropy and crystallographic texture, microstructure evolution in irradiated systems
G.D. Janaki Ram, Ph.D. (IIT Madras)	Joining of materials, additive manufacturing, failure analysis
Lakshman Neelakantan, Ph.D. (MPIE Düsseldorf & RUB, Bochum, Germany)	Corrosion characteristics, smart coatings for corrosion protection, electro-dissolution, -planarization and -deposition

Manas Mukherjee, Ph.D. (Technical University Berlin, Germany)	Metal foams—production and characterization, physics of foaming, X-ray tomography, solidification
Ravi Sankar Kottada, Ph.D. (IISc Bangalore)	High-temperature deformation, superplasticity, nanocrystalline materials, size effects in plastic deformation
Sabita Sarkar, Ph.D. (IISc Bangalore)	Process modeling/design of metallurgical and chemical processes, modelling and simulation of flow through packed beds, fluidized 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, irradiation effects on materials
Emeritus Professors	
S.K. Seshadri, Ph.D. (Imperial College, London)	Electroless deposition of nickel and its composites, evaluation of wear and corrosion characteristics of electro and electroless composite coatings, high-temperature oxidation studies of composite coatings, stress corrosion behaviour of maraging steel weldments
P. Venugopal, Ph.D. (IIT Madras)	Metal forming processes, component development, press tool design (inclusive of applied maths), metal forming machine tools dynamics, design and applications (inclusive of applied maths), cold extrusion of materials, solid state joining of dissimilar powder metallurgical preforms, ironing of friction-prone materials, deep drawing and bending of sheet materials—powder metallurgical characterization, viscous extrusion of ceramics (ybco, nano-materials, etc.), energy-related aspects relevant to metal deformation (wherein the main focus is towards ensuring cost effectiveness in metal forming with conservation of energy in terms of machines, tools and processes)

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

Sl. No.	Coordinator(s)	Title	Period
Conferences			
1	M. Kamaraj, S. Ganesh Sundara Raman and Srinivasa Rao Bakshi	3rd Asian Symposium on Materials and Processing (ASMP 2012)	30–31 August 2012
2	S.S. Bhattacharya, S. Ramaprabhu and M.S. Ramachandra Rao	4th International Conference on Advanced Nano Materials (ANM 2012)	17–19 October 2012
3	M. Kamaraj and B.S. Murty	5th ISRS 2012	13–15 December 2012
4	B.S. Murty	National Conference on Advances in Naval Materials (ADNAM-2013)	22–23 February 2013
Seminars			
Symposia			
1	Srinivasa Rao Bakshi	Symposium titled “Advances in Surface Engineering: Alloyed and Composite Coatings II”, as part of TMS Annual Meeting and Exhibition—2013	3–7 March 2013
Workshops			
1	G.D. Janaki Ram	Welding Research Today: Challenges and Opportunities (WRT 2012)	23–24 November 2012
2	M. Kamaraj, Srinivasa Rao Bakshi and G. Jothinathan	Damage Mechanisms and Analysis of Failures	1–2 March 2013
Short-term courses			
1	B.S. Murty	Practical Metallography	12–15 September 2012
2	S. Ganesh Sundara Raman and M. Kamaraj	Materials Selection and Testing of Materials	5–6 October 2012

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

Sl. No.	Name of Faculty	Title	Institution	Period
Workshops				
1	Lakshman Neelakantan	Faculty development programme (FDP)	Centre for Continuing Education (CCE) staff/Teaching Learning Centre (TLC) core team, IIT Madras	10–12 December 2012

2	Manas Mukherjee	Faculty development program (FDP)	CCE/TLC, IIT Madras	10–12 December 2102
3	Ajay K. Shukla	Faculty development program (FDP)	CCE/TLC, IIT Madras	10–12 December 2012
4	G.D. Janaki Ram	Advanced Manufacturing Technology (AMT 2013)	DRDL, Hyderabad, India 4 January 2013	
5	Srinivasa Rao Bakshi	Advanced Manufacturing Technology (AMT 2013)	DRDL, Hyderabad, India 4 January 2013	
6	M. Kamaraj and S. Ganesh Sundara Raman	AR&DB Initiative on Gas Turbine Materials & Manufacturing Processes	Defense Metallurgical Research Laboratory, Hyderabad 8–9 November 2012	
7	N.V. Ravikumar	50th NMD Celebrations and IIM Annual Meeting	XLRI, Jamshedpur	19 November 2012
8	Ajay Kumar Shukla	50th NMD Celebrations and IIM Annual Meeting	XLRI, Jamshedpur	19 November 2012
9	Srinivasa Rao Bakshi	2-day workshop, Welding Research Today (WRT2012)	IIT Madras	23–24 November 2012
10	Uday Chakkingal	International Deep Drawing Research Conference	IIT Bombay	25–28 November 2012
11	T.S. Sampath Kumar	9th World Biomaterials Congress (9th WBC)	Chengdu, China	1–5 June 2012
		5th Training Programme on Paints and Coatings, organized by NACE–International Gateway India Section (NIGIS) South Zone	Chennai	13–15 July 2012
		Indo-UK Workshop on Advanced Materials and Technology, organized by Society of Materials Science and Engineering, Sterling Group and British Council of India	Anna University, Chennai	27–28 July 2012
12	M. Kamaraj	BRNS technical programme discussion meeting	VECC, Kolkata	10–11 July 2012
Seminars				
1	T.S. Sampath Kumar	National seminar, Recent Trends in Biomaterials for Tissue Engineering (RTBTE'12), co-sponsored by Indian Council of Medical Research (ICMR)	Velammal Institute of Technology, Chennai	27–28 July 2012
Symposia				
1	G.D. Janaki Ram	Solid Freeform Fabrication Symposium (SFF-2012)	University of Texas, Austin	6–8 August 2012
Conferences				
1	Ravi Sankar Kottada	International Conference on Strength of Materials, ICSMA 16	IISc, Bangalore	19–24 August 2012
2	Subramanya Sarma	International Conference on Strength of Materials, ICSMA 16	IISc, Bangalore	19–24 August 2012
3	S.S. Bhattacharya	XI International Conference on Nano-structured Materials, NANO-2012	Rhodes, Greece	26–31 August 2012
4	Lakshman Neelakantan	3rd Asian Symposium on Materials and Processing (ASMP) 2012	IIT Madras	30–31 August 2012
5	Manas Mukherjee	ASMP 2012	IIT Madras	30–31 August 2012
6	Ravi Sankar Kottada and B.S. Murty	ASMP 2012	IIT Madras	30–31 August 2012
7	M. Kamaraj	ASMP 2012	IIT Madras	30–31 August 2012
8	T.S. Prasanna Kumar	6th International Quenching and Control of Distortion Conference	Chicago, IL, USA	10–13 September 2012

9	Srinivasa Rao Bakshi	International Conference ANM-2012	IC&SR, IIT Madras	18 October 2012
10	M. Kamaraj	International Welding Symposium (IWS 2K12)	Bombay Convention Exhibition Centre, Mumbai, India	30 October to 1 November 2012
11	Srinivasa Rao Bakshi	50th NMD celebrations and IIM annual meeting	XLRI, Jamshedpur	19 November 2012
12	N.V. Ravikumar	50th NMD celebrations and IIM annual meeting	XLRI, Jamshedpur	19 November 2012
13	Ajay Kumar Shukla	50th NMD celebrations and IIM annual meeting	XLRI, Jamshedpur	19 November 2012
14	Srinivasa Rao Bakshi	International Conference on Processing and Fabrication of Advanced Materials (PFAM-21)	IIT Guwahati	10–13 December 2012
15	M. Kamaraj	PFAM-21	IIT Guwahati	10–13 December 2012
		3rd International Conference on Recent Advances in Material Processing Technology	National Engineering College, Kovilpatti, Tamilnadu	7–9 January 2013
16	Srinivas Rao Bakshi	National Conference on Advances in Naval Materials (ADNAM-2013)	NIOT, Chennai	22–23 February 2013
17	T.S. Sampath Kumar	ADNAM-2013	NIOT, Chennai	22–23 February 2013
18	Ranjit Bauri	ADNAM-2013	NIOT, Chennai	22–23 February 2013
19	N.V. Ravikumar	ADNAM-2013	NIOT, Chennai	22–23 February 2013
20	Uday Chakkingal	ADNAM-2013	NIOT, Chennai	22–23 February 2013
21	V. Subramanya Sarma	ADNAM-2013	NIOT, Chennai	22–23 February 2013
22	A.S. Gandhi	Mechanical Behaviour of Systems at Small Length Scales	Siddapur, Karnataka	24–28 February 2013
23	Srinivasa Rao Bakshi	Advances in Surface Engineering: Alloyed and Composite Coatings II, part of TMS Annual Meeting and Exhibition–2013	San Antonio, USA	3–7 March 2013
24	Ranjit Bauri	International Conference on Energy Resources & Technologies for Sustainable Development (ICERTSD 2013)	Kolkata, India	7–9 February 2013
25	Srinivasa Rao Bakshi	International Conference on Recent Advances in Composite Materials (ICRACM-2013)	Goa, India	8–21 February 2013

Special lectures delivered by faculty members in other institutions

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
1	V. Subramanya Sarma	Strategies for Improving the Ductility of Ultra Fine Grained Materials	Institute for Materials Physics, University of Muenster, Germany	15 May 2012
		Strategies for Improving the Ductility of Ultra Fine Grained Materials	Karlsruhe Institute of Technology, Karlsruhe, Germany	18 June 2012
		Strategies for Improving the Ductility of Ultra Fine Grained Materials	Max-Planck-Institut für Eisenforschung (MPIE), Düsseldorf, Germany	28 June 2012
2	S.S. Bhattacharya	Temperature and Rate Effects and Introduction to Mechanical Testing Methods	IISc, Bangalore	25 June to 3 July 2012

3	Ravi Sankar Kottada	Room Temperature and High Temperature Mechanical Testing Under Constant Strain Rate and High-Temperature Creep Testing in Compression and Tension	IISc, Bangalore	25 June–14 July 2012
4	T.S. Sampath Kumar	Nanostructured Biocomposites for Bone Tissue Engineering Applications	Velammal Institute of Technology, Chennai	27–28 July 2012
5	V. Sampath	Smart Materials for Electrical Engineering Applications	Schneider Electric, Bangalore	5 September 2012
6	G.D. Janaki Ram	Metallurgical Failure Analysis (6 lectures)	CMRDI, Cairo, Egypt	17–20 September 2012
7	Srinivasa Rao Bakshi	Introduction to Nanotribological Properties	Sri Venkateswara College of Engineering	29 September 2012
8	V. Subramanya Sarma	Mechanical Behaviour of Nano-structured and UFG Metals and Alloys	KPR Institute of Engineering and Technology, Coimbatore	5 October 2012
9	V. Sampath	Advanced Material Technologies	Military College of Telecommunication Engineering, Mhow, Indore, M.P.	9 October 2012
10	N.V. Ravikumar	Precursor Derived Hf/Zr–Si–(O)–C–(N) Nanocomposites—Microstructure Design for Technological Applications	BARC, Trombay, Mumbai	10–12 October 2012
		Bioinspired Materials Science—Nature’s Way of Designing Materials	Institute for Mathematical Sciences, Taramani, Chennai	13 October 2012
11	Uday Chakkingal	Defects in Metal Forming	Indian Society for Non-Destructive Testing, Chennai	20 October 2012
12	G. Phanikumar	Microstructure and Phase Selection in Undercooled and Rapidly Solidified Ni-Base Alloys	Bhubaneswar	22 November 2012
13	Manas Mukherjee	Microporosity in the Cell Wall of Aluminium Alloy Foams	Bhubaneswar	22 November 2012
14	Srinivasa Rao Bakshi	Development of Al/CNT Composites by Powder Metallurgy Techniques—A Review	IIT Guwahati	10–13 December 2012
15	V. Sampath	Shape Memory Alloys—Principles, Mechanisms and Applications	Dhanalakshmi Engineering College, Thandalam, Chennai	20 December 2012
16	Srinivasa Rao Bakshi	Object-Oriented Finite Element Methods and Their Applications for Composite Materials	SA Engineering College, Avadi, Chennai	30 January 2013
17	B.S. Murty	Excitements in Materials Science: The Saga of Nanocrystals and Quasicrystals	Madras University, Chennai	4 February 2013
18	T.S. Sampath Kumar	Biomaterial Aspects of Nanotechnology	National Institute of Technical Teachers Training and Research (NITTTR), Chennai	14 February 2013
19	B.S. Murty	Materials Science R&D in India	DST, New Delhi	28 February 2013
		Passion Versus Challenges in Research	Anna University, Chennai	7 March 2013
20	A.K. Shukla	Process Simulation and Phosphorus Control During BOF Steel-Making Process	Research and Development and Scientific Services, JSW Steel Ltd.	15–16 March 2013
21	B.S. Murty	Ecstasy, Excitement and Challenges in Advanced Materials Research (METTLE 2013)	NIT Trichy	15 March 2013
		Transmission Electron Microscopy of Nanomaterials	NIT Warangal	24 March 2013
22	A.S. Gandhi	Durability Issues in Thermal Barrier Coatings	VSSC, Thiruvananthapuram	27 March 2013

23	B.S. Murty	Nanocrystalline High-Entropy Alloys—A New Class of Alloys	NIT Warangal	28 March 2013
24	Uday Chakkingal	1. Basics of Metal Forming 2. Fundamentals of Sheet Metal Forming	Malnad College of Engineering, Hassan, Karnataka	30 March 2013

Visits abroad by faculty members

Sl. No.	Name of Faculty Member	Country Visited	Date	Purpose of Visit	Funding from
1	Subramanya Sarma	Germany	1 May to 30 June 2012	On AvH fellowship, visited the group of Prof. G. Wilde at the Institute for Material Physics, University of Muenster, Germany Also, visited and delivered lectures at Karlsruhe Institute of Technology, Karlsruhe, Max-Planck Institute for Steel Research, Dusseldorf	AvH Fellowship
2	N.V. Ravikumar	France Germany	2 May–2 June 2012 15–16 May 2012	Visiting Professor, University of Lille Attended Annual Ceremony, Technical University of Kaiserslautern, Germany on invitation by the International School for Graduate Studies, TU Kaiserslautern	
3	T.S. Sampath Kumar	China	1–5 June 2012	Keynote speaker at 9th World Biomaterials Congress—WBC	CPDA, IIT Madras
4	S.S. Bhattacharya	Germany	23–24 August 2012	Session chair at the International Workshop, INT Nano materials Days	
5	B.S. Murty	Korea	25–30 August 2012	Presented invited talk and chaired a session at IUMRS-ICA 2012, Korea Delivered an invited lecture at Gyeongsang National University, Jinju, Korea	
6	S.S. Bhattacharya	Greece	26–31 August 2012	Conference talks	
7	T.S. Sampath Kumar	USA	6–16 October 2012	Invited talk at Materials Science & Technology 2012 Conference & Exhibition, Pittsburgh, Pennsylvania, USA Delivered lectures at the University of Central Florida, Orlando and Iowa State University, Ames	CPDA, IIT Madras
8	Ravi Sankar Kottada	USA	7–11 October 2012	Invited talk at Materials Science & Technology 2012 Conference & Exhibition, Pittsburgh, Pennsylvania, USA	
9	Srinivasa Rao Bakshi	USA	3–8 March 2013	International conference	CPDA
10	G.D. Janaki Ram	Germany	11–15 March 2013	Technical discussions	Sponsored research project
11	Srinivasa Rao Bakshi	Germany	11–15 March 2013	Technical discussions	Sponsored research project

Honours and awards obtained by faculty members

Sl. No.	Name of Faculty Member	Name of Award	Awarded by	Awarded for	Date of Award
Honours					
1	T.S. Sampath Kumar	Keynote speaker	9th World Biomaterials Congress (9th WBC), Chengdu, China		1–5 June 2012
		Judge	5th training programme on paints and coatings organized by NACE—International Gateway India Section (NIGIS) South Zone at Chennai		13–15 July 2012
2	B.S. Murty	INSPIRE Lecture	Madras University		19 July 2012

3	T.S. Sampath Kumar	Inaugural address	Symposium on Recent Trends in Biotechnology, Karpaga Vinayaga College of Engineering and Technology		22 August 2012
4	S.S. Bhattacharya	Session chair	International workshop, INT Nano Materials Days, KIT, Karlsruhe, Germany		23–24 August 2012
5	M. Kamaraj	Certificate of Merit for International Activities	Division of Materials and Processing, Japan Society of Mechanical Engineers	for efforts in organizing ASMP 2012	30 August 2012
6	Srinivasa Rao Bakshi	Certificate of Merit for International Activities	Division of Materials and Processing, Japan Society of Mechanical Engineers	for efforts in organizing ASMP 2012	30 August 2012
7	B.S. Murty	Keynote lecture	Birla Institute of Technology		31 August 2012
8	T.S. Sampath Kumar	Inaugural address	Chemistry Club, Women's Christian College, Chennai		14 September 2012
		Inaugural talk	Material Advantage Charter, Vellore Institute of Technology		21 September 2012
		Guest oration and certificate of appreciation	25th Conference of the Indian Society for Dental Research (IADR-India Section), Chennai	for sharing immense knowledge & expertise	5–7 October 2012
9	Ravi Sankar Kottada	Invited talk	Materials Science & Technology 2012 Conference & Exhibition, Pittsburgh, Pennsylvania, USA		7–11 October 2012
10	Srinivasa Rao Bakshi	Invited talk	International Conference on Processing and Fabrication of Advanced Materials (PFAM-21), IIT Guwahati	Development of Al/CNT composites by powder metallurgy techniques—A Review	11 December 2012
11	V. Subramanya Sarma	Lecture	KPR Institute of Engineering and Technology, Coimbatore		5 October 2012
12	B.S. Murty	Placid Rodriguez Memorial Lecture	IIM Kalpakkam and IIM Chennai chapters		25 October 2012
13	Uday Chakkingal	Session chair	Conference on International Deep Drawing Research		25–28 November 2012
14	S.S. Bhattacharya	Session chair	2nd International Conference on Advances in Materials Processing and Characterisation AMPC 2013		6–8 February 2013

Awards

1	B.S. Murty	PSG Distinguished Visiting Professorship	PSG College of Technology		
2	N.V. Ravikumar	Young Faculty Recognition Award 2012	IIT Madras		8 September 2012

Books, monographs authored/co-authored

Sl. No.	Name of Faculty Member	Title	Publisher	Author/Co-author
Books				
1	T.S. Sampath Kumar	Physical and chemical characterization of biomaterials. In A. Bandhyopadhyaya and S. Bose (eds.), <i>Characterization of Biomaterials</i>	Elsevier Science & Technology Books	Author

Fellowships of academies and professional societies

Sl. No.	Name of Faculty Member	Year of Admission
ASM		
1	K. Prasad Rao	2012

Journal editorial boards

Sl. No.	Name of Faculty Member	Position (Editor/Member)	Journal
1	T.S. Sampath Kumar	Regional Editor (Asia—India)	<i>Journal of Biomaterials and Tissue Engineering</i>
		Editorial Board Member	<i>The Indonesian Journal of Dental Research</i>
		Editorial Board Member	<i>Trends in Biomaterials & Artificial Organs—India</i>

4.1.4.4. Design and Development Activities

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

A novel tool drawing equipment (sub-press equipment) was designed and reengineered by Mr. C.K. Gopalakrishnan based on an idea conceived by Prof. P. Venugopal.

New facilities added or major equipment procured

Sl. No.	Equipment	Value (lakhs of Rs.)
1	Spectrolab M10 OES	60.0
2	Polarization light microscope	16.0
3	60 ton triple-action hydraulic press	22.0
4	Vacuum brazing furnace	40.0
5	CMT MIG welding machine	20.0
6	Plasma arc welding machine	13.0
7	Ultrasonic seam welding machine	19.0

Patents

Patents filed

Sl. No.	Name of Faculty Member	Topic of Patent
1	B.S. Murty (jointly with A.K. Rama Rao, A. Shyamasundar, Vizag Steel Plant and A.S. Gandhi and T. Prakash, IIT Madras)	A Process for Coating Refractories in Steel Plant
2	B.S. Murty, (jointly with A.B.S. Sastry, R.B. Karthik Aamanchi, Ch. Sree Rama Linga Prasad, B.L.V. Prasad and K. Sridhar)	Process for Manufacture of Nano Copper in a Green Way

4.1.4.5. Research and Consultancy

Sponsored research projects

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of Rs.)	Co-ordinators
1	Development of Nanocrystalline Matrix Composites/Coatings by Mechanical Alloying Followed by Spark Plasma Sintering/Cold Spraying (Project No. MET1213128TDBXGDJA)	3 years	IIT Madras Seed Grant	4.75	Srinivasa Rao Bakshi, G.D. Janaki Ram, G. Phanikumar, Abhijit P. Deshpande (Chemical Engineering)
2	Synthesis and Multi-Scale Property Evaluation of Multi-Walled CNT Reinforced Al composites Having Improved Dispersion (Project No. MET111213ISROSRRB)	2 years	ISRO—IIT Madras Cell	22.08	Srinivasa Rao Bakshi
3	A New Route to Manufacture Fibre Reinforced Metal Matrix Composites Diffusion Bonding of Ultrasonically Welded Monotapes (Project No. MET0910108NRBXGDJA)	4 years	Naval Research Board	34.45	G.D. Janakiram, K. Prasad Rao, V. Subramanya Sarma
4	High-Temperature Mechanical Behaviour of High-Strength High-Entropy Alloys (Project No. MET0910110 NRBXKRAV)	3 years	Naval Research Board	48.20	Ravi Sankar Kottada, B.S. Murty

5	Evaluation of Mechanical Properties and FE Modeling of the Deformation of Syntactic Foams Relevant for Deep-Sea Application Instruments and Ocean Observatory Systems (Project No. MET1112123 NIOTRAVK)	2 years	National Institute of Ocean Technology	23.30	N.V. Ravi Kumar
6	Surfacing of DMR 249 A Steel with Austenitic Stainless Steel by Cold Metal Transfer Process (Project No. MET1112124NRBXMKAM)	2 years	Naval Research Board	34.56	M. Kamaraj, G.D. Janaki Ram
7	Modelling Accelerated Aging and Degradation of Solid Oxide Fuel Cells (MAAD-SOFC) (Project No. MET1112125DSTXRANJ)	3 years	Department of Science & Technology	63.27	Ranjit Bauri, Sreenivas Jayanti (Chemical Engineering)
8	Thermo-Mechanical Simulator and Accessories (FIST) (Project No. MET1112126DSTXHODX)	5 years	Department of Science & Technology FIST Programme	640	Head of the Department
9	Enhancing Ballistic Performance of Armour Welds Using Carbide-Free Bainite Fillers (Project No. MET0910113DRDOGDJA)	3 years	Defence Research and Development Organisation	9.49	G.D. Janaki Ram, B.S. Murty
10	Friction Surfacing for Enhanced Surface Protection and Repair of Defects (Project No. MET1112120NRBXPRA)	3 years	Naval Research Board	49.52	K. Prasad Rao, G.D. Janaki Ram
11	Development of High-Strength and Ductile Al Alloy-Based Composite in Solid State by Friction Stir Processing (FSP) (Project No. MET1112121NRBXRANJ)	3 years	Naval Research Board	27.26	Ranjit Bauri, G.D. Janaki Ram
12	Fatigue Behaviour of an Ultra Fine Grained Aluminium Alloy Processed by Equal Channel Angular Pressing (Project No. MET1112122DSTXUDAY)	3 years	DST	40.8	Uday Chakkingal, S. Ganesh Sundara Raman
13	Electrochemical and Corrosion Behaviour of 216L SS as a Potential Alternative to 316L SS Bipolar Plates in Fuel Cell Applications (Project No. MET1213127NRSPLAKS)	3 years	Nissan India R&D	9.9	Lakshman Neelakantan, Raghuram Chetty (Chemical Engineering)
14	Novel Technique for Evaluating the Electrochemical and Corrosion Behaviour of Heterogeneous Surfaces at Micron Scale (Project No. MET1213582NFSCCLAKS)	3 years	IIT Madras Seed Grant	19.8	Lakshman Neelakantan
15	Adhesive Bonding of Automotive Materials (Project No. MET1213128TDBXGDJA)	2 years	DST-TDB	146	G.D. Janaki Ram, Srinivasa Rao Bakshi, G. Phanikumar, Abhijit P. Deshpande (Chemical Engineering)
16	Microwave-Assisted Reduction of Metals Oxides: An Innovative Approach for Economic Extraction of Metals Including Iron and Steel (Project No. MET1213604NFSCAJAK)	3 years	IIT Madras Seed Grant	19.23	Ajay Kumar Shukla
17	Evaluation of Creep Behaviour of A-TIG Weld Joints of Modified 9Cr-1Mo Steel (P91) and Ferritic-Martensitic Steel (P92) and a Reduced Activation Ferritic-Martensitic Steel (RAFM) (Project No. MET1213129BRNSMKAM)	3 years	Board of Research in Nuclear Science	24.95	M. Kamaraj, Ravi Sankar Kottada

18	Rare-Earth Silicate Environmental Barrier Coatings for SiC-Based High Temperature Materials (Project No. MET1213143ISROASHU)	3 years	Indian Space Research Organisation	23.84	A.S. Gandhi
19	Development of Partial Exoskeleton to Enable Enhanced Mobility for a Person with Limited Capability in One Lower Limb and Normal Capability in the Other (Project No. MET1213130SRPXPRAT)	1 year	Socially Relevant Projects		Prathap Haridoss
20	Bioceramic Nanocarriers for Simultaneous Drug Delivery	3.5 years	DBT	35.32	T.S. Sampath Kumar, N.V. Ravikumar

Industrial consultancy projects

Sl. No.	Name of Faculty Member	Title	Agency	Amount (lakhs of Rs.)
1	Kesavan Nair (IC1213MET001AAAAPKES)	X-ray Diffraction and Failure Analysis	Stanadyne Amalgamations	2.07
2	S.S. Bhattacharya (IC1112MET029AAAASSBH)	SEM Analysis of Specimens	Saint Gobain Glass Ltd.	0.44
3	S. Sankaran (IC1112MET031AAAASANK)	TEM Analysis	IISE&R	0.297
4	M. Kamaraj (IC1112MET032AAAAMKAM)	Surface Measurement of Nano Filled Tooth	Quality Network Pvt. Ltd.	1.05
5	V. Subramanya Sarma (IC1212MET027AAAASVSSA)	Failure Analysis of Pipes	Rane TRW Steering Systems Ltd.	1.65
6	Ashutosh Gandhi (IC1112MET036AAAASHU)	Failure Analysis of Pipes Microstructure, Hardness and Fractography Sample	Saint Gobain Glass India Ltd. Iljin Automative Pvt. Ltd.	1.79 2.75
7	Kesavan Nair (IC1213MET002AAAAPKES)	X-ray Diffraction and Failure Analysis	Madras Engineering Industries Pvt. Ltd.	0.269
8	N.V. Ravikumar (IC1213MET003AAAARAVK)	XRD and Failure Analysis of Industrial Components	Mahindra & Mahindra	0.404
9	Kesavan Nair (IC1213MET004AAAAPKES)	X-ray Diffraction and Failure Analysis	Uniparts India Ltd.	0.269
10	Ranjit Bauri (IC1213MET005AAAARANJ)	Radiographic Testing	Sree Balaji Dental College	0.280
11	V. Subramanya Sarma (IC1213MET008AAAASVSSA)	SEM Analysis	Jamna Auto Industries Ltd.	0.056
12	N.V. Ravikumar (IC1213MET006EXOVRAVK)	Investigation of Contamination in Gas Filters	Exova (Qatar) L.L.C.	1.22

RBIC projects

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of Rs.)
1	G.D. Janakiram	Studies on Creep Behaviour of P91 and P92 Steel Welds	BHEL Trichy	23
2	Srinivasa Rao Bakshi, M. Kamaraj	Thermally Sprayed Fly-Ash Coatings on Mild Steel for Improved Wear Resistance	BHEL Ranipet	9.4
3	S. Sankaran, K.C. Harikumar	Development of High-Strength High- Formable Steel	National Metallurgical Laboratory	17.16
4	B.S. Murty	Synthesis of Fe-Based Bulk Metallic Glasses (BMG)	Naval Materials Research Laboratory	24.98
5	K.C. Harikumar, A.S. Gandhi	Critical Review of Literature on the Constitutional and Thermochemical Data of Oxide Systems- Relevant Thermal Barrier Coating	GE India Technology Centre Pvt. Ltd.	7.5

6	Subramanya Sarma, S. Sankaran	Study of Texture and Microstructure During Superplastic Deformation of AA 5083 and AA 2004 (SUPRAL 100) Alloys	Boeing Shared Services Group, USA	10.87
7	K.C. Harikumar	Effect of Alloy Chemistry and Temperature on Phase Stability of High Temperature Alloys for USC Applications–A Computational Approach	Bharat Heavy Electricals Ltd.	21.39
8	K.C. Harikumar, A.S. Gandhi	Critical Review of Literature on the Constitutional and Thermochemical Data of Oxide Systems- Relevant Thermal Barrier Coating	GE India Technology Centre Pvt. Ltd.	11
9	Subramanya Sarma	Development of CRNGO Steels and Characterization of Texture and Magnetic Properties	Tube Investments of India Ltd.	3.93

Exchange programme with other universities including institutions/universities under MoUs

Sl. No.	Name of Faculty Member	Participation Details	Name of University/Institution Which Has MoU
1	S.S. Bhattacharya	M.Tech. student (DAAD)	Karlsruhe Institute of Technology
2	N.V. Ravikumar	M.Tech. student (DAAD)	IFW Dresden

Faculty members' participation with other institutions under MoUs

Sl. No.	Name of Faculty Member	Participation Details	Name of University/ Institution Which Has MoU
1	Srinivasa Rao Bakshi	M.Tech. student Gautam Prakash visited Deakin University for 5 months from February 2012 to June 2012	Deakin University, Australia

Research publications of faculty members and research scholars

Total number of papers published in refereed national journals: 8

Total number of papers published in refereed international journals: 77

Total number of papers presented at national conferences: 2

Total number of papers presented at international conferences: 8

(a) Refereed national journals

1. A. Durga, K.C. Hari Kumar and B.S. Murty (2012) Phase formation in equiatomic high entropy alloys–CALPHAD approach and experimental studies. *Transactions of the Indian Institute of Metals* 65: 375–380.
2. S. Anand Kumar, S. Ganesh Sundara Raman and T.S.N. Sankara Narayanan (2012) Effect of surface mechanical attrition treatment on fatigue lives of alloy 718. *Transactions of the Indian Institute of Metals* 65: 473–477.
3. B. Ramakrishna Rao, A.S. Gandhi, S. Vincent, J. Bhatt and B.S. Murty (2012) Prediction of glass forming ability using thermodynamic parameters. *Transactions of the Indian Institute of Metals* 65: 559–563.
4. S.H. Nandam, N. Charbhai, B.S. Murty and S. Sankaran (2012) Microstructural and mechanical characterization of two aluminium based *in-situ* composite foams. *Transactions of the Indian Institute of Metals* 65: 595–600.
5. S.S. Nayak, D.H. Kim, S.K. Pabi and B.S. Murty (2012) Nanocomposites of aluminum alloys by rapid solidification processing. *Transactions of the Indian Institute of Metals* 65: 647–651.
6. S. Vincent, B.S. Murty and J. Bhatt (2012) Prediction of bulk metallic glass formation in Cu–Zr–Ag–Hf system by thermodynamic and topological modeling. *Transactions of the Indian Institute of Metals* 65: 827–831.
7. C.V. Venkatesh, S. Ganesh Sundara Raman and U. Chakkingal (2013) Characterization of AA6061 alloy processed by equal channel angular pressing and subjected to low cycle fatigue. *Transactions of the Indian Institute of Metals* 66: 147–154.
8. M. Das, V.K. Balla, T.S. Sampath Kumar and I. Manna (2013) Fabrication of biomedical implants using Laser Engineered Net Shaping (LENSTM). *Transactions of the Indian Ceramic Society*.

(b) Refereed international journals

1. M. Govindaraju, K. Prasad Rao, U. Chakkingal, K. Balasubramanian and R. Ravindran (2012) Friction stir processed rare earth containing magnesium alloy for high temperature application. *Materials Science Forum* 710: 235–240.

2. B. Ratna Sunil, T.S. Sampathkumar and U. Chakkingal (2012) Bioactive grain refined magnesium by groove pressing. *Materials Science Forum* 710: 264–269.
3. E. Kassab, L. Neelakantan, M. Frotscher, S. Swaminathan, B. Maass, M. Rohwerder, J. Gomes and G. Eggeler (2012) Effect of ternary element addition on the corrosion behaviour of NiTi shape memory alloys. *Materials and Corrosion* 63. doi:10.1002/maco.201206587
4. T.S. Prasanna Kumar (2012) Coupled analysis of surface heat flux, microstructure evolution, and hardness during immersion quenching of a medium carbon steel in plant conditions. *Materials Performance and Characterization* 1(1). Paper ID: MPC104477.
5. A. Loganathan and A.S. Gandhi (2012) Effect of phase transformations on the fracture toughness of yttria stabilized zirconia. *Materials Science and Engineering: A* 556: 927–935.
6. N. Arun Prakash, R. Gnanamoorthy and M. Kamaraj (2012) Fretting wear behavior of fine grain structured aluminium alloy formed by oil jet peening process under dry sliding condition. *Wear* 294–295: 427–437.
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(c) Proceedings of national conferences

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2. G.M. Karthik, G.D. Janaki Ram, F. D’Elia, C. Ravindran and K. Prasad Rao. A new method to produce titanium particle reinforced aluminum matrix composites. *Advances in Naval Materials (ADNAM 2013)*, 22–23 February 2013, NIOT, Chennai, India.

(d) Proceedings of international conferences

1. P. Chandran and V. Sampath. Friction of a high temperature Cu–Al–Mn–Zn shape memory alloy. *The 4th International Conference on Smart Materials, Structures and Systems (CIMTEC-2012)*, 14–16 June 2012, Montecatini Terme, Italy.
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Distinguished visitors to the department

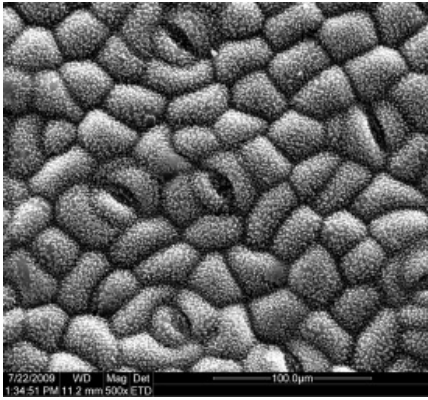
Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1	Dr. K.S. Raja, Assistant Professor, University of Idaho, Moscow, USA	6 August 2012	Delivering IIM seminar talk
2	Dr. Ing. Gunther Eggeler, Chair Professor, Ruhr University Bochum, Germany	1–13 August 2012	Technical interaction and delivering IIM seminar talk
3	Dr. Arvind Agarwal, Professor, Florida International University, Miami, Florida, USA	13 August 2012	Technical interaction and delivering IIM Seminar talk
4	Dr. Leijun Li, Associate Professor, Mechanical and Aerospace Engineering, Utah State University, Logan, USA	19–23 November 2012	Technical interaction
5	Prof. I.A. Ibrahim, Director, CMRDI, Cairo, Egypt	12–13 November 2012	Technical interaction
6	Dr. Mathew J. Kramer, Iowa State University, USA	27 November 2012	Delivering IIM seminar talk
7	Dr. Uday B. Pal, Professor, Boston University, USA	27 November 2012	Technical interaction and delivering IIM seminar talk
8	Dr. K.P. Jagannathan, Director, GKM Institute of Technology, Chennai	7 December 2012	Technical interaction
9	Dr. Jeffrey E. Shield, Professor, University of Nebraska—Lincoln	10 December 2012	Delivering IIM seminar talk
10	Dr. Seong Jin Park, Assistant Professor, POSTECH, Korea	11 December 2012	Delivering IIM seminar talk
11	Dr. Shilpa Sant, Assistant Professor, University of Pittsburgh, USA	12 December 2012	Technical interaction
12	Dr. John Banhart, Professor, TU Berlin	18 December 2012	Invited lecture at ISRS 2012 & technical Interaction
13	Dr. Dietrich Rehfeldt, Professor, Technical University of Hanover, Germany	6 March 2013	Technical interaction
14	Dr. Daniel Fabijanic, Senior Research Fellow, Research Academic Co-ordinator, Deakin University, Australia	8 March 2013	Technical interaction

4.14.5. Other Activities of the Department/Centre

International collaboration achievements of the department

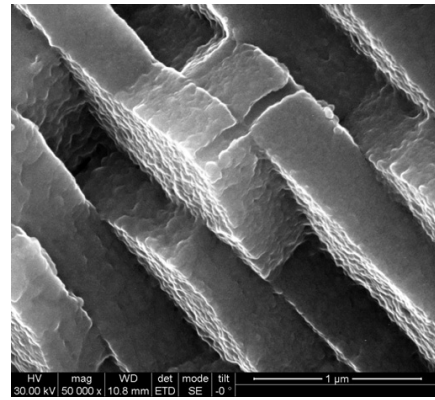
Student visits

Sl. No.	Name of the Student	Purpose of Visit	Date and Venue
1	S.L. Pramod (doctoral student)	Research work (Shastri Institutional Research Collaboration Grant)	March–July 2012, Ryerson University, Canada
2	G.M. Karthik (doctoral student)	Research work (Shastri Institutional Research Collaboration Grant)	May–August 2012, Ryerson University, Canada



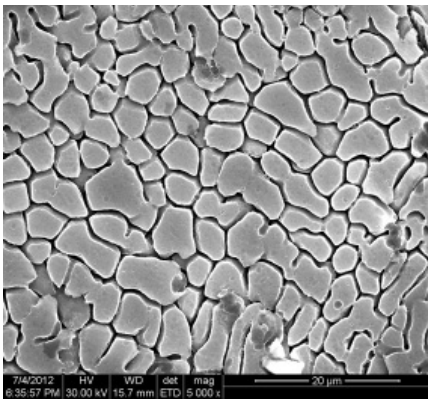
Superhydrophobicity in nature: The epithelial cells of a leaf covered with wax-crystals, the stomata, the breathing cells of the leaf are visible in the scanning electron micrograph. The right interplay of chemistry and geometry making superhydrophobicity possible in plant leaves.

Ms. Soumya, Dr. Sangeetha , Dr. Ravi Kumar

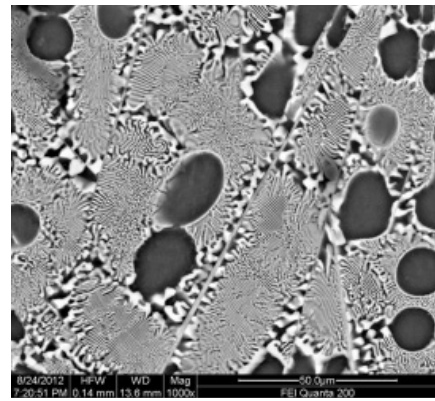


Brick and mortar stacking in nacre: Scanning electron micrograph of the cross-section of a sea-shell (nacre) exemplifying aragonite platelets with an organic matrix sandwiched in-between. This kind of an arrangement enhances the fracture toughness remarkably in such biocomposites inspiring materials scientists to biomimic such structures.

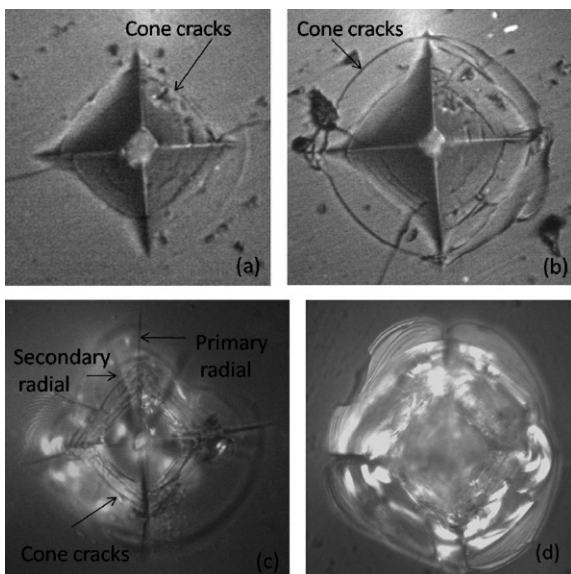
Dr. Sangeetha & Dr. Ravi Kumar



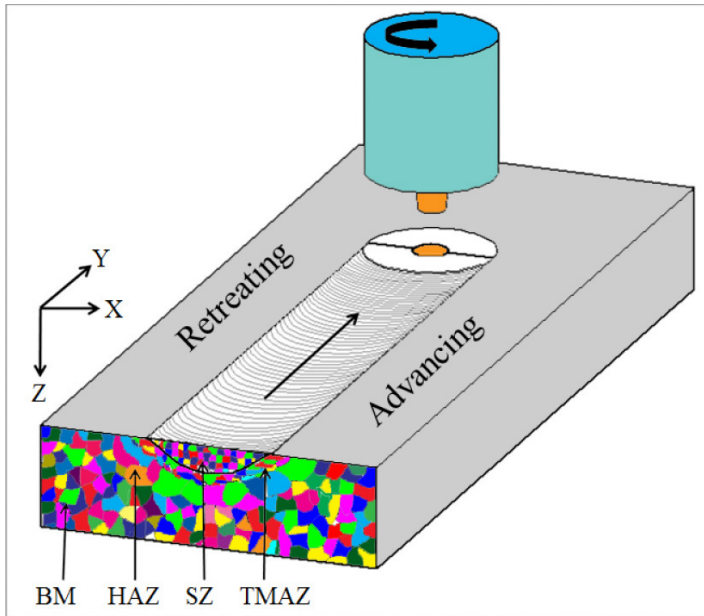
Microstructure of a Al-Sc binary alloy produced through powder metallurgy route via spark plasma sintering. This FEG SEM micrograph shows the fine equiaxed grains of the alloy. Image: FEG SEM micrograph, Material: Al-0.6Sc alloy, **Raghukiran, Devaraj, Dr. Ravi kumar and Dr. Sankaran**



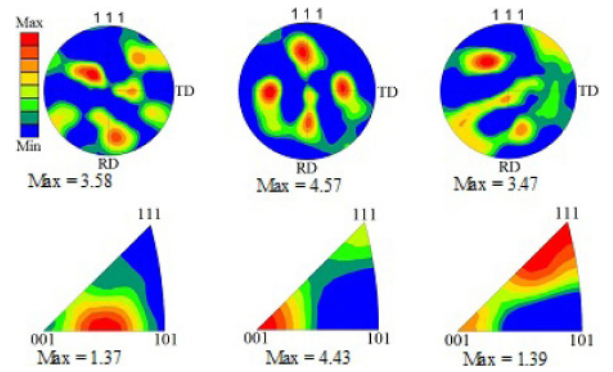
SEM micrograph of the hyper eutectic as-cast Al-40 wt. % Cu alloy. The alloy consists of alternative layers of Al, Al₂Cu (θ) and the prohypereutectic phase. The bright phase exemplify the Al₂Cu phase and dark phase indicate the aluminum rich composition. **Devaraj, Dr. Ravi kumar and Dr. Sankaran.**



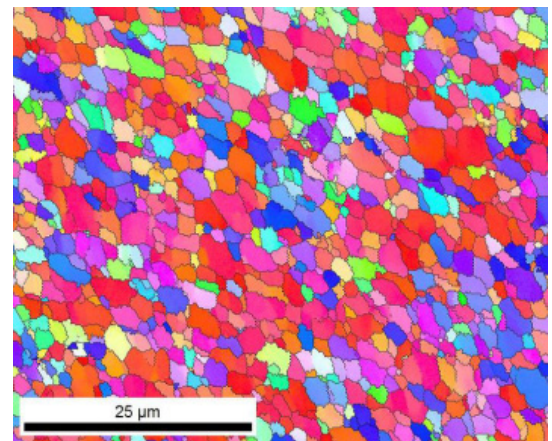
Optical micrographs indicating evolution of cracks in spark plasma sintered silicon oxycarbides and fused quartz **Mr. Sujith Ravindran, Dr. Ravi Kumar, Adv Engg Mater, 2013**



Schematic of friction stir processing (FSP)

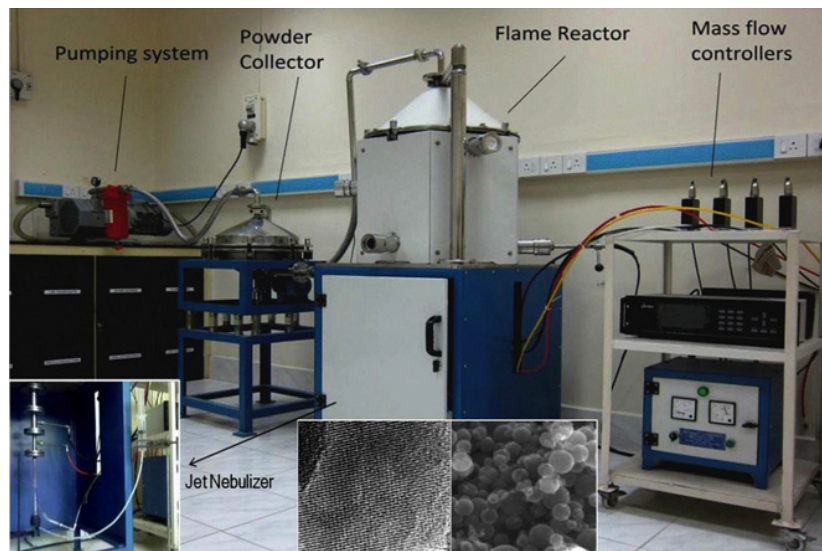


Microtexture developed in FSP of Aluminum



EBSD image of friction stir processed aluminum

Aluminium was subjected to friction stir processing (FSP) and the microtexture developed during the process was analysed by electron backscattered diffraction (EBSD). The color code corresponds to the orientation of the grains. The {111} pole figure (top images in the second picture) and [001] inverse pole figure (bottom images) show the orientations developed at the advancing, center and retreating side of the stir zone (i.e. either side from the center of the stir zone). The maximum intensity (Max) of texture indicated is the factor or number of times the random orientation. A high 'Max' value indicates strong texture or preferred orientation. For example, the centre of the stir zone with a value of 4.57 is having a strong (001) orientation as shown by the red color and it is corroborated by the red color grains in the EBSD image.



