INDIAN INSTITUTE OF TECHNOLOGY
HYDERABAD

Always innovating

Annual Report 2014-15

CONTENTS

FROM THE DIRECTOR

IIT Hyderabad – **Always Innovating**

"The Best Way to Predict the Future is to Create It."

- Peter Drucker

By August 2015 IIT Hyderabad will have nearly 1800 students and 145 plus full time faculty. Of the 1850 students, nearly half are post graduates; 500 Ph.D. and 450 M.Tech., M.Phil. and M.Des., and the rest 900 will be undergraduates. IITH has 14 academic departments covering all areas of engineering, sciences, liberal arts and design; it has a virtual department referred to as Engineering Science - a very novel concept. IITH will graduate about 30 Ph.Ds. in August 2015.

Faculty and students of IITH are at the forefront of innovations: Academic innovations, and innovative research. IITH has had 934 publications, 15 patents filed, and over 238 sponsored projects and consultancy projects. Nearly 80% faculty have sponsored projects. Moreover, IITH has strong industry collaboration – the four PM fellowship are with industry collaboration. IITH has nearly 137 crs in sponsored research funding and nearly 15 crs of industrial research and consultancy. IITH has 105 laboratories for teaching, teaching plus research, and for only research.

On the academic front also, IITH is surging ahead: We have B.Tech. programs in eight engineering departments, MSc in Physics, Chemistry and Math, M.Phil. in Liberal Arts, M.Des. in Design, and Ph.D. in all 13 departments. There is strong emphasis on interdisciplinary academics. IITH has implemented a very novel academic program, referred to as, *Fractal Academics* – the key idea is to atomize courses, provide breadth and depth, emphasize courses in liberal arts as well as creative arts, emphasize project work, and create an interactive learning ambience. In this approach the students will be well equipped to handle challenges of any job or challenges of post graduate education. IITH offers a Minor in Entrepreneurship to all students. IITH offers a double major - i.e. a hardworking and enthusiastic student can get two B.Techs. IITH also offers minor and honors program. IITH is the only institution to offer DigiFab (3D-printing) Lab. to first year students.

IITH has very active collaboration with Japan, and this collaboration is on all fronts – research, academics and infrastructure development. This is a unique collaboration which is helping propel IITH to be among the best in the world. At the infrastructure level, besides several academic buildings, Japanese architects have designed iconic structure to reflect the friendship between Japan and IIT Hyderabad – these are – Knowledge Center (library), Technology Incubation and Research Park, Convention Village, Guest House and Sports and Cultural Complex. As part of the Friendship Program, IITH and Japanese Universities have a very active student and faculty exchange program.

IITH has launched its technology business incubator and four companies have been incubated.

IITH has MoUs and active collaboration with several leading US universities (e.g. Purdue, UIUC, USC, GeorgiaTech., etc.) and leading Japanese Universities (e.g. Univ. of Tokyo, Keio Univ., Osaka University, Tahoka Univ., Ritsumiekan Univ., etc.). IITH has had several visiting faculty from USA, France, and Canada who taught fractional credit courses.

IITH is creating a unique holistic educational ecosystem that will foster interactive learning, cutting edge research, strong industry collaboration, and entrepreneurship. It is providing an environment wherein students and faculty are not afraid to experiment and celebrate their ideas. We believe IITH offer an experiential learning ambience and also an experimental student life that help you surge ahead in life.

Prof UB Desai

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Chairman & Managing Director
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SRITNE, Indian School of Business

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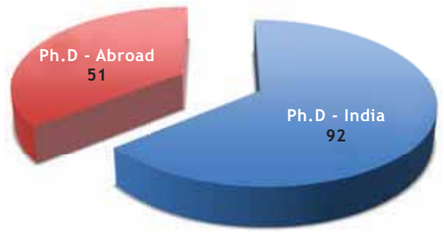
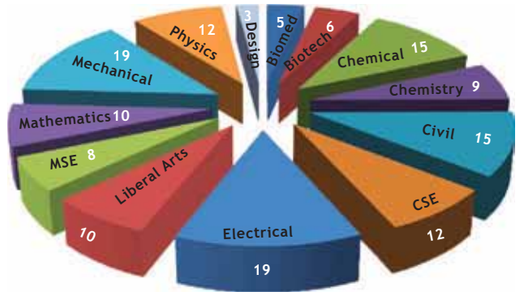
Registrar
Indian Institute of Technology Hyderabad

FACULTY STATISTICS

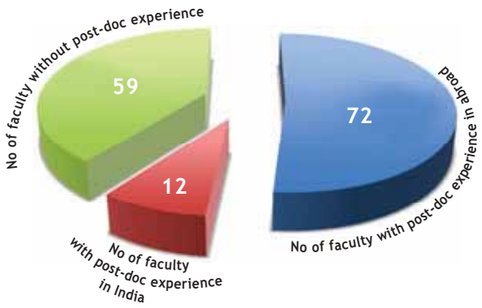
Although started in 2008, IITH started hiring faculty in late 2009. Today IITH has 143 faculty members spread across 13 academic departments. The rapid growth of IITH had attracted applicants with excellent academic and research record. In most of the departments 2 selections are done per year for permanent posts. However, most of the hiring have been at the level of Assistant Professors. 60% of the faculty members do posses extensive post-doctoral experience. The following charts show the distribution and experience of faculty members in various departments.



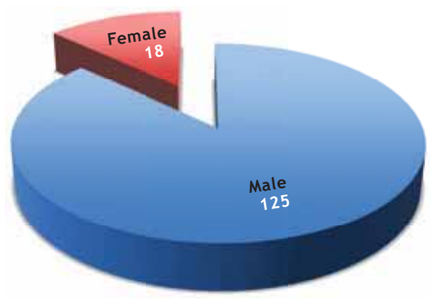
Ph.D of Faculty Members



Department-wise distribution of faculty



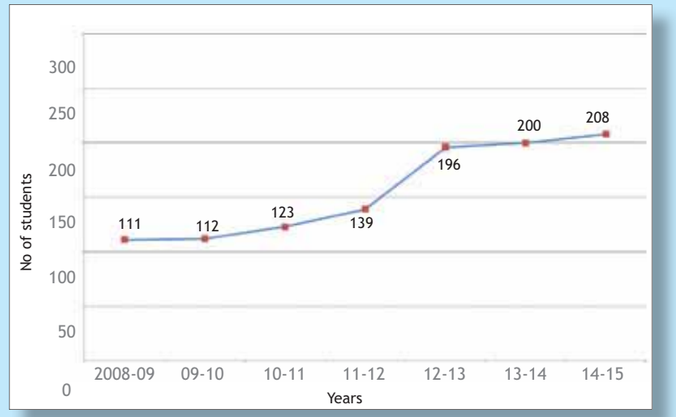
Post-doc experience of faculty



Gender-wise distribution of faculty

ACADEMICS

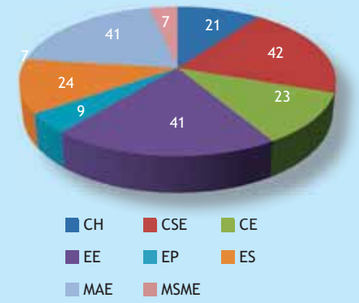
IIT Hyderabad started functioning in the year 2008 with 3 B.Tech programs; Computer Science and Engineering, Electrical Engineering, and Mechanical Engineering. Each of these programs had an intake of 40 students through JEE. In 2009 IITH started admitting PhD students in various departments and in 2010 almost all engineering departments started offering M.Tech programs. M.Sc programs started in the year 2010 with Chemistry Department and in the subsequent years, Physics and Mathematics started their M.Sc programs. M.Phil program was also stated in the year 2012 by the Liberal Arts department and M.Des program was started in the year 2014 by the Department of Design. Today IITH offers 8 B.Tech programs, 16 M.Tech programs, 3 M.Sc programs, 1 M.Des program, 5 M.Phil programs and PhD program in all branches of engineering, science and arts.

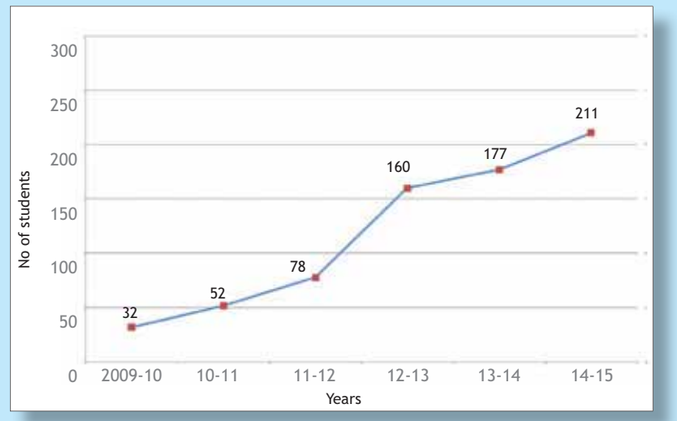


Total number of B.Tech students admitted in each academic year

B.Tech

Department-wise distribution of total students

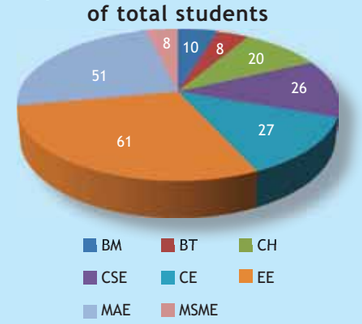




Total number of M.Tech students admitted in each academic year

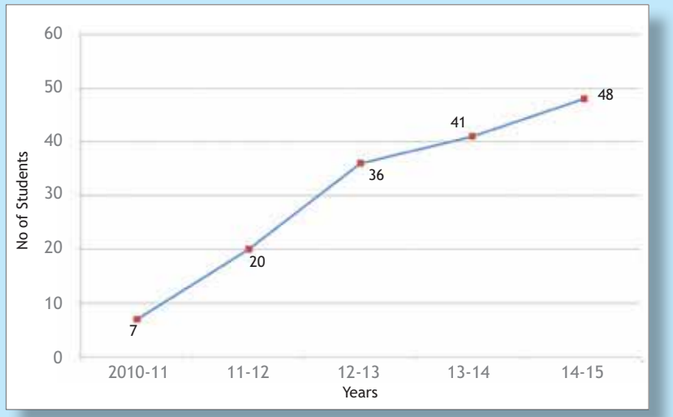
M.Tech

Department-wise distribution of total students

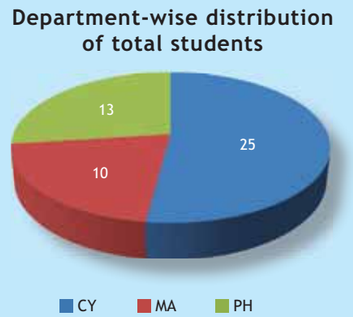


ACADEMICS

M.Sc.



Total number of M.Sc students admitted in each academic year



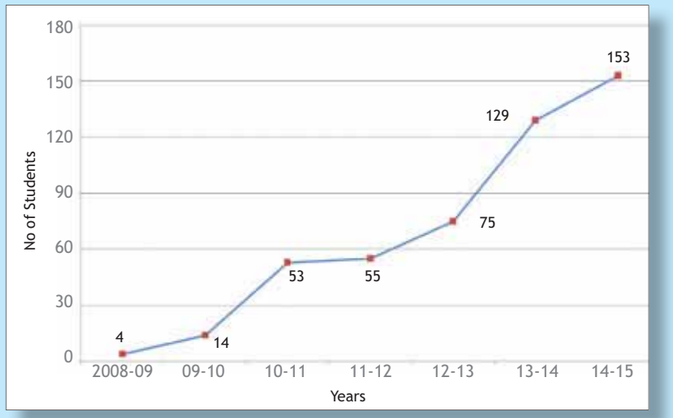
M.Phil

LA	
Year	No. of Students
2012	7
2013	4
2014	4

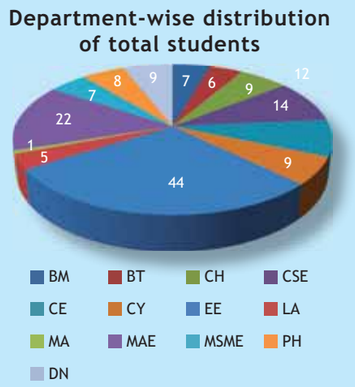
M.Des

Design	
Year	No. of Students
2014	10

PhD



Total number of Ph.D students admitted in each academic year



BM - Biomedical Engineering; BT - Biotechnology; CE - Civil Engineering; CH - Chemical Engineering; CSE - Computer Science & Engineering; CY - Chemistry; EE - Electrical Engineering; EP - Engineering Physics; ES - Engineering Science; LA - Liberal Arts; MA - Mathematics; MAE - Mechanical & Aerospace Engineering; MSME - Materials Science & Metallurgical Engineering; PH - Physics; DS - Design

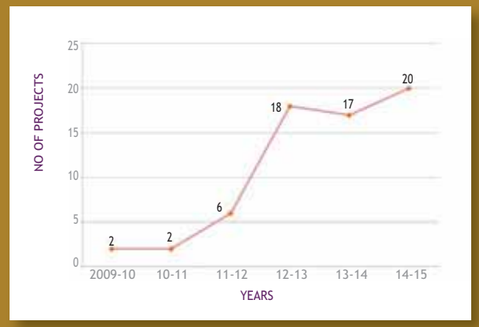
The vibrant research culture in IITH is evident from the large number of publications and the sponsored projects. Today IITH has more than 100 sponsored projects funded by national funding agencies and private companies. The sponsored projects in IITH over the last 6 years is shown in the charts below.

RESEARCH PROJECTS

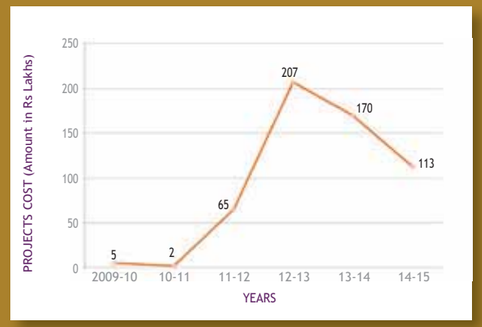
No of Sponsored Research Projects Approved in Each Financial Year

Funding from Sponsored Research Projects

CONSULTANCY PROJECTS



No of Consultancy Projects Approved in Each Financial Year

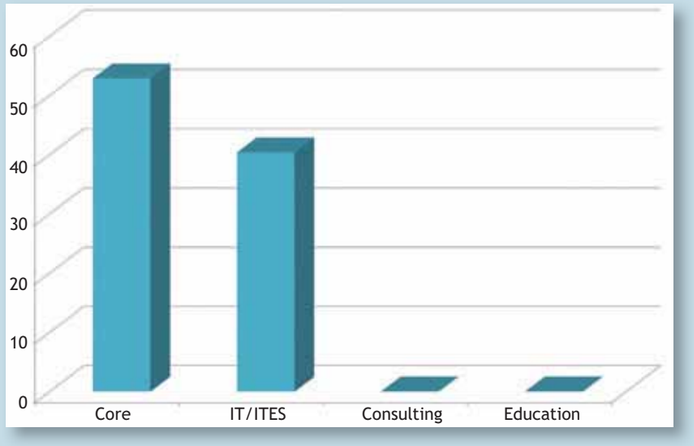


Funding from Consultancy Projects

PLACEMENT REPORT 2015

The placements of Indian Institute of Technology Hyderabad for the academic year 2014-15 has yielded 156 offers for 315 registered students. A total of 110 companies registered for placements this year out of which 49 of them have made it to the campus and interacted with the students of B.Tech, M.Tech, M.Sc & PhD across 14 departments. There were 60 new companies that have made its entrance to IITH this year. Reputed core companies like Yahoo Japan, Tata Motors, Cummins, CH2M Hill, Snapdeal, UHG were the names among the new comers. Companies like Yahoo Japan, Amazon, Paypal, Eaton were the top paying companies. The highest salary offered this year is 29 LPA and the average salary is 10 LPA. There were three international offers from Yahoo Japan. A good number of UG and PG students opted for higher education. Also majority of the MSc graduates have opted for higher education overseas with scholarships.

Number of students placed in different employment sectors



INTERNSHIP

On an average more than 70% students have exhibited a keen interest in the internships, which indicates their inclination to obtain a practical experience of the subject in the real time industry setting. We had some of the reputed companies and universities such as Osaka University, ANCONS, Arizona State University, Strand Life Sciences, Microsoft, Amazon, Phillips, ADP, Deloitte, Salesforce, Innovaccer, Function Space, Goose Technologies, Smartron, Frankly, CD ADapco, Purdue University, Boeing Cyient, Eicher, 3DPLM, Mercedes Benz, JSW Steel, Hero MotoCorp, DRDO, BHEL, Uurmi, Philips, Tata Consultants, L&T Metro, HSR Ventures and SiliconMentor.

TEQIP@ IIT HYDERABAD

The Ministry of Human Resource and Development, Government of India has initiated a long term program known as 'Technical Education Quality Improvement Program (TEQIP)' to aid transformation in the technical education system across India with support of the World Bank.The major objectives are to strengthen the institutions to produce high quality engineers for better employability, enhancing education, research and innovation, and to continuously train faculty members for effective teaching, and so on. Since the launch of this project, IIT Hyderabad has been instrumental in organizing several workshops and programs, with the support of its very active, motivated and dynamic faculty members across almost all disciplines. Several workshops, symposiums, and short-term courses, etc.were organized, in which more than 500 faculty members of engineering colleges across India have participated and benefited. Many of these programs were focused on national issues and cutting edge technologies. Apart from technical events, IIT Hyderabad has also taken lead in organizing workshops on softskills improvement for faculty members, in order to facilitate an overall improvement in academic system. IIT Hyderabad believes that TEQIP activities can make the much needed impact in the present education system. Programs organized last year have been tabulated below:

Name of the Workshop / Conclave	Department	Date
Fundamentals and Application on Nonofibers	Chemical Engineering	4-5 July 2014
Additive / Generative Manufacturing Technologies	Mechanical & Aerospace Engineering	7-8 July 2014
FRP-2014	Mechanical & Aerospace Engineering	10-11 July 2014
Advanced Materials Characterisation Techniques	Material Science & Metallurgical Sciences	1-2 November 2014
Spintronics & Advanced Magnetic Materials	Physics	15-16 November 2014
A Short Course on Engineering Noise Control	Mechanical & Aerospace Engineering	22-24 December 2014
SWAT & MODFLOW	Civil Engineering	26-27 December 2015
Future Trends on Power Metallurgy & Sintering	Material Science & Metallurgical Sciences	1-2 December 2014
Principles of Additive / Generative Manufacturing Technologies	Mechanical & Aerospace Engineering	1-5 December 2014
Teacher Effectiveness	Liberal Arts	5-6 December 2014
Research & Teaching Methodologies in Electrical Engineering	Electrical Engineering	11-12 December 2014
MEMS & NEMS	Chemical Engineering, Physics, Mechanical & Aerospace Engineering	15-19 December 2014
Functional Analysis and Applications - 2014	Mathematics	23-24 December 2015
Green Processes for Energy Conversation (GEC-2015)	Chemistry	29-30 December 2014
Recent Advances In Structural Engineering and Materials IC-Impat	Civil Engineering	14-15 January 2015
Design Innovation & Creative Problem Solving	Design Department	15-17 January 2015
Symposium on the future of Indian Aerospace	Mechanical & Aerospace Engineering	23-24 January 2015
Educators 21st Century for Engineers	Material Science & Metallurgical Sciences	27-28 February 2015
International Symposium on Digital fabrication	Mechanical & Aerospace Engineering	2-3 March 2015

UNNAT BHARAT ABHIYAN

Unnat Bharat Abhiyan is inspired by the vision of transformational change in rural development processes by leveraging knowledge institutions to help build the architecture of an Inclusive India. Their mission is conceptualised as a movement to enable processes that connect institutes of higher education with local communities to address the development challenges of rural India through participatory processes and appropriate technologies for accelerating sustainable growth. It also aims to create a virtuous cycle between the society and an inclusive university system by providing knowledge and practices for emerging professions and to upgrade the capabilities of both the public and the private sectors.

Our Vision

Vision of transformational change in rural development processes by leveraging knowledge institutions to help build the architecture of an Inclusive India.

Our Mission

A movement to enable process that connect institute of higher education with local communities to address the development challenges of rural India through participatory processes and appropriate technologies for accelerating sustainable growth.

IITH studied socioeconomic survey reports of several villages and selected most backward villages, i.e. Uttharapalli and Aliabad villages of Medak district and Rangareddy Guda village of Mahabubnagar District for the UBA activities.

"If we have to build a nation, we should start from the villages."

- **Sri Narendra Modi**
Honorable Prime Minister of India

"Institutes of higher learning must be connected to villages."

- **Smt Smriti Zubin Irani**
Minister for Human Resource Development, Government of India

Implementation Structure at IIT Hyderabad

Institute Coordinator	Dr. Shashidhar

Theme Coordinators	
Education	Dr. Prem Pal
Water Resources	Dr. K.B.V.N. Phanindra / Dr. Shahshidhar
Energy	Dr. Shiva Kumar
Sanitation	Dr. Shashidhar
Agriculture Development	Dr. Nishanth Dongare
Skill Development	Dr. G.V.V. Sharma / Dr. M.V. Panduranga Rao
IT Education	Dr. M.V. Panduranga Rao / Dr. G.V.V. Sharma
Women Development	Dr. D.S. Sharada

Education

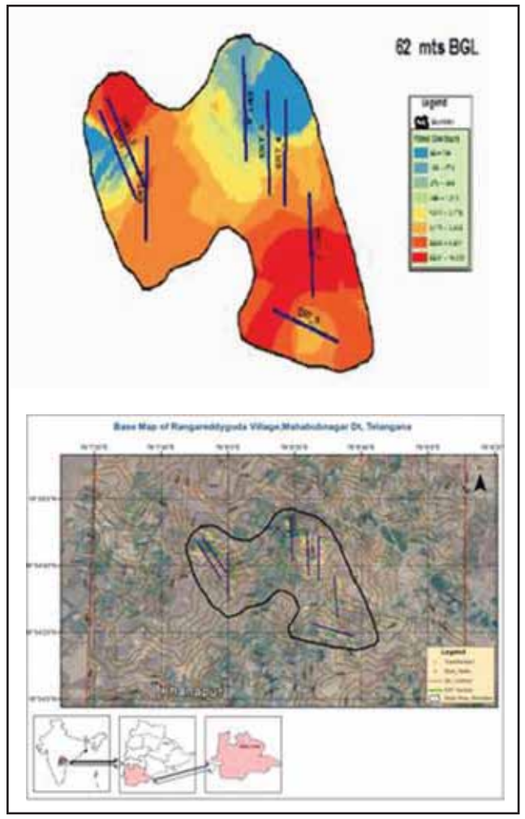
IITH has been actively involved and devoted to the upliftment of the villages adopted under UBA. IITH faculty along with student volunteers visit schools and teach various subjects of primary and higher levels. Volunteers are first divided into groups with three to five members in each. Then, in each classroom, the students are introduced to a friendlier way of interaction, which involved learning through fun and various examples. Students teemed with elation and are indeed, overjoyed to study as little as a drop, yet learn as much a garden in a single day.