Photograph of a Flame Reactor for the synthesis of Nanocrystalline Ceramics. In flame aerosol synthesis, a metallorganic or inorganic precursor is pyrolysed at a high temperature using a flame. The main advantages of this gas-phase synthesis route for nanocrystalline materials are high purity, extremely fine sizes, high degree of crystallinity, low degree of agglomeration, low synthesis costs and high production rates. Flame reactors can also be used for the in-situ synthesis of doped nanocrystalline ceramics or nanocomposites. The entire system shown in the photograph has been designed, developed and fabricated in-house. The inset on the right is a HRSEM (high resolution scanning electron microscope) image showing the spherical morphology of the synthesised nanoparticles of alumina, while the inset on the left is a HRTEM (high resolution transmission electron microscope) image showing the individual nanoparticles of alumina displaying a high degree of crystallinity.

4.15. DEPARTMENT OF OCEAN ENGINEERING

4.15.1. Introduction

The department offers the following academic programmes:

1. B.Tech. and B.Tech. (Hons.) (Naval Architecture and Ocean Engineering)
2. Dual Degree (Naval Architecture and Ocean Engineering)
3. M.Tech. (Ocean Engineering)
4. M.Tech. (Ocean Technology and Management)—User-Oriented Programme by NIOT
5. M.Tech. (Petroleum Engineering)
6. M.Tech. (Offshore Structural Engineering)—User-Oriented Programme by L&T
7. M.S. (Ocean Engineering)
8. M.S. (Petroleum Engineering)
9. Ph.D. (Ocean Engineering)
10. Ph.D. (Petroleum Engineering)

The major areas of teaching and research at the Department are:

- | | |
|----------------------------------|---|
| 1. Offshore structures | 12. Marine instrumentation |
| 2. Ship structures | 13. Ocean and underwater acoustics |
| 3. Port and harbour structures | 14. Ocean optics |
| 4. Deepwater technology | 15. Oil and gas exploration and production |
| 5. Subsea engineering | 16. Reservoir engineering |
| 6. Ships and underwater vehicles | 17. Seismic data collection, processing and interpretation |
| 7. Ship design | 18. Gas hydrates |
| 8. Marine hydrodynamics | 19. Drilling technology |
| 9. Marine robotics | 20. Health, safety and environment in ocean and petroleum engineering |
| 10. Coastal engineering | 21. Enhanced oil recovery |
| 11. Ocean energy | |

4.15.2. Academic Programmes

Students on roll

Programme	I year	II Year	III Year	IV Year	V Year and Others	Total
B.Tech.	33	34	35	21	4	127
Dual Degree	14	19	18	16	15	82
M.Tech.	39	41	2	0	0	82
M.S.	23	15	15	6	0	59
Ph.D.	23	25	16	11	5	80
Total	132	134	86	54	24	430

Endowment prize instituted

The Dr. K.S. Varyani Memorial Award was awarded to Mr. Anoop Vargheese, B.Tech. student.

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

Sl. No.	Name of the Student/ Scholar	Roll No.	Name of the Conference/ Seminar/Symposium/ Workshop	Date and Venue	Financial Assistance from
Abroad					
1	Sunny Kumar P.	OE07D001	OMAE 2012	30 June to 6 July 2012, Rio de Janeiro, Brazil	IIT Madras
2	Nimmy Thankom Philip	OE09S005	31st International Conference on Ocean, Offshore and Arctic Engineering, OMAE 2012	1–6 July 2012, Rio de Janeiro, Brazil	IIT Madras and sponsored projects

3	M. Tholkapiyan	OE11D005	3rd EOS Conference	16–21 March 2013, NIOZ, The Netherlands	IIT Madras
4	V.B. Sudarabalan	OE10D014	3rd EOS Conference	16–21 March 2013, NIOZ, The Netherlands	IIT Madras
5	S.P. Tiwari	OE09D009	Ocean Optics XXI Conference	8–12 October 2012, Scotland	IIT Madras
India					
1	M. Tholkapiyan	OE11D005	Pan Ocean Remote Sensing Conference	5–9 November 2012, Kochi, Kerala	Project
2	V.B. Sudarabalan	OE10D014	Pan Ocean Remote Sensing Conference	5–9 November 2012, Kochi, Kerala	Project
3	S.P. Tiwari	OE09D009	Pan Ocean Remote Sensing Conference	5–9 November 2012, Kochi, Kerala	Project
4	Pravin Jeba Dev	OE12D009	Pan Ocean Remote Sensing Conference	5–9 November 2012, Kochi, Kerala	Project
5	Nasiha Hussain		Pan Ocean Remote Sensing Conference	5–9 November 2012, Kochi, Kerala	Project
6	D. Srikant		National seminar cum workshop on Indian petroleum resources, Delta Studies Institute, Andhra University, Vishakhapatnam	27–29 December 2012, Andhra University, Vishakhapatnam	IIT Madras
7	K.V. Anand, Ph.D.		Conference on Hydraulics, Water Resources, Coastal and Environment Engineering	7–8 December 2012, IIT Bombay	Institute funds
8	Lokesha, Ph.D.		Conference on Hydraulics, Water Resources, Coastal and Environment Engineering	7–8 December 2012, IIT Bombay	Project funds
9	R. Senthil Kumar, Ph.D.		Conference on Hydraulics, Water Resources, Coastal and Environment Engineering	7–8 December 2012, IIT Bombay	Institute funds
10	K. Narendran, Ph.D.		Conference on Hydraulics, Water Resources, Coastal and Environment Engineering	7–8 December 2012, IIT Bombay	Institute funds
11	Wilbert, Ph.D.		Conference on Hydraulics, Water Resources, Coastal and Environment Engineering	7–8 December 2012, IIT Bombay	Institute funds
12	K.V. Anand, Ph.D.		Second International Workshop on Geo-Synthetics and Modern Materials in Coastal Protection and Related Applications	4–5 March 2013, IIT Madras	Workshop funds
13	Lokesha, Ph.D.		Second International Workshop on Geo-Synthetics and Modern Materials in Coastal Protection and Related Applications	4–5 March 2013, IIT Madras	Workshop funds
14	Jermie J. Stephen, Ph.D.		Second International Workshop on Geo-Synthetics And Modern Materials In Coastal Protection And Related Applications	4–5 March 2013, IIT Madras	Workshop funds
15	R. Senthil Kumar, Ph.D.		Second International Workshop on Geo-Synthetics And Modern Materials In Coastal Protection And Related Applications	4–5 March 2013, IIT Madras	Workshop funds

4.15.3. Faculty and Their Activities

Faculty

Name and Qualifications	Major Areas of Specialization
Professors	
V. Anantha Subramanian, Ph.D. (IIT Madras)	Computer-aided ship design, ship hydrodynamics and CFD applications.
S.K. Bhattacharyya, 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
V.G. Idichandy, Ph.D. (IIT Madras)	Experimental techniques, instrumentation, analysis and testing of structural models and prototypes
J.S. Mani, Ph.D. (IIT Madras) [Head]	Coastal engineering, wave hydrodynamics
V. Sundar, Ph.D. (IIT Madras)	Wave–structure interaction, coastal protection, port & harbour structures, fluid flow problems
S.P. Subramanian, Ph.D. (Madras University)	Geological oceanography, engineering geology.
R. Sundaravadivelu, Ph.D. (IIT Madras)	Computer aided analysis, design and experimental studies of coastal and offshore structures, port and harbour structure
C.P. Vendhan, Ph.D. (IIT Kanpur)	Structural dynamics, offshore structures, finite element method, ocean acoustics
S.A. Sannasiraj, Ph.D. (IIT Madras)	Wind-wave generation, data assimilation, breaking wave simulation and its dynamics, wave–structure interaction, dynamics of floating bodies
K. Murali (IIT Madras)	Numerical modelling of coastal hydrodynamics, sediment transport & pollutant transport, CFD modelling for pollutant transport, CFD application to ship and underwater hydrodynamics
S. Surendran, Ph.D. (Yokohama National University, Japan)	Naval architecture, ship motion control and ship structures
P. Krishnankutty, Ph.D. (IIT Madras)	Numerical marine hydrodynamics, ship motions, wave wash and passenger comfort
S. Nallayarasu, Ph.D. (NU Singapore)	Analysis and design of offshore structures, wave–structure interaction, reliability in offshore structural design
Associate Professors	
R. Panneer Selvam, Ph.D. (IIT Madras)	System identification, nonlinear dynamics
P. Shanmugam, Ph.D. (Anna University)	Satellite oceanography, ocean optics
S. Chandrasekaran, Ph.D. (IIT Delhi)	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
G. Suresh Kumar, Ph.D. (IISc, Bangalore)	Reservoir simulation enhanced oil recovery, hydrogeology
Rajesh R. Nair, Ph.D. (Osmania University)	Geophysics, seismic AVA inversion and interpretation
Assistant Professors	
Rajiv Sharma, Ph.D. (IIT Kharagpur)	Design of deepwater drilling solutions and floating structures; computer-aided geometric design, computational geometry, visualization, and their applications in design, robotics and manufacturing; dynamic data-driven forecasting systems
Jitendra Sangwai, Ph.D. (IIT Kanpur)	Gas hydrates, enhanced oil recovery, rheology of complex fluids, polymer science and engineering
Abdus Samad, Ph.D. (INHA University Korea)	Turbomachinery, heat transfer, computational fluid dynamics Multi-disciplinary optimization, artificial lift
Nilanjan Saha, Ph.D. (IISc, Bangalore)	Offshore structures, stochastic analysis, offshore renewable energy
Deepak Kumar, Ph.D. (IIT Delhi)	Structural dynamics, random vibration, stochastic control and stability, time–frequency domain analysis

Prof. J.S. Mani took over administrative responsibilities as HoD, DOE on 10 October 2012.

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

Sl. No.	Coordinator(s)	Title	Period
Conferences			
1	Rajesh R. Nair, Abdus Samad and S.K. Battacharyya	International Conference on Developing Unconventional Oil and Gas Resources	1–3 March 2013
2	V. Sundar	PIANC-COPEDEC VIII, Eighth International Conference on Coastal and Port Engineering in Developing Countries, IIT Madras	20–24 February 2012
Workshops			
1	S.A. Sannasiraj and P. Krishnankutty	Numerical Simulation of Free Surface Wave Problems	18–19 March 2012
2	R. Sundaravadeivelu, P. Shanmugam and G. Suresh Kumar	Water Quality and Management	8–10 December 2011
3	S.A. Sannasiraj and P. Shanmugam	National Workshop on Integrated Coastal Zone Management and Planning for Tamil Nadu	16–17 July 2012
4	Rajesh R. Nair and Jitendra Sangwai	International Workshop on Natural Gas Hydrates: Exploration and Production—What We Learnt and Path Ahead	7–9 August 2013
5	V. Sundar, S.A. Sannasiraj and Nilanjan Saha	Second International Workshop on Geo-Synthetics and Modern Materials in Coastal Protection and Related Applications	4–5 March 2013
6	Jitendra Sangwai and Rajesh Nair	International Workshop on Natural Gas Hydrates: Exploration and Production	7–9 August 2012
7	S.A. Sannasiraj and P. Shanmugam	Integrated Coastal Zone Management and Planning for Tamilnadu Coast	16–17 July 2012
		Advances in Offshore Engineering	22–23 November 2012
8	V. Sundar, S.A. Sannasiraj and Nilanjan Saha	Second International Workshop on Applications of Geo-Synthetics and Modern Materials in Coastal Protection	4–5 March 2013
9	P. Krishnankutty	Numerical Simulation of Free Surface Wave Problems	18–19 March 2013
Short-term courses			
1	V. Anantha Subramanian	Naval Architecture and Shipbuilding	29–30 August 2012
		Hydrodynamic Model Tests for AMET University	24 September to 6 October 2012
2	S. Nallayarasu	Short-term course, Foundation Engineering for Offshore and Coastal Structures	16–20 April 2012
			28 May to 1 June 2012
		Training course, Offshore Structural Engineering	11–15 June 2012
			16–22 June 2012
			16–20 July 2012
		Training course, Analysis of Offshore Structures Using SACS	23–27 July 2012
			20–24 August 2012
		Short-term course, Advances in Fatigue Analysis of Offshore Structures	17–21 December 2012
		Training course, Analysis of Offshore Structures Using SACS Software	13–15 March 2013
			27–29 March 2013
3	S.A. Sannasiraj and Nilanjan Saha	Perspectives in Offshore Engineering	19–23 November 2012

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
Workshops				
1	V. Sundar	Second International Workshop on Geo-Synthetics and Modern Materials in Coastal Protection and Related Applications	IIT Madras	4–5 March 2013
2	Jitendra Sangwai	Workshop on Drilling Engineering	ONGC	5 days
Conferences				
1	V. Sundar	18th Congress of the Asia & Pacific Division of the International Association for Hydro-Environment Engineering and Research (IAHR-APD 2012), Jeju Island, Korea		19–23 August 2012
		PIANC-COPEDEC VIII, Eighth International Conference on Coastal and Port Engineering in Developing Countries	IIT Madras	20–24 February 2012
		National Conference on Hydraulics, Water Resources, Coastal and Environmental Engineering (HYDRO)	IIT Bombay	7–8 December 2012
		8th International Multi-Purpose Reef & Surf Sciences Symposium is proposed to be held at Rincon, Puerto Rico		19–21 February 2013

Special lectures delivered by faculty members in other institutions

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
1	P. Krishnankutty	Surface Ship Manoeuvring	Workshop on AUVs in Ocean Observation Systems, at Shah Alam, Kuala Lumpur, Malaysia	4 December 2012
		Underwater Towed Bodies	Workshop on AUVs in Ocean Observation Systems, at Shah Alam, Kuala Lumpur, Malaysia	4 December 2012
2	V. Sundar	Recent Research Progress in the Coastal Process and Dynamics	IIT Bombay	7–8 December 2012
		Coastal Erosion and Protection	Anahac Mayab University, Mexico	19–23 August 2012
		Tsunami Mitigation Measures		
3	J.S. Mani	Design-Basis Flood Level Estimation for Kalpakkam Plant	BARC, Mumbai	January 2012
4	Jitendra Sangwai	Oil and Gas Engineering	Shri Guru Gobind Singhji Institute of Engineering and Technology, Nanded	June 2012
5	S.A. Sannasiraj	Tsunami Impact on Coastal Zone	National Workshop on Geospatial Technologies for Coastal Resources Management, Indian Institute of Space Science and Technology, Thiruvananthapuram	28–29 May 2012
		An Overview of Ocean Energy Scenario in India	Indian Meteorological Society, Chennai Chapter	27 June 2012
		Wave Energy—An Indian perspective.	Renewable Energy Conference, Reaction 2012, Chennai Trade Centre	26 July 2012
		Data Assimilation For Wave Forecasting	National Conference on Hydraulics, Water Resources, Coastal and Environmental Engineering (HYDRO), IIT Bombay	7–8 December 2012

Visits abroad by faculty members

Sl. No.	Name of Faculty Member	Country Visited	Date	Purpose of Visit	Funding from
1	P. Krishnankutty	Malaysia	4–6 December 2012	Conference	IIT Madras
2	S. Nallayarasu	Malaysia	28 May to 1 June 2012 11–15 June 2012 25–28 June 2012 23–27 July 2012 13–14 August 2012 27–30 August 2012 13–15 March 2013 27–29 March 2013	Training course	The client
3	P. Shanmugam	Oslo, Norway	10–14 December 2012	Meeting with client	The client
		The Netherlands (Royal Netherlands Institute for Sea Research, Texel)	16–21 March 2013	3rd EOS Topical Meeting on Blue Photonics—Optics in the Sea	IIT Madras and project
		Scotland (Glasgow)	8–12 October 2012	Ocean Optics XXI Conference	IIT Madras
4	Rajesh R. Nair	France (Université du Littoral Côte d’Opale, Wimereux)	13–14 June 2012	International Working Group Workshop on Atmospheric Correction Algorithms	France (Université du Littoral Côte d’Opale, Wimereux)
		Australia	15–21 September	Curtin–IIT Madras MoU initiation	Curtin University
5	V. Sundar	Merida, Mexico	6–8 May 2012	Lectures	Project funds
		Jeju, South Korea	19–23 August 2012	Chair keynote session at APD IAHR Conference	Project funds
6	S.A. Sannasiraj	Rincon, Puerto Rico	19–21 February 2013	Presenting papers at conference	CPDA and project funds
		Sendai, Japan	10 March to 24 October 2013	JSPS Fellow	Sabbatical
		Barcelona, Spain	April 2012	Conference, WISE 2012	Project
		Rhodes, Greece	June 2012	Conference, ISOPE 2012	Institute
		Singapore	2–4 July 2012	Joint Research Project meeting	Research project
2	V. Sundar	Colombo, Sri Lanka	29–30 July 2012	SLPA Meeting for Kankesanthurai harbour	Consultancy project
		Trondheim, Norway	6–13 October 2012	SINTEF, NTNU and IIT Madras—joint research project	Research project
		Athens, Greece	29 November to 1 December 2012	PIANC working group meeting	Project

Honours and awards obtained by faculty members

Sl. No.	Name of Faculty Member	Name of Award	Awarded by	Awarded for	Date of Award
Honours					
1	Rajesh R. Nair	Albert Einstein Medal of Honour	Russian National Academy of Science (USA)	Important contributions to science and engineering	March 2013
		Best paper award	Kerala Science Academy	Best paper award, 2013	February 2013
2	V. Sundar	Expert member on the International Panel of Experts (IPE) for the study titled “Coastal Adaptation Study (CAS)”	Building & Construction Authority, Singapore		Mid 2013 to mid 2016

	V. Sundar	Member of Executive Council	Indian Society of Hydraulics		2012–2014
Awards					
1	V. Sundar	IAHR Distinguished Membership Award	Asia Pacific Division of International Association of Hydro-Environment Engineering Research (IAHR)	Outstanding contribution to the scientific activities of the IAHR APD	August 2012
2	Jitendra Sangwai	Innovation Award Second Best Paper Award (for two papers)	Intellectual Ventures ICDT 2012	Patent Paper presentation	– December 2013

Books, monographs authored/co-authored

Sl. No.	Name of Faculty Member	Title	Publisher	Author/Co-author
Books				
1	J.S. Mani	<i>Coastal Hydrodynamics</i> Finalization of guidelines for design of tsunami-resistant structures (2012)	PHI Learning Pvt. Ltd., Delhi Bureau of India Standards	Author

Fellowships of academies and professional societies

Sl. No.	Details		Year of Admission
Humboldt Fellowship			
1	Abdus Samad, Society of Petroleum Engineers		2012
2	Rajesh R. Nair, Society of Petroleum Geophysicists		2012
3	Rajesh R. Nair, Society of Exploration Geophysics		2012
Others			
JSPS	V.Sundar		March 2013
1	International Association of Hydro-Environment Engineering and Research (IAHR)		
2	Member, European Union for Coastal Conservation (EUCC)		
3	Fellow, Indian Society for Hydraulics, India		
4	Member, The Royal Institution of Naval Architects (RINA), London, UK		
5	Life Member, Ocean Society of India		
6	Member, Coastal Research foundation, USA		
7	American Society of Civil Engineers		

Journal editorial boards

Sl. No.	Name of Faculty Member	Position (Editor/Member)	Journal
1	P. Shanmugam	Editorial Member Editor Editorial Member	<i>Dataset Papers in Geosciences (Oceanography Section)</i> <i>Journal of Geophysics and Remote Sensing</i> <i>International Journal of BioSciences and Technology</i>
2	Rajesh R. Nair	Managing Guest Editor	<i>Journal of Unconventional Oil and Gas Resources</i> , Elsevier
3	V. Sundar	Member Associate Editor Associate Editor Member Associate Editor	<i>Journal of Applied Water Engineering and Research</i> <i>Journal of Hydro-Environment Research</i> (Elsevier) <i>Ocean Engineering Journal</i> (Elsevier) <i>Institution of Mechanical Engineers, Part M: Journal of Engineering for the Maritime Environment</i> <i>Indian Society of Hydraulics Journal</i>

4.15.4. Design and Development Activities

New facilities added or major equipment procured

Sl. No.	Name of Equipment	Value (lakhs of Rs.)
1	CTD (conductivity–temperature–depth) sensors Beam attenuation and absorption spectrometer Backscattering sensor Fluorometer and turbidity sensor TRIOS above-water and under-water 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 Other associated field and lab equipment	210
2	Desktop workstation computers (11 nos.) GETAC rugged laptop field computer (1 no) Laptop computer (2 nos.)	8
3	HydroLight radiative transfer software	5
4	ENVI-IDL, FLAASH and DEM software	7.5
5	Laser Doppler vibrometer	25
6	Ground-penetrating radar	70
7	Engineering seismograph	20
8	Hydraulic fracturing equipment	10
9	High-pressure rheometer	18
10	Gas chromatograph	6
11	Tensiometer	10

Patents

Patents filed

Sl. No.	Name of Faculty Member	Topic of Patent
1	Abdus Samad	Progressive Cavity Pump A Point Absorber Apparatus for Wave Energy Extraction An Apparatus to Convert Bidirectional Linear Motion to Unidirectional Rotary Motion Energy Harvesting from Vibrations Bi-directional Flow Turbine
2	Jitendra Sangwai	Rheology of Complex Fluids

4.15.5. Research and Consultancy

Sponsored research projects

Sl. No.	Title	Period	Funding Agency	Amount (lakhs of Rs.)	Co-ordinators
1	Wake Adapted Analysis and Optimization of Propellers and Control Surfaces for High-Speed Applications		Naval Research Board	64.53	V. Anantha Subramanian

2	Flow Visualization and Measurement Around Damping Elements for Floating Bodies in Waves	31 August 2009 to 30 August 2012	Naval Research Board	31.12	S. Nallayarasu and S.K. Bhattacharyya
3	Observations, Algorithms and Analysis of HABs in Oceanic Waters Around India	April 2013 to March 2018	INCOIS, Hyderabad	68	P. Shanmugam
4	In-Situ Measurements of CDOM and Development of Satellite-Based Operational Algorithm for Studying DOC in Indian Regional Waters	April 2013 to March 2016	Space Application Centre (ISRO), Ahmedabad	26	P. Shanmugam
5	Measuring and Monitoring of 3D Characteristics of Underwater Light Field in Coastal Waters	September 2011 to August 2014	Naval Research Board, New Delhi	105.6	P. Shanmugam and S.K. Bhattacharyya
6	Development of Algorithms for Monitoring and Forecasting Hazardous Blooms in Indian Waters Using Satellite and In-Situ Data	August 2010 to August 2013	INCOIS, Hyderabad	39.6	P. Shanmugam
7	Assessment of Functional Performance of Groyne Field Along the North of Chennai Harbour	31 August 2010 to 31 March 2013	ICMAM	91.87	V. Sundar, S.A. Sannasiraj and K. Murali
8	Investigations on Functional Performance of Coastal Structures	12 April 2010 to 11 April 2013	National Institute of Ocean Technology	59.68	V. Sundar and K. Murali
9	Coastal Induction and Risk Map Development for Singapore	24 November 2013	National University of Singapore		V. Sundar and S.A. Sannasiraj
10	Wave Energy Converters for Combined Clean Energy and Coastal Protection	3 years	The Research Council of Norway	78.64	V. Sundar and S.A. Sannasiraj
11	Reuse of Waste Water for Irrigation for Kancheepuram Municipality, Public Works Department (PWD), Project No. CIE/12-13/199/PWDX/INDU	October 2012 to September 2013	Public Works Department (PWD)	20.17	I. Nambi, Sudheer and G. Suresh Kumar
12	The Changing Risks Posed by Petroleum Hydrocarbons in Groundwater Environments: Multiphase Fluid Dynamics Coupled to Multispecies Biodegradation	October 2011 to October 2014	Department of Science and Technology (DST)	39.26	I. Nambi, Ravi Krishna and G. Suresh Kumar
13	Decentralized Wastewater Management—Benchmarking of Public Utilities and PPP	May 2009 to December 2014	Ministry of Urban Development (MoUD)	379.6	Ligy (PI) and G. Suresh Kumar, (Co-I)
14	Multiphase Downhole Pump Design and Optimization for Oil and Gas Field Application	2010–2013	IIT Madras	5	Abdus Samad
15	A Novel Progressive Cavity Pump Design and Analysis	2012–2015	DST	17	Abdus Samad
16	Design and Optimization of Bi-Directional Flow Impulse Turbine	2013–2014	Ministry of Earth Sciences	25	Abdus Samad/Purnima Jalihal (NIOT)
17	Studies on Gas Hydrates	2 years	NIOT, Chennai	26	Jitendra Sangwai
18	Assessment of Functional Performance of Coastal Structures Along East Coast of India	August 2010 to August 2013	ICMAM, Ministry of Earth Sciences	91.87	V. Sundar, S.A. Sannasiraj and K. Murali

19	Coupled Dynamics of Sloshing of Liquid in a Container and Barge	April 2009 to February 2013	Naval Research Board	22.416	S.A. Sannasiraj and V. Sundar
20	Study of an Energy Exchange Between Wind and Waves and Variability of Their Climate Characteristics in the Indian Ocean	July 2010 to June 2012	DST and Russian Foundation for Basic Research	14.302	S.A. Sannasiraj, V. Sundar, R. Ramesh, Alexander S. Ginzburg and Polnikov Vladislav Gavrilovich
21	Coastal Inundation Risk Map Study for Singapore	November 2011 to October 2013	National University of Singapore	14.0	S.A. Sannasiraj

Industrial consultancy projects

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of Rs.)
1	V. Anantha Subramanian	Model Testing for 19.75 m FRV	Goa Shipyard Ltd., Goa	5.59
		Model Testing for 250 Men Ferry Craft	The Shalimar Works Ltd.	3.00
		Model Test for Grab Hopper Dredger	Tebma Shipyards Ltd.	3.93
		Model Testing of 60 ton BP Tug	New Western Marine Shipbuilders Ltd.	3.60
		Technical Support for Vessels Under Department of Fisheries	Tamilnadu Fisheries Department	3.37
		Model Testing for 500 T Feed Water Barge	Shoft Shipyard Pvt. Ltd.	5.61
		Design, Tendering for JCB-Mounted Self-Propelled Barge	Chilika Development Authority	8.42
		Technical Support for Vessels Under ICZMP-Odisha	ICZMP, State Project Management Unit	27.85
2	S. Nallayarasu	Structural Feed for BCP A3 Process Complex (Bassain Redevelopment Project) for Tender Purpose	Oil and Natural Gas Commission	36
		Independent Analysis of 3 and 5 Wellhead Platform	ABSG Consulting	38
		Design of Flap Gate and A-Frame for Drydock at Pipavav Shipyard	Pipavav Defence and Offshore Engineering Company Ltd.	24
		Consultancy Services for Structural and Architectural Design of Building Modules	Petrofac Engineering Services India Pvt. Ltd.	20
		Consultancy Services for Prebid Design OF New Sulphur Jetty	Dodsall Pvt. Ltd.	12
		Detailed Design of Pontoon and Its Superstructure for IREL Pontoons	MN Dastur & Company Pvt. Ltd.	15
		Design of Radiographic Equipment Room	Petro6 Engineers & Consultants Pvt. Ltd.	3
		Support Service for KBe Design	Aker Kvaerner Engineering S.E.A. Sdn Bhd	8
		Verification of Existing Sheet Pile Wall Quay Structure	ABSG Consulting	14
		Pre-Bid Design of Jetty 1,2 and Approach Trestle for Jurong Aromatics Complex	Essar Projects Singapore Pte Ltd., Singapore	12.5
		Consultancy Services for Cable Fatigue Analysis	Impac Offshore Engineering	11
		Pile Driveability Analysis of FY-A platform, FZ-A Platform and Tripod Jackets for Foroozam Project—IOEC	Triune Energy Services Pvt. Ltd.	7.5
		Structural Design Review of B-193 Process Platform Project	Oil and Natural Gas Commission	26

	S. Nallayarasu	Structural Design Review for GSPC–PLQP Platform Project	Aker Kvaerner Engineering S.E.A. Sdn Bhd	42
	S. Nallayarasu	Design Review of Desalination Plant (LTTD)	Kirloskar Contructions and Engineers Ltd.	36
3	R. Sundaravadivelu and P. Shanmugam	Construction of Geo-Tube Embankment for Coastal Erosion Protection at Pentha Village, Orissa	Integrated Coastal Zone Management Project [ICZMP], Orissa	36
		Environmental Monitoring of Gopalpur Port, Orissa	Gopalpur Port, Orissa	
4	V. Sundar	Improvement and Widening to Four Lanes with Both Side Roads of Ennore Expressway from km 1/600 to 7/538	Coastal SPL-JV	8.27
		Providing Technical Assistance for the Construction of a Coastal Road with Necessary Shore Protection Along the Sea Shore from Suraj Agro Industries to Old Harbour Entrance in Chennai Port	Chennai Port Trust	11.91
		Coastal Protection Works Along Two Coastal Stretches of Alappuzha District, Kerela	Irrigation Division, Alappuzha	12.90
		Climate Change Adaptation in Rural Areas of India—CCA RAI. Pilot Project in Mousuni Island, West Bengal	GIZ	11.26
		Bank Protection for Kuttanad, Kerala	Techfab India	0.75
		River Training Work at Punnakayal in Thichendur Taluk of Thoothukudi District	PWD	8.27
		Stability Analysis of WUP During Flootation	M.N. Dastur & Company (P) Ltd.	8.98
		Conducting Bathymetry Study, Design and Formulation of Specification for Shore Protection Measures Along IREL Mining Area	Indian Rare Earths Ltd.	14.04
		Engineered Reefs for Mitigating Wave Disturbance Inside Kahului Harbour, Maui	University of Hawaii	22.75
		Numerical Model Study of Shore Line Evaluation for the East of Thoothukudi Along the Boundary in Collector’s Bungalow at Thoothukudi in Tamilnadu	PWD	2.80
		Construction of Dedicated Berth and Other Infrastructural Facilities for the Administration of the Union Territory of Lakshadweep at Beypore, Calicut SH: Hydraulic Model Studies	Central Public Works	8.98
		APPDCL—Seawater Intake and Outfall System with Groynes, Open Channel System for 2 × 800 MW SDSTPS, Krishnapatnam, Nellore District	Navayuga Engineering Company Ltd.	38.20
		Tranquility Study in the Harbour Basin with Partially Completed BW	Gopalpur Port	5.61
		Construction of Groynes and Seawall in Alappuzha District	Irrigation South Circle	12.92
		Numerical Model Study and Evolution of Cross Section of RMS Wall Along the East of Thoothukudi Along the Boundary of Vivekanandar Colony Adjacent to Thirespuram	PWD/WRO	1.40

RBIC projects

Sl. No.	Name of Faculty Member	Title	Industry	Amount (lakhs of Rs.)
1	V. Anantha Subramanian	Development of Solar Power Marine Propulsion System	Chilika Development Authority, Bhubaneswar, Orissa	21.40
2	Rajesh R. Nair	Estimation of Peat Gas Deposits in Kerala and Konkan Peat Lands	Gas Authority Of India Ltd.	40
3	Abdus Samad/Nilanjan Saha/Sannasiraj	A New Wave Energy Device	Ghent University	US\$8500
4	Jitendra Sangwai	Petroleum Sludge Dissolution	OIL	41
		Gas Hydrates	GAIL	51
		Rheology of Fluids	Intellectual Ventures	3

Exchange programmes with other universities including institutions/universities under MoUs

Faculty members' participation with other institutions under MoUs

Sl. No.	Name of Faculty Member	Participation Details	Name of university/institution which has MoU
1	Rajesh R. Nair	Coordinator and Champion	IPG Paris, France
		Coordinator and Champion	Curtin University, Australia

Research publications of faculty members and research scholars

Total number of papers published in refereed national journals: 2

Total number of papers published in refereed international journals: 53

Total number of papers presented at national conferences: 17

Total number of papers presented at international conferences: 52

(a) Refereed national journals

1. V. Sundar. Shoreline changes along the northern coast of Chennai port, from field measurements. *India Journal of Hydraulics*.
2. Jitendra Sangwai. 2012. Predictability of equation of state (EoS)-based gas hydrate models for single and binary gas mixtures. *SJCET Journal of Engineering and Management* 5(2): 57–62.

(b) Refereed international journals

1. P. Krishnankutty (2012) A study on non linear wave forces and motion responses of a tri-hull carrier vessel. *Journal of Engineering for the Maritime Environment* 226(1): 3–14.
2. S. Nallayarasu (2012) Effect of hull geometry on the hydrodynamic response of spar in regular waves. *Ships and Offshore Structures* available online.
3. H. Nasiha and P. Shanmugam. A model for deriving the bulk refractive index of marine particles in coastal waters. (To appear)
4. P. Shanmugam and M. Tholkapiyan. Spectral models for improving the atmospheric correction results in coastal waters. *Advances in Remote Sensing*.
5. D. Srikant and P. Shanmugam. Integrated log analysis of Cretaceous sedimentary sequence of Ramnad sub-basin, Cauvery basin, India. (To appear)
6. S. Sajumon, K. Murali and P. Shanmugam. Hydrodynamic implementation to the Indian coast: Tides and salinity model. (To appear)
7. P. Shanmugam and S.P. Tiwari. An algorithm for estimating Kd(490) in coastal and oceanic waters. (To appear in *IEEE*)
8. J. Pravin and P. Shanmugam. A model for the subsurface reflectance for coastal waters. (To appear in *Limnology and Oceanography: Methods*)
9. S.P. Tiwari and P. Shanmugam. An evaluation of inversion models for retrieving phytoplankton absorption coefficients in coastal waters. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*.
10. P. Shanmugam. Remote sensing of the coastal ecosystems. *Journal of Geophysics and Remote Sensing*.
11. S.P. Tiwari and P. Shanmugam. A reflectance model for relatively clear and turbid waters. *Engineering, Technology and Applied Science Research* 3: 325–337.

12. M. Tholkapiyan and P. Shanmugam. Spatial and temporal variability of ocean surface algal blooms in the Arabian Sea. (To appear)
13. M. Tholkapiyan and P. Shanmugam. Recent trend in algal blooms and their relation with physical and meteorological factors in oceanic waters around India. (To appear in *Annales Geophysicae*)
14. M. Tholkapiyan, P. Shanmugam and P. Chauhan. Derivation of calibration coefficients for OCM-2 sensor for coastal waters. *Geophysics and Remote Sensing*.
15. S.P. Tiwari and P. Shanmugam. An optical model for deriving the particulate backscattering coefficients in coastal/oceanic waters. *Ocean Sciences*.
16. V.B. Sundarabalan and P. Shanmugam. Radiative transfer modeling of upwelling light fields in coastal waters. *Journal of Quantitative Spectroscopy and Radiative Transfer*.
17. P. Shanmugam, M. Suresh and V.B. Sundarabalan. OSABT: An innovative algorithm for characterization of ocean surface algal blooms in oceanic waters around India. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*.
18. S.P. Tiwari and P. Shanmugam. An optical model for retrieval of phytoplankton absorption coefficients in coastal waters. *Advances in Remote Sensing*.
19. A. Simon and P. Shanmugam. An automated algorithm for classification of algal blooms in oceanic waters around India. *Advances in Remote Sensing*.
20. Shanmugam et al. An evaluation of MODIS/Aqua bio-optical algorithms in Arctic waters. *Environmental Engineering and Management Journal*.
21. P. Shanmugam. CAAS: An atmospheric correction algorithm for the remote sensing of complex waters. *Annales Geophysicae*.
22. C. Sudhir Kumar, C.S. Yang, K. Ouchi and P. Shanmugam. Ship recognition by integration of SAR and AIS. *The Journal of Navigation*.
23. K. Devi, C.S.V. Lakshmi, M.C. Raicy, P. Srinivasan, S.G.N. Murthy, S.M. Hussain, I. Buynevich and R.R. Nair. Integrated approach of assessing sedimentary characteristics of onshore sand deposits on the Velankanni coast, Tamil Nadu, India sheds light on extreme wave event signatures. *Journal of Coastal Conservation* 17: 167–178. doi:10.1007/s11852-012-0228-x
24. D. Trivedi, M.C. Raicy, K. Devi, D. Kumar, I. Buynevich, P. Srinivasan, N.R. Iyer, R. Guin, D. Sengupta and R.R. Nair (2012) Sediment characteristics of tidal deposits at Mandvi, Gulf of Kachch, Gujarat, India: Geophysical, textural and mineralogical attributes. *Journal of Geosciences* 3: 515–524. doi:10.4236/ijg.2012.33054 (<http://www.SciRP.org/journal/ijg>)
25. D. Trivedi, K. Devi, I. Buynevich, P. Srinivasan, K. Ravisankar, V. Silwal, D. Sengupta and R.R. Nair (2012) Interpretation of dune genesis from sedimentological data and ground penetrating radar (GPR) signatures: A case study from Ashirmata Dune Field, Mandvi Beach, Gujarat, India. *International Journal of Geosciences* 3: 772–779. doi:10.4236/ijg.2012.34078 (<http://www.SciRP.org/journal/ijg>)
26. D. Trivedi, Y. Singh, T.K. Maji, S.Ch. Kandpal and R.R. Nair (2012) A new assessment of the elastic thickness (Te) structure of the Indian shield, and its implications. *Annals of Geophysics* 55: 273–281. doi:10.4401/ag-5172 (<http://www.annalsofgeophysics.eu/index.php/annals/article/view/5172>)
27. D. Trivedi, T.K. Maji, D. Sengupta and R.R. Nair (2012) Reappraisal of effective elastic thickness in the south-west Indian Ocean, and its possible implications. *Annals of Geophysics* 55: 265–272. doi: 10.4401/ag-5171 (<http://www.annalsofgeophysics.eu/index.php/annals/article/view/5171>)
28. N.R. Iyer, P. Srinivasan and R.R. Nair (2012) Forensic applications including mapping and classification of tsunami sand deposits and sand dunes with ground penetrating radar. *International Journal of Forensic Engineering*.
29. V. Sundar. Wave interaction with a double chamber oscillating water column device. *International Journal of Ocean and Climate Systems*.
30. V. Sundar. Dynamic pressures and run-up on curved front face and vertical seawall under random waves. *Coastal Engineering Journal*.
31. V. Sundar. Wind-wave characteristics and climate variability in the Indian Ocean region using altimeter data. *Marine Geodesy*.
32. V. Sundar. Shore protection for a placer deposit rich beach of the southwest coast of India. *IJOS*.
33. V. Sundar. Wave overtopping over crown walls and run-up on rubble monud breakwaters with Kolos armour under random waves. *IJOS*.
34. V. Sundar. Artificial reefs: A review. *IJOS*.
35. V. Sundar. Shoreline changes along the northern coast of Chennai port, from field measurements. *Indian Journal of Hydraulics*.

36. N. Natarajan and G. Suresh Kumar (2012) Effect of non linear sorption on multi-species solute transport in a coupled fracture matrix system. *International Journal of Research in Chemistry and Environment* (ISSN: 2248-9649) 2(2): 96–101.
37. N. Natarajan and G. Suresh Kumar. Evolution of fracture permeability due to co-colloidal bacterial transport in a coupled fracture-skin-matrix system. *Geoscience Frontiers* (Elsevier Publications) 3(4): 503–514.
38. G. Suresh Kumar. A review on fluid dynamics of fractured reservoir geology. *International Journal of Geology* (NAUN Publications–ISSN: 1998-4499) 6(2): 45–52.
39. N. Natarajan and G. Suresh Kumar. Effect of fracture-skin on virus transport in fractured porous media. *Geoscience Frontiers* (Elsevier) 3(6): 893–900.
40. V. Renu and G. Suresh Kumar. Numerical modeling and spatial moment analysis of solute mobility and spreading in a coupled fracture-skin-matrix system. *Geotechnical and Geological Engineering* (Springer) 30(6): 1289–1302.
41. G. Suresh Kumar. A review on fluid flow and solute transport through hard rocks. *Journal of Groundwater Research* (IGWC Publishers) 1(1): 20–41.
42. A. Samad (2013) Flow analysis of jet pump used for oil wells. *International Journal of Fluid Machinery and Systems* 6(1).
43. J. Sangwai. Phase stability of semiclathrate hydrates of carbon dioxide in synthetic sea water. *Journal of Chemical and Engineering Data*. (In press)
44. J. Sangwai. Applications of nanotechnology for upstream oil and gas industry. *Journal of Nano-Research*. (In press)
45. J. Sangwai (2013) Experimental investigations on the phase equilibrium of semiclathrate hydrates of carbon dioxide in TBAB with small amount of surfactant. *International Journal of Energy and Environmental Engineering* 4: 11. doi:10.1186/2251-6832-4-11.
46. J. Sangwai (2012) Predictability of equation of state (EoS)-based gas hydrate models for single and binary gas mixtures. *Journal of Petroleum Engineering and Technology* 2(3): 9–17.
47. J. Sangwai (2012) Modeling phase equilibria of semi-clathrates of CH₄, CO₂ and N₂ in the aqueous solution of tetra-*n*-butyl ammonium bromide (TBAB). *Journal of Natural Gas Chemistry* 21(4): 459–465.
48. D.S. Bhaskara Rao and R. Panneer Selvam. Dynamic time domain analysis of a tension based tension leg platform (TBTLP) under regular waves. *Journal of Information, Knowledge and Research in Mechanical Engineering* (ISSN 0975–668X) 2(2): 217–221.
49. G. Vijayakumar and R. Panneer Selvam. Experimental investigations of barge floater with moonpool for 5 MW wind turbine. *Journal of Information, Knowledge and Research in Mechanical Engineering* (ISSN 0975 –668X) 2(2): 227–230.
50. S.A. Sannasiraj and V. Sundar (2012) Liquid sloshing dynamics in a barge carrying container subjected to random wave excitation. *Journal of Naval Architecture and Marine Engineering* 9: 43–65.
51. S.A. Sannasiraj (2012) Numerical simulation of solitary waves using smoothed particle hydrodynamics method. *International Journal of Ocean and Climate Systems* 3(3): 187–202.
52. S.A. Sannasiraj (2012) Joint analysis of the wind and wave-field variability in the Indian Ocean area for 1998–2009. *Atmospheric and Oceanic Physics* 48(6): 639–656.
53. S.A. Sannasiraj (2013) SPH simulation of shallow water wave propagation. *Ocean Engineering* 60: 41–52.

(c) Proceedings of national conferences

1. P. Shanmugam, C. Hu and J.P. Cannizzaro. Remote estimation of *Karenia brevis* abundances in west Florida. *First Indo-US Research Fellows Conclave*, 15–17 March 2013, Marriott Hotel, Pune.
2. V. Sundar. Realtime study on sea state during “THANE” cyclone at North Chennai, India. IIT Bombay.
3. V. Sundar. Energy conversion capacity of a double chamber oscillating water column. IIT Bombay.
4. V. Sundar. A review on artificial reefs. IIT Bombay.
5. V. Sundar. Comparison of wave transformations for various tidal inlet width and angle of incidence. IIT Bombay.
6. V. Sundar. Analysis of cylinder response undergoing VIO by omega arithmetic and numerical methods. IIT Bombay.
7. V. Sundar. Shoreline changes along the northern coast of Chennai port, from field measurements. IIT Bombay.
8. V. Sundar. Stokes second order sloshing in a rectangular tank. IIT Bombay.
9. V. Sundar. Vertical wall protected by wave screens in oblique wave environment. IIT Bombay.

10. V. Sundar. Wave overtopping over crown walls and run-up on rubble mound breakwaters with kolos armour under random waves. IIT Bombay.
11. A. Samad. CFD analysis of flow through wells turbine. *National Conference on Mechanical Engineering: Retrospect and Prospect*, 2–3 February 2013, Suri, West Bengal, India.
12. K. Bharathi, S. Manju and J.S. Mani. Performance of porous reef breakwaters.
13. K. Mullai Vendhan, M.V. Ramna Murthy and J.S. Mani. Field study of wave forces on a seawater intake caisson in Agatti Island, India. *Indian National Conference on Hydraulic Engineering*, 7–8 December 2012.
14. J. Sangwai. Applications of gas hydrates and their problems in oil and gas industry. *International Conference on Global Innovation in Technology and Sciences*, 4–6 April 2013, Kottayam, Kerala, India.
15. J. Sangwai. Predictability of equation of state (EoS)-based gas hydrate models for single and multi-component gas mixtures. *National Conference on Mechanical Engineering Technology*, 2 June 2012, Palai, Kerala, India.
16. D.S. Bhaskara Rao and R. Panneer Selvam. Dynamic time domain analysis of a tension based tension leg platform (TBTLP) under regular waves. *Proceedings of National Conference on Information, Knowledge & Research in Engineering, Technology & Sciences NCIKR-ETS-2013*, 3 February 2013, Bhavnagar, Gujarat, India.
17. G. Vijayakumar and R. Panneer Selvam. Experimental investigations of barge floater with moonpool for 5 MW wind turbine. *Proceedings of National Conference on Information, Knowledge & Research in Engineering, Technology & Sciences NCIKR-ETS-2013*, 3 February 2013, Bhavnagar, Gujarat, India.