All in all, the experience of the volunteers who participated in Unnat Bharat Abhiyan says it all. "The smile which I see on the faces of lovely children is itself a reason strong enough to continue participating in Unnat Bharat Abhiyan", says one volunteer. "When I realize the fact that I am one of the instruments in developing rural areas, I feel as if I am the savior of my own village", giggles the other. With participation in such events, our volunteers' zeal in social service has only skyrocketed.

To lead a village to its own development and to its capability of sustaining itself is a great privilege for us and therefore we wish to teach and guide the young minds which hold infinite potential and abilities within itself.

Water Resources

Groundwater situation in the selected villages is precarious and most of the bore well were dried up in the summer and further most of the new bore wells were failed. So the hydrogeological study is very important to identification and demarcation of groundwater bearing and recharge zones. 2-dimnestional Electrical Resistivity Tomography (ERT) survey using Schlumberger electrode configuration (with maximum spread of 400 m) was performed at 8 sections across the Rangareddyguda village in Balanagar Mandal of Mahabubnagar District in Telangana. Inversion of apparent resistivity distribution was performed using Res2DINV to generate true resistivity distribution along the sections. Iso-resistivity contours of the study area were prepared at different depths using geo-statistical interpolation methods. A geological interpretation of resistivity distribution (both in horizontal and vertical directions) was performed to comment on groundwater potential and recharge zones of the study area.



Energy

Two B.Tech 1st year students visited Uttarapalle village along with IITH faculty and chose project for their IDP, which is a 1 credit independent project course in the EE department. They have demonstrated the proof of concept in a very small scale using LEDs driven by a solar panel and rechargeable batteries. Currently, we are procuring 24 W CFL lamps for testing purposes and plan to procure a solar panel and rechargeable battery of appropriate rating. All this is being done with an eye on reducing costs. The design of the circuitry is underway and is expected to be ready by the middle of July. The solar panel to be fixed to the streetlight posts are being designed to act as mobile chargers as well, since during the daytime, the charging circuits can be driven directly using solar power without using the rechargeable batteries. After building a prototype, we are planning to train electricians in nearby villages to build similar circuits, so that nearby towns and villages could adopt this technology. Further, we would encourage the Uttarapalle village panchayat to engage local women for assembling the circuitry required for the solar street lamps in Uttarapalle village and fund the endeavour to the maximum extent possible.

Agriculture Development

IITH is also working towards the development of sensor nodes for agriculture applications along with TCS in mKRISHI ® framework. TCS and IIT Hyderabad propose to jointly develop and deploy wireless sensor networks at a national scale for achieving sustainable solutions for every acre of arable land in India. In order to make this massive-scale deployment of WSNs economically viable, our key idea is to couple the deployments with value-added services using the TCS Digital Farming platform for the farmers in India. This service-oriented deployment would be a key differentiator and hence an enabler for the first-of-a-kind large scale and sustainable deployment of WSNs. The idea is to provide personalized advisory services to farmers.

SWACHH BHARAT @ IIT HYDERABAD

Swachh Bharat activities were carried out with enthusiasm at IIT Hyderabad both in the temporary campus located at ordnance factory and at the permanent campus in Kandi from the beginning of 2015. The IIT community including staff, students and faculty participated in large numbers to ensure a clean and green campus. To ensure safety, all the participants were provided with protective gear (head gear, face mask and disposable gloves). A large amount of garbage was collected at the end of every session and was properly disposed. In addition, the institute director Prof. Uday B. Desai has a set up a committee of five faculty members with one faculty as the convenor for the Clean India activity. The committee has initiated a Clean India Course (CI 101) last semester to the graduating students of IIT Hyderabad which was successfully completed. A total of 320 students had registered for the course and participated in the Clean India activity as a part of the course.

IITH–JAPAN FRIENDSHIP PROJECT

The objective of IITH-Japan friendship project supported by JICA is to strengthen the teaching and research activities at IITH through world-class research collaboration with Japanese higher educational institutions and industries. It is expected that the cooperation will lead to:

- Increased research output through strong collaboration between IITH and top ranked higher educational institutions in Japan.
- PhD studentship opportunities for IITH graduates at Japanese Universities.
- Development of interactive relationship between IITH and Japanese industrial clusters.

Friendship project is providing the scholarship program exclusively for IITH graduate for higher education in Japanese Universities. 26 graduates from IITH are currently pursuing their higher studies in 9 Japanese Universities (5 masters, and 21 PhDs). To introduce Japanese Universities among IITH students, academic fairs have been conducted in 2013 and 2014 and Indo-Japan education summit 2015 was organized by University of Tokyo together with MEXT at IITH. Further, a fractional credit course on Japanese language has been re-introduced at IITH.

Academic exchange is key to strengthen the research activities. 51 faculty members from IITH travelled to various Japanese Universities and 33 faculty members from various Japanese Universities visited IITH for academic interaction. In addition a symposium on digital fabrication have been conducted and a workshop on smart city is being planned. Several MoUs have been signed under academic exchange programs with University of Tokyo, Osaka University, and Ritsumeikan University. Academic exchange programs are also exists with Keio University, Waseda University, Tohoku University, Kyoto University, Nagoya University, Kyushu University, Tokyo Institute of Technology, Shizuoka University, Toyohashi University, Saitama University, Nara Institute of Science and Technology, Hiroshima University, Tokyo University of Agriculture and Technology, and Tokushima University.

Friendship Project also strives hard to connect IITH with Japanese Industries. The project is arranging the visit of seven Japanese companies to IITH. In addition the Project is also facilitating the visit of IITH faculty members to Japanese companies. A Human Resource Forum was conducted in 2014 Aug in Tokyo and subsequently CONNECT IITH 2015 (IITH-Japan Industry-Academia Interaction Seminar) will be held in 2015 Aug.

Project overview

DISTINGUISHED FACULTY

Anandan P.
Microsoft Research India

Ramamoorthy M.
IEEE Fellow, Former DG of EPRI & Advisor, ERDA, Vadodara

Ashok Jhunjhunwala
IIT Madras

Sitaram N.
Non-Executive Part-time Independent Director, Bharat Electronics Ltd.

Debashis Mukherjee
University of Calcutta, Chair Professor, RCAMOS

Vidyasagar M.
Executive Vice President, Advanced Technology Center, TCS

Kesav V. Nori
Chief Information Officer (Retd.), Tata Consultancy Services

Vineet Chaitanya
IIIT Hyderabad

Narendra Ahuja
Donald Biggar Willet Professor of Engineering, University of Illinois

VK Saraswat
DAE Homi Bhaba Chair Professor

BIOMEDICAL ENGINEERING

Biomedical Engineering Department at IIT Hyderabad is the place where boundaries between engineering and science disciplines fade in order to focus on research and education targeted for ongoing and future technology. The primary mission of the department is to foster interdisciplinary work of highest quality by bringing together a broad spectrum of faculty expertise under a single umbrella to focus on research in Biomedical engineering. By converging the engineering expertise in analytical and experimental methods to biological and medical sciences, BME aim at unveiling the unseen in biology and innovations in technology that can be translated to clinical health care. Over the past year, Biomedical Engineering at Indian Institute of Technology Hyderabad has grown to a total strength of thirty eight with 5 faculty members, one postdoctoral fellow, two administration-cum-technical staff, 14 doctorate students and 18 Masters of Technology students. BME has made substantial investments in strengthening the core research facilities and course curriculum. Faculty in the department of BME undertake research in broad spectrum of areas related to Biomedical Engineering / Bioengineering such as Biophotonics, Lab on a Chip Biosensors, Biophysics, Biomechanics, Tissue Engineering, Nanomedicine and Neuroscience. The department will continue to leverage its core strengths in emerging as one of the leading centers of excellence in Biomedical engineering in the country.

Faculty

Renu John
Ph.D - IIT Delhi
Assistant Professor & HoD

Research Areas: Biomedical imaging, biosensors, optical coherence tomography

Harikrishnan Narayanan Unni
Ph.D - NTU, Singapore
Assistant Professor

Research Areas: Biomicrofluidics, Nanofluidics

Jyotsnendu Giri
Ph.D - IIT Bombay
Assistant Professor

Research Areas: Nanomedicine, Regenerative Medicine, Oral and Craniofacial Diseases

Mohan Raghavan
IISc., Bangalore
Assistant Professor

Research Areas: Theoretical and Computational Neuroscience: Modeling of neuron, network and system dynamics

Subha Narayan Rath
Ph.D - National University of Singapore
Assistant Professor

Research Areas: Biomaterials - stem cellinteraction, regenerative medicine

PUBLICATIONS
(In Peer-Reviewed Journals)

Md Azahar Ali, Saurabh Srivastav, Kunal Mondal, Pandurang M Chavhan, Ved Varun Agrawal, Renu John*, Ashutosh Sharma* and B. D Malhotra*, 'Surface Functionalized NanoporeTitania Integrated Microfluidic Biochip', *Nanoscale**6***, 13958-1396 (2014).

M. A. Ali, K. K. Reza, S Srivastava, V. V. Agrawal, Renu John*, B D Malhotra Langmuir, 'Lipid-Lipid Interactions in Aminated Reduced Graphene oxide Interface for Biosensing Application', 2014, 30 (14), pp 4192-4201, (2014).

M. A. Ali, S. Srivastava, M. K. Pandey, V. V. Agrawal, Renu John*****, B. D. Malhotra*, 'Protein-Conjugated Quantum Dots Interface: Binding Kinetics and Label Free Lipid Detection', *Anal. Chem*', 86 (3), pp 1710–1718, (2014).

MA Ali, PR Solanki, S Srivastava, S Singh, VV Agrawal, Renu John*, B D Malhotra*, 'Protein Functionalized Carbon Nanotubes-based Smart Lab-on-a-Chip', *ACS applied materials & interfaces 7 (10)*, 5837-5846 (2015)

MA Ali, N Singh, S Srivastava, VV Agrawal, Renu John, M Onoda, B D Malhotra, 'Chitosan-Modified Carbon Nanotubes-Based Platform for Low-Density Lipoprotein Detection', *Applied biochemistry and biotechnology 174 (3)*, 926-935, (2014)

SN Rath, A Brandl, D Hiller, A Hoppe, U Gbureck, RE Horch, AR Boccaccini, U Kneser, 'Bioactive copper-doped glass scaffolds can stimulate endothelial cells in co-culture in combination with mesenchymal stem cells', *PloS one*, 9 (12), e113319.