(d) Proceedings of international conferences

1. P. Krishnankutty. Finite element analysis of nonlinear water wave–body interaction—computational issues. *The Asme 2012 31st International Conference on Ocean, Offshore and Arctic Engineering, OMAE 2012*, 10–15 June 2012, Rio De Janeiro, Brazil.
2. P. Krishnankutty. Study on the effect of body length on the hydrodynamic performance of an axi-symmetric underwater vehicle. *4th International Conference on Underwater System Technology*, 4–6 December 2012, Kuala Lumpur, Malaysia.
3. P. Krishnankutty. Design options for dynamic captive ship model test facility. *International Conference on Technology of the Sea*, 6–8 December 2012.
4. P. Krishnankutty. Design and analysis of a towed submersible system. *International Conference on Technology of the Sea*, 6–8 December 2012.
5. V. Anantha Subramanian. Performance analysis of U–tube tank for roll stabilization. *International Conference Cum Exhibition on Technology*, 6–8 December 2012, Indian Maritime University, Visakhapatnam.
6. V. Anantha Subramanian. Design and analysis of a towed submersible system. *International Conference cum Exhibition on Technology*, 6–8 December 2012, Indian Maritime University, Visakhapatnam.
7. S. Nallayarasu. Damping characteristics of heave plates attached to spar hull. *31st International Conference on Ocean, Offshore and Arctic Engineering, OMAE 2012*, 1–6 July 2012, Rio de Janeiro, Brazil.
8. P. Shanmugam, M. Tholkapiyan and M. Suresh. Atmospheric correction and calibration of OCM sensor data. *Proceedings of 3rd EOS Topical Meeting on Blue Photonics–Optics in the Sea (Blue Photonics 3)*, 18–20 March 2013, Royal Netherlands Institute for Sea Research (NIOZ), Texel, The Netherlands.
9. M. Tholkapiyan and P. Shanmugam. Spatial and temporal distribution and dynamics of ocean surface algal blooms in coastal/oceanic waters around India. *Proceedings of 3rd EOS Topical Meeting on Blue Photonics–Optics in the Sea (Blue Photonics 3)*, 18–20 March 2013, Royal Netherlands Institute for Sea Research (NIOZ), Texel, The Netherlands.
10. V.B. Sundarabalan and P. Shanmugam. Measurements and modeling of upwelling light field in coastal waters. *Proceedings of 3rd EOS Topical Meeting on Blue Photonics–Optics in the Sea (Blue Photonics 3)*, 18–20 March 2013, Royal Netherlands Institute for Sea Research (NIOZ), Texel, The Netherlands.
11. S.P. Tiwari and P. Shanmugam. Remote-sensing retrieval of inherent optical properties in oceanic/coastal waters. *Pan Ocean Remote Sensing Conference (PORSEC)-2012*, 5–9 November 2012, Kochi, Kerala, India.
12. M. Tholkapiyan and P. Shanmugam. Oceanographic and atmospheric factors influencing spatial and seasonal variations of algal blooms in Gulf of Mannar. *Pan Ocean Remote Sensing Conference (PORSEC)-2012*, 5–9 November 2012, Kochi, Kerala, India.

13. V.B. Sundarabalan and P. Shanmugam. Rendering of underwater lightfield. *Pan Ocean Remote Sensing Conference (PORSEC)-2012*, 5–9 November 2012, Kochi, Kerala, India.
14. A. Simon and P. Shanmugam. A model to derive bioluminescence field in coastal waters. *Pan Ocean Remote Sensing Conference (PORSEC)-2012*, 5–9 November 2012, Kochi, Kerala, India.
15. S. Pravin Jeba Dev and P. Shanmugam. Dependence of scattering by absorption ratio and sun's angle on f-function of the diffuse reflectance. *Pan Ocean Remote Sensing Conference (PORSEC)-2012*, 5–9 November 2012, Kochi, Kerala, India.
16. J. Nasiha and P. Shanmugam. Model for estimating the particulate bulk refractive index for a wide range of particles in coastal waters. *Pan Ocean Remote Sensing Conference (PORSEC)-2012*, 5–9 November 2012, Kochi, Kerala, India.
17. S.P. Tiwari and P. Shanmugam. Development and application of ocean colour algorithms for estimating inherent optical properties in oceanic/coastal waters. *Ocean Optics 2012*, 8–12 October 2012, Glasgow, Scotland.
18. P. Shanmugam. New atmospheric correction algorithm in bloom waters. *Ocean Optics 2012*, 8–12 October 2012, Glasgow, Scotland.
19. V. Sundar. Impact of non-linear tide–tsunami interaction on near shore run-up. *18th Congress of the Asia & Pacific Division of the International Association for Hydro-Environment Engineering and Research (IAHR-APD 2012)*, 19–23 August 2012.
20. V. Sundar. Numerical modelling of tidal inlets based on extended Boussinesq equations. *18th Congress of the Asia & Pacific Division of the International Association for Hydro-Environment Engineering and Research (IAHR-APD 2012)*, 19–23 August 2012.
21. V. Sundar. Wind wave climate along Indian coasts using satellite altimeter data. *Pan Ocean Remote Sensing Conference PORSEC 2012*, 5–9 November 2012.
22. R. Kanna, S. Gummadi and G. Suresh Kumar. Experimental investigations on microbial enhanced oil recovery. *International Oil & Gas Conference Exhibition, PETROTECH-2012*, 14–17 October 2012, New Delhi.
23. M. Berlin, G. Suresh Kumar and I.M. Nambi. Numerical modeling of petroleum hydrocarbon transport in an unsaturated sub-surface system. *International Conference on Drilling Technology (ICDT-2012)*, 6–8 December 2012, IIT Madras.
24. M. Vasudevan, G. Suresh Kumar and I.M. Nambi. Numerical modeling on remediation of petroleum hydrocarbons under coupled dissolution, sorption and biodegradation for a subsurface system. *International Conference on Drilling Technology (ICDT-2012) and the first National Symposium on Petroleum Science and Engineering (NSPSE-2012)*, 6–8 December 2012, IIT Madras.
25. T. Sharma, J.S. Sangwai and G. Suresh Kumar. Oil/water emulsion interfacial-tension alteration under rotational effect in enhanced oil recovery process. *International Conference on Drilling Technology (ICDT-2012)*, 6–8 December 2012, IIT Madras.
26. M. Berlin, G. Suresh Kumar and I.M. Nambi. Numerical modeling for enhanced transformation of nitrate in an unsaturated porous media. *International Groundwater Conference (IGWC-2012)*, 18–21 December 2012, Aurangabad, Maharashtra.
27. S. Mohana Sundaram, B. Narasimhan and G. Suresh Kumar. The significance of serial and cross correlations on rainfall-recharge regression analysis. *International Groundwater Conference (IGWC-2012)*, 18–21 December 2012, Aurangabad, Maharashtra.
28. M. Vasudevan, G. Suresh Kumar and I.M. Nambi. Numerical study of multi-component dissolution of residual petroleum hydrocarbons in a sub-surface system. *International Groundwater Conference (IGWC-2012)*, 18–21 December 2012, Aurangabad, Maharashtra.
29. M. Berlin, G. Suresh Kumar and I.M. Nambi. Numerical modeling on the effect of immobile water content on nitrate transport in an unsaturated porous system. *First International Conference on Emerging Trends in Engineering and Technology*, Marthandam College of Engineering and Technology, 21–22 February 2013.
30. A. Samad. Swirl induced flow through a venturi-ejector. *ASME 2012 Fluids Engineering Division Summer Meeting (FEDSM2012)*, 8–12 July 2012, Puerto Rico, USA.
31. A. Samad. Delayed flow separation in aerofoil. *5th International Symposium on Fluid Machinery and Fluids Engineering (ISFMFE 2012)*, 24–27 October 2012, Jeju, South Korea.
32. A. Samad. Enhancement of film cooling effectiveness using upstream ramp. *Proceedings of ASME Gas Turbine India Conference 2012, GTIndia 2012*, 1 December 2012, IIT Bombay.
33. A. Samad. Bi-directional flow turbines for wave energy extraction. *Proceedings of the Thirty-Ninth National Conference on Fluid Mechanics and Fluid Power, SVNIT*, 13–15 December 2012, Surat, Gujarat, India, FMFP201271.

34. A. Samad. Flare gas recovery using ejector—A review. *Proceedings of the Thirty-Ninth National Conference on Fluid Mechanics and Fluid Power, SVNIT*, 13–15 December 2012, Surat, Gujarat, India, FMFP201271.
35. A. Samad. Performance analysis of a centrifugal impeller used for crude oil pumping. *Second International Conference on Drilling Technology*, 6–8 December 2012, IIT Madras.
36. A. Samad. Numerical modeling of flow through progressive cavity pump—A review. *Second International Conference on Drilling Technology*, 6–8 December 2012, IIT Madras.
37. A. Samad. Aerodynamic analysis on wind turbine airfoil with cavity. *International Conference on Energy Resources & Technologies for Sustainable Development*, 7–9 February 2013, Bengal Engineering and Science University, Howrah, West Bengal, India.
38. A. Samad. Impulse turbines for OWC based energy device—A review. *International Conference on Energy Resources & Technologies for Sustainable Development*, 7–9 February 2013, Bengal Engineering and Science University, Howrah, West Bengal, India.
39. J. Sangwai. Experimental investigations on the phase equilibrium of semicathrate hydrates of quaternary system of CO₂+TBAB+SDS+H₂O. *2nd International Conference on Drilling Technology (ICDT-2012)*, 6–8 December 2012, IIT Madras.
40. J. Sangwai. Predictability of equation of state (EoS)-based gas hydrate models for single and binary gas mixtures. *2nd International Conference on Drilling Technology (ICDT-2012)*, 6–8 December 2012, IIT Madras.
41. J. Sangwai. Treatment mechanisms for tank bottom sludge remediation: Challenges and future scope. *2nd International Conference on Drilling Technology (ICDT-2012)*, 6–8 December 2012, IIT Madras.
42. J. Sangwai. Biodegradation of paraffins. *2nd International Conference on Drilling Technology (ICDT-2012)*, 6–8 December 2012, IIT Madras.
43. J. Sangwai. O/W emulsion IFT alteration under rotational effect in enhanced oil recovery. *2nd International Conference on Drilling Technology (ICDT-2012)*, 6–8 December 2012, IIT Madras.
44. J. Sangwai. Evaluation of lubricants in drilling fluids to reduce friction effects in deviated wells. *2nd International Conference on Drilling Technology (ICDT-2012)*, 6–8 December 2012, IIT Madras.
45. J. Sangwai. Carbon dioxide sequestration: Understanding its stability at reservoir conditions. *10th International Oil and Gas Conference and Exhibition (PetroTech-2012)*, 14–17 October 2012.
46. J. Sangwai. Will gas hydrate lying on oceanic floors in India solve its energy problem? A futuristic approach. *SPE-EAGE Annual Conference & Exhibition Incorporating SPE Europec*, 4–7 June 2012, Copenhagen, Denmark.
47. J. Sangwai. Applications of nanotechnology for upstream oil and gas Industry. *International Conference on Nanotechnology (Nanocon2012)*, 18–19 October 2012, Pune, India.
48. D.S. Bhaskara Rao, R. Panneer Selvam and S. Nagan. Hydrodynamic analysis of tension based tension leg platform. *Proceedings of the ASME 2012, 31st International Conference on Ocean, Offshore and Arctic Engineering OMAE*, July 2012, Rio de Janeiro, Brazil.
49. G. Vijayakumar and R. Panneer Selvam. Static and dynamic analysis of semi-submersible type floaters for offshore wind turbine. *8th International Conference on Marine Technology (MARTEC 2012)*, 20–22 October 2012, Universiti Malaysia Terengganu, Malaysia.
50. S.A. Sannasiraj. Assimilation of altimeter data into WAM model using stationary Kalman filter. *WISE 2012*, 16–20 April 2012.
51. S.A. Sannasiraj. Deflection of slender cylindrical member under breaking wave impact. *ISOPE 2012*, June 2012.
52. S.A. Sannasiraj. Wind-wave climate along indian coasts using satellite altimeter data. *11th Biennial Pan Ocean Remote Sensing Conference (PORSEC)*, 5–9 November 2012.

Distinguished visitors to the department

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1	Dr. Dong Chull, Principal Investigator and Director of the Ocean Climate Division, Korea Ocean Research and Development Institute (KORDI), Korea	21 November 2012	Official/research discussion

4.15.5. Other Activities of the Department/Centre

Interdisciplinary group achievements of the departments

Dr. P. Shanmugam—Conducting cruises for acquiring optical and physical oceanographic data in the Bay of Bengal.

International collaboration achievements of the department

Faculty visits

Sl. No.	Name of the Faculty Member	Purpose of Visit	Date and Venue
1	P. Shanmugam	Ship measurements, along the coast of Tamilnadu (off Point Calimere on board <i>Sagar Pachimi</i>)	24 February to 2 March 2013, on board <i>Sagar Pachimi</i>
		Ship measurements, along the coast of Tamilnadu (off Point Calimere and Gulf of Mannar)	13–21 August 2012, on board <i>Sagar Purvi</i>
		Ship measurements, along the coast of Tamilnadu (off Point Calimere and Gulf of Mannar)	22 February–3 March 2013, on board <i>Sagar Pachimi</i>
		Field visit to ONGC facilities at Karaikal	10–14 March 2013
2	Rajesh R. Nair	Schlumberger provided PETREL & ECLIPSE software licences for IIT Madras Petroleum Engineering Programme	31 December 2012 to 5 January 2013, Schlumberger, Gurgaon.
		MoU between IIT Madras and IPGP	13–17 June 2012
		MoU between Curtin University and IIT Madras	15–21 September 2012

Student visits

Sl. No.	Name of the Students	Purpose of Visit	Date and Venue
1	Arun S. Nath, Asthanaditta Hasmiraju, Jay Karen Maria William, Kishore Javvaji, Sharad Kumar Gupta, Tony Chacko, Bhavik Shah, Srinivasa BharathiVindya, Vishal Devgan and Bidesh Hembram	Training programme	31 December to 5 January, Schlumberger, Gurgaon office

4.16. DEPARTMENT OF PHYSICS

4.16.1. Introduction

The Department of Physics was established in the year 1959 and now has Ph.D., M.Tech., M.Sc. and Dual Degree (B.S. and M.S.) programmes in Physics and a B.Tech. (Engineering Physics) programme. In addition, the department teaches various core or elective courses in physics to B.Tech. students. The physics department also undertakes a large number of sponsored research and consultancy projects.

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.

Students on roll

Programme	I Year	II Year	III Year	IV Year	V Year and Others	Total
B.Tech.	25	29	21	19	4	98
Dual Degree	8	8	6	10	0	32
M.Tech.	11	8	0	0	0	19
M.Sc.	37	39	0	0	0	76
Ph.D.	41	21	24	20	27	133
Total	122	105	51	49	31	358

Endowment prizes instituted

1. Ms. Lakshmi Ravikumar Memorial Prize
2. Ms. Latha and Sampath Srinath Prize
3. Prof. J Sobhanadri Prize
4. Sri Krishnamurthy Sundarambal Prize

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

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/Seminar/Symposium/Workshop	Date and Venue	Financial Assistance from
1	Subhendu Kumar Manna	PH11D009	4th International Conference on Advanced Nano-Materials—to present a paper on magnetic properties of Fe-5% Ni nano crystallite alloy composites for AC applications	17-19 October 2012, IIT Madras	
2	Sudahar Reddy Bongu	PH11D010	Photonics 2012	December 2012, IIT Madras	
3	Satyanarayana Raju S.R.V.CH	PH11D005			
4	Syed Akbar Ali	PH08D004			
5	V. Sreenath	PH10D004	Workshop on Bayesian statistics, “Bays by the Bay”	4-8 January 2013, Pondicherry (organized by IMSC) Chennai	The organizers supported the travel and stay.
		PH10D004	IUCAA-sponsored workshop, “Present Observational Constraints on Cosmological Parameters”	28 January to 1 February 2013, IUCAA Resource Centre, Department of Physics, University of Delhi	The organizers supported the travel and stay.
		PH10D004	The 27th meeting of the Indian Association for General Relativity and Gravitation (IAGRG-27)		IIT Madras supported the travel and registration fees.

6	Jaffino Stargen	PH12D016	SERC school on preparatory-level theoretical high-energy physics		The organizers supported the travel and stay.
7	Raman Namboodri	PH10D013	Laser symposium	February 2013, Mumbai	
8	Abdul Basith	PH12D019	To visit the INO-RPC Lab	16–28 December 2012	
9	Jafar Sadiq	PH12D008	INO collaboration meeting	5–7 March 2013, BARC, Mumbai	
10	Aleena Chakco	PH12D020	INO collaboration meeting	5–7 March 2013, BARC, Mumbai	
11	Hisay Lama	PH11C013	Presentation of paper, Choice of Metal Heaters for Measuring Thermal Conductivity Using Three Omega Method, at the International Conference RAM 2013	1–2 February 2013, College of Engineering and Technology, Bikaner, Rajasthan	
12	Rama Rao S.D.	PH10D021	Presentation of paper, Structural Refinement and Microwave Dielectric Properties of AWO ₄ Compounds with Wolframite Structure, at International Conference AMPC2013	6–8 February 2013, Anna University, Chennai	
13	Nrisimha Murthy M.	PH11D002	DST-SERC School on Physics of Highly Charged Ions	11 February to 3 March 2013, TIFR, Mumbai	
14	Narasimha Rao V. Avvaru	PH11M006	Presentation of paper, Unusual Magnetic Properties of Transition-Metal Boride Nanoparticles Synthesized by Solid State Chemical Reduction, at 4th International Conference on Recent Advances in Composite Materials (ICRACM'13)	18–21 February 2013, Goa	
15	Ganesh Kotagiri	PH10D025	Presentation of paper, Magneto Impedance Studies on As Cast and Vacuum Annealed Fe ₆₆ Ni ₇ Si ₇ B ₂₀ Ribbons, at National Conference on Advances in Naval Materials (ADNAM'13)	22–23 February 2013, NIOT, Chennai	
16	Subhendu Kumar Manna	PH11D009	Presentation of paper, Magnetroimpedance in Amorphous (Fe ₇₀ Co ₃ O) ₈₀ B ₂₀ Ribbons, at ISJPS'13	25–27 February 2013, IIT Kharagpur	
17	Muhammed Shareef Kolathodi	PH08D022	Presentation of paper, Electrochemical properties of SnO ₂ -TiO ₂ Nanocomposite Fibrous Structures by Electrospinning, at ISJPS'13	25–27 February 2013, IIT Kharagpur	
18	Kapil Gupta	PH10D001	Advanced School on High Resolution Transmission Electron Microscopy (ASTEM-2013)	4–8 March 2013, Institute of Physics (IOP), Bhubaneswar, Orissa	
19	Anoop Baby K.B.	PH12D003	Presentation of paper, Structural, Optical and Electrical Studies of Copper Oxide Thin Films Prepared by Hollow Cathode Magnetron Sputtering, at the International Workshop on Surface Science and Engineering 2013	4–5 March 2013, IIT Indore	
20	Udaykumar K.	PH12D014	Presentation of paper at International Workshop on Surface Science and Engineering 2013	4–5 March 2013, IIT Indore	
21	Dhanya S. Murali	PH10D024	Presentation of paper, Studies on Surface Plasmon Resonance Enhanced Fluorescence of Nano Metal Oxide Clusters, at the International Workshop on Surface Science and Engineering 2013	4–5 March 2013 IIT Indore	

22	Deepak Kumar	PH12D013	Presentation of paper, CZTS Solar Cell, at the International Workshop on Surface Science and Engineering 2013	4–5 March 2013, IIT Indore
23	Joynarayan Mukherjee	PH11D015	Advanced School on High Resolution Transmission Electron Microscopy (ASTEM-2013)	4–8 March 2013, IOP, Bhubaneswar
24	Soumyajit Saha	PH11C034	National Conference on Electron Collision Processes in Atomic and Molecular Physics	7–9 March 2013, V.P. & R.P.T.P. Science College, Gujarat
25	Sayantana Auddy	PH11C029	National Conference on Electron Collision Processes in Atomic and Molecular Physics	7–9 March 2013, V.P. & R.P.T.P. Science College, Gujarat
26	Deepak Kumar	PH12D030	Indo-UK seminar, Functional and Energy Materials, Manufacturing and Structures (FEMMS-2013)	25–26 March 2013, University of Hyderabad, Hyderabad
27	B. Manmadha Rao	PH11D019	Presentation of poster at 4th International Conference in Advanced Nano Materials ANM 2012	16–19 October, IIT Madras

Abroad

1	Ankita Pandey	PH09D013	Presentation of paper, Hydrodynamic Bound States in Stiff Active Filaments	16–20 February 2013, YTP, Kyoto University, Kyoto, Japan
2	Venkata Rao Chunchu	PH09D015	Presentation of paper, Magneto Impedance Studies in As Quenched $\text{Fe}_{73.5}\text{Si}_{1.5}\text{B}_8\text{CuVs-xAlNb}_x$ Nanocrystalline Ribbons, at the 12th Joint MMM/ Intermag Conference	14–28 January 2013, Chicago, Illinois, USA
3	Chiranjib Nayek	PH09D025	Presentation of paper, Magneto Electric Effect in $\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3$ - BaTiO_3 Nano Core–Shell, at the 12th MMM/Intermag conference	14–18 January 2013, Chicago, Illinois, USA
4	Rajib Mondal	PH10D035	Presentation of poster titled “Magneto Caloric Effect in the Rare Earth Inter Metallic Compounds RCoNi (R = Gd, Tb, Dy and Ho)” at the 12th Joint MMM/Intermag conference	14–18 January 2013, Chicago, Illinois, USA

Name of students/scholars who won Convocation/Institute Day prizes

Sl. No.	Name of the Student/Scholar	Roll. No.	Name of Prize.
1	Anjan Dwaraknath	EP08B004	President of India Prize, Bharat Ratna M. Visvesvaraya Memorial Prize, Hema Balasubramanian Excellence Award
2	Sanjay Guruprasad	EP08B019	Dr. Shankar Dayal Sharma Prize
3	Sai Sunilkumar Venkatarao M.M.	PH10M009	Sri Krishnamurthy Sundarambal Prize
4	Apurva Sarkar	PH10C004	Prof. Chilukuri Ramasastry Memorial Prize
5	Ashish Kumar Mishra	PH07D004	Prof. A.L. Laskar Prize

4.16.3. Faculty and Their Activities

Faculty

Name of the Faculty Member	Area of Specialization
Professors	
Sunil Kumar P.B. [Head]	Complex fluids, biological physics and statistical mechanics
Balakrishnan V.	Dynamical systems, quantum dynamics and stochastic
Bisht P.B.	Ultrafast lasers and fluorescence microscopy, fluorescence up conversion, ultrafast laser spectroscopy and fluorescence microscopy

Deshmukh P.C.	Atomic and molecular physics photoabsorption processes in free/confined atoms, molecules and ions
Suresh Govindarajan	Dynamical systems, statistical physics and field theory, quantum field theory, string theory, black holes
Gupte N.M.	Non-linear dynamics, chaos, statistical physics
Hariharan K.	Solid-state ionics/electronics
Kasiviswanathan S.	Interface and surface science of thin films, tunneling spectroscopy, surface plasmon resonance and SPR microscopy, DMS and MCD, DSP-based physical measurements
Kothiyal M.P.	Applied optics, interferometry, optical instrumentation and testing
Lakshmi Bala S.	Classical and quantum dynamical systems, nonlinear dynamics and chaos, chaos in gauge theories, quantum information theory
Arul Lakshminarayan	Quantum chaos, quantum information theory, chaos and transport, mathematical physics
Markandeyulu G.	Magnetism and magnetic materials
Murthy V.R.K.	Microwave physics and materials
Natarajan T.S.	Conducting polymers, molecular electronics, instrumentation
Ramachandra Rao M.S.	Electronic and magnetic materials: oxide electronics, thin films and nanostructures, ZnO nanostructures for light emission, nanocrystalline diamond for mechanical and electronic applications, magnetic nanoparticles, nanoparticles for photovoltaic applications, magneto electric coupling in oxides, magnetotransport, spintronics
Ramaprabhu S.	Synthesis of CNTs, CNCs, graphene, nano composites, metal oxide nano structures, alloys and their applications in hydrogen production, hydrogen storage, hydrogen sensors, chemical and bio sensors, PEMFC, micro fuel cells, DMFC, DEFC, alkaline fuel cells, Li-ion battery, super capacitors, field emission, photovoltaics, nano fluids, switchable mirrors and optical shutters, filters for water purification, carbon dioxide capture and biomedical applications
Sankaranarayanan V.	Low-temperature physics, superconductivity
Satyanarayana M.V.	Quantum optics, laser physics, photonics
Sethupathi K.	Low-temperature physics, superconductivity
Srinivas V.	Experimental condensed matter physics, low-temperature electronic properties, magnetic properties of intermetallic alloys and low-dimensional and disordered materials
Subramanian V.	Microwaves and dielectrics, semiconductors
Subrahmanyam A.	Semiconductor devices, photovoltaics
Vijayan C.	Non-linear optics, optical processes and materials such as semiconductor quantum dots (nanostructures), porphyrins and dyes
Associate Professors	
Ganesan A.R.	Adaptive optics, vision science, laser instrumentation, interferometry, holography and optical metrology
Harish Kumar N.	Superconductivity, novel magnetic materials, instrumentation and automation
Jain M.K.	Semiconductor physics, semiconductors, photovoltaics, chemical sensors
Krishnamurthy C.V.	Modeling and simulation of electromagnetic, acoustic, elastic wave propagation and scattering; nonlinear ultrasonic wave propagation in liquids and solids; modeling and simulation of heat transport in micro- and nanoscale structures; infrared thermography; quantitative imaging schemes; tomography; material characterization
James Libby	Experimental particle physics, CP-violation and flavour physics
Rajesh Narayanan	Condensed matter theory: quantum field theories applied to condensed matter systems, quantum phase transitions, strong disorder physics
Nirmala R.	Rare earth intermetallics
Pattabiraman M.	Experimental atomic physics, quantum optics and magnetometry
Prafulla Kumar Behera	Experimental particle physics
Santhosh P.N.	Magnetism in condensed matter physics, electro ceramics, magnetic materials, low-temperature characterization of advanced materials
Sriram Kumar L.	Semi-classical gravity and cosmology
Tripathy Prasanth	String theory

Assistant Professors	
Aravind G.	Photoelectron spectroscopy, photo absorption studies on biomolecules and reactions involving trapped ions to study the constituents and dynamics of the inter-stellar medium (ISM)
Dawood Kothawala	Semi classical gravity, quantum mechanics of black holes, QFT with minimal length scale
Dillip K. Satapathy	Complex fluids in confinement, physics of complex oxide heterostructures, X-ray and neutron scattering characterization of materials
Manoj Gopalakrishnan	Theoretical biophysics, stochastic processes, nonequilibrium statistical physics
Manu Jaiswal	Condensed matter physics
Murugavel P.	Physics of dielectric, ferroelectric and magneto electric oxide materials in bulk, film and nanocrystalline forms
Ranjit Kumar Nanda	Condensed Matter Theory (electronic structure)
Prahallad Padhan	Experimental condensed matter physics
Aditi Simha	Non-equilibrium statistical physics: heat conduction, drifting flux lattices, sedimental suspensions, sheared complex fluids, 'Active' matter, transition rates in some nonequilibrium steady states
Somnath Chanda Roy	Thin films, materials science, TiO ₂ nanotubes and photo catalysis
Sudakar Chandran	Oxides and nitrides, magnetic materials, spectroscopic techniques (such as Raman, XPS, UV-VIS, IR), defect-structure property correlations, experimental condensed matter physics, materials for memory and energy applications
Snethra Ramanan	Nuclear structure, renormalization group approaches, cold atomic gases in traps and lattices, computational many-body physics
Dawood Kothawala	Semi-classical and quantum gravity; specifically worked on thermodynamics of horizons and QFT with minimal length scale

Visits abroad by faculty members

Sl. No.	Name of Faculty Member	Country Visited	Date	Purpose of Visit
1	P.C. Deshmukh	USA	14 May to 27 July 2012	Research collaboration with University of Georgia, Atlanta
2	V. Subramanian	Germany	1 May to 29 June 2016	DAAD-IIT Faculty Exchange Fellowship for 2012 at the University of Stuttgart
3	Suresh Govindarajan	Qatar	13-15 May 2012	To deliver a lecture at Texas A&M University Qatar Campus, Doha
		Switzerland	16 May to 16 June 2012	Research interaction with the theoretical physics group at CERN, Geneva
4	A.R. Ganesan	Ireland	15 May to 30 June 2012	Collaborative work on adaptive optics in the eye and other aspects of vision science at the National University of Ireland, Galway
5	Neelima M. Gupte	Seattle, Washington, USA	26-30 August 2012	To present a paper at the 3rd International Conference on Theory and Application in Nonlinear Dynamics
6	P.B. Sunil Kumar	Max Planck Institute for Polymer Physics (MPIP), Mainz, Germany	10-14 September 2012	Ongoing collaborative work
7	A. Subrahmanyam	Garmisch Partenkirchen, Germany	10-14 September 2012	To attend the 13th International Conference on Plasma Surface Engineering (PSE 2012)
8	James Frederick Libby	Cincinnati, Ohio, USA	28 September to 4 October 2012	To present a paper at the 7th International Workshop on CKM Unitarity Triangle
9	L. Sriramkumar	Institute d'Astrophysique de Paris (IAP), France	3-23 December 2012	Scientific collaboration with Prof. Jerome Martin
10	Sunethra Ramanan	ICTP, Trieste, Italy and IPN, Orsay, France	7-18 January 2013	To meet research collaborators under Brief Visit
11	Manoj Gopalakrishnan	Department of Mathematics, Durham University, UK	9-17 July 2012	Invited participant in the symposium "Grand Biological Challenges for Mathematicians"

12	Arul Lakshminarayanan	Dresden, Germany	22–26 October 2012	International workshop, Wave Chaos from the Micro- to the Macro Scale, Max Planck Institute for the Physics of Complex Systems
13	M.S. Ramachandra Rao	London	22 March 2013	To attend the annual board meeting of Journal of Physics D: Applied Physics

Visits inside India by faculty members

Sl. No.	Name of Faculty Member	Institution Visited	Date	Purpose of Visit
1	R. Nirmala	NIT Trichy	3–7 December 2012	Invited lecture, Magneto Transport and Neutron Diffraction, in a short-term course on materials characterization
2	Prasanta Kumar Tripathy	Department of Physics and Astrophysics, University of Delhi Puri (Orissa)	10–15 December 2012 16–20 December 2012	Invited talk at International Conference on Light-Cone Physics (LC-2012) and Hadronic and Particle Physics Invited talk at the international conference Indian Strings Meeting 2012
3	V.R.K. Murthy	Bhubaneswar	17 December 2012	XVII National Seminar on Ferroelectrics and Dielectrics
4	P.B. Sunil Kumar	Pune	18–19 December 2012	HiPC meeting
5	C. Vijayan	SN College, Kannur, Kerala	23–26 December 2012	To deliver lectures in a DST-INSPIRE workshop
6	P.B. Sunil Kumar	IISc, Bangalore	29–31 December 2012	Invited talks for an Indo-US meeting on the “Structure, Dynamics and Mechanics of Biological Membranes”
7	C. Vijayan	Cochin, Kerala	4 January 2013	Invited talk, Design of Stable Nano Composite Materials for Photonics, at International Conference on Optoelectronic Materials and Thin Films for Advanced Technology (OMTAT 2013)
8	A.R. Ganesan	Pondicherry University	24–25 January 2013	Invited talk at the OSI symposium
9	Prem B. Bisht	Kolkata University	4–6 January 2013	Invited speaker at 100th Indian Science Congress
10	L. Sriramkumar	Pondicherry	4–9 January 2013	To attend the Bays by the Bay meeting
11	C. Vijayan	Kerala University	5 January 2013	To deliver lectures as resource person in a refresher course for college teachers conducted by Kerala University in the Academic Staff College
12	M.S. Ramachandra Rao	Kolkata	5 January 2013	Invited talks at Science Congress
13	R. Nirmala	Mumbai	14–17 January 2013	Poster presentation at the International Symposium on Neutron Scattering (ISNS 2013)
14	L. Sriramkumar	Visvabharati, Santiniketan, Kolkata	13–18 January 2013	To give a review talk, Recent Developments in Cosmology, to the XX DAE-BRNS High Energy Physics Symposium
15	C. Sudakar	IISc, Bangalore	17–19 October 2012	International conference on Raman spectroscopy
16	C. Vijayan	IIT Bombay	8 December 2012	Enhancement of nonlinear optical absorption copper decorated α -Fe ₂ O ₃ nano particles (DAE-Solids state physics symposium)
		Madras University	November 2012	New Directions in Nano-Photonics, refresher course for college teachers
		Kerala University, Thiruvananthapuram	July 2012	Raman Spectroscopy for Nanomaterials, CV Raman memorial lecture

17	Manoj Gopalakrishnan	IIT Bombay	3–7 December 2012	Solid State Physics: Proceedings of the 57th DAE Solid State Physics Symposium 2012
		Lonavala, Pune	8–11 January 2012	Young Investigators Meeting (YIM2012)
		Department of Physics, Banaras Hindu University	11–14 January 2013	Invited speaker at the conference Condensed Matter and Biological Systems
18	L. Sriramkumar	Department of Physics, Visvabharati, Santiniketan (invited plenary talk at the XX DAE-BRNS High Energy Physics Symposium)	18 January 2013	Non Gaussianities: A Powerful Probe of the Early Universe
		Chennai Mathematical Institute, Chennai	27 March 2013	The Inflationary Scalar Status and Possibilities
19	Prafulla Kumar Behera	Theni, Tamilnadu	9–11 August 2012	INO collaboration meeting
		BARC, Mumbai	5–7 March 2013	INO collaboration meeting
		IIT Madras	11 July 2012	Higgs Boson LHC
		Madras University	7 December 2012	Seminar on discovery of Higgs Boson LHC
		CODISSIA, Coimbatore	21 February 2013	The Mega Science Project
		American College, Madurai (workshop)	28–29 August 2012	Precision Test of Standard Model and Discovery of Higgs Boson at workshop on the pathway to the Higgs boson
		Kendrapara College, Orissa	16 January 2013	The Discovery of the Higgs Boson, at Current Trends In Physics
20	V. Subramanian	IGCAR (colloquium)	23 July 2012	Discovery of Higgs Boson
		Madurai	5 July 2012	To participate in the National Workshop on Multifunctional Materials
21	Somnath Chanda Roy	IIT Madras	16–19 October 2012	Invited talk at Advanced Nano-Materials 2012

Honours and awards obtained by faculty members

Sl. No.	Name of Faculty Member	Name of Award	Awarded for	Date of Award
Awards				
1	G. Aravind	INSA	Young scientist	2012
2	T.S. Natrajan	National Award	Innovation in petrochemical plastic processing industry	2011–2012

Books, monographs authored/co-authored

Sl. No.	Name of Faculty Member	Title	Publisher	Author/Co-author
Books				
1	S. Ramaprabhu	Graphene—The Wonder Material	SAMS Publishers	Co-author, with Rupali Nagar

Fellowships of academies and professional societies

Sl. No.	Name of the Society	Name of Faculty Member	Year of Admission
Others			
1.	Optical Society of India (OSI)	Prem B. Bisht	2013

Sponsored research projects

Sl. No.	Title	Period	Funding Agency	Amount	Co-ordinators
1	Development of Polymer Based Cost Effective Electro Chromic Devices for Automotive Applications	2 years	Department of Science and Technology	27,53,600	A. Subrahmanyam
2	Genetic and Metabolic Engineering in Two Flavinogenic Hemiascomycete Fungi <i>Ashbya gossypii</i> and <i>Eremothecium ashbyii</i> for Enhanced Flavins Production Through Stress Mechanisms	3 years	Department of Biotechnology	36,89,000	T.S. Natarajan
3	Development of an All-Optical Clock Based on Three-Photon Absorption Resonance	3 years	Department of Science and Technology	76,59,658	M. Pattabiraman, C. Vijayan, V. Subramanian
4	Understanding Partial Discharge Activity in Cryogenic Insulation Under Harmonic Voltages Adopting Super High Frequency (SHF) Technique	3 years	Department of Science and Technology	25,08,000	K. Sethupathi
5	Diagnostic Study on Partial Discharge Activity in Cryogenic Insulation Structure by Multisensory System	2 years	Central Power Research Centre	46,00,000	R. Sarathi (EE), K. Sethupathi
6	Magnetic, Electrical and Structural Investigations into the Layered Structures of Double Perovskites	3 years	Council of Scientific and Industrial Research	24,17,000	P.N. Santhosh
7	Collision Process in Atomic and Molecular Physics	3 years	Department of Science and Technology	15,05,520	P.C. Deshmukh
8	Design of Hybrid Organometallic Coordination Complex Materials for Nonlinear Optics	1 year	DST Indo–Australian collaboration	4.66 lakhs (IIT Madras share)	C. Vijayan
9	Testing of RPC Detector Elements and Their Associated Electronics for India-Based Neutrino Observatory	2 years	DST	64 lakhs (approximate)	P.K. Behera, J.F. Libby
10	Defect-Controlled Properties in Indium Oxide—Investigations on Defect-Incorporated In ₂ O ₃ Single Crystals and Epitaxial Thin Films	3 years	UGC–DAE Consortium for Scientific Research	6,09,000	Sudakar Chandran
11	Investigations on the Electrical and Electrochemical Properties of LiFe _{1-y} Mn _y PO ₄ Nanowire and Nanotube–Carbon Composites	3 years	Department of Science and Technology	51,99,106	Sudakar Chandran
12	Electrical Transport and Spectroscopy Studies on Doped ZnO Thin Films	3 years	UGC–DAE Consortium for Scientific Research	6,09,000	M.S. Ramachandra Rao
13	Development of Tungsten and Molybdenum Oxide Thin Films for Use in Gas Sensors and Electrochromic Devices	2 years	Department of Science and Technology (Indo-Hungarian collaboration)	7,00,800	A. Subrahmanyam, Mahaveer Kumar Jain
14	Construction of Ion–Molecule and Ion–Photon Collision Experimental Setup (INSA Young Scientist Project)	3 years	Indian National Science Academy	15,00,000	G. Aravind
15	Design and Evaluation of X-Band Performance of Frequency-Selective Characteristics of Planar Composite Panels	1 year, 3 months	Aeronautical Development Agency	49, 92,000	C.V. Krishnamurthy
16	Construction of a Photoelectron Spectroscopy Experiment for Studying Electronic Structure of Gas-Phase Interstellar Medium Anions	3 years	Board of Research in Nuclear Sciences	34,26,750	G. Aravind
17	Studies of Size Effect on the Physical Properties of Phase-Separated Electron-Doped Manganites and Other Novel Oxides	3 years	UGC–DAE–CSR (Kalpakkam node)	2.9 lakhs	R. Nirmala

18	Study of Magnetic Ordering and Magnetic Field Induced Effects in Rare Earth Intermetallic Compounds and Oxides by Powder Neutron Diffraction	3 years	UGC–DAE–CSR (Mumbai node)	0.35 lakhs	R. Nirmala
19	Study of Nano Materials for Photonic Applications	3 years	DST	10.76 lakhs	Prem B. Bisht
20	Whispering Gallery Modes Radiative Rate of Molecules	3 years	CSIR	27.70 lakhs	Prem B. Bisht

Journal editorial boards

Sl. No.	Name of Faculty Member	Position (Editor/Member)	Journal
1	S. Ramaprabhu, Professor	Member Editor- in-Chief	Journal of Nanofluids (American Scientific Publishers) Graphene (American Scientific Publishers)
2	Nandigana Krishna Mohan, Senior Scientific Officer Gr. I	Associate Editor	Optics and Lasers in Engineering

Research publications of faculty members

Total number of papers published in refereed international journals: 97

Total number of papers presented at national conferences: 1

(a) Refereed international journals

1. L.N. Patro and K. Hariharan (2012) Ionic transport studies in $\text{Sn}_{(1-x)}\text{K}_x\text{F}_{(2-x)}$ type solid electrolytes. *Materials Research Bulletin*.
2. B.K. Money, K. Hariharan and J. Swenson (2012) A dielectric relaxation study of nano composite polymer electrolytes. *Solid State Ionics*.
3. L.N. Patro and K. Hariharan (2012) Mechanical milling: An alternative approach for enhancing the conductivity of SnF_2 . *Materials Letters* 80: 26–28.
4. P. Dabas and K. Hariharan (2012) Thermo analytical, structural and ionic conductivity studies on $50\text{Li}_2\text{O}-45\text{P}_2\text{O}_5-5\text{Nb}_2\text{O}_5$ glass. *Solid State Ionics*.
5. B.P. Vinayan, K. Sethupathi and S. Ramaprabhu (2012) Facile synthesis of triangular shaped palladium nanoparticles decorated nitrogen doped graphene and their catalytic study for renewable energy applications. *International Journal of Hydrogen Energy*.
6. K. Hariharan, B.K. Money and J. Swenson (2012) Glass transition and relaxation processes of nanocomposite polymer electrolytes. *The Journal of Physical Chemistry B* 116: 7762–7770.
7. R. Pradeesh, H.S. Nair, V. Sankaranarayanan and K. Sethupathi (2012) Large magneto resistance and Jahn Teller effect in $\text{Sr}_2\text{FeCoO}_6$. *European Journal of Physics B* 85: 260.
8. R. Pradeesh, H.S. Nair, V. Sankaranarayanan and K. Sethupathi (2012) Exchange bias and memory effects in $\text{Sr}_2\text{FeCoO}_6$. *Applied Physics Letters* 101: 142401.
9. B. Ramachandran, A. Dixit, R. Naik, G. Lawes and M.S. Ramachandra Rao (2012) Dielectric relaxation and magneto-dielectric effect in polycrystalline $\text{Bi}_{0.9}\text{Ca}_{0.1}\text{FeO}_{2.95}$. *Applied Physics Letters* 100: 252902.
10. M. Chandran, B. Tiwari, C.R. Kumaran, S.K. Samji, S.S. Bhattacharya and M.S. Ramachandra Rao (2012) Integration of perovskite PZT thin films on diamond substrate without buffer layer. *Journal of Physics D: Applied Physics* 45: 202001. (Fast Track Communication)
11. U.T. Bhosale, S. Tomsovic and A. Lakshminarayan (2012) Entanglement between two subsystems, the Wigner semicircle and extreme-value statistics. *Physical Review A* 85: 062331. (Published 29 June 2012)
12. H. Aihara *et al.* (Belle Collaboration) (2012) First measurement of ϕ_3 with a model-independent Dalitz plot analysis of $B^\pm \rightarrow DK^\pm$, $D \rightarrow K_s^0 \pi^+ \pi^-$ decay. *Physical Review D* 85: 112014.
13. M. Artuso *et al.* (CLEO Collaboration) (2012) Amplitude analysis of $D^0 \rightarrow K^+ K^- \pi^+ \pi^-$. *Physical Review D* 85: 122002.
14. J. Insler *et al.* (CLEO Collaboration) (2012) Studies of the decays $D^0 \rightarrow K_s^0 K^- \pi^+$ and $D^0 \rightarrow K_s^0 K^+ \pi^-$. *Physical Review D* 85: 092016.
15. Z.Q. Liu *et al.* (Belle Collaboration) (2012) Observation of new resonant structures in $\gamma\gamma \rightarrow \omega\phi$, $\phi\phi$, and $\omega\omega$. *Physical Review Letters* 108: 232001.
16. P.B. Sunil Kumar, G. Jayaraman, S. Ramachandran, S. Ghose, A. Laskar, M. Saad Bhamla and R. Adhikari (2012) Autonomous motility of active filaments due to spontaneous flow-symmetry break-in. *Physical Review Letters* 109: 158302.

17. P.B. Sunil Kumar, N. Ramakrishnan and J.H. Ipsen (2013) Membrane-mediated aggregation of curvature-inducing nematogens and membrane tabulation. *Biophysical Journal* 104: 1018–1028.
18. P. Padhan, A.V. Ravindra and W. Prellier (2012) Electronic structure and optical band gap of CoFe_2O_4 thin films. *Applied Physics Letters* 101: 161902.
19. J.F. Libby, J. Dalseno *et al.* (Belle Collaboration) (2012) Measurement of branching fraction and first evidence of CP violation in $B^0 \rightarrow a_1^\pm(1260)\pi^\mp$ decays. *Physical Review D* 86(9): 092012.
20. J.F. Libby, S. Uehara *et al.* (Belle Collaboration) (2012) Measurement of $\gamma\gamma^* \rightarrow \pi^0$ transition form factor at Belle. *Physical Review D* 86: 092007.
21. J.F. Libby *et al.* (Belle Collaboration) (2012) First observation of $B_s^0 \rightarrow J/\psi\eta$ and $B_s^0 \rightarrow J/\psi\eta'$. *Physical Review Letters* 108: 181808.
22. J.F. Libby *et al.* (Belle Collaboration) (2012) Measurements of branching fractions and time-dependent CP violating asymmetries in $B^0 \rightarrow D^{*\mp}D^\mp$ decays. *Physical Review D* 85: 91106.
23. J.F. Libby *et al.* (Belle Collaboration) (2012) Measurement of $B^0 \rightarrow J/\psi\eta^{(\prime)}$ and constraint on the η - η' mixing angle. *Physical Review D* 85: 091102.
24. J.F. Libby *et al.* (Belle Collaboration) (2012) Search for time-dependent CPT violation in hadronic and semileptonic B decays. *Physical Review D* 85: 071105.
25. J.F. Libby *et al.* (Belle Collaboration) (2012) Search for double charmonium decays of the P -wave spin-triplet bottomonium states. *Physical Review D* 85: 071102.
26. J.F. Libby, J. Stypula *et al.* (Belle Collaboration) (2012) Evidence for $B^- \rightarrow D_s^+ K^- \ell^- \bar{\nu}_\ell$ and search for $B^- \rightarrow D_s^{*+} K^- \ell^- \bar{\nu}_\ell$. *Physical Review D* 86: 072007.
27. J.F. Libby, B. Kronenbitter *et al.* (Belle Collaboration) (2012) First observation of CP violation and improved measurement of the branching fraction and polarization of $B^0 \rightarrow D^{*+}D^{*-}$ decays. *Physical Review D* 86: 071103. (Rapid Communication)
28. J.F. Libby, D. Cronin-Hennessy *et al.* (CLEO Collaboration) (2012) Observation of the Dalitz decay $D_s^{*+} \rightarrow D_s^+ e^+ e^-$. *Physical Review D* 86: 072005.
29. S. Dobbs *et al.* (CLEO Collaboration) (2013) First measurement of the form factors in the decays $D^0 \rightarrow \rho^- e^+ \nu_e$ and $D^{*+} \rightarrow \rho^0 e^+ \nu_e$. *Physical Review Letters* 110: 131802.
30. K. Hara *et al.* (Belle Collaboration) (2013) Evidence for $B^- \rightarrow \tau^- \bar{\nu}_\tau$ with a hadronic tagging method using the full data sample of Belle. *Physical Review Letters* 110: 131801.
31. R. Music *et al.* (Belle Collaboration) (2012) Evidence for the $\eta_b(2S)$ and observation of $h_b(1P) \rightarrow \eta_b(1S)\gamma$ and $h_b(2P) \rightarrow \eta_b(1S)\gamma$. *Physical Review Letters* 109: 232002.
32. B.R. Ko *et al.* (Belle Collaboration) (2012) Evidence for CP violation in the decay $D^{*+} \rightarrow K_S^0 \pi^+$. *Physical Review Letters* 109: 021601.
33. Z.Q. Liu *et al.* (Belle Collaboration) (2012) Observation of new resonant structures in $\gamma\gamma \rightarrow \omega\phi$, $\phi\phi$, and $\omega\omega$. *Physical Review Letters* 108: 232001.
34. J. Li *et al.* (Belle Collaboration) (2012) First observation of $B_s^0 \rightarrow J/\psi\eta$ and $B_s^0 \rightarrow J/\psi\eta'$. *Physical Review Letters* 108: 181808.
35. X.L. Wang *et al.* (Belle Collaboration) (2013) Observation of $\psi(4040)$ and $\psi(4160)$ decay into $\eta/J/\psi$. *Physical Review D* 87: 051101.
36. Y.-T. Duh *et al.* (Belle Collaboration) (2013) Measurements of branching fractions and direct CP asymmetries for $B \rightarrow K\pi$, $B \rightarrow \pi\pi$ and $B \rightarrow KK$ decays. *Physical Review D* 87: 031103. (Rapid Communication)
37. S. Esen *et al.* (Belle Collaboration) (2013) Precise measurement of the branching fractions for $B_s^0 \rightarrow D_s^{(*)+} D_s^{(*)-}$ and first measurement of the $D_s^{*+} D_s^{*-}$ polarization using e^+e^- collisions. *Physical Review D* 87: 031101. (Rapid Communication)
38. D.M. Asner *et al.* (CLEO Collaboration) (2012) Updated measurement of the strong phase in $D^0 \rightarrow K^+ \pi^-$ decay using quantum correlations in $e^+e^- \rightarrow D^0 \bar{D}^0$ at CLEO. *Physical Review D* 86: 112001. (Rapid Communication)
39. J. Dalseno *et al.* (Belle Collaboration) (2012) Measurement of branching fraction and first evidence of CP violation in $B^0 \rightarrow a_1^\pm(1260)\pi^\mp$ decays. *Physical Review D* 86: 092012.
40. S. Uehara *et al.* (Belle Collaboration) (2012) Measurement of $\gamma\gamma^* \rightarrow \pi^0$ transition form factor at Belle. *Physical Review D* 86: 092007.
41. J. Stypula *et al.* (Belle Collaboration) (2012) Evidence for $B^- \rightarrow D_s^+ K^- \ell^- \bar{\nu}_\ell$ and search for $B^- \rightarrow D_s^{*+} K^- \ell^- \bar{\nu}_\ell$. *Physical Review D* 86: 072007.
42. B. Kronenbitter *et al.* (Belle Collaboration) (2012) First observation of CP violation and improved measurement of the branching fraction and polarization of $B^0 \rightarrow D^{*+}D^{*-}$ decays. *Physical Review D* 86: 071103. (Rapid Communication)

43. Cronin-Hennessy *et al.* (CLEO Collaboration) (2012) Observation of the Dalitz decay $D_s^{*+} \rightarrow D_s^+ e^+ e^-$. *Physical Review D* 86: 072005.
44. C.C. Zhang *et al.* (Belle Collaboration) (2012) First study of $\eta_c(1S)$, $\eta(1760)$ and $X(1835)$ production via $\eta' \pi^+ \pi^-$ final states in two-photon collisions. *Physical Review D* 86: 052002.
45. C.P. Shen *et al.* (Belle Collaboration) (2012) Observation of exclusive $Y(1S)$ and $Y(2S)$ decays into light hadrons. *Physical Review D* 86: 031102. (Rapid Communication)
46. J.H. Kim *et al.* (Belle Collaboration) (2012) Search for $B \rightarrow \phi \pi$ decays. *Physical Review D* 86: 031101. (Rapid Communication)
47. C.-L. Hsu *et al.* (Belle Collaboration) (2012) Search for B^0 decays to invisible final states at Belle. *Physical Review D* 86: 032002.
48. K. Negishi *et al.* (Belle Collaboration) (2012) Search for the decay $B^0 \rightarrow DK^{*0}$ followed by $D \rightarrow K \pi^+$. *Physical Review D* 86: 011101. (Rapid Communication)
49. H. Aihara *et al.* (Belle Collaboration) (2012) First measurement of ϕ_3 with a model-independent Dalitz plot analysis of $B^{\pm} \rightarrow DK^{\pm}$, $D \rightarrow K_S^0 \pi^+ \pi^-$ decay. *Physical Review D* 85: 112014. (Rapid Communication)
50. M. Artuso *et al.* (CLEO Collaboration) (2012) Amplitude analysis of $D^0 \rightarrow K^+ K^- \pi^+ \pi^-$. *Physical Review D* 85: 122002. (Rapid Communication)
51. J. Insler *et al.* (CLEO Collaboration) (2012) Studies of the decays $D^0 \rightarrow K_S^0 K^- \pi^+$ and $D^0 \rightarrow K_S^0 K^+ \pi^-$. *Physical Review D* 85: 092016.
52. M. Röhrken *et al.* (Belle Collaboration) (2012) Measurements of branching fractions and time-dependent CP violating asymmetries in $B^0 \rightarrow D^{(*)\pm} D^{\mp}$ decays. *Physical Review D* 85: 091106. (Rapid Communication)
53. M.-C. Chang *et al.* (2012) Measurement of $B^0 \rightarrow J/\psi \eta^{(\prime)}$ and constraint on the η - η' mixing angle. *Physical Review D* 85: 091102. (Rapid Communication)
54. T. Higuchi *et al.* (Belle Collaboration) (2012) Search for time-dependent CPT violation in hadronic and semileptonic B decays. *Physical Review D* 85: 071105. (Rapid Communication)
55. C.P. Shen *et al.* (Belle Collaboration) (2012) Search for double charmonium decays of the P -wave spin-triplet bottomonium states. *Physical Review D* 85: 071102. (Rapid Communication)
56. D. Bhat and M. Gopalakrishnan (2012) Effectiveness of a dynein team in a tug of war helped by reduced load sensitivity of detachment: Evidence from the study of bidirectional endosome transport in *D. discoideum*. *Physical Biology* 9(4): 046003. (Rapid Communication)
57. V. Jemseena and M. Gopalakrishnan. Microtubule catastrophe from protofilament dynamics: New results and insights. (Submitted for publication, 2013).
58. P.K. Behera *et al.* (2012) Measurement of the polarization of W bosons produced with large transverse momentum in pp collisions at $\sqrt{s}=7$ TeV with the ATLAS experiment (ATLAS Collaboration). *European Physical Journal C* 72: 2001.
59. P.K. Behera *et al.* (2012) Search for same-sign top-quark production and fourth-generation down-type quarks in pp collisions at $\sqrt{s}=7$ TeV with the ATLAS detector (ATLAS Collaboration). *JHEP* 1204: 069.
60. P.K. Behera *et al.* (2012) Search for anomaly-mediated super symmetry breaking with the ATLAS detector based on a disappearing-track signature in pp collisions at $\sqrt{s}=7$ TeV, (ATLAS Collaboration). *European Physical Journal C* 72: 1993.
61. P.K. Behera *et al.* (2012) Measurement of the cross section for top-quark pair production in pp collisions at $\sqrt{s}=7$ TeV with the ATLAS detector using final states with two high-pT leptons, (ATLAS Collaboration). *JHEP* 1205: 059.
62. P.K. Behera *et al.* (2012) Search for the Standard Model Higgs boson in the decay channel $H \rightarrow ZZ^{(*)} \rightarrow 4\ell$ with 4.8 fb^{-1} of pp collision data at $\sqrt{s}=7$ TeV with ATLAS (ATLAS Collaboration). *Physics Letters B* 710: 383–402.
63. P.K. Behera *et al.* (2012) Search for contact interactions in dilepton events from pp collisions at with the ATLAS detector (ATLAS Collaboration). *Physics Letters B* 712: 40–58.
64. P.K. Behera *et al.* (2012) Search for decays of stopped, long-lived particles from 7 TeV pp collisions with the ATLAS detector (ATLAS Collaboration). *European Physical Journal C* 72: 1965.
65. P.K. Behera *et al.* (2012) Search for excited leptons in proton–proton collisions at $\sqrt{s}=7$ TeV with the ATLAS detector (ATLAS Collaboration). *Physical Review D* 85: 072003.
66. P.K. Behera *et al.* (2012) Measurement of the centrality dependence of the charged particle pseudorapidity distribution in lead–lead collisions at $\sqrt{s_{NN}}=2.76$ TeV the ATLAS detector (ATLAS Collaboration). *Physics Letters B* 710: 363–382.
67. P.K. Behera *et al.* (2012) Measurement of the inclusive W^{\pm} and Z/γ^* cross sections in the e and μ decay channels in pp collisions at $\sqrt{s}=7$ TeV with the ATLAS detector (ATLAS Collaboration). *Physical Review D* 85: 072004.

68. P.K. Behera *et al.* (2012) Search for diphoton events with large missing transverse momentum in 1 fb^{-1} of 7 TeV proton–proton collision data with the ATLAS detector (ATLAS Collaboration). *Physics Letters B* 710: 519–537.
69. P.K. Behera *et al.* (2012) Search for extra dimensions using diphoton events in 7 TeV proton–proton collisions with the ATLAS detector (ATLAS Collaboration). *Physics Letters B* 710: 538–556.
70. P.K. Behera *et al.* (2012) Search for production of resonant states in the photon–jet mass distribution using pp collisions at $\sqrt{s}=7$ TeV collected by the Atlas detector (ATLAS Collaboration). *Physical Review Letters* 108: 211802.
71. P.K. Behera *et al.* (2012) Search for scalar bottom quark pair production with the Atlas detector in pp collisions at $\sqrt{s}=7$ TeV (ATLAS Collaboration). *Physical Review Letters* 108: 181802.
72. P.K. Behera *et al.* (2012) Observation of a new χ_b state in radiative transitions to $Y(1S)$ and $Y(2S)$ at ATLAS. *Physical Review Letters* 108: 152001.
73. P.K. Behera *et al.* (2012) Search for heavy vector-like quarks coupling to light quarks in proton–proton collisions at $\sqrt{s}=7$ TeV with the Atlas detector (ATLAS Collaboration). *Physics Letters B* 712: 22–39.
74. P.K. Behera *et al.* (2012) Observation of spin correlation in $t\bar{t}$ events from pp collisions at $\sqrt{s}=7$ TeV using the Atlas detector (ATLAS Collaboration). *Physical Review Letters* 108: 212001.
75. P.K. Behera *et al.* (2012) Study of jets produced in association with a W boson in pp collisions at $\sqrt{s}=7$ TeV with the Atlas detector (ATLAS collaboration). *Physical Review D* 85: 092002.
76. P.K. Behera *et al.* (2012) Measurement of the top quark pair production cross-section with Atlas in the single lepton channel (ATLAS collaboration). *Physics Letters B* 711: 244.
77. P.K. Behera *et al.* (ATLAS Collaboration) (2012) Search for doubly charged Higgs bosons in like-sign dilepton final states at $\sqrt{s}=7$ TeV with the Atlas detector. *European Physical Journal C* 72: 1–18.
78. J.P. Lees *et al.* (2013) Branching fraction measurements of the color-suppressed decays $\bar{B}^0 \rightarrow D^{*0}\pi^0$, $D^{*0}\eta$, $D^{*0}\omega$, and $D^{*0}\eta'$ and measurement of the polarization in the decay $\bar{B}^0 \rightarrow D^{*0}\omega$. *Physical Review D—Particles, Fields, Gravitation and Cosmology* 87(3): 039901.
79. P.K. Behera *et al.* (ATLAS Collaboration) (2013) Search for pair-produced massive coloured scalars in four-jet final states with the ATLAS detector in proton–proton collisions at $\sqrt{s}=7$ TeV. *European Physical Journal C* 73(1): 1–20.
80. P.K. Behera *et al.* (Babar Collaboration) (2013) Branching fraction measurement of $B^+ \rightarrow \omega \ell^+ \nu$ decays. *Physical Review D—Particles, Fields, Gravitation and Cosmology* 87(3): 032004.
81. J. Gupta, C. Vijayan, S.K. Maurya and D. Goswami (2012) Ultrafast nonlinear optical response of carbon nanotubes functionalized with water soluble porphyrin. *Optics Communications* 285(7): 1920–1924.
82. M.R. Parida, C. Vijayan, C.S. Rout, C.S.S. Sandeep and R. Philip (2012) Enhanced optical nonlinearity in β -AgVO₃ nanobelts on decoration with Ag nano particles. *Applied Physics Letters* 100: 121119.
83. A.D. Kachhvah and N. Gupte (2012) Transmission of packets on a hierarchical network: Statistics and explosive percolation. *Physical Review E* 86: 026104.
84. S.K. Kalva, M. Rengaswamy, V.S. Chakravarthy and N. Gupte (2012) On the neural substrates for exploratory dynamics in basal ganglia: A model. *Neural Networks* 32: 65.
85. U.T. Bhosale, S. Tomsovic and A. Lakshminarayan (2012) Entanglement between two subsystems, the Wigner semicircle and extreme value statistics. *Physical Review A* 85: 062331.
86. S.C.L. Srivastava, A. Lakshminarayan and S.R. Jain (2013) Record statistics in random vectors and quantum chaos. *Physics Letters* 101: 10003.
87. M.S. Ramkarthik, V. Ravi Chandra and A. Lakshminarayan (2013) Entanglement signatures for the dimerization transition in the Majumdar–Ghosh model. *Physical Review A* 87: 012302.
88. U. Paul Kumar, U. Somasundaram, M.P. Kothiyal and N. Krishna Mohan. (2013) Use of Hilbert transformation in digital fringe projection technique for 3-D shape measurement. *Optik* 124: 166–169.
89. L. Sriramkumar, D.K. Hazra and J. Martin (2012) Scalar bi-spectrum during preheating in single field inflationary models. *Physical Review D* 86: 063523.
90. M. Jaiswal, R.S. Kajen, N. Chandrasekhar, K.L. Pey, C. Vijila *et al.* (2013) Charge transport in lightly reduced graphene oxide: A transport energy perspective. *Journal of Applied Physics* 113: 063710.
91. S. Ramaprabhu and B.P. Vinayan (2013) Facile synthesis of SnO₂ nanoparticles dispersed nitrogen doped graphene anode material for ultrahigh capacity lithium ion battery applications. *Journal of Materials Chemistry A* 1: 3865–3871.
92. S. Ramaprabhu, B. Anbarasan and B. Shriya (2013) Optimization of the formulation and in vitro evaluation of capecitabine nisomes for the treatment of colon cancer. *International Journal of Pharmaceutical Sciences and Research* 4(4): 1504–1513.

93. S. Ramaprabhu and T.T. Baby (2013) Synthesis of silver nanoparticle decorated multiwalled carbon nanotubes-graphene mixture and its heat transfer studies in nanofluid. *AIP Advances* 3: 012111.
94. M.S. Ramachandra Rao, C.R. Kumaran, B. Tiwari, M. Chandran and S.S. Bhattacharya (2013) Effect of temperature on the stability of diamond particles and continuous thin films by Raman imaging. *Journal of Nanoparticle Research* 15: 1509 (IF: 3.3).
95. B.P. Vinayan, R. Imran Jafri, R. Nagar, N. Rajalakshmi, K. Sethupathi and S. Ramaprabhu (2012) Catalytic activity of platinum–cobalt alloy nanoparticles decorated functionalized multiwalled carbon nanotubes for oxygen reduction reaction in PEMFC. *International Journal of Hydrogen Energy* 37: 412.
96. B.P. Vinayan, K. Sethupathi and S. Ramaprabhu (2012) Hydrogen storage properties of Pd decorated nitrogen doped graphene nanoplatelets. *Journal of Nanoscience and Nanotechnology* 12: 1.
97. V. Srinivas, V.V. Rao and G. Mandal (2013) Role of particle size on the magnetoresistance of nano-crystalline graphite. *Carbon* 57: 139–145.

(b) Papers presented at national conferences

1. D. Bhat and M. Gopalakrishnan (2012) Bidirectional transport of motor-driven cargoes is a random walk with memory. *AIP Conference Proceedings* 1512: 140–141.

Distinguished visitors to the department

Sl. No.	Name of the Faculty Member	Purpose of Visit	Period
1	Dr. Saravanan Veerasamy, University of Ohio, USA	Invited seminar on three-dimensional scattering of NN Potential Argonne V18 without partial waves	17 April 2012
2	Dr. Swati Bhattacharya, University of Illinois, Urbana-Champaign, USA	Uncovering the physics of DNA translocation through nano pores: Laying the foundations of personal genomics	26 April 2012
3	Dr. Bhuvanesh Ramakrishnan, Queen's University Belfast, UK	Invited seminar on ultra high intense laser matter interactions and their applications	7 May 2012
4	Dr. T.R. Seshadri, Department of Physics and Astrophysics, Delhi University	Invited seminar on probing primordial magnetic fields with cosmic microwave background radiation	17 May 2012
5	Prof. Ashok Das, University of Rochester, USA	Invited seminar on super-symmetry, shape invariance and the Legendre equations	6 August 2012
6	Mr. Yasir Iqbal, LPT University of Toulouse, France	Invited seminar on exotic quantum ordered spin liquids and emergent gauge structure on frustrated lattices	7 August 2012
7	Prof. C.S. Sundar, Materials Science Group, IGCAR, Kalpakkam	Invited seminar on three facets of materials research	8 August 2012
8	Prof. Shikha Varma, Institute of Physics, Bhubaneswar	Invited seminar on band gap engineering and enhanced UV–VIS absorbance from nano dot patterned rutile TiO ₂ (110) surfaces	9 August 2012
9	Prof. Ajit M. Srinivasa, Institute of Physics, Bhubaneswar	Invited seminar talk, From the Universe to Relativistic Heavy-Ion Collisions: CMBR Fluctuations and Flow Anisotropy	14 August 2012
10	Dr. Sunil Kumar, Coating Mantra Science and Technology Consulting, Adelaide, Australia	Invited seminar on thin film coatings and plasma processing for biomedical engineering applications	23 August 2012
11	Mr. Vivishek Sharma, Ph.D. student at Imperial College, London	Invited seminar on cavity optomechanics: Putting the mechanics in quantum mechanics	30 August 2012
12	Dr. Rohini Godbole, Centre for High Energy Physics, IISc, Bangalore	Invited physics colloquium on significance of the recent discovery of a Higgs boson at the LHC	5 September 2012
13	Dr. Pravabati Chinganbam, Indian Institute of Astrophysics, Bangalore	Invited seminar on geometrical and topological properties of excursion sets of the CMB	12 September 2012
14	Dr. Nina Cousin, Institute of Physics (IoP) Publishing, UK	Invited seminar talk, How to Get Published and Enhance Your Scientific Career	21 September 2012
15	Prof. John J. Kozak, DePaul University, Chicago	Invited seminar talk, Lattice-Statistical Theory of Halo Formation	13 December 2012
16	Dr. Soumya Bera, Institute Neel, CNRS/UJF, Grenoble, France	Invited seminar talk, Multi Factuality and Dephasing Near a Quantum Hall Critical Point	14 December 2012

17	Dr. Omman K. Varghese, University of Houston, Texas, USA	Invited seminar talk, Advanced Solar Energy Conversion Technologies Based on Nanostructure Semiconductor	21 December 2012
18	Dr. Anil K. Dasanna, LPT, Toulouse, France	Invited seminar talk, Closure of DNA Dematuration Bubbles Coupled to Chain Elasticity	2 January 2013
19	Dr. Sai Vinjanampathy, Centre for Quantum Technologies, National University of Singapore	Invited seminar talk, Quantum Non-Equilibrium Thermodynamics as Geometry	3 January 2013
20	Prof. Anita Mehta, S.N. Bose National Centre for Basic Sciences, Kolkata	Invited seminar talk, Competing Synapses with Two Timescales: A Basis for Learning and Forgetting	3 January 2013
21	Dr. Vyas Akondi, University College Dublin, Ireland	Invited seminar talk, Advanced Wave Front Sensing Methods in Astronomy and Vision Science, at the SPIE Student Chapter, IIT Madras	3 January 2013
22	Dr. Ganesh Ramachandran, BIFW Dresden, Germany	Invited seminar talk, Blanquette Order on the Honeycomb Lattice	4 January 2013
23	Dr. Amitabha Nandi, Yale University, USA	Invited seminar talk, Impact of the Dynamic Cytoskeleton on Intracellular Sub-Diffusion: A Local Motion Analysis	8 January 2013
24	Dr. John H. Ipsen, Universty of Southern Denmark	Research collaborator	9 January 2013
25	Dr. Smitha Vishveswara, UIUC, USA	Invited seminar talk, Topological Phases, Majorana Fermions and Disorder in Superconductors	10 January 2013
26	Dr. Raghunath Chelakkot, School of Engineering and Applied Sciences (SEAS), Harvard University, USA	Invited seminar talk, Semi Flexible Polymers: Instabilities Under Confinement, Constraint and Activity	17 January 2013
27	Dr. Erwin K. Reichel, Institute for Microelectronics and Microsensors, Johannes Kepler University, Linz, Austria	Invited seminar talk, Rhea Metric Using Shear-Waves	22 January 2013
28	Prof. Mark Humphrey and Dr. Marie Cifentes, School of Chemistry, Australian National University	Indo-Australian Project collaborators	29 January 2013
29	Dr. Naresh Dadhich, Inter-University Centre for Astronomy and Astrophysics, Pune and Centre for Theoretical Physics, Jamia Millia Islamia, New Delhi	Invited seminar talk, The Gravitational Equation in Higher Dimensions	31 January 2013
30	Dr. Hilda A. Cerdeira, Instituto de Fisica Teorica-UNESP, Sao Paulo, Brazil	Invited seminar talk, Identifying Financial Crises in Real Time	6 July 2012
31	Dr. Shailesh Chandrasekharan, Department of Physics, Duke University, USA	Invited seminar talk, Fermions Bag Approach to Sign Problems	18 July 2012
32	Dr. Carmelo Prestipino, Sciences Chimiques de Rennes UMR 6226 Solid State and Materials Chemistry Group, Campus de Beaulieu, Bat 10B, bureau 122 F-35042 RNNES, France	Invited seminar talk, Structural Modulation and Phase Transitions in $\text{La}_2\text{CoO}_{4.14}$ Investigated by Synchrotron X-ray and Neutron Single-Crystal Diffraction	3 October 2012
33	Dr. P. Sudhagar, Center for Next Generation Dye-Sensitized Solar cells, WCU Program, Department of Energy Engineering, Hanyang University, Seoul-133 791, South Korea	Invited seminar talk, Multifunctional Nanostructure Materials for Next Generation Solar Cells and Solar Fuels	10 October 2012
34	Prof. T. Padmanabhan, Inter-University Centre for Astronomy and Astrophysics, Pune	Invited speaker for the Physics Colloquium on Matters of Gravity	10 October 2012
35	Prof. P. Ziemann, Institute of Solid State Physics, Ulm University, D-89081 ULM, Germany	Invited seminar talk, Structural Phase Transitions in Felt Nano Particles: Chemical & Magnetic Consequences	15 October 2012
36	Prof. Rudolf Gross, Walther Meissner Institute, Bayerische Akademie der Wissenschaften, Garching, Germany	Invited seminar talk, Fermisurfaces in Electron-Doped Cuprate Superconductors	16 October 2012
37	Dr. Mamata Sahoo, Max Planck Institute for Colloids and Interfaces, Potsdam, Germany	Invited seminar talk, Transcriptional Proofreading in Dense RNA Polymerase Traffic	17 October 2012

38	Mr. Arun Kumar Sridharan, Lawrence Livermore National Laboratory, CA, USA	Invited seminar talk, Advances in Solid-State (Crystal and Fibre) Amplifiers and Optical Parametric Amplifiers for Remote Sensing Applications	1 November 2012
39	Dr. Rakesh Tibrewala, Indian Institute of Science Education and Research, Thiruvananthapuram	Invited seminar talk, (Loop) Quantum Gravity and Space–Time Structure	2 November 2012
40	Dr. Anil Kumar, IISc, Bangalore	Invited physics colloquium, Quantum Computation and Quantum Information Processing by Nuclear Magnetic Resonance (NMR) Introduction and Recent Development	7 November 2012
41	Dr. Umakanta Tripathy, Department of Physics, McGill University, Montreal, Canada	Invited seminar talk, Detecting Malaria and Imaging by Multi-Modal Nonlinear Laser Scanning Microscopy(NLSM)	15 November 2012
42	Shri Norman J. Wagner, Alvin B. and Julia O. Stiles, Professor and Chair, Department of Chemical Engineering, University of Delaware, Newark, DE 19716	Invited seminar talk, Shear Thickening Fluids and Their Applications	16 November 2012
43	Ms. Sutapa Roy, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore	Invited seminar talk, Dynamics at Fluid–Fluid Criticality	29 November 2012
44	Dr. Zoltan Labadi, Research Centre for Natural Sciences of the Hungarian Academy of Science, Hungary	Invited seminar talk on metal oxide and transparent conductive oxide layers for solar cells and sensors	2 February 2013
45	Dr. Alaka Das, Jadhavpur University	Invited seminar talk, Intermittency and Crisis in Low and High Dimensional Systems	22 February 2013
46	Prof. M.K.Varma, Department of Physics, IIT Kanpur	Invited seminar talk, Turbulent Convection: Present Challenges	25 February 2013
47	Prof. Madan Rao, Raman Research Institute, Bangalore and National Centre for Biological Sciences, Bangalore	Physics Colloquium: Invited seminar talk, Active Cellular Mechanics and Information Processing in the Living Cell	6 March 2013
48	Prof. Shiv Sethi, Raman Research Institute, Bangalore	Invited seminar talk, Cosmological Implications of Primordial Magnetic Fields	12 March 2013
49	Prof. A.K. Nigam, TIFR, Mumbai	Invited seminar talk, Heusler Alloys: Magnetic Materials with Multifunctional Properties	18 March 2013
50	Prof. S. Chaturvedi, School of Physics, University of Hyderabad	Invited seminar talk, A Quantum Dynamical Framework for Brownian Heat Engines	21 March 2013
51	Dr. Jean-Paul Ryckaert, Polymer Physics, University Libre De Bruxelles, University D’Europe, Boulevard du Triomphe CP 223, ULB, Brussels, Belgium	Visiting Professor	8 October to 7 December 2012



Broadband dielectric spectrometer. A broadband dielectric spectrometer has been procured recently from Novocontrol Technologies GmbH, Germany by the Physics Department. This spectrometer is optimized for high-accuracy dielectric, conductivity, impedance and gain phase measurements in the frequency domain. The system is modular and based on an alpha-A series analyser combined with a sample cell and a cryostat. This spectrometer allows us to measure the dielectric properties of materials over a wide frequency range, from 10 μHz to 40 MHz, as a function of sample temperature, which can be tuned between -160°C and 400°C . In addition, this facility can be used to investigate dynamical processes in polymers and in other soft matter systems.

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 instrument and equipment facilities 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 data collection from extremely sophisticated analytical equipment to the scientific community for their advanced research at very nominal rates.

SAIF also undertakes, on specific 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 be given exposure to sophisticated instruments and their use for analysis.

5.2. Faculty Members and Their Activities

Faculty and Staff

Name	Major Areas of Specialization (Only 3 Areas)
Professor	
S.S. Bhattacharya [Head]	Nanocrystalline materials—synthesis and characterization, superplasticity—theoretical and experimental, metal forming
Scientific Officers	
Babu Varghese	X-ray crystallography, structure determination
R. Murugesan	Mass spectroscopy, chromatography
Technical Staff	
C. Baby	Nuclear magnetic resonance spectroscopy
K.V. Rama	Thermal imaging and analysis
N. Sivaramakrishnan	Magnetometry
G.R. Kamalnab	Electronics and instrumentation

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

Sl. No.	Co-ordinators	Title	Period and Venue
Workshops			
1	N. Sivaramakrishnan	Operational Training Programme on HR SEM	5–9 November 2012, SAIF, IIT Madras
2	C. Baby	Two-day workshop, Applications of FT NMR Spectroscopy	21–22 March 2013, SAIF, IIT Madras

Special lectures delivered by faculty members at other institutions

Sl. No.	Name of Faculty Member	Topic of Lecture	Institution	Date
1	Babu Varghese	Indexing Twin and Multiple Crystals—invited talk delivered to 41st National Conference on Crystallography	CLRI, Chennai	9 October 2012
		16 invited lectures for short-term course, Single-Crystal X-ray Diffractometry	IISER, Thiruvananthapuram	17–22 December 2012
2	K.V. Rama, Technical Officer Gr. I	ICP-OES	Tirumalai Chemicals Ltd., Ranipet	15 June 2012

Industrial consultancy projects (ongoing and new)

Sl. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
1	R. Murugesan	GC-MS Analysis of Industrial Materials	Small and medium industries	5.00
2	C. Baby	High-Resolution NMR Studies of Marine Samples	CMFRI, Cochin	4.33
3	N. Sivaramakrishnan (Project Coordinator) [ongoing]	Material Characterization	Renault Nissan	15.00

5.3. Research and Consultancy

Research publications

Number of papers published in refereed international journals: 11

Papers Published in Refereed International Journals

1. A. Srivastava, Babu Varghese and D. Loganathan (2012) X-ray crystallographic investigation of fully acetylated *N*-(2-deoxy-2-acetamido- β -D-glucopyranosyl)alkanamides as *N*-glycoprotein linkage region analogs. *Journal of Carbohydrate Chemistry* 31(1): 31–47.
2. S. Sujatha, S. Balasubramanian, B. Varghese, M. Jayaprakashvel and N. Mathivanan (2012) Synthesis, characterization and DNA interaction of hexaaza macrotricyclic copper (II) complexes. *Inorganica Chimica Acta* 386: 109–115.
3. S. Karthikeyan, K. Velavan, R. Sathishkumar, B. Varghese and B. Manimaran (2012) Self-assembly of manganese (I)-based molecular squares: Synthesis and spectroscopic and structural characterization. *Organometallics* 31(5): 1953–1957.
4. P. Shankhari, D.K. Roy, K. Geetharani, R.S. Anju, B. Varghese and S. Ghosh (2013) Synthesis and structural characterization of group 5 dimetallaheteroboranes. *Journal of Organometallic Chemistry* 9: 698–704.
5. J.B. Shaik, R. Venkatachalam, B. Varghese and S. Sankararaman (2013) Synthesis and structure of *trans*-bis(1,4-dimesityl-3-methyl-1,2,3-triazol-5-ylidene) palladium (II) dichloride and diacetate: Suzuki-Miyaura coupling of polybromoarenes with high catalytic turnover efficiencies. *Journal of Organic Chemistry* 9: 698–704.
6. S.A.C. Raj, A. Sinthiya and B. Varghese (2012) 4-Aminopyridinium 5-carboxypentanoate monohydrate. *Acta Crystallographica Section E, Structure Reports Online* 68(7): o2181.
7. M.K. Koley, S.C. Sivasubramanian, B. Varghese, P.T. Manoharan and A.P. Koley (2012) A paramagnetic octahedral *trans*-dihydroxy chromium (IV) complex with dianionic tetradentate Schiff base salophen and crystal structure of its *trans*-diisothiocyanato analog. *Journal of Coordination Chemistry* 65(20): 3623–3640.
8. S. Anbu, S. Kamalraj, B. Varghese, J. Muthumary and M. Kandaswamy (2012) A series of oximine-based macrocyclic dinuclear zinc (II) complexes enhances phosphate ester hydrolysis, DNA binding, DNA hydrolysis, and lactate dehydrogenase inhibition and induces apoptosis. *Inorganic Chemistry* 51(10): 5580–5592.
9. D.K. Roy, R.S. Anju, B. Varghese and S. Ghosh (2013) Reactivity of dirhodium analogues of octaborene-12 and decaborane-14 towards transition-metal moieties. *Organometallics* 32(6): 1964–1970.
10. C. Baby (2013) Synthesis, characterization and dynamic NMR studies of a novel chalcone based *N*-substituted morpholine derivative. *Journal of Molecular Structure* 1040: 90–97.
11. C. Baby (2013) Synthesis, growth, structure and physicochemical properties of mono-*N,N,N',N'*-tetramethyl ethylene diaminium (bis) 4-nitrophenolate: A novel third order NLO material. *Crystal Engineering. Communication* (submitted).

6. CENTRES OF SPECIAL FACILITIES

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6.1. CENTRE FOR CONTINUING EDUCATION

6.1.1. Introduction

The Centre for Continuing Education (CCE) at IIT Madras was established in June 1986. The centre facilitates faculty members meet 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 new Centre for Teaching Learning was established in 2011 under the auspices of the Centre for Continuing Education with the following objective:

- To be a Centre of Excellence and Innovation in the Teaching Learning Processes (TLP) for a new and sustainable paradigm in higher technical education, resulting in human resources with the highest professional and personal qualities at the service of the nation.

The institute faculty effectively participates and contributes 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 (Q.I.P.) (AICTE sponsored)
- Short-term training programmes (STTP) under Q.I.P. (AICTE sponsored)
- Curriculum development activities under Curriculum Development Cell
- Book Writing Scheme under Curriculum Development Cell
- Continuing Education Programmes (CEP) for Industry professionals.
- User Oriented Programmes (UOP) for specific industries for their engineers to acquire a higher degree (M.Tech.)
- National Programme on Technology Enhanced Learning (NPTEL)
- Educational Technology Cell (ETC)
- Central Photographic Section
- Activities related to M.B.A. budget
- Conference/seminar/workshop/symposium facilitation
- Allotment of ISBN numbers for text books and other faculty publications
- Facilitating enhancement of the teaching–learning process through the Teaching Centre.

6.1.2. Quality Improvement Programme (Q.I.P.)

The faculty development activities of AICTE 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 Q.I.P. Scheme. Deputation to the academic programmes of the institute, viz., M.Tech. and Ph.D., facilitates career development of the faculty of AICTE-approved technical institutions in the country.

Since the inception, 604 faculty members from other institutions have obtained Ph.D. degrees, and 567 faculty members have obtained M.Tech. degrees under this programme till 2012–2013. The following table provides data on the engineering college teachers who have benefited under Q.I.P.:

Items	Ph.D.			M.Tech.		
	Admitted	On Roll	Awarded	Admitted	On Roll	Awarded
2012–2013	15	68	7	17	28	13
Since inception	619	—	498	636	—	580

6.1.3. Short-Term Training Programmes Under Q.I.P. (AICTE-STC)

Organization of short-term courses under Q.I.P. for faculty members of engineering institutions is supported by AICTE, and it opens up avenues for sharing the expertise of our the faculty, with rich experience in new and upcoming areas. Under this programe, 13 courses (with a total duration of 13 weeks) were conducted during 2012–2013, and 333 teachers of engineering institutions participated in these programmes. From 1970–1971 to 2012–2013, 326 programmes have been held, and 7793 teachers from various engineering colleges have participated in and benefited from these courses.

Programmes held during 2012–2013 under AICTE-STC

Sl. No.	Department	Coordinator(s)	Title	Date	Participants
1	Applied Mechanics & Chemical Engineering	Pijush Ghosh, Ethayaraja Mani	Applications of Molecular Simulations in Research and Industry	14–18 January 2013	12
2	Applied Mechanics	S. Vengadesan, Mahesh V. Panchagunala	Research Topics in Fluid Dynamics	19–24 January 2012	26
3	Civil Engineering	RupenGoswami, C.V.R. Murty	Earthquake Behaviour of Buildings	21–26 January 2013	14
4	Civil Engineering	Ashwin Mahalingam, Sivakumar Palaniappan	Theory and Advanced Practices in Construction Project Management	4–8 March 2013	23
5	Civil Engineering	Subhadeep Banerjee, R.G. Robinson	Characterisation and Modelling of Soil Behaviour	16–22 September 2012	32
6	Chemical Engineering	T. Renganatham, Kannan A.	Applications of Chemical Process Simulators in Chemical Engineering	26–30 November 2012	21
7	Computer Science and Engineering	Madhu Mutyam	Recent Trends in Computer Architecture	17–21 December 2012	28
8	Engineering Design	Palaniappan Ramu, G. Saravanakumar	Optimization for Engineering Design	3–7 September 2012	28
9	Management Studies	V. Vijayalakshmi, Rupashree Baral	Research Methods in Management and Social Sciences	3–7 February 2013	30
10	Mechanical Engineering	Somashekar S. Hiremath, B. Ramamoorthy	Robotics—Mechanics, Control, Sensing, Vision and Intelligence	14–17 January 2013	37
11	Mechanical Engineering	Ashis Kumar Sen, Dhiman Chatterjee	Recent Advancements in Microfluidics	14–18 January 2013	30
12	Mechanical Engineering	A. Seshadri Sekhar, Prabhu Rajagopal	Product Design and Development	20–27 January 2013	31
13	Ocean Engineering	S.A. Sannasiraj, Nilanjan Saha	Perspectives of Offshore Engineering	19–23 November 2012	21
Total					333

6.1.4. Curriculum Development Cell (CDC) Activities

Interesting avenues can be explored for innovation in design and delivery of courses (support is available under the CD Cell, funded by AICTE) for activities such as course structuring and preparation of instructional materials and resource materials such as monographs, laboratory manuals and workshop materials, as well as development of computer-aided instruction packages. The materials developed through these activities can be made available for use by the various engineering institutes in the country. During the year under review, two CD Cell workshops were organized:

Sl. No.	Department	Co-ordinator(s)	Title of CD Cell Activity	Date of the Workshop	Sponsoring Agency
1	Physics	M.V. Satyanarayana, M. Pattabiraman	Workshop on Physics Education and Research	17–22 December 2012	AICTE
2	Mechanical Engineering	B.P. Pundir, Pramod S. Mehta	Modern IC Engines—Syllabus and Teaching	4 April 2013	AICTE

Prof. V. Kamakoti has taken up an assignment with financial support from Intel to develop a lab manual that aids in understanding a complex instruction set architecture (ISA). The main phases of this developmental work are:

1. Introducing a GDB-based hardware platform for assembly program development using the x86 instruction set architecture (ISA).
2. This platform enables the students to write assembly code that involves segmentation, paging, task switching across privilege levels, development of interrupt services routines and paging and to execute the same on a real mother board.

The work will be completed in six months' time.

6.1.5. Book Writing Scheme (BWS)

The Book Writing Scheme is designed to encourage textbook and monograph writing by teachers. Fifty-one books have been published by our faculty under this scheme so far. In addition, under the Golden Jubilee Book Writing Scheme, about 23 books were published. 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	P.V. Subrahmanyam	Mathematics	<i>Fixed Theorems and Applications</i>
2	Kamala Krithivasan	Computer Science and Engineering	<i>Discrete Mathematics and Its Applications</i>
3	Pramod S. Mehta	Mechanical Engineering	<i>Biodiesel—Fundamentals & Applications</i>
4	M. Thenmozhi	Management Studies	<i>Computational Finance</i>
5	Aysha Iqbal	Humanities and Social Sciences	<i>Politics of Global Reception and Awards</i>
6	Jitendra S. Sangwai	Ocean Engineering	<i>Enhanced Oil and Gas Recovery</i>
7	Abdus Samad & Jitendra S. Sangwai	Ocean Engineering	<i>Oil and Gas Production Engineering</i>

6.1.6. Continuing Education Programme (CEP)

Several short-term courses (STCs) were organized under the Continuing Education Programme for professionals from industry and R&D establishments on a need basis. The programmes were tailor-made to suit the requirements of the industries. CEPs are divided into two categories, i.e. Internal CEP and External CEP. From the date of inception, i.e., between 1980 and 2012, 1217 STCs have been conducted, benefiting 29,556 participants. Approximately 65 to 70 such programmes are organized every year. During 2012–2013, 84 STCs were conducted, and 2620 participants attended these programmes. The following STCs were conducted under the Continuing Education Programme during the year 2012–2013.