U Rottensteiner, B Sarker, D Heusinger, D Dafinova, SN Rath, JP Beier, U Kneser, RE Horch, R Detsch, AR Boccaccini, A Arkudas, 'In vitro and in vivo biocompatibility of alginate dialdehyde/gelatin hydrogels with and without nanoscaled bioactive glass for bone tissue engineering applications' *Materials 7 (3)*, 1957-1974.

PUBLICATIONS

(In Peer-Reviewed Conferences)

VP Pandiyan, R John, 'Quantitative Phase imaging of Live Yeast cells using Digital Holographic Microscopy', *International Conference on Fibre Optics and Photonics*, S5A. 4, (2014).

Hanu Phani Ram, P vimal Prabhu and Renu John, '3D Reconstruction of E. Coli Bacteria Using Synthetic Aperture Digital Holographic Microscopy', *International Conference on Fibre Optics and Photonics*, M4A. 1, (2014).

Sk. Faruk Azam, Harikrishnan Narayanan Unni, 'Electrowetting and Droplet Transport in Digital Microfluidic Chips', *COMSOL Conference*, 2014, Bangalore.

Faruk Azam, Shubha Jain, H. N. Unni, 'Automated Electrowetting-Based Digital Microfluidic Chips for Next-Generation Sequencing and Sample Preparation', *Advances in Next Generation Sequencing*, SELECTBIO (2015).

V.V. Unnikuttan, H.N. Unni, Acoustophoretic 'Microfluidic Device for High Throughput DNA sequencing', *Advances in Next Generation Sequencing*, SELECTBIO (2015).

Faruk Azam, Shubha Jain, H. N. Unni, 'Electrowetting based Microfluidic transport On-chip', *Advances in Microfluidics and Lab on a Chip*, (2015).

Shubha Jain, F. Azam, H. N. Unni, 'Advanced Microfluidic Mixing Device for the Study of Macromolecule Dynamics', *Advances in Next Generation Sequencing*, SELECTBIO (2015).

Shubha Jain, F. Azam, H. N. Unni, 'An Effective Design and Simulation for Microfluidic Passive Mixing with Geometric Variation', *Advances in Microfluidics and Lab on a Chip*, SELECTBIO (2015).

FUNDED RESEARCH PROJECTS 2014-15

Renu John, 'Characterization of micro-nanostructures using DHM', BRNS, granted from 2015 Apr-2017, 31 Lakhs.

Jyotsnendu Giri, 'Engineering Nanomedicine', DBT, 2015-2020, 32 Lakhs.

SEMINARS CONDUCTED

'Experimental and theoretical development for optical and photoacoustic tomography', Dr. Samir Biswas, University of Twente, 13 August 2014.

'Engineering Pathogen Mimicking Particles and Immune Priming Microenvironmentfor cancer immunotherapy', Dr. Pallab Pradhan, Georgia Tech, Atlanta USA, 30 July 2014.

'Design, Implementation, and Imaging of Position-Encoded Microfluidic Microsphere-Trap Arrays', Dr. Pinaki Sarder, Washington University in St. Louis, 29 July 2014.

'Wavefront aberrations, adaptive optics and examples from vision science', Professor V. Lakshminarayanan, University of Waterloo, 28 July 2014.

'Factors Affecting the Cues for Concurrent Vowel Identification: Vowel Level, Age and Hearing Loss', Dr. Anantha Krishna C, Medical University of South Carolina, USA, 24 June 2014.

'Functionalization of Graphene Oxide Nanosheets for Advancement in Anti-microbials and Electrochemical Biosensors', Dr. Murugan Veerapandian, University of Montreal, 26 May 2014.

TALKS GIVEN IN INTERNATIONAL / NATIONAL CONFERENCES

'TERMIS-AM Annual Meeting', Washington, D.C., USA, 13-16 December 2014.

'Protein Stabilized and Sustained Deliverable Nanofiber Smart Scaffold For Multiphase Tissue Regeneration'.

WORKSHOPS / SEMINARS

'TEQIP for digital fabrication', Subha Narayan Rath

AWARDS / RECOGNITIONS

'Ramalingaswami Fellowship' awarded to Jyotsnendu Giri, 2015.

'Best Poster' award for the paper 'Advanced Microfluidic Mixing Device for the Study of Macromolecule Dynamics', Advances in Next Generation Sequencing , SELECTBIO (2015) authored by Shubha Jain, F. Azam, H. N. Unni.

IITH Research Award to M.Tech student Faruk Azam, 2015.

BIOTECHNOLOGY

The **Department of Biotechnology (BT)** has six faculty members with cutting-edge research expertise in areas encompassing: HIV integration, Cancer biology, NMR, Structural Biology, Epigenetics, DNA Repair, Amyloids & Prion protein biology, Ion channel physiology and channelopathies. Currently two post graduate degree programs are offered: M.Tech in Medical Biotechnology & PhD in Biotechnology. The department's laboratories are well-equipped with advance research infrastructure and equipment such as: Flow-cytometer, Fluorescence Microscope, Multi-mode Readers, High Speed & Ultracentrifuges, Cluster, Spectrophotometer, Nanodrop Reader, Cell & Microbial Culture facilities, Circular Dichroism, FPLC system etc. M.Tech students take advance courses in the first two semesters followed by research work for thesis in any of the above mentioned research fields.

Also, the M.Tech students are trained to improve their presentation skills through seminar courses and scientific writing skills through independent research proposal writing. The Ph.D program comprises of a mandatory rigorous course work followed by thesis work. Students carry out research in well-equipped above mentioned research laboratories.

Faculty

Basant Kumar Patel
Ph.D - Banaras Hindu University
Assistant Professor and HoD

Research Areas: Protein misfolding diseases, Amyloid, Prion

Anamika Bhargava
Ph.D - Innsbruck Medical University, Austria
Assistant Professor

Research Areas: Voltage-gated calcium channels, electrophysiology, channelopathies, structure-function relationship, and imaging of ion channels.

Anindya Roy
Ph.D - IISc
Assistant Professor

Research Areas: DNA repair, Cancer Biology

N.K. Raghavendra
Ph.D - IISc
Assistant Professor

Research Areas: HIV-1 integrase, human LEDGF/p75, protein-protein interaction, small molecule inhibitors, innate immunity, UBC13-UEV1A

Rajakumara Eerappa
Ph.D - CCMB
Assistant Professor

Research Areas: X-ray Crystallography, Structural Biology, Epigenetics and DNA repair.

Thenmalarchelvi Rathinavelan
Ph.D - University of Madras
Assistant Professor

Research Areas: Computational structural biology, Biomolecular NMR spectroscopy, Biophysics of Gram-negative bacterial infectious diseases & trinucleotide repeat expansion disorders.

PUBLICATIONS
(In Peer-Reviewed Journals)

S. Agarwal, P Mishra, G Shivange, N Kodipelli, M Moros M, JM de la Fuente, R Anindya, 'Citrate-capped gold nanoparticles for the label-free detection of ubiquitin C-terminal hydrolase-1', *Analyst.*, 140: 1166-73, 2015.

G. Shivange, N. Kodipelli, M. Monisha, R. Anindya, 'A Role for Saccharomyces cerevisiae Tpa1 Protein in Direct Alkylation Repair', *Journal of Biological Chemistry.*, 289(52):35939-52, 2014.

G. Shivange, N. Kodipelli, R. Anindya, 'A nonradioactive restriction enzyme-mediated assay to detect DNA repair by Fe(II)/2-oxoglutarate-dependent dioxygenase', *Anal Biochem.*, 465C:35-37, 2014.

T. Rathinavelan, M. Lara-Tejero, M. Lefebre, S. Chatterjee, A.C. McShan, D.C. Guo, C. Tang, J.E. Galan and R.N. De Guzman, 'NMR model of PrgI-SipD interaction and its implications in the needle-tip assembly of the Salmonella type III secretion system', *J. Mol. Biol.*, 426, 2958-2969, 2014.

N. Khan, N. Kolimi, T. Rathinavelan, 'Twisting right to left: A…A mismatch in a CAG trinucleotide repeat overexpansion provokes left-handed Z-DNA conformation', *PLoSComput Biol.*, 11, e1004162, 2015.

K.W. Schicker, E. Novikova, B. Pöhn, T. Stockner, C. Kugler, A. Singh, C. Zeitz, M.E. Lancelot, I. Audo, B.P. Leroy, M. Freissmuth, S. Herzig, J. Matthes and A. Koschak, 'Spectrum of Cav1.4 dysfunction in congenital stationary night blindness type 2. V. Burtscher', *BiochimBiophysActa.* Aug; 1838 (8):2053-65, 2014.

T. Hong, H. Yang, S.S. Zhang, H.C. Cho, M. Kalashnikova, B. Sun, H. Zhang, A. Bhargava, M. Grabe, J. Olgin, J. Gorelik, E. Marbán, L.Y. Jan, and R. M. Shaw, 'Cardiac BIN1 folds T-tubule membrane, controlling ion flux and limiting arrhythmia', *Nat Med.* Jun; 20 (6):624-32, 2014.

FUNDED RESEARCH PROJECTS 2014-15

Anamika Bhargava, 'Role of C-terminus of T-type Voltage-gated Calcium Channels in Regulating Channel Expression and Activity', DBT, March 2015, Rs. 48.27 Lakhs.

SEMINARS CONDUCTED

'Role of core transcription factors in differentiation, maintenance and induction of pluripotent stem cells', Dr. Rajkumar Thummer, University of Bonn, Germany, 17 September 2014.

'Peroxisome biogenesis in yeast – Unplugging the division machinery', Dr. Sirisha Nagotu, University of Bonn, Germany, 17 September 2014.

TALKS GIVEN IN INTERNATIONAL / NATIONAL CONFERENCES

Anindya Roy, 'Oxidative dealkylation by AlkB family of Enzymes' at the 'Metabolomics-2015', Indian Institute of Science, Bangalore, 12-13 January 2015.

N.K. Raghavendra, 'HIV integrase - human LEDGF/p75 interface: a potential drug target' at National Seminar on 'TRendys in Biochemistry, 2014'. Department of Biochemistry, Acharya Nagarjuna University, Guntur (AP). 17-18 October 2014.

T. Rathinavelan, 'Structure and dynamics of bacterial outer membrane proteins to elucidate the mechanism of capsular polysaccharide surface expression'. Interuniversity Accelerated System User Workshop, New Delhi, 5 May 2014.

T. Rathinavelan, 'Surface aromatic residues and hydrophobic plug aligned in the lumen of *E. coli* outer membrane lectin (Wzi) regulates bidirectional hydraulic conductivity'. Scientific Applications on PARAM Yuva II, Pune, 8-9 January 2015.

T. Rathinavelan, 'Revelation of osmoregulatory role of *E. coli* outer membrane lectin pinpoints potential antibacterial drug targets'. Current Trends in Computational Natural Sciences-2015, IIIT Hyderabad, 5 April 2015.