Internal CEPs for the year 2012–2013

Sl. No.	Department	Co-ordinator	Title of the Proceedings	Duration	No. of Participants
1	Mechanical Engineering	N. Siva Prasad	Internal CEP on Mechanical Design	22 April to 1 May 2012	30
2	Electrical Engineering	Ashok Jhunjunwala	Internal CEP on Digital Signal Processor and Applications	2–15 May 2012 18–31 May 2012 4–16 June 2012 18–30 June 2012 4–17 July 2012	63 65 65 65 65
3	Civil Engineering	Koshy Varghese	Internal CEP on Planning Programme to SPCL	23–27 April 2012	24
4	Biotechnology	Mukesh Doble & Sathyanarayana Gummadi	Internal CEP on Summer Workshop on Bioprocess Engineering	9–13 July 2012	—
5	Mechanical Engineering	N. Siva Prasad	Internal CEP on Mechanical Design	21 April to 29 September 2012	50
6	Management Studies & Mechanical Engineering	V. Vijayalakshmi & Parag Ravindran	Internal CEP on Self Awareness and Higher Goals in Education 2012	12–16 June 2012	42
7	Mechanical Engineering	N. Siva Prasad	Internal CEP on Mechanical Design	9–18 May 2012	30
8	Computer Science & Engineering	Hema A. Murty	Internal CEP on Workshop for Visually Challenged	15 May to 20 June 2012	5
9	Ocean Engineering	S.K. Bhattacharyya & V. Anantha Subramanian	Internal CEP on Hydrodynamic Model Testing	2–4 July 2012	20
10	Engineering Design	Venkatesh Balasubramanian	Internal CEP on Process Engineering Training Program-Module I	7 June to 5 July 2012	10

11	Engineering Design	Venkatesh Balasubramanian	Internal CEP on Process Engineering Training Program-Module 3	20 November to 20 December 2012	8
12	Civil Engineering	Manu Santhanam	Internal CEP on Training in Concrete Technology	4–8 June 2012	6
13	Management Studies	Rahul R. Marathe	Internal CEP on Manufacturing Systems Management	4–5 June 2012	25
14	Civil Engineering	Ashwin Mahalingam & Ravindra Gettu	Internal CEP on Short Course for Shapoorji Pallonji Engineering	11–15 June 2012	—
15	Mechanical Engineering	N. Siva Prasad	Internal CEP on Finite Element Analysis	21–30 June 2012	30
16	Management Studies	Lata Dyaram & T.J. Kamalanabhan	Internal CEP on Leadership Development Programme—2012	6–8 December 2012	32
17	Physics	J.F. Libby	Internal CEP on Planning Committee Meeting for Five Year Cycle of SERC Schools on Experimental High Energy Physics	9 November 2012	—
18	Management Studies	M.P. Ganesh	Internal CEP on Teacher Leadership	9–10 November 2012	19
19	Management Studies	Rupashree Baral, M.P. Ganesh and V. Vijayalakshmi	Internal CEP on Nurturing the Inner You	2–3 November 2012	15
20	Engineering Design	Palaniappan Ramu & G. Saravana Kumar	Internal CEP on Optimization for Engineering Design	3–7 September 2012	10
21	Electrical Engineering	Ashok Jhunjhunwala	Internal CEP on Digital Signal Processor and Applications	6–17 August 2012 21 August to 1 September 2012	43 43
22	Management Studies	Rahul R. Marathe	Internal CEP on Manufacturing Systems Engineering	21–22 August 2012	25
23	Engineering Design	Venkatesh Balasubramanian	Internal CEP on Disruptive Innovation in Healthcare	13–19 October 2012	5
24	Mechanical Engineering	Narayanan	Internal CEP on Vibration	1 September to 15 December 2012	35
25	Mechanical Engineering	A. Ramesh	Internal CEP on Automotive Combustion	24–28 September 2012	40
26	Mechanical Engineering	N. Siva Prasad	Internal CEP on Finite Element Analysis	28 September to 8 October 2012	30
27	Electrical Engineering	Shanti Swarup & Mahesh Kumar	Internal CEP on Modern Power Systems	17–22 September 2012	30
28	Civil Engineering	C.V.R. Murty & Rupen Goswami	Internal CEP on Development of Book On Earthquake-Resistant Design of RC Buildings	—	—
29	Mechanical Engineering	Ashis Kumar Sen & Dhiman Chatterjee	Internal CEP on Recent Advancements in Microfluidics	14–18 January 2013	5
30	Civil Engineering	S.M. Shiva Nagendra	Internal CEP on Industrial Air Pollution Control Techniques and Air Quality Management	11–13 October 2012	64
31	Management Studies	T.J. Kamalanabhan & M. Thenmozhi	Internal CEP on Supervisory Development Programme	14–20 October 2012	26
32	Applied Mechanics	Pijush Ghosh & Ethayaraja Mani	Internal CEP on Applications of Molecular Simulation in Research & Industry	14–18 January 2013	2
33	Mechanical Engineering	M. Govardhan	Internal CEP on Aerodynamics of Steam Turbines	7–11 January 2013	20

34	Ocean Engineering	S. Nallayarasu	Internal CEP on Advances in Fatigue Analysis of Offshore Structures	17–21 December 2012	44
35	Engineering Design	Asokan T. & N.J. Vasa	Internal CEP on Manufacturing Excellence Through Relevant Automation	6–8 December 2012	20
36	Management Studies	Rahul R. Marathe	Internal CEP on Modern Manufacturing Management	4–5 December 2012	25
37	Electrical Engineering	Ashok Jhunjunwala	Internal CEP on Digital Signal Processor and Applications	13–27 December 2012	52
				21 January to 2 February 2013	70
38	Management Studies	M. Thenmozhi	Internal CEP on Enhancing Research Skills in Finance	7–9 January 2013	15
39	Management Studies	M. Thenmozhi & P. Krishna Prasanna	Internal CEP on Financial Modeling Analytics	15–16 February 2013 & 21–23 February 2013	10
40	Civil Engineering	J. Murali Krishnan	Internal CEP on Modified Binders	30 January to 1 February 2013	22
41	Management Studies	Usha Mohan & Rahul R. Marathe	Internal CEP on Fundamentals of Optimization	10 December 2012 to 31 June 2013	25
42	Civil Engineering	Ravindra Gettu	Internal CEP on Training Programme for Engineers from SPCL	24 February to 2 March 2013	18
43	Civil Engineering	K. Ananthanarayanan	Internal CEP on Training Programme on Construction Management for SPCL Engineers	11–15 March 2013	45
44	Civil Engineering	Manu Santhanam	Internal CEP on Durability and Long Term Performance of Concrete	12 February 2013	100
45	Mechanical Engineering	A. Seshadri Sekhar & Prabhu Rajagopal	Internal CEP on Product Design and Development	21–26 January 2013	4
46	Applied Mechanics & Mechanical Engineering	Prasad Patnaik B.S.V. & C. Balaji	Internal CEP on Heat and Mass Transfer in Single- and Two-Phase Flows	22–23 February 2013	15
47	Management Studies	T.J. Kamalanabhan & Lata Dyaram	Internal CEP on Architect Readiness Programme	22 March to 4 May 2013	17
48	Civil Engineering	K. Ananthanarayanan & Robinson	Internal CEP on CMRL Training	25–29 March 2013	30
49	Mechanical Engineering	N. Siva Prasad	Internal CEP on Mechanical Design	23 March to 14 September 2013	35
50	Electrical Engineering	Ashok Jhunjunwala	Internal CEP on Digital Signal Processor and Applications	11–23 March 2013	55
51	Computer Science and Engineering	Madhu Mutyam	Internal CEP on Programming in Java and Matlab	20 May to 7 June 2013	50
52	Civil Engineering	A. Meher Prasad	Internal CEP on Design and Construction of GFRG/Rapidwall Building Systems	25–28 March 2013	35
53	Civil Engineering	A. Veeraragavan	Internal CEP on Training Programme on Gap-Graded Mixes	12–13 April 2013	13
54	Electrical Engineering	Ashok Jhunjunwala	Internal CEP on Digital Signal Processor and Applications	8–11 May 2013	40
				13–25 May 2013	60
				29 May to 11 June 2013	60
				17–29 June 2013	60
				3–16 July 2013	60

55	Management Studies	Lata Dyaram	Internal CEP on Leadership Development Programme (LDP) for Caterpillar India	12 April 2013 to 13 April 2013 & 10–11 May 2013	50
Total					2085

External CEPs for the year 2012–2013

Sl. No.	Department	Co-ordinator	Title of the Proceedings	Duration	No. of Participants
1	Civil Engineering	Ligy Philip	External CEP on Scaling Up of Community-Based Water Quality Monitoring and Sanitary Surveillance in Veppanapalli Block of Krishnagiri	1 May 2012 to 31 January 2013	300
2	Ocean Engineering	S. Nallayarasu	External CEP on International Workshop on Floating Systems and Deepwater Moorings	25 May 2012	20
3	Civil Engineering	A. Veeraragavan	External CEP on Overseas Training Programme for the Provincial Engineers of Sri Lanka	14–18 May 2012	11
4	Ocean Engineering	S. Nallayarasu	External CEP on Offshore Structural Engineering	28 May to 20 July 2012	25
5	Engineering Design	Venkatesh Balasubramanian	External CEP on Process Engineering Training Programme—Module 2	20 July to 18 November 2012	8
6	Mechanical Engineering	M.S. Shunmugam	External CEP on Fundamentals of Process Planning	1–2 August 2012	—
7	Engineering Design	C.S. Shankar Ram	External CEP on Vehicle Dynamics and Control	5–7 September 2012	20
8	Ocean Engineering	S. Nallayarasu	External CEP on Training Course on Offshore Structural Engineering	23–27 July 2012 & 27–30 August 2012	36
9	Humanities and Social Sciences	Sreekumar N.	External CEP on UGC Lectures Series in Gandhian Philosophy	15 October to 31 March 2012	—
10	Electrical Engineering	S. Karmalkar	External CEP on Introduction to Research	25–27 June 2012	—
11	Civil Engineering	A. Boominathan & Subhadeep Banerjee	External CEP on Refresher Course on Selected Topics in Geotechnical Engineering	29–30 November 2012	20
12	Civil Engineering	S.R. Gandhi	External CEP on Ash Dyke Management	6–7 August 2012	—
13	Civil Engineering	Arul Jayachandran	External CEP on Design of Structural Steelwork as per Australian Code AS 4100	13–15 December 2012	20
			External CEP on Design of Structural Steelwork as per BS/Euro Codes	23–25 December 2012	20
14	Engineering Design	C.S. Shankar Ram	External CEP on Mathematical Modelling and Simulation of Automotive Systems	30–31 January 2013	—
			External CEP on Automotive Brake Systems	21 February 2013	30
15	Ocean Engineering	S. Nallayarasu	External CEP on In-House Training “Analysis of Offshore Structures Using SACS”	13–15 March 2013 & 27–29 March 2013	20
16	Humanities & Social Sciences	Himanshu Dandotiya	External CEP on Fellow Programme in MGMT	14 March to 30 April 2013	5
Total					535

6.1.7. User-Oriented Programme (UOP)

The User-Oriented Programmes are designed to suit the requirements of the industrial organizations. Two-year M.Tech. programmes are being organized to meet the specific needs of associated industries, as well as the PG diploma programme on Metro Rail Technology and Management. The following programmes are being offered under UOP:

- M.Tech. (Construction Technology & Management) in Civil Engineering Department
- M.Tech. Automotive Technology in the Mechanical Engineering Department (auto industry)
- M.Tech. Ocean Technology and Management in the Ocean Engineering Department
- M.Tech. Offshore Structural Engineering
- PG Diploma Programme on Metro Rail Technology and Management
- Medical Biotechnology

Sl. No.	Department	Co-ordinators	Course Number	Title
1	Civil Engineering	K.N. Satyanarayana & Koshy Varghese	CCE/CEP/UoP/02/CE/ KNS/KV/06-07	UOP M.Tech. (Construction Technology & Management) (8th batch)
			CCE/CEP/UoP/03/CE/ KNS/KV/06-07	UOP M.Tech. (Construction Technology & Management)
			CCE/CEP/UoP/14/CE/ KV&KNS & KA/11-12	UOP M.Tech. (Construction Technology & Management) (14th batch)
			CCE/CEP/UoP/15/ KA&KV/CE/12-13	UOP M.Tech. (Construction Technology & Management) (15th batch)
2	Mechanical Engineering	M.S. Shunmugam & Ramesh Babu	CCE/CEP/UoP/04/ME/ MSS/NRB/06-07	Automotive Technology
3	Ocean Engineering	S.K. Bhattacharyya	CCE/CEP/UoP/05/OE/ SKB/06-07	Ocean Technology and Management
4	Ocean Engineering	S. Nallayarasu & S.K. Bhattacharyya	CCE/CEP/UoP/12/OE/ SN-SKB/11-12	M.Tech.—Offshore Structural Engineering
5	Civil Engineering	R.G. Robinson	CCE/CEP/UoP/13/CE/ RGR/11-12	PG Diploma Programme on Metro Rail Technology and Management
6	Biotechnology	Mukesh Doble	CCE/CEP/UoP/01/BT/ Frontier/05-06	Medical Biotechnology

6.1.8. National Programme on Technology Enhanced Learning (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, using information and communication technology (ICT). Its main objective is to increase the reach of high-quality engineering and sciences education across our country, which will transform India into a strong and vibrant knowledge economy.

NPTEL—Phase I is a pioneering joint initiative of 7 IITs and IISc, Bangalore in developing 136 video-based courses and 125 Web-based courses. IIT Madras is the co-ordinating institute of this project. Both the Web and video course contents are freely available to everyone in our website (<http://nptel.iitm.ac.in>) and through YouTube (<http://www.youtube.com/iit>).

NPTEL—Phases II and III: Currently, more than 314 courses (Web + videos) developed under Phase II are also available on the NPTEL website and YouTube. Preparations are under way for adding more than 500 new courses. These courses cover various disciplines, including technology, engineering, management, sciences, and humanities, and are expected to be completed by 2013. IIT Madras is the co-ordinating institute of this project.

Accessing NPTEL courses

All courses developed under NPTEL phases I and II and the list of courses (along with the syllabi) for the various courses developed under NPTEL Phase II are available to everyone free of cost and without any formal registration at the NPTEL website (www.nptel.iitm.ac.in).

For the benefit of students and faculty, free and easy downloads of Web- and video-based courses are available from the NPTEL website in three formats, namely, MPEG4, FLV and 3GP, and are also distributed to individuals/

institutions for a nominal fee. The video courses are currently telecast through the Eklavya channel, made available by MHRD exclusively for this purpose. Institutions can use the government-subsidized VPN bandwidth available through NMEICT.

NPTEL usage statistics

NPTEL is being used extensively by students, faculty members and working professionals. The NPTEL channel in YouTube has crossed more than 88.5 million upload views. The NPTEL site has recorded more than 21.9 million visits since its inception, in 2006.

NPTEL online Live courses

Two live online courses, “Digital System Design” and “Basic Electrical Circuits”, were conducted this semester from IIT Madras. Several institutions and some individuals participated in these courses.

Web studio

The Web studio at IIT Madras is equipped with state-of-the-art studio facilities, hardware and software for production of educational multimedia videos. The Web studio assists faculty members with the creation of electronic course content, supplements, lecture notes, quizzes, etc. and enables them to be available to the student community. All NPTEL video and Web courses created by faculty members of IIT Madras are recorded and edited here. In addition to the creation and maintenance of the NPTEL website, other departmental websites, conference websites and conference and meeting brochures are created at the Web studio. The Web studio has extended its services to include the following:

- Meeting the curriculum demands of IIT Hyderabad and IIT Mandi: IIT Madras faculty members have used the facilities available in the Web studio, provided under the National Knowledge Network, to teach courses for IIT Hyderabad and IIT Mandi students.
- Supporting all projects sanctioned to IIT Madras under the National Mission on Education through ICT (Sakshat)
- Preparation of online and video-supplemented laboratory experiments in chemistry for IGNOU
- Developing innovations in teaching methodology with access to Web-based learning, for high school children, under the Kuruvila Jacob Initiative
- Text transcription of NPTEL video lectures to provide video indexing, searching and database creation for bootstrapping semi-automatic and automatic transcription algorithms, for MHRD, New Delhi
- Maintenance of course management system (Moodle) for IIT Madras
- Serving as a state-of-the-art video conferencing facility, under the Country-wide Classroom Network, enabling the faculty, research scholars and students to use virtual classrooms and video conferencing
- Conducting educational programmes and research initiatives for school children

6.1.9. Educational Technology Cell

CCE—TV studios

Two digital TV studios of broadcast quality, equipped with state-of-the-art equipment such as digital video cameras, vision mixers/special effects generators, audio mixers, presentation computer connected through VAG to PAL converters and tele-Prompter, are available in a classroom atmosphere, lit by Cine-cool-lights.

Two 3-CCD portable video camcorder units for outdoor video coverage and digital non-linear editing machines are available for video production. All video courses created by faculty members are recorded here.

Three remote controlled video cameras with a remote control room in the IC&SR auditorium are maintained by CCE for video recording and video streaming.

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 important functions such as convocations and conferences held in the institute. Besides this, the section renders assistance to UG and PG students, research scholars and faculty members of all the departments/centres for their activities including technical photography, conference poster preparation, etc. The in-house processing and printing work is confined to black and white photography. After recent modernization, this section provides digital/high-resolution photography for all the needs of the institute.

The Central Photographic Section undertook 79 departmental job orders and covered 44 functions during 2012–2013. In addition, the Central Photographic Section contributed a large percentage of its photographs to the Heritage Centre. Passport size photos of the graduands of the 2013 convocation were taken and made ready for degree certificates.

6.1.11. Conference Registration for the Year 2012–2013

The Institute vide its circular No.F.R.150/3/2011 dated 31 March 2011 gave instruction that all national & international conferences, workshops, seminars, symposiums etc. organized by IIT Madras faculty have to be registered with CCE. Accordingly the details of such programmes registered with CCE for the year 2012-13 is given below:

Sl. No.	Department	Co-ordinators	Title of the Conference	Duration	No. of Participants
1	Chemistry	G. Sekar	Institutional Symposium: Chemistry in-House Symposium—2012 (CiHs-12)	22 August 2012	300
2	Mechanical Engineering	Raghu Prakash & Amaresh Chakrabarti	Fourth International Conference on Research into Design (ICoRD'13)	7–9 January 2013	200
3	Aerospace Engineering	Job Kurian & Chakravarthy S.R.	National Conference on Propulsion	7–9 February 2013	310
4	Civil Engineering	R. Sivanandan & A. Veeraragavan	National Conference on Urban Mobility—Challenges, Solutions and Prospects	13–14 July 2012	170
5	Mathematics	S.H. Kulkarni & S. Sundar	International workshop, Modeling, Computing and Optimization	3–12 September 2012	35
6	Mathematics	A.V. Jayanthan & T.E. Venkata Balaji	National Workshop on Advanced Instructional School in Commutative Algebra 2012	7–26 May 2012	36
7	Chemistry	T. Pradeep & Sumi Jose	International Conference on Emerging Technologies for Clean Water	14–16 September 2012	112
8	Civil Engineering	S.R. Gandhi, A. Boominathan and K.S. Ramakrishna	International Conference on Developments in Deep Foundation Technologies and Its Relevance to Infrastructure Projects in India	27–29 September 2012	230
9	Aerospace Engineering	S.R. Chakravarthy & T.M. Muruganandam	International Workshop on Flame Stabilisation and Combustion Stability	6–8 August 2012	50
10	Computer Science and Engineering	V. Kamakoti	International Conference on Security, Privacy and Cryptographic Engineering	30 October to 6 November 2012	200
11	Ocean Engineering	S.K. Bhattacharyya	International Conference on Developing Unconventional Oil and Gas Resources	1–3 March 2013	150
12	Applied Mechanics	M. Manivannan	National Workshop On Dasa Naadi: Clinical and Scientific Exploration	26–27 July 2012	150
13	Ocean Engineering	V. Sundar	International Workshop on Geosynthetics and Modern Materials in Coastal Protection and Related Applications	4–5 March 2013	110
14	Humanities and Social Sciences	Sonika Gupta & Mugurel Zlotea	Institutional Workshop on DGMT Language Workshop	6–18 August 2012	10
			International Conference on Participation, Contestation and Legitimation in Chinese Politics	3–5 December 2012	18
15	Ocean Engineering	S.A. Sannasiraj & Nilanjan Saha	National Workshop on Advances in Offshore Engineering	22–23 November 2012	20
16	Central Electronics Centre	V. Jagadeesh Kumar	Regional Workshop on Basic Test and Measuring Instruments: Concepts, Calibration and Measurement Uncertainty	3–5 September 2012	—
17	Electrical Engineering	Andrew Thangaraj & Sri Krishna Bhashyam	National Workshop on JTG Summer School 2013 and 2014 in Signal Processing, Telecommunication and Networking	25–28 July 2013	101
18	Mathematics	S.H. Kulkarni & V. Vetrivel	National Symposium on Mathematical Methods and Applications (NSMMA 2012)	22 December 2012	101
19	Engineering Design	Venkatesh Balasubramanian	National Workshop on Human Factors and Occupational Safety in Construction Industry	24–28 September 2012	30
20	Ocean Engineering	Srinivasan Chandrasekaran & R. Sundaravadivelu	National Workshop on Marine Structures: Planning, Analysis, Design, Construction and Repair	30 August to 1 September 2012	20

21	Mathematics	T.E. Venkata Balaji, Suresh Nayak & Srikanth Iyengar	International Workshop Singularity Categories in Algebra Geometry and Commutative Algebra	2–12 January 2013	35
22	Management Studies	G. Srinivasan & Usha Mohan	International Conference on Simulation	21–23 February 2013	200
23	Biotechnology	R.S. Verma	International Conference on Next Generation Sequencing	1–3 November 2012	105
24	Management Studies & Civil Engineering	L.S. Ganesh & K.N. Satyanarayana	National Conference on Academic and Research Conference of PMI (INDIA)	31 January to 2 February 2013	55
25	Chemical Engineering	Raghuram Chetty	National Workshop on Safety in Process Industry	7–9 November 2012	35
26	Management Studies	Lata Dyaram	National Workshop on Leadership Development Programme (LDP) 2012	6–8 December 2012	25
27	Biotechnology	Rama S. Verma	National Seminar on Advanced Heart Failure & Mechanical Assist Meet 2013	16 March 2013	—
28	Computer Science and Engineering	Hema A. Murthy & C. Chandra Sekhar	National Workshop on Winter School on Speech and Audio Processing (WiSSAP)	22–25 February 2013	205
29	Ocean Engineering	S.A. Sannasiraj & P. Krishnankutty	National Workshop on Numerical Simulation of Free Surface Wave Problems	18–19 February 2013	30
30	Ocean Engineering	K. Murali, V. Sundar & R. Sundaravadivelu	Short Course on Seawater Intake and Outfall—Planning, Design and Recent Trends	3–5 April 2013	20
31	Ocean Engineering	V. Sundar	National Conference on Hydraulics, Water Resources, Coastal and Environmental Engineering HYDRO 2013	4–6 December 2013	200
32	Ocean Engineering	V. Sundar & S.A. Sannasiraj	International Workshop on Ocean Wave Energy	2–3 December 2013	100
33	Chemical Engineering	S. Pushpavanam & T. Renganathan	International Conference on MaCKiE 2013	4–6 February 2013	70
34	Chemical Engineering	S. Pushpavanam	International Conference on IEFHC—2013	10–12 February 2013	125
35	Ocean Engineering	Jitendra S. Sangwai	Institutional Workshop on Tubing and Fitting	8 February 2013	25
36	Humanities and Social Sciences	Binitha Thampi, R. Santhosh & K. Kalpana	International Symposium on State and Social Movements: Violence, Health and Food Security	13–14 March 2013	34
37	Humanities and Social Sciences & Mechanical Engineering	S.R. Chella Rajan & Ajit Kumar Kolar	International Winter School on Growth and Sustainability in a Highly Dynamic City	25 February to 8 March 2013	20
38	Engineering Design & Mechanical Engineering	T. Asokan & M. Singaperumal	National Workshop on Standardization in the Field of Industrial and Production Automation Systems and Robotics	6 March 2013	60
39	Chemistry	Nandita Madhavan & Sankararaman	International Conference MEDCHEM 2013—Advances in Anticancer Drug Discovery and Development	25–26 October 2013	302
40	Humanities and Social Sciences	Milind Brahme & M. Suresh Babu	International seminar-cum-workshop, Inclusive Education	27–28 February 2013	30
41	Mechanical Engineering	N. Siva Prasad & A.S. Sekhar	International Conference on Computer-Aided Engineering 2013 (CAE 2013)	19–21 December 2013	200
42	Applied Mechanics	C. Lakshmana Rao & M. Ramasubba Reddy	National Indian Conference on Applied Mechanics (INCAM) 2013	4–6 July 2013	100
43	Metallurgical and Materials Engineering	M. Kamaraj, Ravi Kumar & S.R. Bakshi	National Workshop on Advanced X-ray Techniques and Applications (AXTA 2013)	27 April 2013	100

44	Biotechnology	Sanjib Senapati	International Conference on Biomolecular Simulations: Recent Trends and Future Scope	27–30 November 2013	80
45	Mechanical Engineering	Prakash Maiya	National Conference on Refrigeration and Air Conditioning (NCRAC 2013)	12–14 December 2013	205
Total					4714

6.1.12. ISBN Number Allotment

Allotment of ISBN numbers is also part of CCE's activities, and this year we have so far allotted eight ISBN number, the details of which are given below:

Sl. No.	Department	Author(s)	Title	ISBN Number
1	Ocean Engineering	S.A. Sannasiraj & V. Sundar	<i>Eighth International Conference on Coastal and Port Engineering in Developing Countries</i>	978-93-80689-06-7
2	Ocean Engineering	S.K. Bhattacharyya, Rajiv Sharma, V. Anantha Subramanian & Krishnan Kutty	<i>Monograph on Submarine Design and Engineering</i>	978-93-80689-07-4
3	Ocean Engineering	S.K. Bhattacharyya, Rajiv Sharma, V. Anantha Subramanian & Krishnan Kutty	<i>Proceedings of the IC Submarine Technology and Marine Robotics</i>	978-93-80689-08-1
4	Engineering Design	Nilesh J. Vasa, I. Ihara & M. Kamaraj	<i>Proceedings of the 3rd Asian Symposium on Materials and Processing (Extended Abstracts)</i>	978-93-80689-09-8
5	Civil Engineering	Ravindra Gettu, Arun Menon, Manu Santhanam & Radhakrishna G. Pillai	<i>Rehabilitation and Restoration of Structures</i>	978-93-80689-10-4
6	Civil Engineering	Sivakumar Palaniappan & Ashwin Mahalingam	<i>Advances in Building Sciences</i>	978-93-80689-11-1
7	Ocean Engineering	Rajiv Sharma, R. Sundaravivelu, S.K. Bhattacharyya & S.P. Subramanian	<i>E-Proceedings of the Second International Conference on Drilling Technology 2012 (ICDT-2012) and the first National Symposium on Petroleum Science and Engineering 2012 (NSPSE-2012)</i>	978-93-80689-13-5
8	Civil Engineering	Ravindra Gettu & Susy Mathews	<i>Forward in Reverse Gear</i>	978-93-80689-15-9

6.1.13. Establishment of Teaching Learning Centre and the Faculty Development Programmes Organized

A Teaching Learning Centre (TLC), possibly the first of its kind among higher technical institutions in the country, was established in 2011 with the following vision and mission:

Vision

To be a Centre of Excellence and Innovation in the Teaching Learning Process (TLP) for a new and sustainable paradigm in higher technical education, resulting in human resources with the highest professional and personal qualities at the service of the nation.

Mission

- To instil respect and love for life-long learning
- To facilitate a productive educational environment
- To create synergy among teachers, students and experts by facilitating continuous and seamless interaction
- To motivate teachers and students towards an efficient and enjoyable educational interaction
- To implement research-based, scientifically-proven and innovative teaching–learning methodologies/technologies
- To develop a pool of world-class educators
- To address issues in the broader spectrum of education based on resources ranging from our philosophical heritage to modern psychology
- To study research questions contributing to efforts to improve education across the institute.

The centre has its own premises at Level-V of the Central Library Building. The activities and the programmes conducted by the TLC so far are listed below:

Activities

1. An MoU between IIT Madras and Wipro Mission 10X was signed on Thursday, 26 April 2012. This was a first-of-its-kind MoU for joint work on “Faculty and Student Development and Research in Engineering Education”.
2. A paper titled “Development of a Teaching Learning Centre and Ongoing Faculty Development Programs—A Case Study”, authored by Texas A&T and TLC faculty members, was presented at the Internal Education Forum of ASEE in San Antonio, Texas on 9 June 2012.
3. A felicitation ceremony was held on 6 September 2012 to felicitate YFRA awardees 2012. Prof. V.G. Idichandy, former Deputy Director, was the chief guest, and he gave away mementos to the following YFRA Awardees:
 - Andrew Thangaraj, Electrical Engineering
 - N.V. Ravi Kumar, Metallurgical and Materials Engineering
 - Ashwin Mahalingam, Civil Engineering
 - Deepa Venkitesh, Electrical Engineering
 - Edamana Prasad, Chemistry
4. The first anniversary of the Teaching Learning Centre was celebrated on 23 August 2012. Dr. Eric Miller, Visiting Faculty, Department of Humanities and Social Sciences delivered a guest lecture on “Conversation Analysis for the Facilitation of Student Participation”. In addition to this, an interactive discussion on effective teaching was held. This session was conducted by Prof. S. Sankararaman, Department of Chemistry. About 20 faculty members participated.
5. Dr. Edamana Prasad and Dr. G. Phanikumar were deputed to attend the 5th edition of India’s most authoritative conference on higher education, called EDGE 2012, organized by the National Institute of Advanced Studies (NIAS), from 11 to 14 March 2012 in New Delhi.
6. Faculty members of Purdue University visited CCE on 29 January 2013 to learn about the activities of CCE and TLC.
7. The Wiley Author Workshop was conducted on 23 January 2013 at IC&SR Conference Hall-III for the benefit of faculty members on the process involved in getting their research papers published and understand the expectations that editors have from authors and their works. Dr. Ernest Krick Wood, Vice President and Publishing Editor, Physical Sciences & Engineering, Dr. Ray Boucher, Editorial Director (Journal Management and Strategic Journal Development) and Dr. Mark Hammond, Editorial Director (Engineering Books Programme) addressed the faculty members of the institute. Prof. Sarit Kumar Das, Dean (AR) delivered the valedictory address. About 20 faculty members and 30 research scholars participated in the workshop.

Workshops/special lectures

1. Prof. M.S. Ananth, former Director, IIT Madras gave a talk on “Effective Teaching” to the TLC Core Group on 7 March 2012.
2. Prof. Tim McCarthy, Professor of Steel Structures, University of Wollongong, Australia gave a talk on “Addressing Student Learning in Core Mechanics Subjects” on Thursday, 22 March 2012, in the TLC.
3. A short-term course titled “Self Awareness and Higher Goals in Education 2012” was conducted from 12 to 16 June 2012 for the benefit of faculty members across the country. Forty-three participants participated. Dr. Vijayalakshmi and Dr. Parag Ravindran of the Department of Management Studies and Department of Mechanical Engineering were the co-ordinators. The programme was inaugurated by Prof. K. Ramamurthy, Dean, Academic Courses, IIT Madras. Prof. Devdas Menon, Prof. Mukhopadhyay, TIST Cochin, Prof. L.S. Ganesh, Shri Arul Dev, Shri Manoj Pavitran and Mr. Parthasarathy Ramanujam delivered special lectures.
4. A one-day Teaching Assistant Orientation Programme was conducted on 5 August for the Teaching Assistants from the Electrical Engineering and Physics departments by the TLC Core team. The programme was inaugurated by Prof. Bhaskar Ramamurthi, Director, IIT Madras. A total of 169 Teaching Assistants from the Electrical Engineering Department and 52 from the Physics Department participated. Dr. Arun Menon (Civil Engineering) and Prof. S. Karmalkar (Electrical Engineering) were the co-ordinators. The feedback from the participants is being analysed for further action.
5. A three-day “Faculty Training Programme” was held from 20 to 22 August 2012, for the benefit of faculty members from NITs and new IITs. Dr. Smita Srivastava and Dr. Basavaraja M. Gurappa of the Department of Biotechnology and the Department of Chemical Engineering were the co-ordinators. The programme was inaugurated by Prof. K. Ramamurthy, Dean, Academic Courses, IIT Madras. Twenty-nine participants actively participated. Dr. Srinivasan Sundarrajan, Director, NIT Trichy delivered the valedictory address and distributed

- certificates to the participants. The programme was well received, and the participants gave very good feedback. The following topics were covered, and the training programme was conducted by the TLC. A few special sessions were handled by experts from Mission 10X, viz., Dr. Jishi, Dr. Sujatha Jagannath and Dr. Vatsal Singh. This is the first time that such a programme has been conducted, and this experience will be carried forward.
6. Prof. M.S. Mathews, Department of Civil Engineering delivered a two-part interactive lecture on “Teaching the Next Generation B.Techs” on 10 August 2012. In the first part of the lecture, the extensive research work carried out by him in the area of the teaching learning process, including Bloom’s taxonomy and effective teaching strategies, have been covered. In the second part, an interactive brainstorming exercise was carried out with the participants. About 25 faculty members, apart from many students, participated in the interactive session.
 7. Phase-II of the Teaching Assistant Orientation Programme (TAO) was conducted on 22 September for the Teaching Assistants from the Physics Department by the TLC Core Team. Fifty-five Teaching Assistants from the Physics Department participated. Dr. Arun Menon (Civil Engineering) and Prof. S. Karmalkar (Electrical Engineering) were the co-ordinators. The sessions were handled by Prof. Mehta, Prof. Lakshmi Bala, Prof. Markandeyulu, Dr. Edamana Prasad, Dr. Smita Srivatsava, Dr. Harishkumar, Dr. Parag Ravindran and Prof. S. Karmalkar. The feedback from the participants is being analyzed for further such programmes.
 8. Phase-III of the Teaching Assistant Orientation Programme (TAO) was conducted on 29 September for the Teaching Assistants from Electrical Department by the TLC Core Team. Eighty-Four Teaching Assistants from the Electrical Engineering Department participated. Dr. Deepa Venkitesh (Electrical Engineering) and Prof. S. Karmalkar (Electrical Engineering) were the co-ordinators. The sessions were handled by Prof. Mehta, Prof. Lakshmi Bala, Dr. Edamana Prasad, Dr. Deepa Venkitesh, Prof. S. Karmalkar and Dr. Sujatha Jagannath (Wipro Mission 10X). The feedback from the participants is being analysed for further such programmes.
 9. A two-day workshop on “English for Academic Purposes” was held on 12 and 13 October 2012 for the benefit of Ph.D. scholars. Dr. Aysha Iqbal and Prof. S.C. Chaudhary of the Department of Humanities and Social Sciences were the experts who trained the participants through their interactive lectures. The programme was inaugurated by Prof. K. Krishnaiah, Dean, Academic Research, IIT Madras. Twenty-six participants actively participated. The programme was well received, and the participants gave very good feedback. The following two additional review sessions were organized with the same participants:
 - a. Stage II of “English for Academic Purposes” was held on 2 February 2013 for the benefit of the research scholars of the institute. Dr. Aysha Iqbal and Prof. S.C. Chaudhary of the Department of Humanities and Social Sciences were the experts who trained the participants through their interactive lectures. Fifteen EAP participants actively participated. The programme was well received, and the participants gave very good feedback.
 - b. Stage III of “English for Academic Purpose” was held on 9 March 2013 for the benefit of the research scholars of the institute. Dr. Aysha Iqbal and Prof. S.C. Chaudhary of the Department of Humanities and Social Sciences were the experts who trained the participants through their interactive lectures. Eleven EAP participants actively participated. The programme was well received, and the participants gave very good feedback.
 10. A 3-day faculty development programme (FDP) for our faculty was held from 10 to 12 December 2012. Twenty-eight faculty members participated. This FDP was planned by the Core Faculty Team of the TLC, IIT Madras, and the interactive sessions were handled by Prof. Jeffery Froyd, Director, Academic Development, Texas A&M University and Prof. P.K. Imbrie, School of Engineering Education, Purdue University. Members from the TLC Core Faculty also handled a few sessions. Prof. M.S. Sivakumar delivered a lecture, “Holistic Approach to Education and Learning—Beyond the Class Room”. Dr. Sujatha Srinivasan and Dr. Edamana Prasad were the co-ordinators of FDP-2012.
 11. Prof. Jeffery Froyd conducted an advanced training session on learning and teaching on 14 December 2012 for the benefit of TLC Core members, and 30 faculty members participated.
 12. A 90-minute workshop on “Learning Outcomes of a Course” was conducted on Friday, 11 January 2013. TLC Core Faculty members, Dr. Prasad, Dr. Nandita Madhavan and Dr. Smita Srivastava were the resource persons. About 20 faculty members of the institute attended this workshop.
 13. Prof. V. Balakrishnan, Department of Physics delivered a special lecture on “Some Naïve Thoughts on Learning, Teaching and Research” on 20 March 2013. About 33 faculty members participated in the interactive session.
 14. Recently, Dr. Chandrika Rajagopal has been appointed as Senior Consultant to assist with TLC activities.

6.2. CENTRE FOR INDUSTRIAL CONSULTANCY AND SPONSORED RESEARCH

6.2.1. Introduction

The Centre for Industrial Consultancy and Sponsored Research was set up in 1973 to foster and promote sponsored research activities as well as relationships with industries. It facilitates active participation of the faculty in various interactive programmes organized for the benefit of industries and the institute. The centre also plays a pro-active role in managing the intellectual property generated by the institute and its commercialization. In addition, the centre provides administrative support for carrying out consultancy and sponsored research projects, particularly for recruitment of project staff, maintenance of accounts and purchase of equipment as well as materials.

Some of the major activities that the centre is involved are:

- Sponsored research programmes
- Consultancy projects: research based/retainer/institutional
- Collaborative projects with organizations and industries in foreign countries
- Industrial Associateship Scheme
- ISRO–IIT Madras Space Technology Cell joint projects
- IGCAR–IIT Madras Cell joint projects
- NIOT–IIT Madras Ocean Technology Cell
- Patenting and technology transfers
- Faculty and student entrepreneurship and incubation
- Positive Messaging and Outreach Programme

Dean: Prof. Krishnan Balasubramanian

Staff

Sri. R. Sundaram	Chief Techno Economic Officer
Dr. V. Suresh	Senior Techno Economic Officer
Smt. Prema Chakrapani	Deputy Registrar [up to April 2013]
Sri S. Sundaravinayagam	Deputy Registrar [from April 2013]
Sri V. Rajendran	Assistant Registrar

6.2.2. Sponsored Research

A total of 158 projects with a value of Rs.10,520 lakhs were taken up by the institute during 2012–2013 as given below.

Sl. No.	Agency	No. of Projects	Value (lakhs of Rs.)
1	Aarhus University	1	25
2	Aeronautical Development Agency	1	50
3	All India Council for Technical Education	1	16
4	Asian Office of Aerospace Research and Development	1	36
5	Aeronautics Research & Development Board	3	57
6	Bureau of Energy Efficiency	1	82
7	Board of Research in Nuclear Sciences	9	309
8	Council of Scientific and Industrial Research	11	216
9	Department of Biotechnology	10	1573
10	Department of Electronics & Information Technology	2	311
11	Defence Research and Development Organisation	4	387
12	Department of Science & Technology	67	4769
13	European Commission	1	235
14	Human Settlement Management Institute, HUDCO	2	31
15	Institute of Chartered Accountants of India	1	9
16	Indian Council of Social Science & Research	1	7
17	Indo–French Centre for the Promotion of Advance Research	2	64
18	Indian National Academy of Engineering	1	4
19	Indian National Science Academy	1	15
20	Indian Space Research Organisation	6	126

21	Indo-US Science & Technology Forum	3	291
22	Ministry of Human Resource and Development	1	6
23	Ministry of Steel	1	176
24	National Buildings Construction Corporation Limited	1	36
25	National Institute of Ocean Technology	2	39
26	National Program on Micro and Smart Systems	1	59
27	Naval Research Board	2	89
28	Nissan Research Support Program	5	47
29	Public Works Department, Tamil Nadu	1	20
30	Telecom Centre of Excellence	1	10
31	Technology Development Board	2	190
32	Tamilnadu Forest Department	1	5
33	The Research Council of Norway	1	79
34	University Grants Commission	4	19
35	UK India Education & Research Initiative	3	40
36	University of Pompeu Fabra, Spain	1	83
37	Uppsala University, Sweden	1	50
38	Vikram Sarabhai Space Centre	1	11
	Total	158	9572
	Others and additional grants		947
	Grand total	158	10,520

This includes international collaborative and industry-sponsored projects. About 171 faculty members served as co-ordinators for projects sanctioned in 2012–2013. The value of the ongoing sponsored projects during 2012–2013 is Rs.46079 lakhs. About 304 faculty members were actively involved in these ongoing sponsored research projects.

6.2.3. Consultancy Programmes

Four hundred and eighty-seven consultancy assignments of value totaling Rs.4588 lakhs were taken up during 2012–2013 as given below:

Sl. No.	Type of Consultancy	Number of Jobs	Value (lakhs of Rs.)
1	Research-based industrial consultancy	115	1859
2	Institutional consultancy	347	2145
3	Retainer consultancy	22	42
4	Testing (ET & IT)	3	10
	Additional value		532
	Total	487	4588

A total of 161 faculty members were actively involved in consultancy projects. The value of the ongoing consultancy projects during 2012–2013 is Rs.7429 lakhs.

6.2.4. New Faculty Scheme

The institute provides funds for new faculty members to initiate research in their area of specialization at IIT Madras. This funding will also help them get sponsored research grants to continue and establish their research activities at IIT Madras. This scheme is operated as a project under the Centre for IC&SR. Proposals for projects up to Rs.5.00 lakhs will be recommended by the Dean, IC&SR to the Director for approval. In the case of proposals where there is an experimental activity requiring special equipment, institute support to the project up to Rs.20.00 lakhs is possible.

During the year, 30 proposals were approved for funding under the New Faculty Scheme for a total sum of Rs.369 lakhs.

6.2.5. Industrial Associateship Scheme

A total of 184 industries were members of this scheme (large scale, 30; medium scale, 107; small scale, 47) in 2012.

6.2.6. Other Programmes

(a) ISRO–IITM Space Technology Cell joint projects

This is an ongoing activity sponsored by ISRO, in which research projects of interest to ISRO are being taken up at IIT Madras. Fifteen ongoing projects with a total value of Rs.382 lakhs were continued, and 6 new projects with a value of Rs.126 lakhs were taken up during the year 2012–2013.

(b) IGCAR–IITM Cell

Six ongoing projects were continued during 2011–2012, with a total value of Rs.146 lakhs. No new projects were initiated during this period.

(c) NIOT–IITM Cell

The NIOT–IITM Cell has been set up in IIT Madras to initiate further NIOT-sponsored research activities at IIT Madras during 2010–2011. The 10 ongoing projects were continued during 2011–2012, with a total value of Rs.303 lakhs, and 2 new projects with a value of Rs.39 lakhs were sanctioned for the year 2012–2013.

(d) 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 have been taken up.

- (1) Socially relevant projects
- (2) Rural Technology Action Group (funded by Planning Commission)
- (3) Centre for Social Innovation & Entrepreneurship (CSIE)

A write-up on the activities of the above projects is given in Annexure–1.

6.2.7. Distinguished Visitors to the Centre

Delegations from the following organizations visited IIT Madras for discussions on possible collaborative research work.

- Integral Coach Factory
- Cairn India Ltd.
- University of Alabama System
- Director of Power & Energy (US Army)
- Boeing India
- Michelin (R&D) team
- Southern Railways
- NTPC Energy Technology Research Alliance
- HAL, Bangalore
- BRNS, Mumbai

MoUs/agreements signed

Twenty-two new MoUs/agreements were signed by IIT Madras with the following organizations/institutions during 2012–2013:

-
- | | |
|---|--|
| ● ITC Ltd. | ● Physics Equipments Co. |
| ● Automation Industry Association of India | ● Saint-Gobain Research India Ltd. |
| ● Saint-Gobain Abrasives Inc., USA (2 nos.) | ● Anant Udyog |
| ● Nagarjuna Fertilizers and Chemicals Ltd. | ● LG SoftIndia Pvt. Ltd. |
| ● Saint-Gobain Recherche, France | ● Gopalpur Ports Ltd. |
| ● MRF Ltd. | ● Altair Engineering India Pvt. Ltd |
| ● Toegepast-Natuurwetenschappelijk Onderzoek (TNO) | ● Whirlpool GTEC |
| ● Institute of Engineering and Ocean Technology (IEOT) | ● Technology and Action for Rural Advancement (TARA) |
| ● Hitachi India Pvt. Ltd. | ● Glazing Society of India (GSI) |
| ● Tata Power Strategic Electronics Division (Tata Company Ltd.) | ● Mahindra & Mahindra Ltd. |
| ● Hycult Biotechnology b.v., The Netherlands | ● AT&T Services, Inc., New Jersey |
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6.2.8. Patents

Details of patent applications filed during the year 2012–2013 are given below:

Sl. No.	Title	Inventor	Department
1	Progressing Cavity Pump Rotor	Abdus Samad	OEC
2	Synthesis of Quinolone Antibiotics from Baylis-Hillman Adducts	Ramasamy Karthikeshwaran Muraleedharan K.M. John Victor Napoleon	CHY
3	A Universal Approach to the Synthesis of Palladium Dendrites on Carbon-Based Substrates	Raghuram Chetty Kranthi Kumar	CHE
4	A Point Absorber System for Wave Energy Extraction	Abdus Samad	OEC
5	Invention Disclosure: Non-Destructive Structural Health Monitoring Using On-Board Device	Sankara J. Subramanian	EDD
6	Visible Detection of Quantity of Water Flow Using Quantum Clusters	Murthy H.S.N. Pradeep T. Annamalai Leelavathi Mohan Udhaya Sankar Chaudhary Amrita	CHY
7	Forceps (Orthodontic Device and Method)	Sankara J. Subramanian	EDD
8	Standing/Reclining Wheelchair	Sujatha Srinivasan	MEE
9	A Human Powered Device	Sandipan Bandyopadhyay Saravana Kumar G.	EDD
10	Bharati—A Universal Script for Indian languages with Applications in Online Handwritten Character Recognition	Srinivasa Chakravarthy V.	BIO
11	Bidirectional Flow Turbine	Abdus Samad	OEC
12	An Apparatus to Convert Bidirectional Linear Motion to Unidirectional Rotary Motion	Abdus Samad	OEC
13	MaPaMan: A Reconfigurable Parallel Manipulator	Sandipan Bandyopadhyay	EDD
14	Methods for Selective Visual Detection of TNT	Pradeep T. Ammu Mathew Panikkanvalappil Ravindranathan Sajanlal	CHY
15	A Method for the Preparation of Graphenic Material from Asphalt and Its Application in Water Purification	Pradeep T. Soujit Sengupta Theruvakkattil Sreenivasan Sreeprasad Shihabudheen Mundampra Maliyekkal	CHY
16	A Non-Destructive Method to Identify Used Syringes and Thus Prevent Their Re-use	Asokan T.	EDD
17	Design and Assembly of a Clutch	Sandipan Bandyopadhyay Saravana Kumar G.	EDD
18	Development of Ti–TiB In Situ Composite by Spark Plasma Sintering (SPS) Using KBF ₄ as an Inexpensive Precursor	Ranjit Bauri	MET
19	Electrochemical Synthesis of Palladium Dendrites on Carbon Nanotubes	Raghuram Chetty Kranthi Kumar Maniam	CHE
20	Method for Eliminating Mode Shifting in Large Mode Area Optical Fibres	Balaji Srinivasan Venkitesh Deepa Panbiharwala Yusuf	ELE
21	Process and Applications of Encapsulated Liquids in Particulate Materials: Formation of Liquid Micro-Marbles	Mahesh V. Panchagnula Prasad Bhosale	APM

22	System and Method for Predetermining the Onset of Impending Oscillatory Instabilities in Practical Devices	Sujith R.I. Vineeth Nair Gireesh K. Thampi Sulochana K.	ASE
23	Burst Detection as a Precursor to the Onset of Impending Oscillatory Instabilities in Practical Systems	Sujith R.I. Vineeth Nair Gireesh K. Thampi Sulochana K.	ASE
24	Gel-Based Water Purification: Adsorbent Composition and Water Purification Device	Pradaeep T. Mohan Udhaya Sankar Chaudhary Amrita Anshup	CHY
25	Catalytically and Chemically Modified Carbon Nanostructures for Storage of Hydrogen	Ramaprabhu Sangeetha B. Remya T.S. Subashini G.	PHY

Details of patent applications granted during the year 2012–2013 are given below:

Sl. No.	Title	Inventor	Department
1	A Novel Bioprocess for the Preparation of Sulfide Compounds of Cerium	Varadaraju U.V. Kalarical Janardhanan Sreeram Harinarain Yamini Shrivastava Balachandran Unni Nair	MET
2	Multi-Antenna Cellular Broadband Wireless Communication System with Interference Mitigation	Bhaskar Ramamurthi Vinosh Babu James	ELE

Technology transfer/royalty

Sl. No.	Inventor	Name of the Invention	Company	Value (lakhs of Rs.)
1	T.A. Gonsalves	Development of LAN Trainer Kit	Benchmark Electronic Systems (P.) Ltd.	2.38
2	T. Pradeep	Pesticide Removal Attachment Based on Nano Technology	Aquamall Water Solutions Ltd., Hyderabad	25.11
3	Ashok Jhunjhunwala	Royalty on OFT Form Benchmark	Benchmark Electronic Systems Pvt. Ltd., Perungudi, Chennai	1.32
4	T.S. Natarajan	Electro Spinning Apparatus	Physics Instruments Co., Chennai	2.55
5	K. Mangala Sunder	Distribution and Marketing of NPTEL Educational Material	Bodhbridge Educational Services Pvt. Ltd.	2.15
6	Ashok Jhunjhunwala	Transfer of Technology for ATM Development	Vortex Engineering Pvt. Ltd.	29.52
7	Ligy Philip	Bioremediation of Hexavalent Chromium Contaminated Aquifers	Anant Udyog	5.62
8	K. Giridhar	WICOMM-T Kit	Benchmark Electronic Systems Ltd.	3.47
9	Ashok Jhunjhunwala	Remote Diagnostic Kit and Weather Monitoring	Neurosynaptic Communications Pvt. Ltd.	1.35
Total				73.46

An amount of Rs.173 lakhs was received for transfer of technology during this year.

6.2.9. Publications

- IC&SR brought out a brochure and DVD on expertise in nanotechnology at IIT Madras (co-ordinated by Dr. T. Pradeep).
- IC&SR also brought out the IIT Madras Calendar, IIT Madras New Year Greeting Card and the IIT Madras Diary for 2013.

6.2.10. Incubation Activities

The following companies were approved for incubation in this period:

Sl. No.	Company	Faculty Member Concerned	Name of the Director/ Promoter	Description of Products/Services to Be Offered
1	Greenenvironment Innovation and Marketing India Pvt. Ltd.	Ligy Philip, Civil Engineering	Varun Sridharan P. Sridharan Nair Sam Thomas Arun Sridharan	The company will focus on providing the most appropriate and cost effective environmental engineering solutions that are based on sustainability principles.
2	Yr's Intuitions	M. Thenmozhi, Management Studies	Vivek Dhandapani	The company will draft and implement social media strategies for clients in the following areas: <ul style="list-style-type: none"> • Social networking • Event management • Social media marketing • Social advertising

6.2.11. Technology Appreciation Programme

Sl. No.	Title of Programme	Co-ordinator
1	Fuel Cells	Raghuram Chetty, Department of Chemical Engineering
2	New Product Development	Aruna Shekar, Department of Mechanical Engineering

6.2.12. Innovative Student Projects

Sl. No.	Lead Student	Mentor	Title	Amount Sanctioned (lakhs of Rs.)
1	Sushant Veer & Mittapally Rohith	Sujatha Srinivasan, MEE	Semi-Flexion Orthotic Knee Joint	1.9
2	Rudra Naik	Sandipan Bandyopadhyay, EDD	Gear-less Differential	0.35
3	N. Nigamaa	Sankara J. Subramanian, EDD	Device and Method for Force Measurement in Orthodontic Applications	1.5
4	Aditya Bhardwaj	Sandipan Bandyopadhyay, EDD	Rod Bending Machine	0.65
5	Tushar Garg	Sandipan Bandyopadhyay, EDD	Design, Fabrication and Performance Analysis of Solar Stills	0.5
6	P. Purnima	Upendra Natarajan, CHE Sathyanarayana N. Gummadi, BIO	Use of Low Molecular Weight Tris(aminoethyl)amine Derivatives as Anticancer Drugs	1.7
7	Teja Mullapudi	Nitish R Mahapatra, BIO	Biological Separation of Enantiomers Using Estrogen Receptors	2.0
Total				8.60

6.2.13. Positive Messaging and Outreach Programme

A new initiative on the positive messaging from IIT Madras was initiated. A startup company, Y’rs Intuitions, has been requested to co-ordinate the creation of different Net-based avenues for “ReachIITM” and reaching out to the various stakeholders of IIT Madras. An e-Newsletter Campaign has been initiated, and currently there is a monthly periodical. In this effort, the following sites have been created and managed on a frequent basis:

- Facebook (www.facebook.com/reachIITM)
- Twitter (www.twitter.com/reachIITM)
- YouTube (www.YouTube.com/reachIITM)

6.2.14. Other Information

1. Joint Policy Committee meetings of the ISRO–IIT Madras Space Technology Cell were held on 18 February 2013 and 13 September 2012.
2. “Thomson Innovation: The Premier IP Research & Analysis Solutions, DERWENT World Patents Index”, a one-day programme, was organized by IC&SR for the faculty and students of IIT Madras on 2 February 2013.
3. IIT Madras organized Pure Mobility Connect 2013, a one-day workshop on “Clean and Sustainable Transportation: Trends, Technologies, Policies and Roadmap for India”, supported by Renault Nissan Technology & Business Centre India Pvt. Ltd., Chennai on 25 February 2013.
4. The New Research Fund has been approved by the IC&SR Board and the BoG, and a Rs.50 crore fund has been created. An oversight committee has been formed for making recommendations to the Dean, IC&SR on the mode of deployment of the activities under this fund.
5. There was participation in the 5th Bangalore Nano Exhibition, during 5–7 December 2012, at Bangalore (co-ordinated by Dr. T. Pradeep).
6. A NIOT–IIT Madras Ocean Technology Cell meeting was held on 27 December 2012.
7. A review meeting of ongoing Nissan projects was held on 6 November 2012.
8. As part of the Industry Connect Initiative, some faculty members from IIT Madras visited Mahindra Research Valley to undertake a joint collaborative research project. A follow-up meeting was held on 23 November 2012.
9. The Joint Policy Committee Meeting of the IGCAR–IIT Madras Cell was held on 5 September 2012.
10. Dr. Malcolm Portera, Special Advisor to the Governor of Alabama and University of Alabama System on economic development programmes visited IIT Madras for a Global Alliance Partnership with IIT Madras.
11. An IC&SR board meeting was held on 28 August 2012.
12. The IP Cell was set up in the Centre for IC&SR.
13. An all R&D Deans’ meeting was held on 25 August 2012 at IIT Madras.
14. A meeting of the committee constituted by the Dean, IC&SR to evaluate the proposals for the Nissan Research Support Programme was held on 5 July 2012. Out of 13 proposals presented, 5 were considered for funding, for a total value of Rs.47.50 lakhs.
15. Technology Day was celebrated on 11 May 2012 at IIT Madras with Dr. Baldev Raj, Former Director, IGCAR, Kalpakkam and President, Indian National Academy of Engineering (INAE) as the chief guest and delivering the Technology Day Lecture on “National Challenges: An Opportunity to Enrich and Enhance Science-Based Technologies”.
16. A one-day “Positive Messaging Programme” was conducted by Global Footprint, Delhi at IC&SR.

Annexure 1

SOCIALLY RELEVANT PROJECTS (SRP) PROGRAMME

The Socially Relevant Projects (SRP) Programme, which was started in the year 2003, with an initial grant of Rs.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 2013, six new projects were funded under this scheme for a period of one year.

A project on “Improving Supply Chain Efficiency for Food Security” is one of the projects initiated this year. The project investigators are Dr. Usha Mohan and Dr. R.K. Amit from the Department of Management Studies, IIT Madras. The project seeks to identify the network of food supply chain relationships and develop a framework that identifies and analyses crises related to food supply chains. The goal is to evolve a framework and methods to improve the supply chain efficiency, which will result in enhanced food security.

A project on “HuMotor: A Humane Way to Utilize Human Efforts at a Workplace”, was proposed by Dr. Sandipan Bandyopadhyay, Dr. G. Saravana Kumar and Dr. Palaniappan Ramu of the Department of Engineering Design. The device (called the “HuMotor”—an acronym for “human-powered motor”) essentially converts human efforts, harnessed in the form of a stair-climbing motion of the legs, into a unidirectional rotation of a pulley—from which power can be tapped to perform tasks such as lifting of materials. A partly functional prototype of HuMotor has been built, and the present study will focus on finalizing the design of the HuMotor through conducting usability studies by deploying HuMotor prototypes at 5 construction sites and collecting feedback.

A project titled “Development of an Exoskeleton to Enable Enhanced Mobility for a Differently-Abled Person” was proposed by Dr. Prathap Haridoss, Department of Metallurgical and Materials Engineering. The objective is to develop a partial exoskeleton to enable enhanced mobility for a person with limited capability in one lower limb and normal capability in the other. The exoskeleton will be developed in the laboratory and tested with dummy weights.

Dr. Palaniappan Ramu, Department of Engineering Design and Dr. M.S. Sivakumar, Department of Applied Mechanics have proposed a project on “Enhanced Agricultural Decision Support System Using GIS”. The objective of this project is to develop a GIS framework for large amounts of agricultural data, available in the form of an RDBMS, so that the data can be depicted better to enable farming decisions.

Dr. Pijush Ghosh, Department of Applied Mechanics, has proposed a project titled “A Student in Teacher’s Role in Rural Schools: A Pilot Study of the (C Minus 4) Model”. The objective of this project is to train 20–25 students from rural schools so that they can successfully teach classes for students four years junior to them. The training will be conducted at IIT Madras.

A project titled “Development of a Standing Wheelchair”, proposed by Dr. Sujatha Srinivasan, Department of Mechanical Engineering aims to further develop and clinically test a design for a standing wheelchair that has been developed at IIT Madras. The prototype, developed already, demonstrates the concept and is undergoing further work to ensure its safety for testing with actual wheelchair users. The SRP funding is for further development towards eventual commercialization.

A project on “Design and fabrication of a Low Cost Bioptic Electronic Focus Telescope for Subjects with Low Vision”, proposed by Dr. Shanti Bhattacharya and Dr. Nitin Chandrachoodan (Department of Electrical Engineering, IIT Madras), in collaboration with Ms. Sailaja, M.V.S. (Elite School of Optometry, Chennai), which was sanctioned in 2011, was granted an extension and is progressing well. A prototype of the device has been built and is being tested at Shankar Nethralaya, and the investigators are working on the next version of the device.

Another project on “Mobile Eye Surgical Units”, initiated in 2011, has been extended. The project investigators are Dr. Mohanasankara Sivaprakasam, Dr. V. Jagadeesh Kumar and Dr. V. Jayashankar, all from the Department of Electrical Engineering, IIT Madras. The project has been a grand success, with approximately 500 surgeries being conducted in rural areas in the pilot phase, a first of its kind in India, and has garnered a great amount of goodwill amongst several sections, including our alumni. Surgeries are being performed at the mobile unit, and this will continue for a few years.

Annexure 2

RURAL TECHNOLOGY ACTION GROUP (RUTAG), IIT MADRAS

Completed Projects

Textile industry

A low-cost Rapier kit has been developed as a retrofit that converts a power loom into a Rapier machine with somewhat comparable performance parameters with the real, but expensive, Rapier machines.

Similarly, the commonly available pedal-operated Nepali type loom has been modified with better joints and schemes for transmitting power. The modified Nepali loom achieves higher productivity and reduces the drudgery of handlooms. If this loom is ready, we could potentially tap into the Tamilnadu Government's scheme of providing subsidies for about 6000 pedal looms in the next 3 years.

Pottery industry

Development of microwaveable clay pots for potters has been tried out. In the first phase the characteristics of the existing pots have been mapped and certain findings on thickness, shape, etc. have been made. Highly advanced research is proposed to be done with the help of CGCRI, Kolkata within a time frame of six months.

Natural fibre industry

A banana fibre extraction machine has been introduced, with the help of PSG College of Technology, to improve the efficiency of the extraction process in terms of productivity and reduced breakage of the fibre when it is being extracted.

Ongoing projects

- Charcoal from *velikatan* (*Prosopis juliflora*)—The objective is to introduce technology in the production process to improve the productivity and quality of the charcoal produced as well as the working conditions and safety of the workers.
- Development of weft insertion system and take-up and let-off motion in handlooms for the blind (for an NGO based in Latur, Maharashtra)—This is expected to reduce the drudgery of the weavers and increase the productivity to at least double the existing levels.
- Setting up grey water treatment plants and monitoring water quality for small and medium scale units—This is an ideal solution to purify water in villages.
- Improving the strength of Athangudi tiles in order to make them crack resistant, helping the artisans of Chettinad standardize and improve crack resistance of the exclusive Athangudi tiles
- Textile crafts from pineapple leaf fibres
- Building with compacted and stabilized mud blocks for *balwadis*
- Powered tricycle for the mobility-disabled
- Sustainable bamboo-based human-driven mobile platform for water filtration
- Microwavable red clay pottery
- Palm leaf splitter
- Palm tree climber

Seminars involving NGOs/technical institutions

- “Encouraging Students to Participate in Developing Solutions for Rural Technology Problems”—award of prizes in April 2012
- Participation in the seminar on palm tree and palm products—June 2012
- Meeting with DMI Group of Institutions, Chennai—June 2012
- One-day workshop on rural technologies at PSG College of Technology, Coimbatore—August 2012
- Symposium on Global Natural Fibres, at Bangalore—September 2012
- Demonstration of palm tree climber at Kanyakumari—March 2013
- Networking of new NGOs/technical institutions



Project Report: April 2012 to March 2013

Center 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 Center 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 develop 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 in the development of socially beneficial products and ideas
- *Collaboration*—creating an ecosystem that extends to other technology 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
- Its focus on academic research that will seek to address problems exclusively within the Indian context

The Center for Social Innovation and Entrepreneurship (CSIE) focuses on two fronts:

1. **Education about social enterprises:** It is widely recognized 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.
2. **Contributing to the 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, the available 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 IITs 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 sponsors (the 1984 batch), IIT Madras faculty members and the partnering agency (Villgro). The members of the GC are:

R. Nagarajan, Project Coordinator, CSIE, Dean, International & 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 & CEO, Villgro
Anand Krishnaswamy, Consultant, The Lemelson Foundation
Joseph Thomas, Project Consultant, CSIE
Nishant Goyal, Principal Project Officer, CSIE

2.1. Staffing

Two full-time Project Consultants work at the Centre.

3. Activities

Various activities were identified/performed as per the mission of CSIE. These activities are:

- (a) **Education**—*offering academic programmes on social innovation and entrepreneurship for students across disciplines and degrees at IIT Madras*
 - Minor courses in Innovation and Social Entrepreneurship
 - Course ‘Technology, Innovation and Invention’ of ED first-year students
 - M.B.A.—Social Entrepreneurship (planning)
 - AVPN workshop—social performance measurement
- (b) **Research**—*providing an enabling environment for both student and faculty researchers interested in social enterprise research within the IIT campus*
 - Proposals/MoUs, events, meetings
 - Academic/applied research, consultancy
 - i. Research paper on ‘Knowledge Gaps in Organic Agriculture’
 - ii. Membership in Project Advisory Committee for UNIID in Southeast Asia
 - iii. Research—evaluation of SE educational programmes in India
 - Sub-project for Villgro-funded IDRC project activities
 - Events, lecture and workshop, proposals and MoUs, meetings Attended
 - Documentation
 - i. Social Enterprises and Support System in India
 - ii. List of domain reports—Social Enterprises
 - iii. Technology in Action
 - iv. Social Projects at IIT Madras
- (c) **Catalysing innovation**—*encouraging young innovators and entrepreneurs by assisting in the development of socially beneficial products and ideas*
 - Student start ups internships, projects
 - i. Student start ups, students’ out-of-class activities (2009, 2010, 2011)
 - ii. 3D printer
 - iii. Mentoring, email opportunities to students
 - Proposals/MoUs
 - Events
 - i. IIT Madras Entrepreneurship Week 2013
 - ii. Product design and business model workshop at Shaastra
 - iii. Sankalp Unconvention 2013 passes to minor students
 - iv. 3D4D workshop
 - v. Genesis—social entrepreneurship business plan competition
 - Meetings attended
- (d) **Collaboration**—*creating an ecosystem that extends to other technology institutions, including IITs*
 - CSIE–IIT Madras Academic Contribution Award
 - Networking with internal organizations at IIT Madras/external networking
 - Proposals and MoUs
 - Outreach channels and meetings
 - Events
 - Awareness and branding
 - i. CSIE in *The Hindu Business Line*

Apart from the above-mentioned activities, various management-related activities are also carried out in accordance with the required process laid out internally (e.g. internal documentation) as well as by IC&SR (e.g. finance and accounts).

The work done during the reporting period, under each activity heading, is described in the following.

4. Education

4.1. Minor courses in innovation and social entrepreneurship

Description

Minor specialization is an integrated, 3-semester stream, consisting of 4 courses (choice between 2 courses) available as electives to students of the B.Tech. and M.A. Development Studies programmes in their 3rd and 4th years. Students from other degree programmes may also take 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 faculty teaching the course is multidisciplinary, from the management, social science and engineering branches. Practicing social entrepreneurs and domain experts deliver guest lectures.

The course lays emphasis on two aspects:

- A theoretical understanding of the business of enterprise and innovation, in particular focusing on its relevance for India's marginalized communities
- Practical understanding of establishing and running an enterprise, including developing appropriate technology, product development and business development

Course	Coverage	Output from Students
An Introduction to Social Enterprises in India	<ul style="list-style-type: none">● Theory● Case studies● Guest lecture by practitioners● Rural field visit/visit to SE	Case studies
Product Design and Business Models	<ul style="list-style-type: none">● Creative problem solving (TRIZ techniques)● Engineering design and prototyping● Entrepreneurship● Finance● Business models and strategy	Business plans
Laboratory-based course (at Centre for Innovation, CFI)	Centre for Innovation Lab	Prototypes
Rural field study	Rural visits	Business plans

Impact

The students are able to attain practical experience by working on projects in Innovation and Social Entrepreneurship—Laboratory course or Rural field visit course.

Students of Laboratory course at CFI lab worked on socially relevant projects to develop prototype e.g. 'Foot Operated Hand Pump', 'Sack Carrier', 'Digital Content Delivery and Display System', 'Portable refrigerator', 'Mobility aid for visually impaired' etc.

Students of Rural field study course prepared business plans after visits to village; the students worked on b-plans like 'Groundnut storage-shelling-processing business', 'Hospitality training', 'decentralised Bio-fertilizer production', 'English speaking', and 'Fish refrigeration and supply chain'. The studies were carried out at an identified village, and mentoring from domain experts was organised. The proposed solutions included suggested business plan, operation and marketing plan. The students gain information through focus group discussion, interaction with village panchayat, people and social enterprises.

Product design and business model of 12 projects were (e.g. Hand cranked cell phone charger, Assistive Wheel Chair, Compost technology, Room Power Saver, Sack carrier etc.) prepared.

Role of CSIE

CSIE co-ordinates with the faculty of the minor course.

- Attend all classes, and evaluation of Course 1, 3, 4 and coordinate with faculty
- Course 1 (Intro to Social Enterprises): arrange rural visit of class, co-ordinate for guest speakers—11, case studies, organize rural visit, lead class discussion on SE and help in evaluation
- Course 2 (Product Design and Business Models): lecture and assignments on problem definition, discuss course design, co-ordinate for guest speakers and module leaders, their honorarium, prepare evaluation criteria and evaluate end semester presentations/reports, attendance, group formation, lightening pitch at E-week by students
- Course 3 (CFI lab course): co-ordinate for evaluation panel, problem solving and mentoring

- Course 4 (rural field study): co-ordinate for course design, rural visit, mentors, prepare course notes and give feedback to students on B-plans
- Attend classes of courses, prepare course notes of 4 courses
- Promote Course 2 as elective among IIT Madras students
- Manage Google groups of 3 courses
- Co-ordinate for minor introduction and elective selection
- Co-ordinate for changing departmental course numbers of minor courses to interdisciplinary course numbers

4.2. Course—‘Technology, Innovation and Invention’ of ED first-year students

Attend classes of course, prepare course notes

4.3. M.B.A.—Social Entrepreneurship (Planning)

An M.B.A. programme in Social Entrepreneurship is being conceptualized and planned. In this regard, meetings were held with faculty members, including Prof. Satyajit, TISS. Draft concept notes have also been prepared for the same.

Various resources such as the *Ashoka U Curriculum Guide* are being referred to for designing the programme.

4.4. AVPN workshop—Social Performance Measurement

The Asian Venture Philanthropy Network (AVPN) organised a workshop on ‘Introduction to Social Performance Measurement (SPM)’. Nishant, project consultant at CSIE attended this workshop.

The workshop consisted of two parts:

- (a) History and background of SPM in philanthropic organizations, social enterprises and nonprofits; overview of different methodologies; best practices through case studies.
- (b) Starting with SPM: logic model, setting objectives, SPM-frameworks, verification, valuation, etc.; time and money resources to start work on PM.

4.5. Highlights

- Mentors arranged for rural field study students from AID India, Ecologin, Central Institute of Brackishwater Aquaculture (CIBA), M.S. Swaminathan Research Foundation (MSSRF)
- Evaluation of rural field study course done by COO, Villgro and Consultant, The Lemelson Foundation
- Arranged 18 guest speaker sessions of practicing social entrepreneurs, for minor course
- Chairman, Keggfarms delivered guest lecture to minor course students
- Worked with AID India during rural field study course
- 6 minor course students did internship in social enterprise/public policy issues.

Proposals and MoUs

- Proposal received from Centre for Social Initiative and Management (CSIM) for help with rural field study course

5. Research

5.1. Academic/applied research, consultancy

5.1.1. Research paper on knowledge gaps in organic agriculture

Paper publication: Joseph Thomas and O.B. Ramasubramanian. (2013) Knowledge gaps in organic agriculture, a preliminary study on agricultural universities, changing state agricultural policies and organic farming practice in India. In C. Shambu Prasad and John D’Souza (eds.), *Rethinking Universities for Development: Intermediaries, Innovation and Inclusion*, Centre for Education and Documentation, Mumbai.

The researcher traveled to Sikkim, Kerala and Ooty for interviews and field visit.

The paper was presented at “Rethinking Universities for Development: Intermediaries, Innovation and Inclusion”, meeting held on 8 and 9 January 2013 at Jawaharlal Nehru University, New Delhi (<http://uniid2012.tk/>).

5.1.2. Membership in Project Advisory Committee for UNIID in Southeast Asia

CSIE worked on the IDRC-supported project “Universities & Councils Network for Innovation for Inclusive Development (UNIID)”. The goal was to apply to IDRC for a project with a consortium of institutions from South

Asia (India, Pakistan and Sri Lanka). In this connection, meetings held in Nepal and Sri Lanka were attended. IDRC budget cuts prevented the South Asia project from taking off. However, CSIE (represented by Joseph Thomas) became a member of the Project Advisory Committee for UNIID in Southeast Asia (UNIID-SEA). Member countries include Malaysia, Thailand, Indonesia and Vietnam, and the project is run by the Ateneo School of Government, Manila, The Philippines. CSIE attended the UNIID-SEA meetings held at Bangkok, Manila and Kuala Lumpur to review the projects being implemented by UNIID-SEA. Through these meetings, CSIE is building a strong network that will have implications for fund raising through collaborative projects.

5.1.3. Research—Evaluation of social entrepreneurship educational programmes in India

The research project ‘Evaluation of Social Entrepreneurship Educational Programmes in India’ was taken up by CSIE along with Centre for Social Entrepreneurship, TISS in February 2013. The project is funded by IDRC, Canada and Villgro.

This research will form a chapter among the cases and overview essays, written by leading researchers and educators in India, to provide lessons on talent infusion for social enterprises and the ecosystem of incubators, educators, fellowship programmes, etc.

Abstract

Indian academia have responded to the significant social transformation that social entrepreneurs create, by offering educational programmes on social entrepreneurship. These include several high-profile academic institutions. Educational programmes in social entrepreneurship aim to produce graduates with social vision and skills in order to take an active part in addressing social problems. These programmes include both formal and non-accredited programmes. The formal programmes can be broadly divided into three categories: (a) full time SE degree; b) minor/electives in bachelor’s and master’s degrees; and (c) part-time/distance courses. The non-accredited programmes are managed by unconventional institutions. Many business schools have included elective courses on social entrepreneurship that increase the focus on business as a means of bringing about social change. These efforts move a section of young Indians to take social entrepreneurship as a career choice. This study will provide a comparative overview of social entrepreneurship educational courses presently taught in India. The study will also enumerate roles that graduates of these programmes undertake in order to address social problems. Some programmes prepare graduates to become social entrepreneurs rather than employees of social enterprise. Their success will also be studied. On the other hand, social enterprises find hiring and retaining qualified staff as second-top challenges, to achieve scale and commercial success. With this contradictory situation, it is time to assess the relevance and quality of these educational programmes, from the perspectives of educators, students/graduates and current/future employers.

5.2. Sub-project for Villgro-funded IDRC project activities

Villgro and CSIE have executed the 1st year of the project “Learning from Pro-Poor, Market-Driven Innovation in India” with grants from the International Development Research Centre (IDRC), Canada. Villgro received grants from IDRC, Canada for the project.

The project had three main objectives:

- (a) Conduct primary research intended to find evidence from social enterprises in India on where innovations have succeeded and failed in reaching the low-income market segment and where there are unmet needs. The information that comes out of primary research will be used as the basis for course materials on innovation and social entrepreneurship.
- (b) Disseminate primary and secondary research on innovation and social entrepreneurship (as practitioner experience is not easily accessible). This research will be disseminated to academics, practitioners and students, resulting in a basic understanding of innovation and social entrepreneurship for all three groups.
- (c) Monitor and evaluate Villgro’s impact based on the outcomes from innovations incubated, as well as products sold directly by Villgro’s marketing arm, Villgro Stores.

Villgro and CSIE executed this project together, and as part of the primary research, CSIE contacted and encouraged academics and practitioners to undertake research in the form of short-term (6 months) funded projects. The proposals gathered by CSIE were vetted and recommended for approval by an Independent Research Advisory Committee. The funding was used to manage the sub-project activities and expenses of the project consultant appointed to carry out the same.

The first round of completed research projects and the institutes that executed them are:

Project Title	Host Institute
Assessing Social Enterprises: The Need for New Parameters	Centre for World Solidarity and KICS
Scaling-Up Social Enterprises—Drivers and Challenges	Intellicap
Inclusive Business Models—Prospects and Challenges	IIM Bangalore
Understanding the Adoption Dynamics of New Products Among People Living in Rural India	IFMR
How Can Early-Stage Social Businesses Be taken to the Next Level?	DASRA

Though the project was completed in June 2012, CSIE coordinated with Villgro to contact researchers for the second round of proposals for the year 2012.

The final report of this project was submitted in October 2012.

5.3. Events

- CSIE co-organized the National Conference and Research Workshop on ‘Technology, Innovation and Social Change at TISS during 16–18 August 2012.
- CSIE staff attended the international conference ‘Technology, Innovation and Social Change’ during 22–24 January 2013 at TISS.

5.4. Lecture and workshop

- Lecture given to government employees looking after self-help groups from Tamil Nadu Corporation for Women’s Development—14 July 2012 at Auroville.
- Mentorship workshop for ICT companies at IIM Ahmedabad on 21 July 2012.

5.5. Proposals and MoUs

- Proposal submitted, meeting with the Lemelson Foundation
- ANDE proposal submitted (John Bosco, Jessica Seddon and Joseph Thomas)
- Joint proposal IGIDR and CSIE to Shastri Indo-Canadian Institute
- Discussions with University of Southampton
- On the request of the Centre for Innovations in Public Systems, ASCI, Hyderabad, a project proposal for Rs.50 lakhs was submitted. The discussion now is on involving IIT Madras students in the study on common service centres.
- Proposal for IDRC, Canada-sponsored research on ‘Rural Technology and Business Incubator: Leveraging the IIT Madras Ecosystem for Social Enterprises’

5.6. Meetings attended

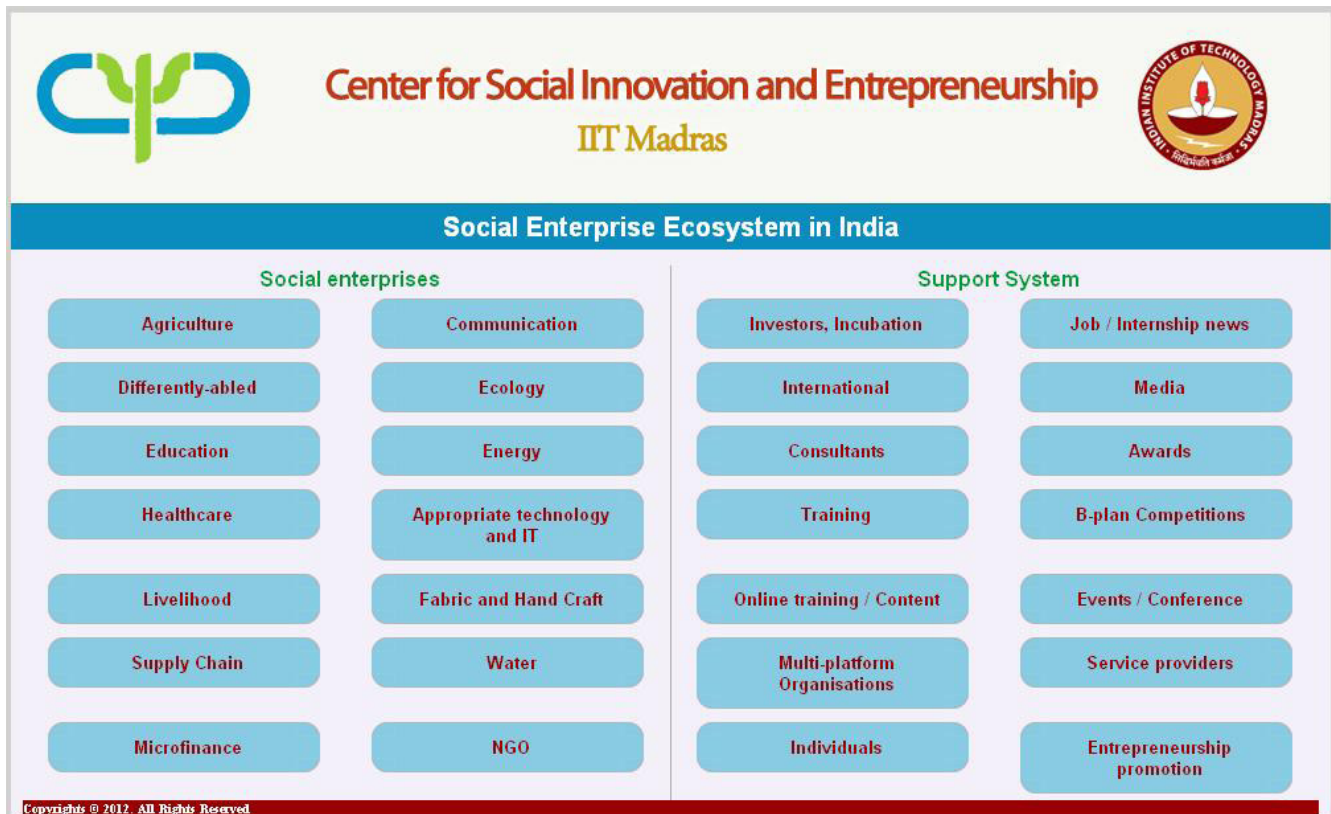
- Core Advisory Group on Sustainable Agriculture Business Practice of United Nations Global Compact, meetings attended in Geneva, January 2013 and New York, March 2013. As an outcome, CSIE will also be represented on a separate knowledge track that has started in the Global Compact.
- Meeting with Peter Westerstrahle and Auli Pere–Tekes, Finland
- Meeting on IDRC project work with Prof. Shambu Prasad at Hyderabad, 28 September 2012, and sharing session at CESS on writeshops on 28 September.
- Knowledge in Civil Society meeting of core group, Hyderabad, 29 September 2012
- “Markets that Empower Farmers (& Consumers)”, organized jointly by ASHA (Alliance for Sustainable & Holistic Agriculture) and XIM-B (Xavier Institute of Management, Bhubaneswar), 30–31 July 2012
- Joseph Thomas, presentation at “Workshop to Evolve a Draft Policy Framework for Organic Farming in Odisha”, 5 February 2013 at XIM-B, Bhubaneswar
- Joseph Thomas attended the Organic Farming Biennial Convention, held during 6–7 November 2012 by the Organic Farming Association of India at Bhubaneswar, Orissa.

Note: The travel and lodging expenses for all the above were borne by host organizations.

5.7. Documentation

5.7.1. Social enterprises and support system in India

The information is being documented and posted on the website (<http://csie.iitm.ac.in/SEandSupport.html>). The number of organizations on the SE and Support page as of March 2013 are: 173 social enterprises, 171 support organizations (total 344). The Web page informs students about the maturity of the social enterprise domain.



Social enterprises are organized in sectors as agriculture and dairies, communication and IT, differently-abled, education, energy, healthcare, affordable housing, livelihood, microfinance, supply chain, waste management and environment, and water and sanitation.

Support system includes various resources and organizations such as investors; incubators; the media; education, training and research; online training/content; awards; B-plan competitions; job/internship news; fellowship; multi-platform organizations; entrepreneurship networks; etc.

5.7.2. Documentation: List of domain reports—Social enterprises

Reports and studies on various social enterprise sectors are listed on the website for students (and other stakeholders). These reports are available in the public domain, on the websites of various organizations. Links are provided on this page, compiling the list at one place.

The reports are on various themes in the SE domain (impact measurement, etc), and sectors such as agriculture and dairies, communication and IT, differently-abled, education, energy, healthcare, livelihood, affordable housing, microfinance, supply chains, and water and sanitation.

5.7.3. Documentation: Technology in Action

Social innovation is a key element of social entrepreneurship. The domain has unique challenges such as problem statement related to survival and other basic needs of life, faced by a large number of people, and low affordability.

The Web page 'Technology in Action' lists some technologies that solve social problems, labs/centres in social innovation and research, awards, etc. Technologies are listed in the sectors of agriculture and dairies, communication, disability, energy, health, IT, livelihood and water.

5.7.4. Documentation: Social Projects at IIT Madras

IIT Madras has been at the forefront in developing technologies to solve pressing problems of society. The Web page on ‘Social Projects at IIT Madras’ organizes and disseminates information about these projects within the student and faculty communities. Projects at Socially Relevant Projects (SRP), Rural Technology Action Group (RuTAG), TeNeT group, Engineering Design Department and other departments support a large number of such projects.

Projects are listed sector-wise, such as agriculture, differently-abled, ecology, energy, healthcare, housing, and water and sanitation. The documentation is organized as Project Summaries (problem, solution, uniqueness), How (technical details, status) and Team/Contact Information.

6. Catalysing Innovation

6.1. Student start ups, internships, projects

The students at IIT Madras are encouraged to start up their own social enterprises, intern in an existing social enterprise and develop socially relevant projects. These students include, but are not limited to, the 40 students of the minor course.

6.1.1. Student start ups

Some students have taken up entrepreneurship after joining the ISE minor, while some students had pre-decided to become entrepreneurs and thus joined the course to learn.

Student entrepreneurs from the ISE minor are:

Minor Batch	Name	Company	Company Domain
2009	Alex J.V.	Techie Street	
2009, 2009	Tarun Mehta, Swapnil		Started to build electric bike
2009	Thirumalai		Co-own land, testing organic farming models
2009	Harsh Dhakani		Clean water at Gujarat (failed)
2010	Sagar		Low-cost diagnosis of diabetes
2010, 2010, 2011	Ravi Teja, M. Sandeep Bhargav Ram	Desto	Design service
2010, 2011, 2012 Course 2	Saurav Roy, Saurabh Prakash Gupta, Mohit Mittal	Myriads	
2011 Course 2	Satish Kannan	Phasorz Technologies (working with Enbasekar)	Point-of-care ECG diagnostics
2011 Course 1	Satish Dinakaran	Botix	GPRS-based product
2011 Course 1	Shanmugam		Dairy farming
2012 Course 1	Siddharth Thakur		Digital image-based scanning solution

6.1.2. Students' out-of-class activities

Three students of the Engineering Design and Chemical Engineering departments worked as interns with CSIE on documentation of social projects at IIT Madras.

Many minor course students participated in activities, outside of their course work, in the area of social enterprises. The following is a sample of students and their work:

2009

- Alex J.V.: started up Techie Street, an ecosystem to source components for prototype building. He was also the student head of C-TIDES—student entrepreneurship cell of IIT Madras.
- Thirumalai R.: co-owns land, testing organic farming models and working as agri-marketing specialist at IAMWARM (Irrigated Agriculture Modernisation and Waterbodies Restoration and Management) Project, Public Works Department (PWD), Government of Tamilnadu.
- Tarun Mehta, Swapnil Jain, Jaideep Badduri, Sayantan Biswas: Tarun and Swapnil started up a company to build an electric bike. All 4 students worked on the patented Humotor to reduce the load and improve the efficiency of workers and won the National Innovation Council award. They also worked on the Stirling engine and developed 3 prototypes of it. Tarun was also student head of C-TIDES—student entrepreneurship cell of IIT Madras.

- Harsh Dhakani: started up a company in Ahmedabad to provide clean water in rural areas, which failed. He is working with Flipkart—an entrepreneurial start up.

2010

- Sagar: plans to start up, working on technology for low-cost diagnosis of diabetes, won a B-plan competition.
- Ravi Teja, M. Sandeep: started up (with 4 friends) Desto Creative Solutions, a design firm offering services in graphic design and Web development. Ravi Teja opted out of placements and working on Desto full time.
- Saurav Roy: Started up Myriads with 4 friends.
- Lohit, Vishruth, Vinay: reputed national and international B-plan competitions.
- Ramesh: interned at Hand in Hand, attended Jagriti Yatra.

2011

- Shanmugam: started up organic dairy farming
- Bhargav Ram: startup (with 4 friends) Desto Creative Solutions, a design firm offering services in Graphic design and Web development. Ravi Teja opted out of placements and working on Desto full time.
- Saurabh Prakash Gupta: He is interning at Embrace Innovations.
- Satish Kannan: started up Phasorz Technologies (working with Enbasekar)—point-of-care ECG diagnostics.
- Satish Dinakaran: M.S. Entrepreneurship student, working on GPRS-based watch for child security.
- Abhinav Ram, Sandeep Kothinti: developed digital Braille prototype. Prof. Sandipan working with them for patent application.
- Bindu Upadhyay: internship at Educational Initiatives; she was a teaching assistant for the course “Design Challenges—Physics and Engineering”. She wants to educate poor children as her career choice. She is interning at Embrace Innovations.
- Sourabh Mehta: internship in ‘Hole in the Wall’ (primary education field) and in Solar Energy and Building Physics Laboratory (LESO-PB), Ecole Polytechnique Fédérale de Lausanne (EPFL) (sustainable development).
- Chandni Chandran: Did a course, ‘Agenda for Survival’, with a social enterprise, Centre for Science and Environment; internship with AHADS (Attappady Hill Area Development Society) (Social Enterprise for the Welfare of Tribals); iVil coordinator for Candle Making Project.
- Bhargav Ram: started a company, “Desto Creative Solutions”, along with 3 other partners, a design firm offering services in graphic design and Web development.
- Lakshmi Parvathy: working with iVil to collaborate with Shankar Nethralaya, to take eye testing to villages. She did an internship at Help Age India and ‘Btechguru’, an organisation working in educational services.
- Krishna Teja: wants to take up food processing and supply chains as career, after undergoing rural field study course.
- Harish Marisetty: internship at Rakshak Foundation, worked on public policy issue of whether India should bear the burden of environment regulation at the cost of its development.
- Tanuj Jhunjhunwala: developed good prototype (in team) during CFI lab course for bicycle-operated hand pump. He is also Shastra event core. Led IIT Madras team in national robotics events.
- Sunaina Donimath: was core member of C-TIDES.
- Vidyasagar: was core member of C-TIDES.

6.1.3. 3D printer

A 3D printer was received by CSIE during the 3D4D workshop conducted at IIT Madras. It is installed at the CFI lab to enable students to develop quick prototypes.

6.1.4. Mentoring

- Student project on groundnut farming—IIT Madras
- Student project on bio-fertilizer manufacture—IIT Madras
- Student project on green rating—XIM-B
- Student project on comparing organic farming policy—XIM-B
- Mentoring Coinside, Mukunda Foods and Vindz Power
- Coinside won Rs.5 lakhs from Power of Ideas (mentored Sneha Jain and Sudarshan Lodha)

6.1.5. Email opportunities to students

Information regarding various events, B-plan competitions and programmes is emailed to the past and present minor course students.

6.2. Proposals and MoUs

- Project proposal on ‘Service Learning’ submitted to Indo-US Science and Technology Forum in collaboration with Engineers Without Borders (EWB) and Howard University, USA
- MoU with Mentoredge (CIIE, IIM Ahmedabad) signed for jointly organizing mentoring session for entrepreneurs at Chennai)
- Joseph Thomas enrolled as mentor with Mentoredge, CIIE, IIM Ahmedabad and with Centre for Entrepreneurship, TISS, Mumbai.
- Chilasa, Venture Philanthropy fund discussions on signing MoU with CSIE for funding socially relevant student ventures
- Non-disclosure agreement signed with Edmund Bell King (solar lantern project for students)

6.3. Events

6.3.1. IIT Madras Entrepreneurship Week 2013

IIT Madras launched ‘Entrepreneurship Week’, 3–9 March 2013, which was dedicated to celebrating and fostering entrepreneurship on campus. E-Week was open to anyone in the IIT Madras ecosystem who had innovative/entrepreneurial inclinations. This included students, faculty and staff members, alumni, incubatees and organizations that work closely with IIT Madras. Through the week there were a number of sessions organized where attendees interacted with a variety of entrepreneurs, investors and alumni to learn more about entrepreneurship and obtain feedback on their own ideas and plans.

E-week was sponsored by CSIE.

Agenda

Date	Theme	Events
Sunday, 3 March 2013	E-Week Kick-Off	<ul style="list-style-type: none">● Showcasing 6 start ups from IIT Madras● Inauguration by the Director, IIT Madras and keynote address by Prof. Ashok Jhunjunwala● Launch of the IIT Madras Incubation Cell and the IIT Madras Entrepreneurship Forum● Showcasing organizations that form IIT Madras entrepreneurship ecosystem—RTBI, C-TIDES, BioTech Incubator, CFI, CSIE and IIT Madras Research Park● Discussions on the IIT Madras entrepreneurship ecosystem
Monday, 4 March 2013	The Joys and Challenges of Entrepreneurship	<ul style="list-style-type: none">● Video screening of an interview with serial entrepreneur Kanwal Rekhi (IIT Bombay alumnus)● Interactive discussion with IIT Madras alumni entrepreneurs
Thursday, 7 March 2013	Entrepreneurship Unconference for Faculty	<ul style="list-style-type: none">● Open discussion between alumni entrepreneurs and faculty members on developing entrepreneurial skills and working with start ups
Friday, 8 March 2013	IIT Madras Entrepreneurs Through the Ages	<ul style="list-style-type: none">● Panel discussion with IIT Madras alumni entrepreneurs who started up companies in the 1970s, 1980s, 1990s and post 2000
Saturday, 9 March 2013	Opportunities, Experiences and Ideas	<ul style="list-style-type: none">● Panel discussion on opportunities for entrepreneurs● ‘How to Pick a Winning Opportunity’, keynote talk by Raju Venkatraman (serial entrepreneur and IIT Madras alumnus)● Lunch and ‘Poster Walk’ among incubatee companies● ‘My Idea’—lightning pitch session for students, staff, incubatees and faculty members with ideas—E-Week wrap up

6.3.2. Product design and business model workshop at Shastra

The workshop provided an initial thrust and resource pointers to set students on a path of thinking about markets and products, rather than just hobby projects. 90+ students attended this event.

This 8-hour workshop was conducted in two parts: Product Design and Business Model.

Igniting imagination

WORKSHOP ON PRODUCT DESIGN AND BUSINESS MODELS



Transform your hobby project into a market Product

WHEN: 6th January, 2013, 9 am to 6 pm
WHERE: Dept of Management Studies, 401
WHAT: Hands-on design and plan with Industry Experts, Resources for Prototyping.

Session 1: Opportunity Evaluation of Idea
Session 2: Product Design
Session 3: Business Modelling

in association with



IIT Madras - CSIE
(Center for Social Innovation & Entrepreneurship)

SPEAKERS



Raj Shankar

- Co founder and Principal Strategist at ichiban Business Consultants.



Ramesh Manickam

- Founder and CEO of Centroid Creative Hubb.
- Designer of the legendary 'thunderbird' bike of Royal Enfield.
- Alumnus of IIT Delhi.

CONTACT: Srikar
09789936395
vnsrikar@gmail.com

Nishant Goyal
09444260995
mtnishant@gmail.com

Limited Seats !! Registrations are done on first come first serve basis.
Mail your product idea to csie@iitm.ac.in



www.shastra.org



SHAstra 2013
The Spirit of Engineering
January 5th-8th



iitmadrass

6.3.3. Sankalp Unconvention 2013 passes to minor students

Villgro offered 4 passes to ISE minor students for Sankalp Unconvention 2013 (ticket cost Rs.15,000 each + taxes). CSIE sponsored 50% of the board and lodging expenses for the selected students. Minor students had to submit a statement of purpose (500 words) to apply for a pass.

Sponsored students submitted a summary on each session they attended at the event to Villgro and CSIE as payback.

About Sankalp Unconvention 2013

Sankalp Unconvention, Asia's largest collaborative platform on social entrepreneurship, was held during 17–18 April 2013 at the Hotel Renaissance in Powai, Mumbai, India. The annual summit is a convergence of global knowledge, investment and dialogue geared towards building a more inclusive ecosystem for high-impact, pro-poor businesses. Each year, it brings several social enterprises to the forefront, and connects them to enablers, mentors and crucial networks.

6.3.4. 3D4D workshop

The 3D4D workshop was organized on 29 May 2012, and a Makerbot 3D printer was received.

6.3.5. Genesis—social entrepreneurship business plan competition

Genesis, a business plan competition of social entrepreneurship, was conducted by C-TIDES (IIT Madras student entrepreneurship cell), with Joseph Thomas as judge. Nishant introduced CSIE.

6.4. Meetings attended

- Conference call with Audrey Celian of RIANITA

7. Collaboration

7.1. CSIE-IIT Madras Academic Contribution Award

The Academic Contribution Award recognizes and felicitates individuals in academia who have made a contribution in India through research, educational programmes and/or practical initiatives (incubators, business plan competitions, technical projects, etc), contributing to practical understanding and advances in development-relevant knowledge, during the last 2 years.

CSIE made efforts to outreach for the award and nominate some academicians.

7.1.1. Finalists and winner 2013

Nominations/applications for the award were open till 17 February 2013.