T. Rathinavelan, 'Twisting Right To Left: A…A Mismatch In A CAG Trinucleotide Repeat Overexpansion Provokes Left-Handed Z-DNA Conformation', International congress on DNA structure in Health and Disease, AIIMS New Delhi, 12-13 April 2015.

N. Kolimi, N. Khan, T. Rathinavelan, 'A…A mismatch instigates B- to Z-DNA transition in a DNA duplex comprising of CAG & GAC trinucleotide repeat expansions' National Symposium on Biophysics and Golden Jubilee Meeting of Indian Biophysical Society, Center for Interdisciplinary Research in Basic Sciences, Jamia Millia Islamia, New Delhi, 14-17 February 2015.

S.A. Nair, T. Rathinavelan, 'Bidirectional water conductivity of *E. coli* outer membrane lectin (Wzi) is regulated by surface aromatic residues and luminal hydrophobic plug' National Symposium on Biophysics and Golden Jubilee Meeting of Indian Biophysical Society, Center for Interdisciplinary Research in Basic Sciences, Jamia Millia Islamia, New Delhi, 14-17 February 2015.

AWARDS / RECOGNITIONS

'Excellence in Teaching Award 2014', Basant K Patel.

'Excellence in Teaching Award 2014', Anindya Roy.

'Gandhian Young Techno-logical Innovation Award 2015' (as Mentor), Anindya Roy.

'Excellence in Teaching Award 2014', T. Rathinavelan.

'Best Poster' award in International congress on DNA structure in Health and Disease, AIIMS New Delhi, 12-13 April 2015, Ch. Nimilitha, Y. Ajjugal, T. Rathinavelan.

CHEMICAL ENGINEERING

The Department of Chemical Engineering (CH) at IITH offers B.Tech, M.Tech and Ph.D programs. Today the department has 15 faculty members, 38 Ph.D, 31 M.Tech, and 82 B.Techstudents. The department has state-of-the-art research infrastructure that cuts across the boundaries of conventional chemical engineering. The department's research focus falls into six areas with numerous funded projects involving both theoretical and experimental aspects; each of them remarkable for its sheer depth and their interdisciplinary approach.

The undergraduate curriculum emphasizes heavily on both strong theoretical foundation and hands on experience for solving real world problems. At the post-graduate level, more emphasis is given to honing a student's research skill for practical applications.The department has proudly graduated its first batch of B.Tech students in 2015.

Faculty

Kirti Chandra Sahu
Ph.D - JNCASR, Bangalore
Associate Professor & HoD

Research Areas: Transition to turbulence in shear flows, spatially developing flows in complex geometries, multiphase and interfacial flows.

Vinod Janardhanan
Ph.D - KIT, Germany
Associate Professor

Research Areas: Fuel cells, Heterogeneous catalysis

Anand Mohan
Ph.D - Texas A&M, USA
Assistant Professor

Research Areas: Cardiovascular Mechanics, Complex Fluid Rheology

Balajiiyer Vaidyanathan Shantha
Ph.D - IIT Bombay
Assistant Professor

Research Areas: : Structure-property relations, modeling and computational materials design, biophysics, polymer physics, hydrodynamics.

Chandra Shekhar Sharma
Ph.D - IIT Kanpur
Assistant Professor

Research Areas: Hierarchical Polymer and Carbon Structures, Electrospun Nanofibers, Bio-inspired Functional Surfaces

Debaprasad Shee
Ph.D - IIT Kanpur
Assistant Professor

Research Areas: Metal and metal oxide catalysts, Biomass conversion, Multifunctional catalytic material

Devarai Santhosh Kumar
Ph.D - IIT Madras
Assistant Professor

Research Areas: Biochemical and Bioprocess development of therapeutic enzymes, Tissue Engineering.

Kishalay Mitra
Ph.D - IIT Bombay
Assistant Professor

Research Areas: Multi-objective optimization, Optimization under uncertainty, Surrogate optimization, Data based modeling, Evolutionary Computation, Optimal Control, Supply chain optimization, planning and scheduling

Lopamudra Giri
Ph.D - University of Iowa
Assistant Professor

Research Areas: Systems biology, Live cell imaging and data mining

Narasimha Mangadoddy
Ph.D - University of Queensland - Australia
Assistant Professor

Research Areas: Mineral Processing, CFD, Multiphase Flows, Fluidization, Particulate Technology

Parag D. Pawar
Ph.D - Johns Hopkins, USA
Assistant Professor

Research Areas: Biophysics, Polymicrobial Biofilms, Intercellular Interactions, Bacterial Infections

Phanindra Varma Jampana
Ph.D - University of Alberta, Canada
Assistant Professor

Research Areas: Compressed Sensing, System Identification

...Faculty

Praveen Meduri
Ph.D - University of Louisville, Lousville
Assistant Professor

Research Areas: Nanomaterials, Energy storage, Batteries (Lithium-ion, Lithium-sulfur, metal-air), Supercapacitors, Electrochemistry of materials.

Saptarshi Majumdar
Ph.D - IIT Kharagpur
Assistant Professor

Research Areas: Molecular Simulation, Mesoscale, Thermodynamics, Drug Delivery System, Process Modeling & Development

Sunil K. Maity
Ph.D - IIT Kharagpur
Assistant Professor

Research Areas: Heterogeneous Catalysis, Chemical Reaction Engineering, Biorefinery, Steam reforming, Oxidative steam reforming, Hydrodeoxygenation of vegetable oil, Oligomerization of olefins, Thermodynamic analysis, Process design using Aspen Plus, Techno-economic analysis

PATENTS FILED

International

Srinadh Mattaparthi and Chandra S. Sharma, 'High Aspect Ratio Hierarchical Superhydrophobic and Anti-Reflective Polymeric Surfaces Fabricated by Bio-mimicking Canna Indica Plant', PCT Application No. PCT/IM2014/001910, 24 September 2014.

National

Srinadh Mattaparthi and Chandra S. Sharma, 'High Aspect Ratio Hierarchical Superhydrophobic and Anti-Reflective Polymeric Surfaces Fabricated by Bio-mimicking Canna Indica Plant', Indian Patent Application No. 2507/CHE/2014, 20 May 2014.

Shital Yadav, I. Manipujitha, Tulika Rastogi and Chandra S. Sharma, 'Cellulose Acetate based Non-woven Nano-fiber Matrix with High Absorbency Properties for Female Hygiene', Indian Patent Application No. 3684/CHE/2014, 28 July 2014.

Shital Yadav, and Chandra S. Sharma, 'Process of Fabrication of Natural Sub-micron Aligned Fibers with Controllable Geometry from a Citrus Peel Extract', Indian Patent Application No. 5928/ CHE/2014, 26 November 2014 .

PUBLICATIONS
(In Peer-Reviewed Journals)

M. K. Tripathi, K. C. Sahu and R. Govindarajan, `Dynamics of an initially spherical bubble rising in quiescent liquid', *Nature Communications*, 6, 5268, 2015.

M. K. Tripathi, K. C. Sahu, G. Karapetsas and K. Sefiane and O. K. Matar, 'Non-isothermal bubble rise: Non-monotonic dependence of surface tension on temperature', *Journal of Fluid Mechanics*, 735, 82-108, 2015.

P. Randive, A. Dalal, K. C. Sahu, G. Biswas, P. P. Mukherjee, 'Wettability effects on contact line dynamics of droplet motion in an inclined channel', *Physical Review E.,* 91, 053006, 2015.

S. Ghosh, R. Usha and K. C. Sahu, 'Absolute and convective instabilities in double-diffusive two-fluid flow in a slippery channel', *Chemical Engineering Science*, 134, 1-11, 2015.

M. K. Tripathi, K. C. Sahu, G. Karapetsas and O. K. Matar, 'Bubble rise dynamics in a viscoplastic material, Journal of Non-Newtonian Fluid Mechanics', 222, 217-226, 2015.

A. B. Wakale, K. Venkatasubbaiah and K. C. Sahu, 'A parametric study of buoyancy-driven flow of two-immiscible fluids in a differentially heated inclinedchannel', *Computers and Fluids*, 117, 54-61, 2015.

P. A. P. Swain, G. Karapetsas, O. K. Matar and K. C. Sahu, 'Numerical simulation of pressure-driven displacement of a viscoplastic material by a Newtonian fluid using the lattice Boltzmann method', *European Journal of Mechanics – B/ Fluids*, 49, 197-207, 2015.

N. Nandakumar, K. C. Sahu and M. Anand, 'Pulsatile flow of a shear-thinning model for blood through a two-dimensional stenosed channel', *European Journal of Mechanics – B/Fluids*, 49, 29-35, 2015.

R. Govindarajan and K. C. Sahu, 'Instabilities in viscosity-stratified flow', *Annual Review of Fluid Mechanics*, 46, 331-353, 2014.

K. C. Sahu and R. Govindarajan, 'Instability of a free shear layer in the vicinity of a viscosity-stratified layer', *Journal of Fluid Mechanics*, 752, 626-648, 2014.

M. K. Tripathi, K. C. Sahu and R. Govindarajan, 'Why a falling drop does not in general behave like a rising bubble', *Scientific Reports (Nature Publishing Group)*, 4, 4771, 2014.

S. Ghosh, R. Usha and K. C. Sahu, 'Double-diffusive two-fluid flow in a slippery channel: A linear stability analysis', *Physics of Fluids*, 26, 127101, 2014.

S. Ghosh, R. Usha and K. C. Sahu, 'Linear stability analysis of miscible two-fluid flow in a channel with velocity slip at the walls', *Physics of Fluids*, 26, 014107, 2014.

K. C. Sahu, 'A review on double-diffusive instability in viscosity stratified flows', *Proceedings of the National Academy of Sciences, India*, 80 (3), 513-524, 2014.

J. N. Kusuma, O. K. Matar and K. C. Sahu, 'Numerical simulations of miscible channel flow with chemical reactions', *Current Science*, 106 (6), 841-852, 2014.

G. Karapetsas, K. C. Sahu, K. Sefiane and O. K. Matar, 'Thermocapillary-driven motion of a sessile drop: effect of non-monotonic dependence of surface tension on temperature', *Langmuir*, 30 (15), 4310-4321, 2014.

Vinod M. Janardhanan, Dayadeep S Monder, 'Sulfur Poisoning of SOFCs: A Model Based Explanation of Polarization Dependent Extent of Poisoning', *J. Electrochem. Soc.,* 161, F1427-F1436, 2014.

Vikram Menon, Qingxi Fu, Vinod M. Janardhanan, Olaf Deutschmann, 'A model based understanding of solid oxide electrolysis cells (SOECs) for syngas production by H2O/CO2 co-electrolysis', *J. Power Sources.*, 274, 768-781, 2015.

Srinivas Appari, Ryota Tanaka, Chengyi Li, Shinji Kudo, Jun-ichiro Hayashi, Vinod M. Janardhanan, Hioaki Watanabe, Koyo Norinaga, 'Predicting the temperature and reactant concentration profiles of reacting flow in the partial oxidation of coke oven gas using detailed chemistry and a one-dimensional flow model', *Chem. Eng. J,* 266, 82-90, 2015.