The finalists are:

- Prof. Satyajit Majumdar, Tata Institute of Social Sciences, Mumbai
- Prof. C. Shambu Prasad, Xavier Institute of Management, Bhubaneswar
- Mr. Ajay Dixit, Entrepreneurship Development Institute of India, Ahmedabad
- Dr. Rama Krishna Reddy Kummitha, Tata Institute of Social Sciences, Mumbai

The winners of the award are to be announced at Sankalp Unconvention Forum on 17 April 2013.

CSIE-IITM ACADEMIC CONTRIBUTION AWARD

VILLGRO AWARDS 2013
FOR THE SOCIAL ENTREPRENEURSHIP ECOSYSTEM

The Center for Social Innovation and Entrepreneurship (CSIE), IIT Madras is collaborating with Villgro Innovations Foundation on a category close to its heart during the Villgro Awards 2013 for the Social Entrepreneurship Ecosystem. The 'CSIE-IITM Academic Contribution Award' hopes to unearth and recognize outstanding individuals in the Academia (professors, researchers, deans) who have made a significant contribution to understanding the social entrepreneurship space in India through research, educational programs and/or practical initiatives between 2011 and 2012. If you know anybody who deserves this recognition click on the link below and nominate them now.

LAST DATE : 17TH FEB

Click here to apply or nominate now!

Visit www.unconvention.co.in to find out more about other categories, criteria, prizes, jury etc.



For more information :
csie@iitm.ac.in / awards@villgro.org
Ph - 044 6663 0400



7.2. Internal organizations at IIT Madras/external networking

Regular interaction with student-driven organizations such as C-TIDES (the student led e-cell), CFI (Centre for Innovation), iVil (IIT for Villages) and other organisations in domains similar to that of RuTAG (Rural Technology Action Group) and RTBI (Rural Technology Business Incubator) was done.

Email was sent to faculty groups to submit their social projects to be listed on the CSIE website.

CSIE is reaching out to various national and international organizations for strategic partnerships. CSIE has also hosted various visitors in this regard.

7.3. Proposals and MoUs

MoU signed with Mentoredge (CIIE, IIM Ahmedabad) for jointly organizing a mentoring session for entrepreneurs at Chennai.

7.4. Events

- CSIE, along with CIIE, IIM Ahmedabad, co-organized an *Economic Times* ‘Power of Ideas’ mentoring session for short-listed applicants.
- Organized an event for mentoring entrepreneurs with MentorEdge, CIIE, IIM-A, 19 May 2012.
- Attended international seminar on SE at TISS, organized by University of Texas at Austin with Dell Social Innovation Challenge. Faculty members from over 30 academic institutions attended the seminar.

7.5. Outreach channels and meetings

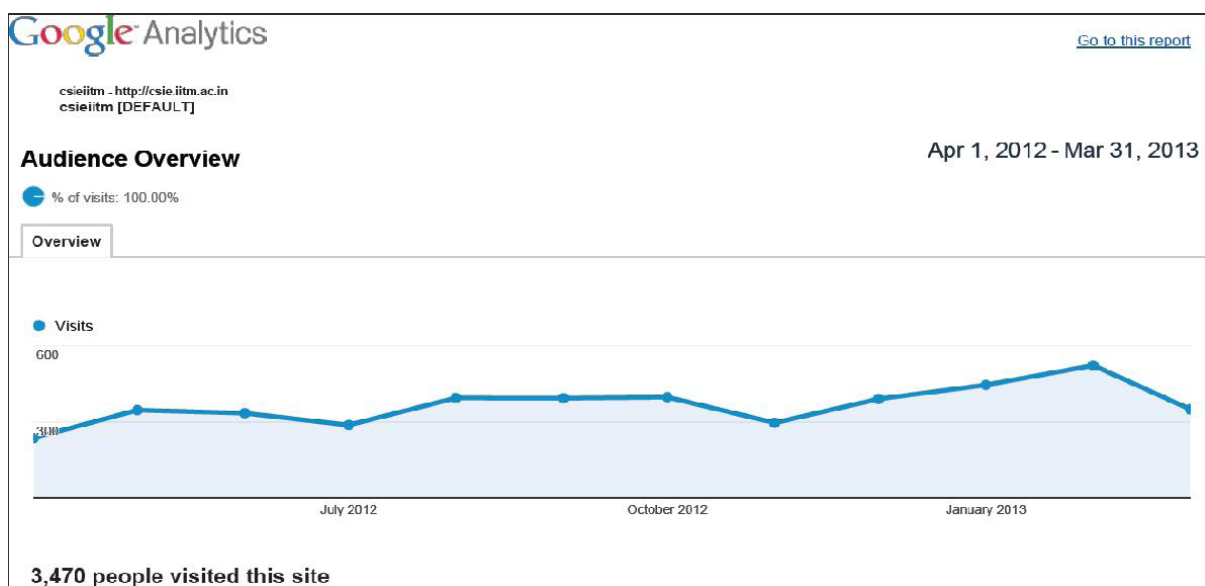
- CSIE mailing list created in Google Groups (100 members joined)
- Attended PAN IIT Kolkata
- National Association of Social Enterprises (NASE) sharing and networking on 30 August 2012, Bangalore.
- Met Massachusetts Institute of Technology (MIT) graduate students
- Rob Hanna, Dell Social Innovation Challenge—meetings, interaction with minor class
- Meeting with Sanaullah Fathi, Edge Talents, Potencia Ventures

7.6. Awareness and branding

Promotion and awareness of CSIE is done using multiple channels such as websites, LinkedIn and Facebook identities, emails to IIT Madras student and faculty groups, flyers at Alumni Day and other events, etc. CSIE activities were mentioned in the Director’s speech at Convocation 2012.

We have received requests for information from multiple agencies, including social enterprises, academia, investors, government agencies and accelerator programmes, who wish to know more about the centre.

The number of unique visitors to the website during the period from April 2012 to March 2013 was 3470.



7.6.1. CSIE in The Hindu Business Line

CSIE was featured in *The Hindu Business Line* on 24 February 2013 (<http://www.thehindubusinessline.com/features/nudging-students-to-social-innovation/article4446700.ece>).



THE HINDU
Business Line

Nudging students to social innovation

N. Ramakrishnan

For a cause: (from left) Nishant Goyal, Project Consultant; R. Nagarajan, Project Coordinator, and Joseph Thomas, Project Consultant, Centre for Social Innovation and Entrepreneurship, IIT - Madras. — N. Ramakrishnan

February 24, 2013:

What would a premier technical institution have to do with social innovation and entrepreneurship? Quite a lot, if you were at the Indian Institute of Technology – Madras, which has set up and runs a Centre for Social Innovation and Entrepreneurship, on its sylvan campus.

The Centre has been set up with funds raised by alumni of the 1984 batch, when they had a reunion in 2009 on the occasion of the silver jubilee of their graduation.

The Centre for Social Innovation and Entrepreneurship (CSIE) itself follows the more popular Centre for Innovation at the IIT, set up with funds raised by the 1981 batch to mark their silver jubilee reunion.

The Centre for Innovation, though immensely popular among students as it is more or less run by them, it was felt does not do too much of work that is socially oriented. Besides, how many of the ideas generated at the Centre for Innovation have commercial potential. “We felt that there was a need for a centre that dealt with entrepreneurship.”

8. Management Activities

8.1. Governance Committee meetings

Regular meetings are being held to monitor the progress and for further planning. Minutes of meetings are circulated among the GC members.

8.2. Internal documentation

The planning and informational documents on all activities within the centre are maintained and updated regularly. These include documentation of the minor course, research proposals, events and reporting. The concept note of CSIE was prepared and circulated among various stakeholders. CSIE continues to update the activity plan document to guide its activities. The documents ‘Work Done (April 2011 to July 12)’ and ‘Action Identified’ were prepared as part of the same. Minutes of GC meetings are being prepared and circulated.

An activities report of CSIE is published in the annual report of IIT Madras and circulated among IIT Madras alumni.

8.3. Accounts

Accounting for CSIE is managed by the Centre for IC&SR. The Centre for IC&SR facilitates, co-ordinates and administers all sponsored and consultancy projects at IIT Madras.

9. Testimony and Photographs

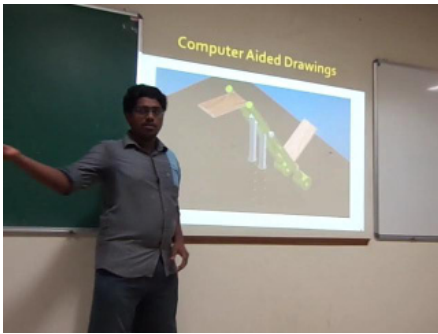
9.1. Testimony from students

“The course was very much different from the usual courses at IIT, making it very interesting to work and think differently.”

“Now we have got the flavour for business and how things work, the risks involved, the patience required and the strategies that can be employed.”

“This course has helped me not just in realizing the complexities of the business world, but also it made me realize certain hidden abilities in me.”

9.2. Photographs



Students' presentations: product design and business model



Interaction of guest speaker with class



Students witness a children's parliament during a rural visit



Students' interaction with Mr. Elango, Panchayat Academy, during rural visit

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 the blend of an academic environment and an industry-like working atmosphere.

The centre is housed in dust-free environment. 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. In view of the large demand for these trained personnel both within the institute and outside, conducting such long-term training programmes has become one of the important activities of the centre.

The centre has diversified its activities and now offers the following services:

- Servicing and maintenance of electronic equipment/instruments
- Training programmes for manpower development
- Calibration of electronic test and measuring instruments
- Testing of electronic products
- Development of custom-built equipment
- Consultancy services to industries in the above-mentioned areas.

So far, the CEC has provided expertise and services in the above areas to more than 230 industries/organizations inside and outside the country.

In the area of renewable energy, the CEC has been playing a key role by conducting training programmes related to solar photo-voltaics (SPV). Forty SPV training programmes have been conducted, and more than 860 personnel have been trained. The 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 in this area. The CEC is active in diverse projects involving SPV technology.

Four special (customized) 12-week training programmes were organized for radio officers of the merchant navy to 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 ISO/IEC 17025 standards. In CEC both the ISO and NABL accreditation were actively maintained through adherence to the specified processes and procedures.

Activities

1. CEC two-year Technician Training Programme

Preparations are going on for admission of the 28th batch of the Technician Training Programme (2 years' duration). The total number of candidates to be admitted is 12. The previous batch comprises nine trainees.

2. Workshop sessions for B.Tech. students

CEC conducts the electronics workshop/laboratory sessions for B.Tech. I Year students (part of WS 1020).

3. Some of the important consultancy projects completed in 2012–2013

Sl.No.	Co-ordinator	Title of Project	Organization	No. of Assignments	Project Value (in Rs.)
1	The Head CEC	Servicing of Multifunction Calibrator and Autocal Transconductance Amplifier	ETDC, Chennai	2	28,678
		Servicing of Network Analyser	Smart Wireless	1	39,326

The Head CEC	Servicing of AC Power Source, Oscilloscope, Data Logger, Power Supply, Synthesized Signal Generator, Digital Multimeter, Insulation Tester	Elmack Engineering Services, Chennai	8	1,06,741
	Calibration of Decade Resistance Box	MTL Instruments Pvt. Ltd., Chennai	4	6,067
	Calibration of DMM, Clamp Meter and Temperature Source, Testing of UPS	R.R. Electronics, Chennai	7	14,046
	Servicing of Megger Power meter	Tamil Nadu Petro Products Ltd., Chennai	1	5,618
	Testing of Electronic Ballast	Tirumala Tirupati Devasthanams, Tirupati/Tirumala	1	33,090
	Calibration of Dual Display Multimeter	SAMEER, Government of India, Chennai	1	2,809
	Servicing of DMM, Calibration of DMM	Pulser	2	6,405
	Calibration of AC/DC Calibration Standard, AC/DC Voltage Current Source, Universal Fuel gauge, Capacitance Box, Digital Multimeter, Function Generator and DC Power Supply	Instrulab Aero & Allied Sstems, Chennai	14	50,561
	Testing of 6 kVA UPS	PTS Powertronics Solutions	1	29,214
	Servicing of Control Board	Ananth Industrial Electronics	1	4,504
	Testing of Fire Alarm Assembly	Ravel Electronics Pvt. Ltd.	2	16,854
	Calibration of DMM	Lawkin Motors Group	1	1,910
	Servicing of Analogue Control Card and Chromograph Controller Card	Orchid Chemicals	5	47,985

Total number of consultancy projects: 47

Total value of projects: Rs.3.98 lakhs

4. Conference presentations

1. Sri C.R. Jeevandoss attended the IEEE International Instrumentation and Measurement Technology Conference (I²MTC 2012) in Graz, Austria between 13 and 16 May 2012 and presented a poster, "An Innovative Method for Determining the Junction Temperature of a Photovoltaic Cell".
2. Ms. K. Sulochana presented a poster, "Super-Luminescent Diode Coupled with a Fabry-Perot Etalon for Measurement of CO₂ and C₂H₂ in a Gas Mixture", at the International Conference on Trends in Optics and Photonics, organized by IIT Madras from 9 to 12 December 2012.
3. Ms. K. Sulochana attended the International Conference on Raman Spectroscopy, organized by IISc, Bangalore, between 12 and 17 August 2012, and presented a poster, "Simultaneous Measurement of Multiple Species Using Nd³⁺:YAG laser for Combustion Application".
4. Ms. G. Amutha attended the 3rd Asian Symposium on Materials and Processing, organized by IIT Madras, on 30 and 31 August 2012, and presented a paper.

5. Training programmes conducted by CEC

1. Two Train the Trainers (Professor Summit) programmes, Embedded System Design Using Atmel 8 bit and 32 bit Microcontrollers, were conducted with the help of Atmel India P. Ltd. on 3 and 4 May 2012 and on 4 and 5 January 2013.
2. A workshop on Basic Test and Measuring Instruments was conducted by the CEC from 3 to 5 September 2012. Twelve participants attended the workshop.

3. A workshop on PCB design using ORCAD software was conducted at the CEC for 15 students on 27 and 28 September 2012.

6. Training programmes attended by CEC staff members

G. Amutha and S. Veeraraghavan attended the training programme LED Lighting System, conducted by CPRI, Bangalore on 8 October 2012.

7. Development work completed

Three power amplifiers for amplifying an 0 V to 10 V input to 0 V to 500 V output for the Applied Mechanics Department for control of displacements along three axes were developed and handed over to the user.

8. Other activities

Testing of UPS from new vendors for entering rate contract. The PC maintenance cell of the Institute is now under CEC. The PC maintenance cell provides maintenance service to computers and associated peripherals at IIT Madras.

9. Staff strength

The centre has 10 technical and 2 administrative staff members assisted by eight technicians employed on project mode.

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, i.e. 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 facilities in different shops and sections. A list of the shops and sections, with their facilities, is provided here.

Sl. No.	Shop	Facilities
1	Carpentry	Wood working with planing, circular saw cutting, turning, thickness reduction, polishing processes and power-operated hand tools
2	Fitting & Tool Room	Filing, drilling, tapping, jig boring, tool milling, engraving, marking, slotting, grinding, cutting and 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 and vertical milling machines
4	Gear Shop	Spur, helical and bevel gear cutting and gear inspection
5	Electrical Shop	Trainers for electrical circuits; DOL and star—delta starter trainers
6	Instrument Shop	Calibration of pressure gauges up to 1000 bar and precision machines
7	Welding Shop	Arc welding, gas welding, brazing, TIG welding and plasma arc cutting.
8	Foundry Shop	Sand moulding, melting and die casting machines
9	Smithy Shop	Open hearth furnace
Sections		
10	Pneumatics and Hydraulics	Basic pneumatic trainers, electro-pneumatic trainer, PLC for pneumatics trainer, basic hydraulic trainers
11	FRP	Manufacturing polymer composites by hand lay-up process
12	Plastics	Introduction to plastics, demonstration and production in hand operated, semi-automatic injection and compression moulding of plastics
13	Instrumentation & Communication Laboratory	Introduction to basic communication systems, exercises in optical fibre communication; introduction to various kinds of transducers; microprocessor-based control applications, examples of stepper motor control, traffic light controller and PLC

In addition, the Central Workshop is operating the institute buses and maintaining the institute vehicles (light and heavy).

The Central Workshop is training 842 B.Tech./Dual Degree (1st year) students undergoing courses WS 1010 (4 credits), WS 1020 (2 credits) and WS 1030 (2 credits, exclusively for students of the Engineering Design Department, during the 1st semester).

Department	No. of Students
Aerospace Engineering	59
Biotechnology	69
Chemical Engineering	93
Civil Engineering	99
Computer Science	57
Electrical Engineering	120
Engineering Design	58
Engineering Physics	29
Mechanical Engineering	147
Metallurgical and Materials Engineering	49
Naval Architecture and Ocean Engineering	53
Physics (Dual Degree)	9
Total	842

Training modules

1. Power Tools
2. Machining Process—Turning
3. Machining Process—Milling
4. Foundry & Smithy
5. Plastics & FRP
6. Welding
7. Electrical
8. Electronics
9. Pneumatics & Hydraulics
10. Instrumentation & Communication

The Central Workshop fabricates test set-ups and their accessories for Ph.D., PG and UG projects. A total of 818 work orders were executed during the year 2012–2013.

Facilities for training students in various modules were enhanced and training facilities modernized in the year 2012–2013. Four CNC lathes, 3 CNC milling machines, 1 vertical machining centre, 10 milling machines, 12 centre lathes, 6 pneumatics trainers, 2 hydraulic trainers and 1 die casting machine were procured. These machines are used for fabrication work and training students.

7.2. Central Gas Supplies Unit

The Central Gas Supplies Unit procures industrial gases and special gases from various manufacturers/suppliers and issues them to the various departments and labs 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 infrastructural 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 well equipped with a good number of sophisticated burners, a drilling and cutting machine, grinding and polishing equipment and other tools necessary for fashioning a variety of glass apparatus. The section has adequate facilities for quartz working and has developed a high level of expertise in this area.

A 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 are among the sophisticated apparatus that have been fabricated.

During the period from April 2012 to March 2013, the section executed 245 work orders for various departments.

8. CENTRAL LIBRARY

The Central Library is well equipped with all modern facilities and rich information resources in the form of CD-ROMs, on-line databases, e-journals, e-books, e-standards, e-patents and various other printed information material related to applied science, engineering, technology, humanities, management, social science and other new emerging areas. The Central Library has 4,62,140 holdings, including 845 current journals, catering to the information needs of 11,603 members, and provides various value-added services with the help of modern information-handling tools and techniques. The major activities of the Central Library from April 2012 to March 2013 are described in the following.

8.1. Statistics of Library Information Services

Item	2011–2012	2012–2013
A. Collections		
Books	2,50,803	2,54,515
Theses	5,182	6,212
Pamphlets and reports	4,123	5,153
Microfilms/fische	1,842	1,842
Book-Bank	16,103	17,118
Current periodicals by subscription	845	845
Current periodicals by exchange/gifts	87	87
Back volumes of periodicals	1,09,713	1,09,713
Patents and specifications	20,418	20,418
German Collection	44,280	44,280
CD-ROMs	1,445	1,488
Audio/video cassettes	448	448
e-Books		21
Total	4,55,289	4,62,140
B. Membership		
Staff	757	787
Faculty members	541	574
Students	6,490	9,888
Alumni Members	29	51
Corporate members	10	10
Special members	58	58
IAS members	164	165
Project co-ordinators	70	70
Total	8,119	11,603
C. Services—Circulation		
1. Number of books/journals issued	77,095	90,843
2. Number of books issued—Book Bank (GS)	3,473	4,402
3. Number of books issued—Book Bank (WS)	3,287	3,232
5. Overdue and other charges collected (Rs.)	7,27,588.50	6,73,437
6. Photocopy charges collected (Rs.)	25,878.50	7,100
D. Project Loan to Departments/Centres		
1. Books issued	1,217	771
E. Inter-Library Loan Transactions		
1. Borrowed from other libraries	8	7
2. Loaned to other libraries	9	5
F. Reprint Service		
1. Reprints received from other institutions (pp.)	181	84
2. Reprints supplied to other institutions (pp.)	2,334	596
G. Smart Cards Generated/Issued	2,995	4,480
H. Expenditure (Rs.)		
1. Purchase of books	91.17 lakhs	112.68 lakhs
2. Journal subscriptions	817.57 lakhs	875.20 lakhs
I. New Journals/Databases Added	6	8

8.2. ISO 9001:2008 Activities

The Central Library actively participated in ISO 9001: 2008 activities and maintained a quality-based library system, services and procedures. The major activities related to ISO 9001: 2008 are listed below:

1. An ISO internal audit was conducted on 21 May 2012.
2. An ISO management review meeting was held on 19 June 2012.
3. An ISO surveillance audit was held on 26 June 2012.
4. An ISO internal audit was conducted on 30 November 2012.
5. The Central Library has taken the initiative to conduct periodical review meetings of the library staff, comprising the Chairman LAC, Librarian, Deputy Librarian, assistant librarians and section in-charges for effective functioning of the Central Library. For this purpose, 2 review meetings, 1 LAC meeting and 2 staff meetings were organized between April 2012 and March 2013.

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 policy of the institute. In this regard, some of the selected initiatives are listed in the following.

8.3.1. Equipment Added Between April 2012 and March 2013

- a. One barcode printer, procured in April 2013
- b. One smart card printer, procured in December 2012

8.3.2. Online Access to e-Journals

Online access to the following 3 databases/packages has been added based on the recommendations of the faculty.

1. Turnitin (plagiarism prevention software)
2. ProQuest: full-text dissertations and theses (PQDT)
3. UptoDate database

In addition, subscriptions to the following e-databases and e-journals were renewed:

One Petro database, Journal Citations Report (JCR), Thomson Core Patents, Taylor & Francis package, Indian Economy Database, Science (online subscription), American Chemical Society, AIAA, American Mathematical Society, Blackwell, John Wiley, Oxford University Press, Royal Society of Chemistry, SAGE, SIAM, Taylor and Francis, Thomas Telford, JSTOR and Syndetic.

8.3.3. Extended Working Hours on Saturday and Sundays

The Central Library has extended its working hours up to 12.00 midnight during quiz/end-Semester and make-up exams on Saturdays and Sundays for the benefit of students.

8.3.4. Systematic Re-shelving of Books

To facilitate easy retrieval of books for the benefit of our students and faculty, two groups, with 22 members, have been formed who devote one hour daily in the morning/afternoon in the stack areas. The first phase of the re-shelving of books has been completed, and the second phase is in progress. This initiative has generated considerable satisfaction among users.

8.3.5. Smart Card Facilities

A dual-side Retransfer Smart Card Printer was purchased and installed.

8.4. Retirement of Staff

Mr. C.R. Sekar, Assistant Librarian retired from service on 31 July 2012.

8.4.1 Library Automation

1. The i-portal was upgraded to <http://iportal.cenlib.iitm.ac.in:8080/> (new WebOPAC).
2. RFID I-code -1 (29000) and I-code -2(15000) tags were procured.
 - One self-check-out station was added.
 - A security cross-check station was added.
3. The ELIMS server has been set up for RFID-based circulation transactions.
4. The server has been set up for automatic backing up of the VTLS database (in CC), and a daily manual backup is taken by the Deputy Librarian.
5. The data of 2,410 patrons' records (students, faculty, staff, alumni, IAS members) were added to the Virtua-VTLS database.
6. Four PCs were procured for the RFID workstation and VTLS WebOPAC.

8.4.2 Faculty and Their Activities

Name	Qualifications	Major Areas of Specialization
Harish Chandra, Librarian	M.A., M.L.I.Sc., Ph.D.	Rural Information System, ISO application in libraries, digital libraries, website design and maintenance, Industries Information Service
Mahendra N. Jadhav, Deputy Librarian	M.Sc., M.L.I.Sc., M.Phil.	Library automation, digital libraries, open source software, library portals
P. Natarajan, Assistant Librarian	M.A., M.L.I.Sc.	Library administration, acquisition section, technical processing, smart card applications, stack management

Short-term courses/workshops/seminars/symposia/conferences/training programmes/meetings attended by faculty members/staff in recognized academic institutions

Sl. No.	Name of the Staff Member	Title	Institution	Period
1	Harish Chandra, Librarian	Expert for selection committee for eligible Group II staff	CLRI, Chennai	16 April 2012
		Member of the National Advisory Committee for the 29th National Convention of SIS	New Delhi	26–28 November 2012
		Selection Committee member DPC to consider promotion of staff members	Institute of Mathematical Science, Library, Chennai	22 June 2013
		Member of NAC	DESIDOC, New Delhi	September–October 2013
		Attended National Conference	CSIR-SERC, Chennai	13-15 March 2013
		Inaugural address	Hindustan University, Chennai	22 August 2012
2	Mahendra N. Jadhav	Attended Experts PRSG Committee meeting as member	IGNOU, New Delhi	18 August 2012
		Attended INDEST Consortia Meeting and Workshop	IIM Ahmedabad	17–20 January 2013
		Attended Experts PRSG Committee meeting as member	IGNOU, New Delhi	2 February 2013
		Member of Experts Committee of library and Information Science Curriculum Development Programme	Department of Library and Information Science, University of Madras)	25 March 2013
3	Sesha Nadha Sathapathi, SLIA	National Conference on Reaching Out to Users Through Technology (ROUTE-2013): Enhancing Innovation Library Service in Open Environment	CSIR-SERC, Chennai	13–15 March 2013
4	M.Muruganandham, Junior Assistant	National Conference on Reaching Out to Users Through Technology (ROUTE-2013): Enhancing Innovation Library Service in Open Environment	CSIR-SERC, Chennai	13–15 March 2013

Special lectures delivered by faculty members in other institutions

Sl. No.	Name of Faculty Member	Topic of Lecture	Venue and Date
1	Harish Chandra	Quality Services in the 21st Century Libraries	Periyar University, Salem, 10 August 2012
		Web-Based Library and Information Services (organized by Anna University, Central Library and SALIS, Chennai)	Anna University Library, 18 November 2013
2	Mahendra N. Jadhav	Hindi Computer Workshops	Central Hindi Training Sub-Institute, Chennai, 4 August 2012

8.5. Journal Advisory Boards

Sl. No.	Name of Faculty Member	Level	Journal
1	Harish Chandra, Librarian	Member of the Library Advisory Board	<i>Indian Streams Research Journal</i> (monthly multidisciplinary)

Fellowships of academies and professional societies

Sl. No.	Name of Faculty Member	Name of Academy/Professional Society	Level
1	Harish Chandra	President, SLA, Asian Chapter	January–December 2012
		Member—Standing Committee of International Federation of Library Associations and Institutions	2009–2013
		Member—Advisory Board of <i>Indian Streams Research Journal</i> (monthly multidisciplinary research journal)	Ordinary
		ISKO (India Chapter), Bangalore	Ordinary
		Association of Government of India Libraries	Life
		Medical Librarians Association of India	Life
		Madras Library Association, Chennai	Life
		IATLIS, Patiala	Life
		Society of Information Science, New Delhi	Life
		Indian Society for Training & Development, Delhi	Life
		Tamil Nadu Library Association, Chennai.	Life
		SALIS, Chennai	Life
		IASLIC, Kolkata	Life
		Association of Mathematics Teachers of India	Life
		Special Libraries Association	Annual
		ILA—Indian Library Association	Life
		Maulana Azad Library, Aligarh Muslim University, Aligarh (member, Library Sub-Committee)	Ordinary
2	Mahendra N. Jadhav	Special Libraries Association (SLA)	Annual
		ILA—Indian Library Association	Ordinary
		IASLIC	Ordinary
		Society of Information Science	Life
		BOSLA—Bombay Science Librarian's Association	Life
3	P. Natarajan	SALIS, Chennai	Life
4	K. Sethu	SALIS, Chennai	Life

Distinguished visitors/groups to the central library

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1	Chairman, Ramco Group	21 September 2012	To see the facilities and the functioning of the Central Library

8.5.1 Future Plans

1. To initiate the creation of a database of the conference proceedings received from the faculty of IIT Madras
2. To capture more ISBNs for updating the syndetic database
3. To repair a minimum of 8000 books that will be identified from the stacks
4. To organize professional development lectures and other professional events
5. To issue newly designed smart cards to dependents of the faculty and staff residing in the campus

9. STUDENTS AMENITIES AND ACTIVITIES

9.1. Hostels

IIT Madras, being a residential institute, requires that students must reside in the hostels on campus. There are 15 men's hostels and 2 ladies' hostels used for accommodating students of the UG and PG programmes, research scholars and project staff. Further, in order to meet the additional requirements of accommodating a large number of lady students, 2 extensions (3 G-type quarters originally meant for accommodating married research Scholars and 10 C-2 type faculty quarters) have been used. A total of 5665 single rooms, 88 double rooms, 54 triple rooms, 3 quadruple rooms and 3 pentuple rooms are available in the hostels. Research scholars and some students of 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 5504 men and 1148 women (students and project staff) residing in the hostels.

There are 6 messes, one mess run by the Office of Hostel Management and 5 run by private contract caterers, including one to serve lady students, that cater to the food requirements of the students and project staff members residing in the hostels. The house-keeping services in the hostel sector 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, which assists the Warden with the day-to-day functioning of the hostel. Each hostel office is supported by the staff of the Office of Hostel Management, which is a centrally administered body and is in overall charge of the functioning of the hostels and the Central Supplies Unit. There are 105 employees, and they are responsible to the Hostel Management through the respective wardens of the hostels. The Chairman, Council of Wardens is the Chairman of the Office of Hostel Management. He 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**

M. Prakash Maiya, Professor, Department of
Mechanical Engineering

Name of the Hostel/Unit	Warden
Alakananda	Somashekhar S. Hiremath, Associate Professor, Mechanical Engineering
Brahmaputra	Dillip Kumar Chand, Associate Professor, Chemistry
Cauvery	Srinivasan Chandrasekaran, Associate Professor, Ocean Engineering
Central Supplies Unit	M. Prakash Maiya, Professor, Mechanical Engineering
Ganga	A. Gopalakrishna, Associate Professor, Biotechnology
Godavari	Appa Rao G., Associate Professor, Civil Engineering
Jamuna	Sathyanarayana N. Gummati, Associate Professor, Biotechnology
Krishna	S.M. Shiva Nagendra, Associate Professor, Civil Engineering
Mahanadhi	G. Phanikumar, Associate Professor, Metallurgical and Materials Engineering
Mandakini	Jyotirmaya Tripathy, Associate Professor, Humanities and Social Sciences
Narmada	B.S.V. Prasad Patnaik, Associate Professor, Applied Mechanics
Pamba	Asokan T., Associate Professor, Engineering Design
Saraswathi	P. Murugavel, Assistant Professor, Physics
Sarayu	Madhumathi R., Professor, Management Studies
Sharavathi	Usha Mohan, Assistant Professor, Management Studies
Sindhu	P.N. Santhosh, Associate Professor, Physics
Tamiraparani	Umakant Dash, Associate Professor, Humanities & Social Sciences
Tapti	N.S. Narayanaswamy, Associate Professor, Department of Computer Science

9.2. Medical Facilities

Medical facilities are provided to the students in the well-equipped Institute Hospital, which is a Primary Health Centre, with basic facilities for minor surgeries, clinical tests and pharmacy services and with rooms for patients' recovery. Clinical advice is given to the students on a wide range of health problems. Details of the medical facilities are available in Chapter 13—Campus Amenities.

9.3. National Cadet Corps

Institutional Training:

1. Enrolment

A total of 241 Senior Division/Senior Wing Air NCC cadets from IIT were enrolled against the authorized strength of 200 during the year 2012–2013.

2. Kitting

All cadets were fitted with a full NCC uniform set to meet the expected standard of turn-out.

3. Training

Training was conducted as per the NCC syllabus, vide Director General NCC, Delhi No. 614/Trg/111(revised) dated 31 Dec 2007.

4. Annual training camp

The annual training camp was conducted from 1 to 7 December 2012. Range firing practice was conducted for all cadets at the miniature range, IIT Madras. Cultural and sports activities were also conducted during the camp.

Technical and common syllabuses were covered by the specialist technical staff of this unit.

Weapon training and drills with arms and without arms were conducted by the permanent instructional staff.

5. Social service/community development activities

Social service/community development activities such as raising awareness about the evils of smoking AIDS and precautions to be taken against fire were organized during the annual training camp.

9.4. Gymkhana

The Institute Gymkhana takes care of the general welfare, sports and co-curricular and cultural activities of students. Sports activities form an integral part of the overall development of personality, which prepares the students to overcome challenges in their various walks of life after their graduation. Hence the students are encouraged to participate in and organize a number of sports activities.

The following tournaments were conducted during the year 2012–2013 by the Institute Gymkhana of IIT Madras.

- Freshie Tournament, for I year B.Tech. students (for all games)
- The inter-collegiate invitation tournament Sportfest—2012
- NSO selection for I year B. Tech. students (compulsory Attendance 85% percentage).
- All-India Inter-Collegiate Basketball Tournament for Men (Gerhard Fischer Cup) and for Women (Mrs. Kokila Rajaiah Trophy)—2013
- IIT Sanmar Inter-Collegiate Invitation Cricket Tournament—2013.
- Inter-hostel tournament—Schroeter Trophy (Gymkhana Day)
- Inter IIT Tournament for participation in 2012 at IIT Roorkee. There was a total of 148 students in the IIT Madras contingent.
- Non-media tournament—Dean (Students) Trophy
- Inter-IIT coaching camp (12 days, compulsory for Inter-IIT contingent)
- Inter-IIT Staff Meet selection and coaching for the staff
- 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—2012

The inter-collegiate invitation tournament was conducted for city colleges, both for men and women, from 24 to 30 September 2012. A total number of 32 colleges participated in this tournament, which was conducted on a league-cum-knockout basis. Trophies were awarded to the winners of various games. This tournament helps finalize the Inter-IIT team probabilities. Our students took part enthusiastically in all the games and won a few events.

Inter-IIT Aquatic Meet 2012

The Inter-IIT Aquatic Meet was held from 1 to 5 October 2012 at IIT Roorkee. The IIT Madras contingent won the gold medal in water polo.

Inter-IIT Sports Meet 2012

The 48th Inter-IIT Sports Meet was held between 14 and 24 December 2012 at IIT Roorkee. The intense practice during the mini camp held in November and the mini camp held from 1 to 13 December 2012 improved our preparation quite a bit. IIT Madras won the second position in the men's section. IIT Madras won the gold in hockey, volleyball and basketball, the silver in cricket and the bronze in badminton, squash, table tennis and athletics. In the women's section, IIT Madras was placed seventh among 15 IITs by winning a total of 22.80 points. The women's badminton team got the gold medal. In swimming, the IIT Madras girls performed well. No doubt most of our teams performed their best—the IIT Madras men won the runner-up cup in the general championship.

All-India Inter-Collegiate Invitation Basketball (GF & KR) Tournament 2013

This tournament was conducted from 15 to 20 March 2013 and attracted teams from south India, with the matches returning to our revived and renewed basketball court in the Open Air Theatre. The attractive features of the tournament are the following: (1) There is prize money for both men's and women 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 by many teams. The matches were conducted on a league-cum-knockout 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.

IITM–Sanmar Inter-Collegiate Cricket Tournament

The prestigious IIT–Sanmar Inter-Collegiate Cricket Tournament for city colleges, sponsored by the Sanmar group, was conducted from 13 to 21 March 2013. There was a record entry from 12 city colleges competing for the top honours. A high level of competition was witnessed throughout the tournament. SRM University won the coveted trophy, and Hindustan College of Engineering 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: (i) 9-a-side tennis ball cricket, (ii) 9-a-side tennis ball cricket for freshers, (iii) 6-a-side football, (iv) 6-a-side hockey, (v) 3-a-side basketball and (vi) 3-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 larger participation of the students/campus community. These events were a grand success, attracting a large number of participants from the staff and students as well as student spectators, who witnessed and encouraged their hostel teams.

All the Gymkhana clubs, such as the Fitness Club, with newly added facilities, the Badminton Club, the Tennis Club and Swimming Pool Club, functioned very well during the period. The Swimming Pool Club was closed for complete, large-scale repairs and reconstruction of the swimming pool. 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 1293, the Tennis Club had a membership of 273, and the Badminton Club had a membership of 276. Excellent training and able guidance in yoga, pranayama and aerobics were provided to the students and the campus residents at the Fitness Club, bringing out the importance of maintaining a good physique and health.

The advance planning of the calendar of sports events, including the fixtures for both the Schroeter and 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 to the sports and games facilities at the campus.

The New Indoor Sports Complex was inaugurated last year for table tennis, weight lifting, the Fitness Centre (with new equipment) and squash (two courts). Two new squash courts are being readied to serve as additional sports and games facilities at the campus.

Institute Open Indian Traditional Games Tournament

The Gymkhana proudly and enthusiastically organized this tournament for the first time. It included games and sports such as kabaddi, kho-kho, *kayirizhippu* (tug-of-war), tennikoit, *gilli dhand*, *yaezhu kal* (seven stones), Pondy cricket, *uriyadi* (blindfolded pot-breaking), throw ball, marbles (Bandhaa format), one-arm wrestling, slow cycle race, skipping and dodge-ball (only for ladies). The response from all sections of the campus—students, faculty members, staff members and campus residents, including a large number of women and children—was overwhelming and heart-warming. The novelty of the meet was a major factor in attracting such a large participation in the debut edition.

National Sports Organisation

National Sports Organisation (NSO) is functioning as per the GoI's decision to improve 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 physical fitness activities.

In the academic year 2012–2013, nearly 360 first-year 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 performance of a considerable number of first-year students at the various tournaments, viz. Inter-IIT Sports Meet, Sportsfest and All India Invitation Inter-Collegiate Basketball Tournament, is 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, viz. hockey, football, basket ball and volleyball.

Overall, it has been an eventful year for Gymkhana activities, and the glory of the General Championship Cup was experienced this year also.

9.5. Advisor, Weaker Section

The institute has nominated one advisor to take care of the welfare of students of the weaker sections. He periodically meets these students and counsels them on various academic and non-academic requirements. During the period under report, a few students could not do well, and they were counseled, and consequently, they performed very well.

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 difficulties in understanding during normal teaching hours. Also, drawing instruments were issued to needy first-year students belonging to the weaker sections.

The mentor programme introduced in the previous year was continued. In this programme, each first-year student belonging to a weaker section is attached to a mentor (from the senior students) for discussions and guidance regarding academic matters. The reports are periodically reviewed and discussed with the advisor.

9.6. Mentoring for Individual Transformation (MITr)

MITr, earlier known as Guidance and Counselling Unit (GCU), is a body comprising faculty members and senior students. The objective of MITr is to provide guidance to the students on the various academic and extra-curricular activities on campus and to counsel students who are facing any curriculum-related, or personal, problems.

Particularly, when a new student joins the institute, he/she needs a lot of information and orientation to adjust to the new place. MITr plays a key role in making the transition from a new student to an IITian, viz. instils a sense of pride and confidence in the self, an essential to do anything to the expected level at IIT Madras.

The unit has a set of student counsellors and faculty counsellors who are available at any time for any help that may be needed.

MITr's responsibilities also include helping out students who find it difficult to cope with the academic load through tutors who will do the needful. Interesting talks and workshops by people from various walks of life were arranged by MITr, which also facilitated students to get acquainted with and contact the right person(s) freely as and when necessary.

MITr is not only for the first-year students but is also actively involved in counselling or offering any kind of help to the students in higher semesters.

9.7. International & Alumni Relations

The Office of Alumni Relations at IIT Madras has a dual mission—enhancing institute/alumni relations and raising funds for various developmental and social projects.

The birth of I&AR (Office of International & Alumni Relations)

The merging of the offices of Alumni Affairs and International Relations to create the Deans' Office may be interpreted as a clear indication of IIT Madras' immediate and pressing priority—to leverage the institute's excellent relations with its alumni “to catalyze increased engagement with academic institutions, industry and enterprises across the world.”

In the words of the first Dean of International & Alumni Relations at IIT Madras, Prof. Nagarajan [1981/BT/CH], “on the academic front, alumni can play key roles in nucleating faculty collaborations, followed by research scholar exchanges, culminating in MoUs and joint degree programs where warranted”.

9.7.1. Events

PAN IIT APAC Singapore

A global community boasting 200,000 IIT alumni, PAN IIT holds its yearly conference in either India or the USA. For the first time, PAN IIT chose to hold the yearly conference in Singapore in April 2012—this as a direct consequence of a growing number of IITians in the region, complemented by impressive business and social development in the region.

A special session was held for the IIT Madras alumni, wherein the Director, Prof. Bhaskar Ramamurthi [1980/BT/EE], held an interactive session with them and elaborated the institute's current scenario, goals for the future and plans for achieving them. The alumni gained much from the session, including rekindling of friendships from many years ago.

Institute Day

The 53rd Institute Day was held on 12 April 2012—The Guest of Honour, Vice Chairman of the Murugappa Group of Companies, M.M. Murugappan, shared the stage with the Director, Prof. Bhaskar Ramamurthi [1980/BT/EE], and gave away the 2012 Distinguished Alumnus awards and the Institute Day prizes to both students and faculty members. Most of these honours were funded by the alumni. An award for excellence in teaching was also instituted on the same day, thanks to its sponsorship by our Distinguished Alumnus Prof. Marti Subrahmanyam [1967/BT/ME]. The first proud recipient of the award was Prof. K. Krishnaiah [1980/PhD/CH], an alumnus and Dean of Academic Research.

PG Confluence Day

The 2nd PG Confluence Day, organized by the Office of Alumni Affairs in collaboration with IIT Madras Alumni Association, was envisioned as an interactive platform between the PG students, research scholars and alumni. It was inaugurated by the Director, Prof. Bhaskar Ramamurthi [1980/BT/EE], the Dean of Planning & In-charge Alumni Affairs, Prof. David Koilpillai [1984/BT/EE], and the Distinguished Alumni. The Director noted an increase in the number of postgraduate students in the institute and in its various collaborations, a clear indication of IIT Madras' encouraging step towards moving up in global rankings. The Dean of Planning spoke of government-sanctioned facilities that were being utilized, including a high-performance cluster (4096 nodes), transmission electron microscope and other spectrometry facilities.

Connecting with alumni in the USA

On their official tour of the USA, the Director of IIT Madras, Prof. Bhaskar Ramamurthi [1980/BT/EE], and Dean, International & Alumni Relations, Prof. Nagarajan [1981/BT/CH], visited seven cities—New York, Boston, Lafayette, Washington D.C., Chicago, San Francisco Bay Area, and Houston. The chief purpose of the tour was to increase alumni engagement with the institute, enhance fund-raising and increase academic collaborations between IIT Madras and other academic institutions in the USA. Towards this objective, the Director and the professor met three groups of IIT Madras alumni—entrepreneurs, academics and those in industry.

Alumni Day

The auditorium started to fill up quickly on the morning of 21 July 2012. Alumni Day opened with the premiere of “Alumni Matter II”, followed by a welcome address by the erstwhile Dean of Planning & Alumni Affairs, Prof. David Koilpillai [1984/BT/EE]. Prof. Nagarajan [1981/BT/CH] then took the stage and detailed the events and the generous contributions for the year 2011–2012. Vivek Jha, representing the IIT Madras Alumni Association, then expressed his thoughts on the ongoing and fruitful partnership. The Ten Dollars a Month (TAM) Club was re-launched as GEMs (Give Every Month), and its new logo was unveiled by V. Gautham and another alumnus.

International Day

The first ever “International Day” to be celebrated on campus, on 4 November 2012, was attended with great enthusiasm by Indian and foreign students alike. Both groups collaborated, planned and executed the event without a hitch. A piece on the Chinese flute, a Japanese dance, a traditional European dance, a German cultural presentation and a rock band who, among other well-known songs, performed the viral “Why This Kolaveri Di?”, gave an international flavour to the evening.

Pan IIT Kolkata

The Pan IIT Alumni Global Conference 2012 was held in Science City, Kolkata and attended by 1500 IITians from around the world. This 3-day event was inaugurated on 7 December 2012 by the Chief Minister of West Bengal, Mamata Banerjee, who also rendered the keynote address. The event played host to guests and speakers of high calibre. Notable guests included the Governor of West Bengal, M.K. Narayanan, chief ministers from three neighbouring states, Assam, Jharkhand and Chattisgarh, Civil Aviation Minister Ajit Singh (KGP-ian) and US Ambassador to India Nancy Powell.

IIT Madras had the third largest contingent in attendance, nearly 80. The IIT Madras breakout session featured short presentations by Prof. Nagarajan [1981/BT/CH], Dean, International & Alumni Relations, and V. Gopinath, President, IIT Madras Alumni association. The Director, Prof. Bhaskar Ramamurthi [1980/BT/EE], in his lucid and crisp style, presented IIT Madras’ strategic vision, striking an instant chord with the alumni present. His speech elicited spontaneous offers of support in various forms. Prof. Bhaskar also participated in a plenary panel on industry–academia collaboration, putting forth his views in a clear and succinct way.

Reunion Day

Reunion Day, held for the batches of 1972, 1977 and 1987, turned out to be an impressive event, with over 250 alumni participating. It was a special occasion for the batch of 1987 as they were celebrating their silver reunion. The President of the IITM Alumni Association (IITMAA), K.R. Gopi, took the stage and spoke of the activities and initiatives of the association towards improving alumni networking and interactions.

Delhi Chapter meeting

Continuing the tradition of meeting alumni from various chapters, the year 2013 started off with a chapter meeting on a nice sunny day (20 January) in the Delhi winter. The function was a great success, with more than 60 alumni present with their families, totaling more than 100. The Director gave an account of various research activities of IIT Madras.

International meet

On 23 January 2013, IIT Madras held an international students’ meet, where all the international students were invited for a gathering at the IC&SR Conference Hall. The event was kicked off with high-tea, which enabled social networking, followed by a photo shoot. All new and former international students came together and were warmly welcomed by the Director of the institute, the Dean of International and Alumni Relations and the International Peer Advising Leaders.