V.C.S. Palla, D. Shee, and S.K. Maity, 'Kinetics of Hydrodeoxygenation of Octanol over Supported Nickel Catalysts: A Mechanistic Aspect', *RSC Adv.,* 4, 41612-41621, 2014.

S.K. Maity, 'Opportunities, recent trends and challenges of integrated biorefinery: Part I', *Renewable Sustainable Energy Rev.,* 43, 1427-1445, 2015.

S.K. Maity, 'Opportunities, recent trends and challenges of integrated biorefinery: Part II', *Renewable Sustainable Energy Rev.,* 43, 1446-1466, 2015.

V. Dhanala, S.K. Maity, D. Shee, 'Oxidative Steam Reforming of Isobutanol over Ni/γ-Al2O3 Catalysts: A Comparison with Thermodynamic Equilibrium Analysis', *J. Ind. Eng. Chem.,* 27, 153-163, 2015.

A. Mogilicharla, T. Chugh, S. Majumdar, K. Mitra, 'Multi-Objective Optimization of Bulk Vinyl Acetate Polymerization with Branching', *Materials and Manufacturing Processes*, 29, 210-217, 2014.

A. Mogilicharla, K. Mitra, S. Majumdar, 'Modeling of propylene polymerization with long chain branching', *Chemical Engineering Journal*, 246, 175-183, 2014.

H. Goel, P. R. Chandran, K. Mitra, S. Majumdar, P. Ray, 'Estimation of Interfacial Tension for Miscible and Partially Miscible Liquid Systems by Dissipative Particle Dynamics', *Chem. Phys. Lett.,* 600, 62-67, 2014.

A. Mogilicharla', S. Majumdar, K. Mitra, 'Multi 'Objective Optimization of Long Chain Branched Propylene Polymerization', *Polymer Engineering and Science*, 55, 5, 1067-1076, 2015.

A. Mogilicharla, P. Mittal, S. Majumdar, K. Mitra, 'Kriging Surrogate based Multi-objective Optimization of Bulk Vinyl Acetate Polymerization with Branching', *Materials and Manufacturing Processes*, 30, 4, 394-402, 2015.

N. Virivinti and K. Mitra, 'Fuzzy Expected Value Analysis for an Industrial Grinding Process', *Pow. Tech.,* 268, 9-18, 2014.

A. K. Haridas, C. S. Sharma and T. N. Rao, 'Electrochemical Performance of Lithium Titanate Sub-micron Rods Synthesized by Sol-gel/ Electrospinning', *Electroanalysis*, 26, 2315-2319, 2014.

A. K. Haridas, C. S. Sharma and T. N. Rao, 'Donut Shaped Li4Ti5O12 Structures as High Performance Anode Material for Lithium ion Batteries', Small, 11(3), 290-294, 2015.

M. Kakunuri and C. S. Sharma, 'Synthesis of carbon xerogel nanoparticles by inverse emulsion polymerization of resorcinol formaldehyde and their use as anode materials for lithium-ion battery', *RSC Advances*, 5, 4747-4753, 2015.

P. P. Naidu, M. Anand, 'Importance of VIIIa inactivation in a mathematical model for the formation, growth, and lysis of clots', *Math. Model. Nat. Phenom.*, 9(6), 17-33, 2014.

Ravi Gujjula, Narasimha, M., 'Prediction of solid recirculation rate and solid volume fraction in an internally circulating fluidized bed', *International Journal of Computational Methods*, 12(4), 1-24, 2015.

V. T. S. R Kumar Reedy, Narasimha Mangadoddy, 'Rheology based CFD modeling of magnetite medium segregation in a dense medium cyclone', *Powder Technology*, 227, 275-286, 2015.

Teja Reddy Vakamalla, Kedar S. Kumbhar, Ravi Gujjula, Narahimha Mangadoddy, 'Computational and experimental study of the effect of inclination on hydro-cyclone performance', *Separation and Purification Technology*, 138, 104:117, 2014.

Narasimha, M., A.N. Mainza, Holtham, P. N., Powell, M. S., and Brennan, M. S., 'A semi-mechanistic model of hydrocyclones-Developed from industrial data and inputs from CFD', *International Journal of Mineral Processing*, 133, 1-12, 2014.

Arugonda Rakesh, Vakamalla T. S. R. Kumar Reddy, Mangadoddy Narasimha, 'Air-Core Size Measurement of Operating Hydrocyclone by Electrical Resistance Tomography', *Chemical Engineering Technology*, 37(5), 1–12, 2014.

P. Jampana, S. Shah, J. Shaw, 'A region growing method for detecting interfaces in X-ray view cellimages', *IEEE Sensors*, 14 (7), 2283 – 2292, 2014.

L. Giri, A. K. Patel, W.K. AjithKarunarathne, V. Kalyanaraman, K.V. Venkatesh and N. Gautam, 'G-protein subunit translocation embedded network motif underlies GPCR regulation of Calcium oscillations', *Biophysical Journal*, 107, 242-254, 2014.

Devarai S K and Suman R, 'Fungal lipase production by solid state fermentation - An overview', *J Anal Bioanal Tech.,* 6(1), 1-10, 2014.

Sasidhar RE, Devarai S K and Rajeswari, 'Pharmacological importance of integrin antagonists in the treatment of cancer', J, *J Cell SciTher.*, 6(1), 1-9, 2015.

PUBLICATIONS

(In Peer-Reviewed Conferences)

M. K. Tripathi and K. C. Sahu, 'Evaporating falling drop', *IUTAM Symposium on Multiphase flows with phase change: challenges and opportunities*, 8-11 December 2014, Hyderabad, India.

M. S. Soumitri, S. Majumdar, K. Mitra, 'Optimization Using ANN Surrogates with Optimal Topology and Sample Size', *IFAC International Symposium on Advanced Control of Chemical Processes,* Whistler, British Columbia, Canada, 7-10 June 2015.

P. Mittal, K. Kulkarni, K. Mitra, 'A Novel and Efficient Hybrid Optimization Approach for Wind Farm Micro-Siting', *IFAC International Symposium on Advanced Control of Chemical Processes*, Whistler, British Columbia, Canada, 7-10 June 2015.

A. Mogilicharla, S. Majumdar, K. Mitra, 'Modeling and Optimization of Propylene Polymerization with Branching', *Proceedings of European Symposium on Computer Aided Process Engineering (ESCAPE 24)*, 15-18 June 2014.

A. Mogilicharla, S. Majumdar, K. Mitra, 'Kinetic Analysis and Optimization of Long Chain Branched Propylene Polymerization System', *IFAC World Congress 2014*, Cape Town, South Africa, 24-29 August 2014.

N. Virivinti, K. Mitra, 'Expected Value Analysis for an Industrial Grinding Process with Fuzzy Uncertain Parameters', *Proceedings of European Symposium on Computer Aided Process Engineering (ESCAPE 24)*, 15-18 June 2014.

S. Mattaparthi and C. S. Sharma, 'Fabrication of rough polymer surfaces exhibiting anti-reflective properties', *MRS Proceedings*, 2015, mrsf14-1728-l14-13 doi:10.1557/opl.2015.190.

N. Kumar, K. Jagadeeshwar, A. P. Deshpande, M. Anand, 'Maxwell fluid model for small amplitude oscillatory shear data with varying angular frequency for poly-vinyl alcohol-sodium borate (PVA-SB) gels', *International Conference on Theoretical, Applied, Computational, and Experimental Mechanics (ICTACEM)*, Kharagpur INDIA 29-31 December 2014.

Mayank, K., Mahale, M., Govender, I., Narasimha, M., 'Coupled DEM-CFD model to predict the tumbling mill dynamics', *IUTAM Symposium on Multiphase Flows with Phase Change Challenges and Opportunities*, Hyderabad, 8-11 December 2014. 10.1016/j. piutam.2015.04.020.

Narasimha, M., Jeason Crasta, Sreenivas, T., Mainza, A.N., 'Performance of hydrocyclone separating bi-component mixture', *XXVII International Mineral Processing Congress* (IMPC), Santiago-Chile, 20-24 October 2014.

Ravi Gujjula and Narasimha, M., 'Hydrodynamics study of gas-solid flow patterns in an internally circulating fluidized bed with a draft tube', *Proceedings of the 11th International conference on Fluidized bed Technology* by Jinghai Li, Fei Wei, XiaojunBao and Wei Wang, Beijing, China, 14-17 May 2014.

P. Reddy, S.Shukla, W. K. AjithKarunarathne, S. Jana, L.Giri, 'Segmentation of neuron and measurement of optically programmed neurite growth: Fast automation via Baysianthresholding', *7th International IEEE/EMBS Conference on Neural Engineering Conference*, France, Montepllier, 22-25 April 2015.

M. Kakunuri and C. S. Sharma, 'Photoresist derived carbon films as high capacity anodes for Lithium ion battery', *ECS Trans.,* 61(7), 37-43 (2014)

C. S. Sharma, H. Katepalli, A. Sharma, G. T. Teixidor and M. Madou, 'Fabrication of resorcinol-formaldehyde xerogel based high aspect ratio 3-D hierarchical C-MEMS structures', *ECS Trans.,* 61(7), 45-54 (2014)

FUNDED RESEARCH PROJECTS 2014-15

S. K. Maity, *Steam Reforming of Butanols using High Surface Area Mesoporous CeO2ZrO2 Mixed Oxides Supported Metal Catalysts*, CSIR, 1 March 2015, Rs. 20.55 Lakhs.

Parag D. Pawar, *Multi-scale investigation of the dynamics of polymicrobial biofilm development under hydrodynamic shear, Science and Engineering Research Board*, DST, May 2014, Rs. 16.5 Lakhs.

Narasimha Mangadoddy, '*Development of Mathematical model for integrated iron ore grinding Ball-mill-Air classifier circuit: Energy-grind optimization*, R&D-TATA Steel, January 2015, Rs. 15 Lakhs.

Santhosh Kumar Devarai, *Production Engineering of Glutaminase Free L-asparaginase by SSF and SmF Using Novel Asparagine rich Agricultural Waste and Product Characterization as Anti-Leukaemic Agent*, Science and Engineering Research Board, DST, 2014, Rs. 54.98 Lakhs.

SEMINARS CONDUCTED

'Turbulence in symmetric binary mixtures', Dr. Prasad Perlekar, Reader, Centre for Interdisciplinary Sciences & Tata Institute for Fundamental Research, Hyderabad, India, 7 January 2015.

'Use of Continuum Modeling to Understand Crystal Growth Systems at the Lab and the Industrial Scale', Dr. Gaurab Samanta, Research Scientist, Sun Edison Semiconductor, Saint Peters USA, 12 January 2015.

Active Turbulence, Dr Sumesh P. Thampi, 'Postdoctoral Research Assistant', The Rudolf Peierls Centre for Theoretical Physics, University of Oxford, 21 January 2015.

'2-D unsteady flow of blood through a channel with multiple stenoses: A computational study', N. Nanda Kumar, PhD Scholar, Department of Chemical Engineering, IIT Hyderabad, 11 February 2015.