Buddy programme and trip to VGP Universal Kingdom

One of the visions of IIT Madras is to create a social framework that helps incoming international students integrate into the campus more easily in social as well as academic terms. A mutual cultural exchange and learning can be strongly enhanced by providing a supportive environment. For this reason, a buddy programme has been started, which is in its pilot phase. The buddy will help the student adjust to the IIT Madras campus life.

9.7.2. Distinguished Alumnus Award

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.

2013 DAA

1. Dr. S. Gopalakrishnan, Professor, Department of Aerospace Engineering, Indian Institute of Science, Bangalore (M.Tech. in Applied Mechanics, 1987)
2. Dr. Hari Balakrishnan, Professor, Department of Computer Science, Massachusetts Institute of Technology, Cambridge, MA, USA (B.Tech. in Computer Science, 1993)
3. Dr. Shankar Ramamurti, Professor, Department of Physics, Yale University, New Haven, CT, USA (B.Tech. in Electrical Engineering, 1969)
4. Dr. Ramanathan V. Guha, Google Inc., Los Altos Hills, CA, USA (B.Tech. in Mechanical Engineering, 1986)

5. Dr. Kumar N. Sivarajan, Chief Technology Officer, Tejas Networks, Bangalore (B.Tech. in Electrical Engineering, 1987)
6. Dr. Venky Harinarayanan, Senior VP, Walmart Global eCommerce and Head of @walmartLabs, Saratoga, CA, USA (B.Tech. in Computer Science, 1988)
7. Dr. Anand Rajaraman, founding partner, Cambrian Ventures, Palo Alto, CA, USA (B.Tech. in Computer Science, 1993)
8. Dr. Sailesh Krishna Rao, founder and Executive Director, Climate Healers, Danville, CA, USA (B.Tech. in Electrical Engineering, 1981)

9.7.3. Inter-IIT Fund-Raising Workshop

After the successful fund-raising workshop at IIT Kharagpur last year, the event was back at IIT Madras this year (10 and 11 January 2013). IIT Bombay, IIT Guwahati, IIT Kanpur, IIT Gandhi Nagar, IIT Delhi and IIT Kharagpur participated in the workshop along with IIT Madras. Marty Holmes, Texas A&M’s Vice President of Marketing and Programs of the Association of Former Students and Ms. Chandrika Rajagopal, Program & Advancement Coordinator of the Center for Teaching Excellence, Texas A&M joined the workshop and shared their fund-raising strategies. Each IIT presented and shared their alumni relations and fund-raising ideas, practices, methods, strategies and the challenges they faced. The workshop concluded with each IIT listing their takeaways at an executive summary session chaired by the Director, IIT Madras, Prof. Bhaskar Ramamurthi.

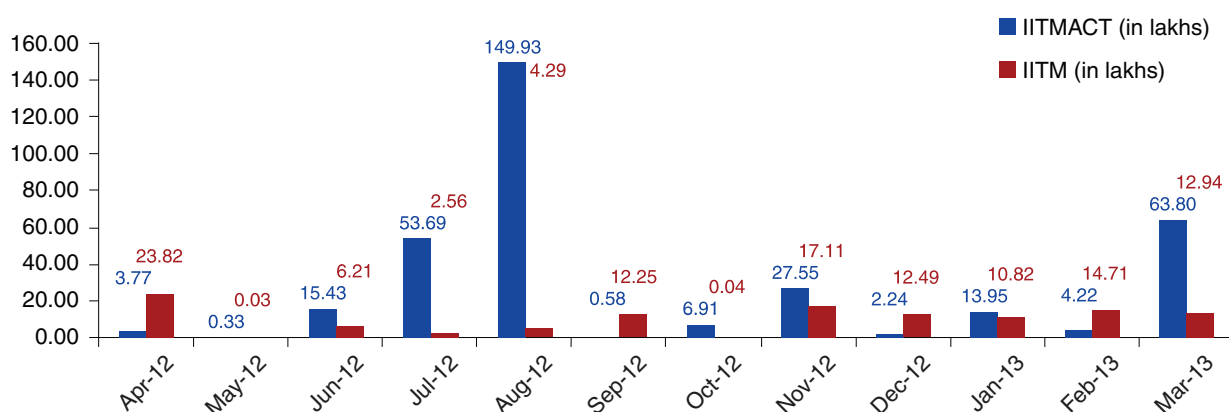
9.7.4. Leadership Lecture Series

To create more avenues for alumni to interact and share their experiences with students and faculty, the “Leadership Lecture Series: Alumni Speak!” was started in 2012. Two or three lectures are scheduled each month, and more than 20 IIT Madras alumni who are industry leaders in various fields have delivered a series of scintillating lectures. Please visit <http://alumni.iitm.ac.in>

Financials

Month/Year	IITMACT (in lakhs of Rs.)	IITM (in lakhs of Rs.)
April 2012	3.77	23.82
May 2012	0.33	0.03
June 2012	15.43	6.21
July 2012	53.69	2.56
August 2012	149.93	4.29
September 2012	0.58	12.25
October 2012	6.91	0.04
November 2012	27.55	17.11
December 2012	2.24	12.49
January 2013	13.95	10.82
February 2013	4.22	14.71
March 2013	63.80	12.94
Total	81.97	38.46

Note: Includes 3.94 lakhs of GEM



9.7.5. Travel Grant

The IITMAANA Travel Grant was instituted ten years ago. Its scope was enlarged in 2010 to support undergraduate travel as well. Sponsored by the IIT Madras Alumni Association of North America, it reimburses half of the students' expenses abroad and allows them to travel overseas for competitions, summits, workshops, conferences and internships. This grant transfers \$20,000 annually to IIT Madras for this purpose.

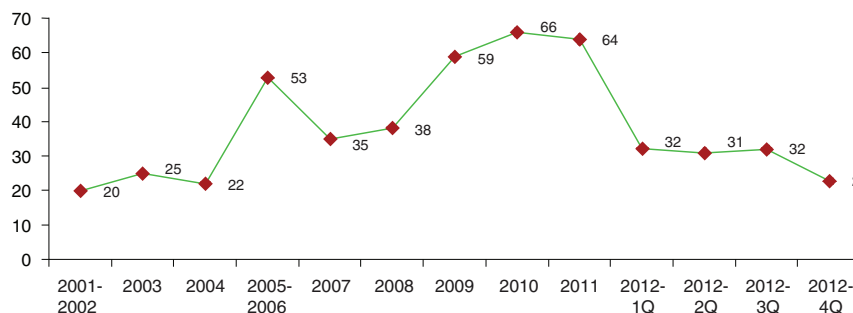
IITMAANA instituted the Travel Grant Endowment in 2011, aiming to make the Travel Grant a sustainable initiative while widening its reach. The Travel Grant is one of the most popular and successful alumni programmes.

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.

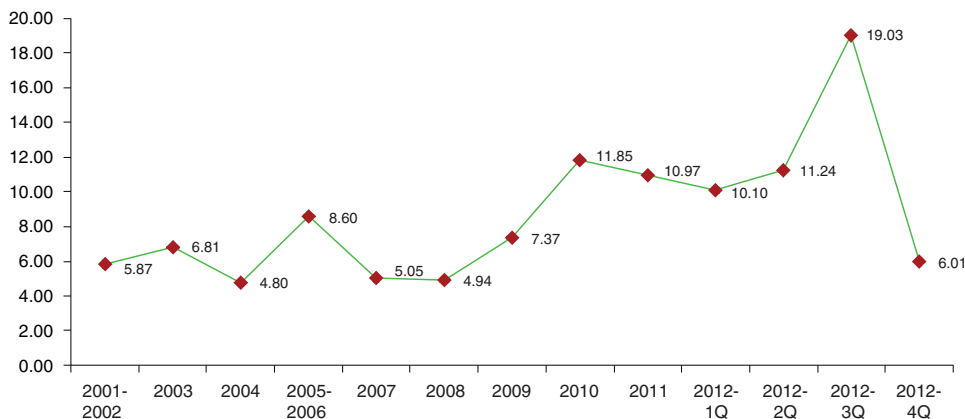
The Ram Sundaram [1988/BT/CE] Travel Grant also assists undergraduate and postgraduate students with travel abroad for various purposes. It reimburses 50% of out-of-pocket expenses.

Year	Amount (in lakhs of Rs.)	No. of Students
2001–2002	5.87	20
2003	6.81	25
2004	4.80	22
2005–2006	8.60	53
2007	5.05	35
2008	4.94	38
2009	7.37	59
2010	11.85	66
2011	10.97	64
2012—1Q	10.10	32
2012—2Q	11.24	31
2012—3Q	19.03	32
2012—4Q	6.01	23
Total	112.63	500

Travel Grant disbursed (Year vs No. of Students)



Travel Grant disbursed (Year vs Amount in lakhs)



MoUs

The following MoUs were signed last year:

Name	Date of Signing	Country	Champion
The University Francois-Rabelais in Tours (renewal)	6 January 2012	France	Prof. R. Krishna Kumar, ED
University of Edinburgh	17 January 2012	United Kingdom	Prof. Siva Ram Murthy, CS; Prof. Pradeep, CY
University of South Australia	13 February 2012	Australia	Prof. Ramasubba Reddy, AM
Universite de Montreal	20 February 2012	Canada	Prof. Dilip Kumar Chand, CHY
The University of Queensland	16 March 2012	Australia	Prof. P. Selvam, CHY
West Pomeranian University of Technology (ZUT)	27 April 2012	Poland	Prof. Prabhu Rajagopal, ME
Nagaoka University of Technology, Hitachi	10 May 2012	Japan	Prof. Kamaraj, MME
Embassy of France	16 May 2012	France	Prof. Sudeer Chella Rajan, HS
Kyushu University (IGSES)	19 May 2012	Japan	
Sauder Business School, The University of British Columbia	31 May 2012	Canada	Prof. C. Rajendran, MS
Nanyang Technological University	2 July 2012	Singapore	Prof. K. Ramamoorthy, Dean AC, CE
Kungl Tekniska Hogskolan (KTH)	9 July 2012	Sweden	Prof. Muralikrishnan J.
The University Of British Columbia	12 July 2012	Canada	Prof. Ravindra Gettu, CE; Dr. Radhakrishna G. Pillai, CE
Dublin City University, Dublin	13 July 2012	Ireland	Prof. Deepa Venkatesh, EE
Aarhus University IBIES Erasmus Mundus Action	15 July 2012	Denmark	
Universidad de Granada	20 July 2012	Spain	Prof. S. Umesh, CS
Indiant Institute of Technology Madras (IPGP)	31 July 2012	France	Prof. S.K. Bhattacharya, OE; Prof. R. Rajesh Nair, OE
Technische Universitat Darmstadt	21 August 2012	Germany	Prof. Krishnan Balasubramaniam, ME
The University of Western Australia	31 August 2012	Australia	
Kyushu University	19 September 2012	Japan	Prof. N.J. Vasa, ED
Technische Universitat Eindhoven	16 October 2012	The Netherlands	Prof. Prabhu, EE
Julius Maximilian University of Wurzburg	10 January 2013	Germany	Prof. Milind Brahme, HSS
Osaka Prefecture University	16 January 2013	Japan	Prof. M. Balasubramanian, MM
University of California, San Diego, School of Medicine	24 January 2013	United States of America	Prof. Sanjib Senapathi, BT
The Norwegian University of Science and Technology (NTNU)	25 February 2013	Norway	Prof. V. Sundar, OE
Kyungpook National University (renewal)	21 March 2013	South Korea	Prof. Samuel G.L., ME

We also hosted the following delegates from various universities and institutions:

Institution/Organization	Country	Name
Asia		
City University of Hong Kong	Hong Kong	Ms. Judy Ma, Dr. Kamineni P. Rao, Mr. Frank Chow
University of Science and Technology	Hong Kong	Prof. Micheal Loy, Prof. David Benfield, Ms. Margaret Chau Prof. Christopher Chao, Prof. Jogesh Muppalla
Wipro University	India	Dr Nagarjuna Sadineni
Taipei Economic and Cultural Center in Chennai	India	Prof. Frank Ming Cheng Lin, Prof. Kun Chu Chung

IBM	India	Ms. Pamela Kumar, Mr. Igenesius Ernest Thambyraj, Mr. Sriram Mahaligam, Mr. Rahul M. Rao, Mr. Giri N.K. Rangan, Dr. Gururaj Rao, Mr. Rajesh Rengarajan
IIT Bombay	India	Prof. Shyamala Iyer
British Council	India	Mr. Kathik Rajasekaran, Ms. Pallavi Manickavel
WABCO Ltd.	India	Dr. Christian Wiehen
Indo-US Science and Technology Forum	India	Dr. Rajiv Sharma
British Council	India	Ms. Lynne Heslop
Applied Materials	India	Prof. Suraj Rengarajan, Mr. Vikas Dabeer
US Commercial Service	India	Ms. Mala Venkat
Shell India Markets Private Limited	India	Mr. Laxmi Narasimhan
French Embassy in India	India	Mrs. Golda Malhotra
Japan Advanced Institute of Science and Technology	Japan	Dr. Yusuke Kawakami, Prof. Kohki Ebitani, Prof. Ryo Maezono
The University of Tokyo India Office	Japan	Prof. Hiroshi Yoshino, Ms. Shivani Gopalkrishna
Ritsumeikan India Office	Japan	Prof. Satoshi Hata
Kyushu University	Japan	Prof. Minoru Nishida, Mr. Hideto Takei, Prof. Keiko James Dr. Akira Harata, Dr. Hideharu Nakashima
The University of Tokyo	Japan	Dr. Hiroshi Yoshino
Universiti Teknologi Mara	Malaysia	Prof. Dr. Mohd Nasir Taib, Prof. Dr. Sharifah Aishah Syed, Prof. Dr. Hj. Ahmed Jaffer
Samsung	North Korea	Mr. Hyunjin Kong, Mr. Younjae Cho, Mr. Anurag Tripathi
National University of Singapore	Singapore	Ms. Aditi Rao
National University of Singapore	Singapore	Prof. B.V.R. Chowdari
Pukyong National University	South Korea	Dr. Moon Gab Joo, Dr. Jee Youl Ryu, Dr. Deock Ho Ha, Dr. Jong Rak Yoon, Dr. Seok Tae Kim, Dr. Yeon Ho Chung
Kyungpook National University	South Korea	Prof. Gyewan Moon
Abu Dhabi University	United Arab Emirates	Prof. Mohamed Irshad Jamaldeen, Prof. Aly S. Nazmy
Europe		
Royal Danish Embassy	Denmark	Prof. Freddy Svane
Tallinn University of Technology	Estonia	Prof. Mari Peets
Ecole Centrale Nantes	France	Ms. Sabine Vermillard
University of Tours	France	Mr. Sebastien Salvador, Dr. Marc Desmet
Institut National Polytechnique de Toulouse	France	Prof. Michel Doisy
Institut de Chimie de Clermont Ferrand	France	Prof. Sylvie Ducki
Universite De Haute Alsace	France	Prof. Jean Philippe Lauffenburger
INSA Lyon	France	Ms. Nina Arnesen, Ms. Marie Pierre Favre
IPSA	France	Ms. Gabriella Torino
French Embassy In India	France	Mr. Max Claudet
Alliance Francaise of Madras	France	Mr. Francois Dabin
Universitat Passau	Germany	Prof. Franz Lehner, Prof. Dr. Hans Ziegler, Dr. Wolfgang Hau
Technische Universitat Dresden	Germany	Prof. Ursula Schaefer, Prof. Claudia Lage
RWTH Aachen	Germany	Mr. Martin Schmalfuss, Dr. Uwe Kaltenborn, Dr. Rafiq Azzam
Universitat Bremen	Germany	Prof. Yasemin Karakasoglu, Dr. Annette Lang, Prof. Annette Ladstatter

University College Cork	Ireland	Ms. Carmel Jorden, Prof. Patrick Fitzpatrick, Dr. Christopher Shepard
Dublin City University	Ireland	Mr. Jean Philippe Imbert
University of College Cork	Ireland	Dr. Christopher Shepard
Politecnico Di Miland	Italy	Prof. Giancarlo Spinelli
ETH	Switzerland	Dr. Angelika Wittek, Ms. Adeline Hofrichter
University of Birmingham	United Kingdom	Prof. Brian J. Connolly
University of Southampton	United Kingdom	Dr. Alan Richard Chambers
University of Edinburg	United Kingdom	Prof. A.R. Wallace
Cardiff Metropolitan University	United Kingdom	Prof. Anna Dukes
	United Kingdom	Prof. Danish Ambassador
University of Leeds	United Kingdom	Dr. Andrew Bulpitt, Ms. Sujatha Sunil Kumar
University of Southampton	United Kingdom	Prof. Dame Wendy Hall
European Union India	United Kingdom	Dr. Philippe De Taxis Du Poet
European Research Council	United Kingdom	Dr. Ramesh Pillai, Prof. Donald B. Dingwell, Ms. Samantha Christey
University of Leeds	United Kingdom	Prof. Peter Jimack
North America		
Citizen Center	Canada	Mr. Raju Goteti
Markham	Canada	Mr. Joe Li, Mayor Frank Scarpitti, Ms. Christina Kakaflikas, Mr. Stephen Chait, Mr. Logan Kanapathi
PiTech	Canada	Mr. Rabiz N. Foda
DoctorBusiness	Canada	Ms. Rajasri Sriskandarajah
Quanser	Canada	Mr. Paul Gilbert
New Dawn Energy Solution	Canada	Mr. Nani Pradeepan
Government Canada High Commission of Canada	Canada	Mr. Dial Singh
Rollins College	United States of America	Prof. Jenifer Ruby, Prof. Wenxian Zhang, Prof. Ralph Drtina Prof. Lezlie Laws, Prof. Jonathan Walz, Prof. Venessa Garay, Prof. Sharon Carnahan, Prof. Luis Martinez, Prof. Jayashree Shivamoggi, Prof. Susan Bach, Prof. Ilaon Alon, Prof. Bill Svitavsky
Texas A&M	United States of America	Prof. Rajagopal, Mr. Patrick Linke, Prof. Eyad Masad
The University of Alabama at Birmingham	United States of America	Mr. David E.Springer, Ms. Linda C. Lucas
University of Missouri	United States of America	Prof. Annette L. Sobel, Prof. Cathy Cutler, Prof. Robert V. Duncan, Dr. Raghuram Kannan
Nanoparticle Biochem	United States of America	Prof. Henry White
University of Nebraska Lincoln	United States of America	Prof. George Gogos, Prof. David Jones, Prof. Lance Perez
Schlumberger	United States of America	Mr. Arindam Dutta, Prof. David Rowatt
Schlumberger	United States of America	Mr. S. Ramamurthy, Prof. TS Ramakrishnan
San Antonio	United States of America	Mr. Julian Castro
Purdue University	United States of America	Prof. Davis B. Janes, Prof. Gregory M. Shaver, Prof. Anil K. Bajaj, Prof. Venkataramanan (Ragu) Balakrishnan

Wright State University	United States of America	Prof. Raghavan Srinivasan, Prof. George P.G. Huang
University of South Dakota	United States of America	Dr. Ranjit. T. Koodali
Applied Materials (AMAT)	United States of America	Dr. Ranga, Dr. Robert Visser, Mr. Vikas Dabeer
Oklahoma State University	United States of America	Dr. Burns Hargis, Dr. Paul Tikalsky, Dr. Vignesh Rajamani
Australia & Oceania		
University of Western Australia	Australia	Prof. Robyn, Prof. Hema Sharada
Deakin University	Australia	Prof. Peter Hodgson, Ms. Ravneet Pawha
University of Melbourne	Australia	Prof. Saman K. Halgamuge
University of South Australia	Australia	Prof. Andrew Parfitt, Mr. Nigel Relph Prof. Nanda Nandagopal, Mr. Raju Narayanan
The University of Western Australia	Australia	Ms. Milly Ingate
The University of Western Australia	Australia	Prof. Mark Reynolds
University of Technology, Sydney	Australia	Prof. Longbing Cao
La Trobe University	Australia	Dr. Richard Y. Lai
Swinburne University	Australia	Prof. George Collins, Dr. Athena Bangara

10. STUDENTS PLACEMENT

Details of the number of students placed during 2012–2013 are provided below:

Branch	B.Tech.	Dual Degree	M.Tech.	M.B.A.	M.A.	M.Sc.	M.S.	Ph.D.	Total
Aerospace	15	18	11	—	—	—	3	1	48
Applied Mechanics	—	—	4	—	—	—	8	—	12
Biotechnology	14	11	—	—	—	—	—	—	25
Civil	28	28	24	—	—	—	—	1	81
Chemical	49	7	10	—	—	—	2	1	69
Chemistry	—	—	—	—	—	2	—	—	2
Computer Science	20	14	48	—	—	—	16	—	98
Electrical	34	45	31	—	—	—	20	1	131
Engineering Design	—	27	—	—	—	—	3	—	30
Engineering Physics	13	—	—	—	—	—	—	—	13
Humanities and SocialSciences	—	—	—	—	8	—	—	—	8
Management Studies	—	—	—	50	—	—	1	—	51
Mathematics/IMSC	—	—	2	—	—	2	—	—	4
Mechanical	60	44	41	—	—	—	9	8	162
Metallurgical	15	7	5	—	—	—	—	1	28
Ocean	20	9	13	—	—	—	2	1	45
Physics	—	—	2	—	—	5	—	—	7
Total	268	210	191	50	8	9	64	14	814

During the year, 814 students/scholars were placed in various organizations.

11. FINANCIAL ASSISTANCE TO STUDENTS

Financial assistance in the form of scholarships and fellowships is given to meritorious students who are pursuing engineering, technology and science education at the institute. The details of the scholarships and fellowships sanctioned to the students of different programmes during 2012–2013 are as follows.

11.1. Assistance to B.Tech./Dual Degree Students

Merit-cum-means scholarships: 25% of the students admitted to the B.Tech./Dual Degree programmes and whose parental income is less than Rs.4.5 lakhs were sanctioned MCM scholarships (i.e., exempted from payment of tuition fees of Rs.25,000 per semester and given a pocket allowance of Rs.1000 per month). During the period under report, 783 students benefited. The year-wise details of the number of students who benefited are given in Table 11.1(b).

SC/ST students admitted to the B.Tech./Dual Degree programmes and whose parental income is less than Rs.4.5 lakhs were sanctioned a concession of free messing plus a pocket allowance of Rs.250 p.m. and exemption from payment of tuition fees and hostel seat rent as per GoI post-matric scholarship rules. As on 31 March 2013, 407 students have benefited.

Institute free studentships/scholarships for the B.Tech./Dual Degree programmes, which consist of exemption from payment of tuition fees, were sanctioned to the students.

The batch-wise details of the number of students who benefited are given below:

Table 11.1 (a)

Sl. No.	Name of the Scholarships	No. of Students
1	GoI Ministry of Tribal Affairs SC/ST Scholarships	17
2	Ministry of Social Empowerment	32

Note: 12 SC scholarships have been sanctioned, and 5 ST scholarships have not yet been sanctioned.

Table 11.1 (b) No. of MCM and SC/ST scholarships

Batch	MCM Scholarships	SC/ST Scholarships	Student Freeships
2012	206	85	57
2011	201	102	47
2010	206	129	87
2009	170	91	53
Total	783	407	244

In addition to the above, the institute sanctioned a notional prize of Rs.1000 for the 25 top-ranking B.Tech. students (in JEE 2011) whose parental income is less than Rs.4.5 lakhs.

11.2. Other Scholarships

Scholarships were sanctioned by NCERT, the GoI and state governments to meritorious students pursuing the B.Tech. programme in the institute.

No. of state government scholarships obtained by B.Tech./DD students

State	Batch/Total No. of Students				Total
	2012	2011	2010	2009	
Kerala	—	—	—	2	2
Maharashtra	—	2	2	1	5
Total	—	2	2	3	7

11.3. M.Tech.

Students who joined the M.Tech. programme through GATE were awarded Half-time Teaching Assistantships (HTTAs) at Rs.8000 per month. During the period under report, 358 fresh assistantships and 359 renewed assistantships were given. The discipline-wise details are given below:

No. of HTTAs awarded

Sl. No.	Discipline	Fresh—2012 Batch		Renewal—2011 Batch
		I Semester	Non-HTTA Converted to HTTA	
1	Aerospace Engineering	9	2	16
2	Applied Mechanics	13	1	11
3	Biotechnology—Clinical Engineering	12	0	12
4	Chemical Engineering	25	4	32
5	Civil Engineering	34	5	52
6	Computer Science and Engineering	52	0	56
8	Electrical Engineering	58	0	52
9	Industrial Mathematics and Scientific Computing	8	3	9
10	Mechanical Engineering	66	7	67
11	Metallurgical and Materials Engineering	23	2	18
12	Ocean Engineering	24	1	26
13	Solid State Technology	10	0	8
	Total	334	24	359

11.3.1. M.Tech. Dual Degree

Students of the 2008 batch who joined the M.Tech. programme Dual Degree were awarded HTTAs at Rs.8000 per month based on their obtaining valid GATE scores or on scoring CGPAs of 8.0 or above (CGPAs of 7.5 and above for SC/ST students). During the period under review, 250 students were awarded fresh assistantships of Rs.8000 per month from June 2012, and 250 assistantships were renewed in January 2013, of which 219 were HTTAs renewed at a rate of Rs.8000/- per month and 31 were renewed at a rate of Rs.4500 per month since they obtained CGPAs of less than 6.5 in the July–November 2012 semester. The department-wise details are given below:

Sl. No.	Discipline	2008 Batch	
		Fresh (9th Semester)	Renewal (10th Semester)
1	Aerospace Engineering	21	21
2	Biotechnology	16	16
3	Chemical Engineering	13	13
4	Civil Engineering	33	33
5	Computer Science and Engineering	16	16
6	Electrical Engineering	49	49
7	Engineering Design	36	36
8	Mechanical Engineering	50	50
9	Metallurgical and Materials Engineering	6	6
10	Naval Architecture and Ocean Engineering	10	10
	Total	250	250

11.4. M.Sc.

Students admitted to the M.Sc. programme were sanctioned Rs.1000 per month merit scholarships as per rules. Exemption from payment of tuition fee was also extended to certain students. During the period under report, 117 students benefited. The department-wise details are given below:

No. of merit scholarships and freeships awarded

Sl. No.	Course	Merit Scholarships		Freeships (Tuition Fee Waivers)		50% Freeships (50% Tuition Fee Waivers)	
		I Year	II Year	I Year	II Year	I Year	II Year
1	Chemistry	12	12	5	6	10	2
2	Mathematics	12	13	4	7	—	6
3	Physics	10	10	4	4	—	—
	Total	34	35	13	17	10	8

11.5. M.A.

Institute merit scholarships: 25% of the students admitted to the M.A. programme and whose parental income is less than Rs.4.5 lakhs were sanctioned merit scholarships (i.e., exempted from payment of tuition fees of Rs.3000 per semester and given a pocket allowance of Rs.1000 per month).

SC/ST students admitted to the M.A. programme and whose parental income is less than Rs.4.5 lakhs were sanctioned a concession of free messing plus a pocket allowance of Rs.250 per month and exemption from payment of tuition fees and the hostel seat rent as per GoI post-matric scholarship rules.

Institute free studentship scholarships for the M.A. programme, which consist of exemption from payment of tuition fees, were sanctioned to the students.

The batch-wise details of number of students benefited also are given below:

Batch	Merit Scholarship	SC/ST Scholarship
2012	6	1
2011	7	2
2010	8	3
2009	1	3
2008	0	0
Total	22	9

11.6. M.S.

The scholars admitted to the M.S. programme through GATE are given half-time teaching research assistantships (HTRAs) of Rs.8000 per month for three years. During the period under report, 570 scholars received these assistantships, of which 223 were fresh scholars. The department-wise details of the assistantships awarded and renewed are given below:

No. of HTRAs awarded

Sl. No.	Discipline	Fresh	Renewal	Total
1	Aerospace Engineering	14	25	39
2	Applied Mechanics	22	23	45
3	Biotechnology	11	13	24
4	Chemical Engineering	7	22	29
5	Civil Engineering	17	18	35
6	Computer Science and Engineering	21	34	55
7	Engineering Design	4	14	18
8	Electrical Engineering	42	88	130
9	Management Studies	11	26	37
10	Mechanical Engineering	43	44	87
11	Metallurgical and Materials Engineering	8	7	15
12	Ocean Engineering	23	33	56
Total		223	347	570

11.7. Ph.D.

Scholars admitted to the Ph.D. full time programme in engineering are sanctioned HTRAs of Rs.18,000 per month for the first 2 years and Rs.20,000 per month for next 3 years. Scholars admitted to the Ph.D. full time programme in science subjects through GATE or other equivalent exams are sanctioned Rs.16,000 per month for the first 2 years, Rs.18,000 per month for the next 3 years. During the period under report, 815 students obtained assistantships, of which 254 were fresh scholars. The department-wise details of the assistantships awarded and renewed are given below:

No. of HTRAs awarded

Sl. No.	Discipline	Fresh	Renewal	Total
1	Aerospace Engineering	7	28	35
2	Applied Mechanics	17	37	54
3	Biotechnology	25	45	70
4	Chemical Engineering	14	42	56

5	Chemistry	11	17	28
6	Civil Engineering	24	74	98
7	Computer Science and Engineering	11	22	33
8	Engineering Design	10	15	25
9	Electrical Engineering	19	69	88
10	Humanities and Social Sciences	8	6	14
11	Management Studies	5	7	12
12	Mathematics	9	11	20
13	Mechanical Engineering	26	89	115
14	Metallurgical and Material Engineering	11	29	40
15	Ocean Engineering	17	43	60
16	Physics	40	27	67
	Total	254	561	815

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 registration fee, of Rs.1,00,000.

11.9. National/International Conferences in India

Research scholars and students are given the following financial assistance for presentation of papers at national/international conferences in India:

- Registration fees for national conferences: Rs.2000
- Registration fees for international conferences: Rs.3000
- Travel: Third class AC train fare
- Daily allowance: Rs.200 per diem subject to a maximum of 10 days

12. WEAKER SECTION & FOREIGN NATIONAL STUDENTS

12.1. B.Tech. Programme

As per GoI orders 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 with a relaxation. These students have to score only 60% of the marks obtained by the last student of the general category to qualify for admission. During counselling prior to admission, an adviser explains to each student the requirements of the different branches. This helps the students to choose a suitable branch based upon their capabilities and interest. When a student finds the chosen branch is tough, he or she is allowed to switch over to a branch with a lower JEE cut-off at the end of his or her first semester.

The following are the details of the numbers of SC/ST students admitted to the B.Tech. programme through JEE and the preparatory course in July 2012:

Total Intake	Sanctioned Intake		Programme	No. Joined Through JEE		No. Joined Through Preparatory Course	
	SC	ST		SC	ST	ST	PD
B.Tech., 446	67	34	B.Tech.	67	34	2	3
Dual Degree, 392	59	29	Dual Degree	53	28	1	3

SC/ST students admitted against reservation are given the following benefits:

- Travelling allowance (II 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 Rs.250/- p.m., provided their parents' income is Rs.4,50,000 net per annum 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 of these students are lower than those of the general category.

12.2. Preparatory Course for Admission to B.Tech. Programme

A preparatory course 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 made from the Joint Entrance Examination 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. The following are the details of admission in July 2012:

Offers Issued for PC		No. Joined	
ST	PD	ST	PD
—	9	—	5

Preparatory course candidates of the 2011–2012 batch were offered admission to the B.Tech./Dual Degree programme in July 2012 as they had successfully completed the preparatory course.

12.3. M.Tech. Programme

Seats are reserved for SC and ST candidates as per GoI orders. They are admitted through GATE by a separate merit list. The following are the details of admission in July 2012:

Offers issued		No. Joined (HTTA)	
SC	ST	SC	ST
57	28	49	24

12.4. M.Sc. Programme

Admissions were made to the M.Sc. programme through entrance examinations only. A total of 1 ST and 20 SC 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 were requested to recruit SC and ST students. Other special steps were also taken to enhance the recruitment of these categories of students.
- Scholarships are given to these students as per GoI norms.

12.5. Admission of Foreign National Students and Indian Nationals Residing Abroad

In July 2012, 5 Ethiopian students joined the M.Tech. programme.

At the end of March 2013, 6 foreign nationals were on the rolls of the institute. The programme and country-wise details are given below:

Country	I Year	II Year	III Year	IV Year	V Year	Total
1. Foreign National Students						
M.Tech.						
Ethiopia	5	1	—	—	—	6

Foreign students are also permitted to use the Book Bank. Book Bank library tickets are issued to each student. Books are issued for a semester.

In addition to the above, IIT Madras Alumni Association provides financial assistance to students under the IITMAANA Travel Grant Programme to assist IIT Madras students to visit the USA and present their papers at nationally recognized technical conferences. The grants cover airline ticket charges and visa fees but exclude payment of 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 residential and non-residential buildings and maintenance of various services in the institute. This unit also awards contracts in a transparent manner and in the best interest of the institute and ensures that all-round integrity as well as the best possible standards are maintained through adequate supervision. The Engineering Unit ensures that timely, prompt and efficient services are provided to the residents on campus.

The Engineering Unit completed the following major works during the period from April 2012 to March 2013.

Major works completed (civil)

Sl. No.	Name of Work	Lakhs of Rs.
1	Construction of Community Centre (G+2 floors) by replacing the existing Community Hall at IIT Madras	549.96
2	Construction of new building for electrical maintenance (Academic Zone)	40.00
3	Construction of lift room for Sharavathi Hostel and office of Dean, Students	12.93
4	Construction of 2 kl diesel tank	16.46
5	Installing 1 MW solar power plant	600.00
6	Providing AC facility in CRL Complex	40.00
Total		1259.35

Major work in progress (civil)

Sl. No.	Name of Work	Lakhs of Rs.
1	Providing architectural services of the work of construction of 2 blocks of new B type quarters (G+6 floors, 24 flats in each block)	64.60
2	Construction of National Centre for Combustion R&D (NCCRD) at IIT Madras	1120.00
3	Construction of new bus depot near Velachery Gate in IIT Madras	126.55
4	Construction of Academic Complex and canteen building at IIT Madras	5500.00
5	New boys' hostel	4470.00
6	New girls' hostel	2071.00
7	Renovation of swimming pool at IIT Madras —widening of deep pool by 2.5 m and shallow pool by 5 m, revamping water purification and circulation system, waterproofing works, lining the pool with vitrified tiles, etc.	569.47
8	Construction of additional wing (G+2 floors) for Chemistry Department	1210.00
9	Construction of additional floor over MSRC building	213.60
10	Construction of boundary wall	169.20
Total		15514.42

Work in progress (electrical)

Sl. No.	Name of Work	Lakhs of Rs.
1	Electrification of proposed construction of 30 nos. of G type quarters (G+6) for research scholars	39.90
2	Supplying and installing solar water heater system (SWHS) at various hostels in IIT Madras	87.22
3	Providing and installing 10 passenger lifts for proposed community hall block at IIT Madras	13.27
4	Providing and installing 8 passenger lifts for proposed G-3 block in IIT Madras	13.85
5	Construction and validation of class 1000 cleanroom IV at first floor of CSD at IIT Madras	60.26
6	Rearranging the main panel and DBs and provision of AMF panel for 63 kVA DG set at Vindhya mess in IIT Madras	8.19
7	Augumentation of ESB substation by providing 1000 kVA 110/433 kV distribution transformers and shifting the existing transformer to Central Workshop and Narmada Hostel substations inside IIT Madras premises	35.35
8	Replacement of lifts at Electrical Science Block and Chemistry Block and installation of lift at the Engineering Design Building in IIT Madras	53.43
Total		311.47

Future plans

The following works are planned to be taken up during the next academic year:

Sl. No.	Name of the Work	Lakhs of Rs.
1	ESB vertical expansion	2.00
2	Construction of D type quarters (48 houses) (48,000 × 2500/sq. ft)	12.00
3	Construction of third floor in building (office of Dean, Students)	2.00
	Provision of 1 MW additional solar power unit	7.00
	Total	23.00

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 to this, 167 servant quarters are also 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 movement of blackbuck 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 the institute, which were previously linked from Raj Bhavan Telephone Exchange, were 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 Tamil Nadu Co-operative Milk Producers' Federation (TCMPF) and distributes it to the student hostels.

Under the provision supply scheme, the unit procures items of major consumption from wholesale suppliers through the Provision Selection Committee and Provision Purchase Committee and distributes them to the hostels, thus economizing the mess expenditure in the hostels.

Further, the unit procures branded cosmetics and eatables from wholesale dealers and distributes them to the students through the Students Amenities Centres at nominal prices, which are much less than the maximum retail prices (MRP).

13.6. Guest Houses

There are two guest houses in the campus, viz. the Main Guest House and Taramani Guest House, which have 7 suites and 84 rooms, respectively.

13.7. Hospital

The Institute Hospital takes great pride in providing medical supportive services to this esteemed institute of national importance. It is the best of hospitals attached to a teaching institute.

The medical crew consists of Dr. Mahalakshmi M. Ravi, Chief Medical Officer-i/c and the following officers:

Senior Medical Officers	Medical Officers	Senior/Junior Medical Officers (on Contract)
Dr. B. Rebecca Punithavalli	Dr. N. Porchelvi	Dr. Shabanam B. Mulani
Dr. Sabitha Selvam	Dr. V. Thenral	Dr. H. Anand
	Dr. D. Saraswathi	Dr. J. Siva
	Dr. R. Gowri Shanker	
	Dr. P. Kavitha	

It is needless to mention that they have the dedicated assistance of visiting consultants, paramedics and supporting staff.

Activities

The following continuing medical education programmes were conducted for academic improvement of our doctors:

Topic	Name of Medical Faculty Member	Held on
Efficacy Without Efficacy Barriers in Gliptins	Dr. Periyandavar	18 April 2012
Acute Respiratory Infections	Dr. Jagadeesh	25 April 2012
Management of Depression	Dr. Mohanraj	3 May 2012
Premix Insulin Analogues	Dr. Sriram Mahadevan	7 June 2012
Recent Guidelines in Hypothyroidism and Thyroid/Co-Morbidity	Dr. Suresh Prabhu	22 June 2012
Chronic Kidney Disease—Prevention and Overview	Dr. N. Venkatesan	7 July 2012
Chronic Kidney Disease—Prevention and Overview	Dr. N. Venkatesh	7 August 2012
Management of Cough	Dr. Chandra Sekhar	31 August 2012
Update on Current Stone Management	Dr. Harish Bhat	28 September 2012
Recent Trends in the Management of Diabetes	Dr. A. Srinivasan	8 February 2013
Rabies and Its Prophylactics	Dr. A. Parthasarathy	1 March 2013
Current Treatment Options in Hemorrhoids and Varicose Veins	Dr. P. Jothishankar	20 March 2013
Nexus Between Hypoglycaemia and CVD Risk (Case-Based Modules)	Dr. A. Panneerselvam	21 March 2013

Health education programmes

Topic	Name of Medical Faculty Member/Organization	Held on
Diabetes and Eye	Dr. Atheeshwar Das, Vitreo-Retinal Surgeon	19 November 2012
Effective Diabetes Care	Dr. Suresh Prabhu, Endocrinologist	22 November 2012

Conference

- An ECG workshop was conducted on 26 and 27 May 2012 at the IC&SR Auditorium by Dr. M.Chenniappan, Director, ECG Club, Trichy.

Training programmes for hospital staff

- As part of 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.
- Dr. B. Rebecca Punithavalli, Dr. V. Thenral, Dr. D. Saraswathi, Dr.P. Kavitha and Dr.G. Shobanadevi also attended the BLS/ACLS programme conducted by TACT, Anna Nagar on 26 and 27 September 2012.

Free medical check-up camps for institute employees and their dependants

- An anaemia detection camp was conducted on 19 November 2012.
- Diabetes detection camps were conducted on 22 November 2012.
- Health check-up for KV students were conducted from 15 to 17 October 2012 and from 21 to 23 January 2013.
- On the eve of Women's Day celebrations, a free women's health check-up camp was held on 6 and 7 March 2013.
- Free BMD and BMI check-up camps conducted on 13 and 15 March 2013.
- A free lipid profile test was conducted on 19 March 2013.

Surgeries

The operation theatre was upgraded with latest necessary equipment.

- Major and minor surgeries : 492
- Orthopaedic intra-articular procedures: 22

Gynaecology

- Pap smear: 118

Emergency surgeries/laparoscopic surgeries

- Laparoscopic appendicectomy: 13
- Laparoscopic sterilization: 2
- Open appendicectomy: 2

Details of infectious diseases treated as in-patients (ward)

1. Viral fever: 44
2. Chicken pox: 86
3. Acute gastroenteritis (AGE): 25
4. Dengue fever: 61
5. Enteric fever: 38
6. Pneumonia: 3
7. Hepatitis : 5
8. Bronchitis: 5
9. Mumps: 1
10. TB: 3
11. Malaria: 6

Total claims for in-patient admissions in the Institute Hospital through insurance companies: Rs.38,11,379

Annual census of hospital for the year 2012–2013

	O.P.Day 8 am to 6 pm	Emergency cases 6 pm to 8 am	In-patients casualty admissions	In-patients (in ward)	Surgery	Dental	X-ray	ECG	USG	Lab	Physio
April 2012	6813	574	236	34	34	63	233	85	51	553	161
May 2012	5791	542	222	29	35	72	159	47	36	466	120
June 2012	5485	448	156	36	45	66	190	80	55	495	103
July 2012	6504	577	181	37	42	104	168	97	62	644	120
August 2012	8394	757	288	54	32	99	233	67	66	703	Closed
September 2012	7695	763	285	85	36	103	155	86	91	824	Closed
October 2012	8479	794	362	86	39	100	274	63	82	994	Closed
November 2012	7803	784	300	43	36	96	199	79	52	668	Closed
December 2012	6227	502	190	35	44	93	154	117	54	580	112
January 2013	7380	670	207	55	38	132	218	67	62	625	143
February 2013	7542	689	263	40	60	97	284	119	67	701	133
March 2013	7104	686	300	44	18	59	269	157	32	828	128
Total	85217	7786	2990	578	459	1084	2536	1064	710	8081	1020

Grand total = 1,11,525 patients for the year 2012–2013

13.8. Bank

The IIT branch of State Bank of India is functioning on campus. It provides 2 ATMs. A branch of Canara Bank is also functioning on campus. ICICI Bank has provided an ATM in the Hostel Zone.

13.9. Post Office and Telecom Centre

There is a post office on campus opposite to the State Bank of India to cater to the needs of the staff, students and residents of the campus. A 24-hour telecom centre is functioning to cater 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, is functioning on the campus, besides a Kendriya Vidyalaya (KV). 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 available for films screened by the Film Club during weekends and for use for other functions of the institute and the schools.

13.12. Student Activities Centre

This building is used for playing indoor games by students as well as for conducting important functions such as the convocation, orientation programme for freshers, etc.

13.13. Cafeteria

Two canteens, viz. IIT Staff Canteen and Tiffanys Restaurant, are available on campus to cater to the needs of the staff and students.

13.14. Crèche

A crèche is functioning on campus for the benefit of staff/working women. There were about 50 children in the crèche during the period under report.

13.15. Transport Services

The Institute has 8 LYNX buses which provide transport facilities to 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, i.e., 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 79th Finance Committee of the Institute, in its meeting held on 14 December 2012, recommended non-plan revised estimates of Rs.243.44 crores for the year 2012–2013 and budget estimates of Rs.263.52 crores for 2013–2014. The committee also recommended a revised estimate of Rs.178.75 crores under the plan head besides recommending a budget estimate of Rs.180.00 crores under plan schemes for 2013–2014.

The following is the summary of revised estimates for 2012–2013 and budget estimates for 2013–2014 as approved by the Board of Governors of the institute in their 215th meeting, held on 14 December 2012.

(Figures in crores of Rs.)

Item	B.E. 2012–2013	R.E. 2012–2013	B.E. 2013–2014
Opening balance	—	8.43	
Grant projected	197.50	190.00	218.12
Institute income projected	35.50	45.00	45.45
Total	233.00	243.43	263.52
Expenditure proposed	233.00	243.43	263.52
Surplus/deficit	—	—	—
Scheme			
Plan Grant OH-31	24.00	30.00	35.75
Grant for asset creation OH-35	177.31	148.75	144.25
Total	201.31	178.75	180.00

Audit

The annual accounts of the institute for the year 2011–2012 were audited by the Principal Accountant General (Tamil Nadu & Pondicherry) during June–July 2012. A certified copy of the Accounts and Audit Report was sent to MHRD, New Delhi to be placed before Parliament on 28 December 2012 after obtaining the approval of the Board of Governors of this institute on 14 December 2012, at its 215th meeting.

Summary of Plan/Non-Plan Funds Utilization for 2011–2012

Plan

(Figures in crores of Rs.)

Item	
Opening balance	29.97
Normal plan grant sanctioned during 2011–2012	183.00
OSC	
Total available	212.97
Capital expenses during 2011–2012	
Building & construction	103.65
Furniture & fixtures	2.86
Equipment	74.95
Books, journals & periodicals	10.01
Revenue expenditure	27.13
Total	218.60

Non-Plan

(Figures in crores of Rs.)

Item	
Opening balance	–7.31
Grant sanctioned during 2011–2012	165.66
Tuition fees	9.08

Hostel fees	1.20
Entrance examination fees	27.75
Administrative income	5.01
Interest income	7.93
Other fees	1.42
Other income	5.87
Total available	216.60
Expenditure during 2011–2012	
Pay & allowances	104.33
Service pension & family pension	48.07
Library services	0.12
Health services	2.36
Student scholarship	1.82
Hall subsidy	—
Administrative expenses	3.48
Departmental/laboratory/workshop expenses	10.37
Transport subsidy	0.65
Student support activities	2.14
Computer facilities	1.28
Housekeeping & estate maintenance	12.38
Water/electricity Charges	16.33
Entrance examination expenses	4.85
Total utilized	208.18
Surplus	8.42

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