'Integrated processing of renewable resources to biofuels and platform chemicals: Prospects of chemical and biomolecular engineering sciences', Dr. Sasisanker Padmanabhan, Senior Staff Technologist, Praj Matrix R&D Center, Division of Praj Industries, Pune, India, 18 February 2015.

'Gradient Biomaterials for the Potential Regeneration of Tissue Transitions', Dr. Satyavrata Samavedi, Post-doctoral research associate,

Rensselaer Polytechnic Institute, Troy, New York, 25 March 2015.

'Simulation of Droplet Motion on Mixed Wettability Surface', Dr. Amaresh Dalal, Associate Professor, Department of Mechanical Engineering, Indian Institute of Technology Guwahati, 4 March 2015.

'Overview of R&D and inventions/products through science that has happened at DuPont', Dr. Anuradha Mishra, Senior scientist, DuPont Knowledge Center (DKC), Hyderabad, 11 March 2015.

'Solving the Economic Plantwide Control System Design Puzzle', Prof. NitinKaistha, Department of Chemical Engineering, Indian Institute of Technology Kanpur, 8 April 2015.

'Advanced Bio-Energy Research – Indian Initiatives', Dr. D. K. Tuli, Executive Director & Centre coordinator of DBT-IOC, Centre for Advanced Bio-Energy Research, 15 April 2015.

'Directed Assembly of Nano-Patterned Multicomponent Polymer Films and Surfaces', Dr. Alamgir Karim, Goodyear Chair and Professor, Department of Polymer Engineering, University of Akron, Ohio, 12 June 2015.

'Quantum molecular sieving of light isotope', Dr. Suresh K. Bhatia, Australian Professorial Fellow, School of Chemical Engineering, The University of Queensland, Brisbane, 12 June 2015.

TALKS GIVEN IN INTERNATIONAL / NATIONAL CONFERENCES

Kirti Chandra Sahu, 'Some interesting phenomena in bubbles and drops', International Symposium on Computational Multiphase Flow, Ritsumeikan University, Japan, 14 January 2015.

Sunil K. Maity, 'Cobalt supported γ-Al2O3 catalyst for steam reforming of isobutanol for production of synthesis gas', Seventh Tokyo Conference on Advanced Catalytic Science and Technology (TOCAT7), Kyoto, Japan, 1-6 June 2014.

Sunil K. Maity, 'An Overview of Biorefinery: A case study of hydrodeoxygenation of vegetable oils for production of green diesel', Keynote speaker in Innovation and Advancement in Chemical Science and Technology, St. Thomas College, Bhilai, 10 February 2015.

Kishalay Mitra, 'Kinetic Analysis and Optimization of Long Chain Branched Propylene Polymerization System', IFAC World Congress 2014, Cape Town, South Africa, 24-29 August 2014.

M. Kakunuri and C. S. Sharma, 'Photoresist derived Carbon Thin Films as High Capacity Anodes for Lithium Ion Battery', 225th ECS Meeting, Orlando, FL (USA), 11-16 May 2014.

C. S. Sharma, H. Katepalli, A. Sharma, G. T. Teixidor and M. Madou, 'Fabrication of Resorcinol-formaldehyde Xerogel based High Aspect Ratio 3-D Hierarchical C-MEMS Structures', 225th ECS Meeting, Orlando, FL (USA), 11-16 May 2014.

C. S. Sharma and M. Kakunuri, Advanced carbon Xerogel Materials, First International Carbon MEMS Ring, University of California, Irvine, 14-16 September 2014.

C. S. Sharma and M. Kakunuri, 'Nanostructured Carbon Materials as High Capacity Anodes for Lithium-ion Battery', International Conference on Advanced Materials and Energy Technology (ICAMET 2014), IIEST Shibpur, 17-19 December 2014.

Anand Mohan, 'Rheology of blood and its variation with clot formation', CompFlu-2014, JNCASR Bangalore, 24 December 2014.

Parag D. Pawar, 'A 3D Computational Model to Investigate the Effects of Morphology and Quorum Sensing on Antibiotic Resistance of Bacterial Biofilms', 5th Annual International Conference on Advances in Biotechnology, IIT Kanpur, 13 March 2015.

Teja Reddy V., Narasimha, M., 'Modelling turbulent flow of cyclone separation: Prediction of turbulence effect on particle classification', IUTAM Symposium on Multiphase Flows with Phase Change Challenges and Opportunities, Hyderabad, 8-11 December 2014.

Mandakini Padhi, Teja Reddy V., and Narasimha M., 'Iron Ore Slimes Beneficiation using Optimized Hydrocyclone Operation', International seminar on Mineral Processing Technology, 12-14 March 2015.

Teja Reddy V., Asha Kumari A., Sreedhar G.E., Shivakumar, R., Sharma, S.K., Narasimha M., Raja Banerjee, 'Prediction of Hydrodynamic Performance of Industrial Cyclones: Role of Turbulence Modelling', International seminar on Mineral Processing Technology, 12-14 March 2015.

Asha Kumari A., Teja Reddy V., Narasimha M., Sreedhar G.E., Shivakumar, R., Sharma, S.K., 'Simulating Coal Partitioning of a Dense Medium Cyclone using CFD model: Effect of NGM', International seminar on Mineral Processing Technology, 12-14 March 2015.

Santhosh Kumar Devarai, 'Gold Nanoparticle immobilized with Protein for Proteasome Inhibition: A Mathematical Model to Address Myeloma Cancer', Department of Nanotechnology, JNTUH, Hyderabad, UGC Programmee - National level, 2014.

'Multicomponent model based simulations of the dynamic response of cross-linked polymer grafted nanoparticle networks', 2nd Soft Matter Young Investigators Meet, Pondicherry, 18-20 December 2014.

WORKSHOPS / SYMPOSIUMS

IUTAM Symposium on Multiphase flows with phase change: challenges and opportunities, 8-11 December 2014, 43 oral presentations + 45 poster presentations, Guest of honour: Prof. Gautam Biswas (Director, IIT Guwahati), 150 participants (around 50 % from abroad).

TEQIP Workshop on Fundamentals and Applications of Nanofibers, 4-5 July 2015.

TEQIP Workshop on MEMS and NEMS (Design and Fabrication), 15-19 December 2014.

AWARDS / RECOGNITIONS

'DST INSPIRE Faculty Award', Chandra Shekhar Sharma, July 2014.

'Gandhian Young Technological Innovation Award', Chandra Shekhar Sharma, 2015.

Kishalay Mitra, Science and Engineering Research Board, DST financial assistance for attending IFAC World Congress 2014, Cape Town, South Africa, 24-29 August, 2014.

Dr. Chandra S. Sharma and his students receiving 'Gandhian Young Technological Innovation Award 2015' at Rashtrapati Bhawan, New Delhi on March 8, 2015

Mr. Srinadh winning Power of Shunya Episode 4 on ET Now News Channel

Participants of IUTAM symposium

CHEMISTRY

The **Department of Chemistry (CY)** is actively conducting research in cutting-edge areas of Organic, Inorganic and Physical Chemistry, as well as fulfilling the needs of the undergraduate program of IIT Hyderabad. At present, there are forty seven research scholars in the department, pursuing Ph.D, and thirty four students who are enrolled in the two year M.Sc program; they are mentored by nine faculty members. Our first batch of M.Sc students graduated in 2012 and the second batch in 2013. Many of our M.Sc students are currently pursuing Ph.D at universities in Japan and in Europe. The department also has several sponsored projects in diverse areas of Chemistry.

The department, has state of the art research facilities that include, a 400 MHz NMR, a BET analyser, HRMS, Single Crystal- and Powder- XRD, Fluorescence/ lifetime and Raman spectrometers, Atomic force microscopy (with conductive, electrostatic force, magnetic force, surface potential, nanolithography modes), Gas chromatography-Mass Spectrometer, HPLC, Glove boxes, and many such sophisticated set-ups. The department is also equipped with necessary infrastructure, for carrying out wet chemical syntheses or related experimentation, at both undergraduate and postgraduate level. Our aim is to produce highly sought after and knowledgeable graduates for pursuing careers with academia, industry and government.

Faculty

Faiz Ahmed Khan
Ph.D - University of Hyderabad
Professor & HoD

Research Areas: Transition Metal-mediated reactions in organic synthesis, Discovery of New Methodologies and Control of Stereochemistry in organic synthesis, Chemical Synthesis in Ionic Liquids, and Supported Catalysts, Synthesis of Natural and aesthetically pleasing.

Tarun K Panda
Ph.D - Free University - Berlin, Germany
Associate Professor

Research Areas: Main group chemistry, Coordination chemistry, Lanthanide chemistry, Homogeneous catalysis, X-ray Crystallography and structure analysis.

Ch. Subrahmanyam
Ph.D - IIT Madras
Associate professor

Research Areas: Catalysis, Nanomaterials and Energy systems

Bhabani Shankar Mallik
Ph.D - IIT Kanpur
Assistant Professor

Research Areas: Computational and Theoretical Chemistry

G Prabusankar
Ph.D - IIT Bombay
Associate Professor

Research Areas: Organometallic & Catalysis

D. S. Sharada
Ph.D - University of Hyderabad
Assistant professor

Research Areas: Synthetic Methodology, Benign Organic Synthesis, Heterocyclic Chemistry and Medicinal Chemistry

G. Satyanarayana
Ph.D - IISc
Associate Professor

Research Areas: To develop synthetic methodologies/transition-metal catalysis based on one-pot transformations.

Surendra Kumar Martha
Ph.D - IISc, Bangalore
Assistant Professor

Research Areas: Materials Electrochemistry with special emphasis on Lead-Acid, Lithium-Ion and Sodium-Ion Batteries.

Melepurath Deepa
Ph.D - Delhi University
Associate Professor

Research Areas: Applied Electrochemistry

PATENTS FILED

K. Krushnamurty, I. Srikanth, Anil Kumar, P.A. Das, M. Deepa and Ch. Subrahmanyam 'Conductive polymer reinforced carbon epoxy (C-epoxy) composite for improved electrical conduction and a method of preparation', Filing number: 1707/CHE/2015 (Indian patent).

PUBLICATIONS

(In Peer-Reviewed Journals)

K. R. Babu and F. A. Khan, 'An unusual formation of diarylmethane scaffolds from 4-(halomethyl) cyclohex-2-enone derivatives', *Tetrahedron Lett.*, 56, 4067-4070 (2015).

S. Ahmad, S. Choudhury and F. A. Khan, 'Synthesis of marine brominated alkaloid amathamide F: A palladium-catalyzed enamide synthesis', *Tetrahedron*, 71, 4192-4202 (2015).

L. Vasamsetty, F. A. Khan and G. Mehta, 'A short, general, Suzuki-Miyaura coupling anchored approach to 3-alkenylbutenolides: total synthesis of akolactones A & B, hamabiwalactone B and ancepsenolide', *Tetrahedron*, 71, 3209-3215 (2015).

F. A. Khan, B. M. Budanur and C. Sudheer, 'Bridgehead Substitution via Putative Norborn-1-en-3-ones: Application in the Synthesis of Complex Molecules', *Chem. Eur. J.,* 21, 7021-7025 (2015).

F. A. Khan, 'BF3-Et2O mediated skeletal rearrangements of norbornyl appended cyclopentanediols, Chintada Nageswara Rao', *Org. Biomol. Chem.,* 13, 2768-2775, (2015).

S. H. Mahadevegowda and F. A. Khan, 'Diastereoselective Synthesis of Spirocyclic Dihydrofurans and 1-Oxaspiro[4.5]decan-6-one Derivatives from Norbornyl α-Diketones', *Eur. J. Org. Chem.*, 4, 858-870 (2015).

K. R. Babu and F. A. Khan, 'A domino reaction of tetrahalo-7,7-dimethoxybicyclo[2.2.1]heptenyl alcohols leading to indenones and a de novo synthesis of ninhydrin derivatives', *Org. Biomol. Chem.,* 13, 299–308, (2015).

B. M. Budanur and F. A. Khan, Beilstein 'Superoxide chemistry revisited: synthesis of tetrachlorosubstitutedmethylenenortricyclenes', *J. Org. Chem.,* 10, 2531-2538 (2014).

L. Vasamsetty, F. A. Khan and G. Mehta, 'A model approach towards the polycyclic framework present in cembranoid natural products dissectolide A, plumarellide and mandapamate', *Tetrahedron Lett.,* 55, 7068-7071 (2014).

L. Vasamsetty, D. Sahu, B. Ganguly, F. A. Khan and G. Mehta, 'Total synthesis of novel bioactive natural product paracaseolide A and analogues: computational evaluation of a 'proposed' biomimetic Diels-Alder reaction', *Tetrahedron,* 70, 8488-8497 (2014).

M. R. Hari and F. A. Khan, 'A Solvent Effect in the Reaction of Diazomethane with Norbornane-2,3-dione 3-Hemiketals', *Synth. Commun.,* 44, 3314-3319, (2014).

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S. H. Mahadevegowda and F. A. Khan, 'Synthesis of the tetrahydrofuran unit of varitriol and g-butyrolactones from 5-oxabicyclo[2.1.1]hexane derivative via oxidative cleavage reactions', *Tetrahedron Lett.,* 55, 2266-2269 (2014).

K. Naktode, J. Bhattacharjee, A. Chakrabarti and T. K. Panda, 'Syntheses and Structures of Dimeric Sodium and Potassium Complexes of 2,6-Diisopropyl-Anilidophosphine Borane Ligand', *J. Chem. Sci*, 127, 265-272 (2015).

S. Anga, J. Bhattacharjee, A. Harinath,and T. K. Panda, 'Synthesis, Structure and Reactivity Study of Magnesium Complexes with Carbodiimides and N,N'-Bis(2,6 diisopropylphenyl)-1,4-diaza-butadiene Ligands', *Dalton Trans.,* 44, 955-965 (2015).

S. Anga, S. Das Gupta, S. Rej, B. S. Mallik, and T. K. Panda, 'Modeling of Transition State in Grignard Reaction of Rigid N-(aryl)imino-acenapthenone (Ar-BIAO): A Combined Experimental and Computational Study', *Australian J. of Chemistry*, 58, 931-938 (2015).

T. K. Panda, M. T. Gamer and P. W. Roesky, 'A novel Synthesis of Sodium and Potassium Cyclopentadienyl, Inorganic Syntheses', *Chapter 2*, 36, 35-37 (2014).

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S. Anga, S. Rej, K. Naktode, T. Pal and T. K. Panda, 'Syntheses and solid state structures of various Zinc (II) Complexes with Bi-dentate N-(Aryl)imino-Acenapthenone (Ar-BIAO) Ligands', *J. Chemical Sci.,* 127, 103-113 (2015).

K. Naktode, R. K. Kottalanka, H. Adimulam and T. K. Panda, 'Tetra-nuclear Copper Complex having P–N–P Ligand to P–O–P Ligand – Syntheses and Structural Studies', *J. Coordination Chemistry,* 67, 3042-3053 (2014).

J. Bhattacharjee, R. K. Kottalanka, H. Adimulam, and T. K. Panda, 'Synthesis of Monomeric and Polymeric Alkali and Alkaline Earth Metal Complexes using a Phosphinoselenoic Amide Ligand in Metal Coordination Sphere', *J. Chemical Sci,* 126, 1463-1475 (2014).

K. Naktode, S. Das Gupta, A. Kundu, S. K. Jana, H. P. Nayek, B. S. Mallik, and T. K. Panda, 'Functionalisation of Imidazolin-2-imine to Corresponding Phosphinamine, Chalcogenide (O, S, Se, Te) and Borane Compounds', *Australian J. of Chemistry,* 68, 127-136 (2014).

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S. Biswas and B. S. Mallik, 'Effects of Temperature on Structure and Dynamics of Aqueous Mixtures of N,N-Dimethylformamide', *J. Chem. Engg. Data.*, 59, 3250, 2014.

R. Sydam, M. Deepa, S.M. Shivaprasad, A.K. Srivastava, 'A WO_3-poly(butyl viologen) layer-by-layer film/ruthenium purple film based electrochromic device switching by 1 Volt application', *Solar Energy Mater. Solar Cells*, 132, 148-161 (2015).

R. Sydam, A. Ghosh, M. Deepa, 'Enhanced electrochromic write-erase efficiency of a device with a novel viologen: 1,1□-bis(2-(1H-indol-3-yl) ethyl)-4,4□-bipyridinium diperchlorate', *Organic Electronics*, 17, 33-43 (2015).

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S. M. Seetharaman, P. Nagarjuna, P.N. Kumar, S.P. Singh, M. Deepa, M.A.G. Namboothiry, 'Efficient organic-inorganic hybrid perovskite solar cells processed in air', *Phys. Chem. Chem. Phys.,* 16, 24691-24696 (2014).

P. N. Kumar, R. Narayanan, M. Deepa, A.K. Srivastava, 'Au@Poly(acrylic acid) plasmons and C_{60} improve light harvesting capability of a TiO_2/CdS/CdSeSphotoanode', *J. Mater. Chem.A*, 2, 9771-9783 (2014).

A. Bhaskar, M. Deepa, R. Mantripragada, T.N. Rao, 'Poly(3,4-ethylenedioxythiophene) sheath over a SnO_2 hollow spheres/graphene oxide hybrid for a durable anode in Li-ion batteries', *J. Phys. Chem. C*, 118, 7296-7306 (2014).

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Amrita Das, Alavala Gopi Krishna Reddy, Jonnada Krishna and Gedu Satyanarayana*, 'An efficient

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A. Sagar, V. N. Babu and D. S. Sharada, 'Silica gel promoted environment-friendly synthesis of α-amino amidines and regioselective transformation of α-amino amidines into amidino substituted indazoles,' *RSC Adv.*, 5, 29066-29071 (2015)].

S. Vidyacharan, N. C. Chaitra, A. Sagar and D. S. Sharada, 'A one-pot palladium catalyzed ligand and metal oxidant-free oxidative isocyanide insertion leading to 2-amino-substituted-4(3*H*)-quinozolinones', *Synth. Commun.*, 898-907 (2014)].

A. H. Shinde, N. Archith, S. Malipatel and D. S. Sharada, 'A facile one-pot protocol for the synthesis of tetrazolyl-tetrahydroisoquinolines via novel domino intramolecular cyclization/Ugi-azide sequence', *Tetrahedron lett.*, 55, 6821-6826 (2014)].

A. H. Shinde, S. Malipatel, B. Satpathi, D. S. Sharada, 'A highly efficient synthesis of imidazo-fused polyheterocycles via Groebke-Blackburn-Bienaym reaction catalyzed by $LaCl_3.7H_2O$', *Tetrahedron lett.*, 55, 5915-5920 (2014)].

A. Sagar, S. Vidyacharan and D. S. Sharada, 'I_2-promoted cross-dehydrogenative coupling of a carbonyl aldehydes with alcohols for the synthesis of a-ketoesters', *RSC Adv.*, 4, 37047-37050 (2014).

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P. Manoj Kumar Reddy, K. Krushnamurty, Sk. Mahammad-unisa, A. Dayamani and Ch. Subrahmanyam, 'Preparation of activated carbons from bio-waste: Effect of surface functional groups on methylene blue adsorption', *Int. J. Environ. Sci. Technol.*, 12, 1363-1372 (2015).

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A. Daya Mani, P. Manoj Kumar Reddy, M. Srinivaas, P. Ghosal, N. Xanthopoulos, Ch. Subrahmanyam, 'Facile synthesis of efficient visible active C-doped TiO2 nanomaterials with high surface area for the simultaneous removal of phenol and Cr(VI)', *Mater. Res. Bull.,* 61, 391-399 (2015).

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A. Sathyanarayana, and G. Prabusankar, '(±)-2,8-and 4,10-diimidazolium-6H,12H-5,11-methanodibenzo[b,f] diazocines: Synthesis and structural studies', *16th CRSI National Symposium in Chemistry (NSC-16)*, Department of Chemistry, Indian Institute of Technology Bombay, Powai, Mumbai, 7-9 February 2014.

C. Naga Babu, and G. Prabusankar, 'Discrete Cadmium(II)-Organoselenones', *17th Chemical Research Society of India (CRSI) CRSI National Symposium in Chemistry (NSC-17)*, CSIR-NCL, Pune, 6-8 February 2015.

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FUNDED RESEARCH PROJECTS 2014-15

Tarun K. Panda, *C-H Activation of Poorly Active Molecules by Organo-alkaline Earth Metal Catalysts*, Science and Engineering Research Board (SERB), 13 May 2014, Rs. 46.19 Lakhs, (SB/S1/IC45/2013).

Tarun K. Panda, *Amidophosphine Borane as Potential Source for Hydrogen – An Experimental and Computational Approach*, Ministry of New and Renewable Energy (MNRE), 31 October 2014, Rs. 34.14 Lakhs.

Bhabani Shankar Mallik, *First principles approaches to structure, reactivity and spectroscopy of ionic liquids*, DST, India, 26 June 2014, Rs. 28 Lakhs.

G Satyanarayana, *Transition Metal Mediated Intermolecular C-C and Intramolecular C-O Bonds Formation, Concise Enantioselective Synthesis of Chromans*, DST-SERB, Rs. 50 Lakhs.

Ch. Subrahmanyam, *Transformation of greenhouse gases into clean fuels by low temperature plasma-catalysis*, MNRE, 31 October 2014, Rs. 75 Lalkhs.

G Prabusankar, *OrganoChalcogenone Stabilized Bismuth Compounds: Synthesis, Reactivity Studies and Applications*, DST-SEBR, 3 September 2014, Rs. 50.9 Lakhs.

TALKS GIVEN IN INTERNATIONAL / NATIONAL CONFERENCES

Tarun K. Panda, 'Novel amidophosphine-chalcogenides and boranes into alkaline earth metal & rare earth metal coordination sphere-Syntheses, Structures and Polymerization study', Indian School of Mines, Dhanbad, Jharkhand, 6 May 2014.

Tarun K. Panda, 'Novel NHC Based Ligands in Group 4 Metal Complexes and Their Reactivity', IACS, Kolkata, West Bengal, 3 June 2014.

Tarun K. Panda, 'Alkaline Earth Metal Chemistry: Donor Atoms Play Key Roles for Stabilization', Université de Rennes 1, Campus de Beaulieu – Salle de reunion, France, 10 September 2014.

Tarun K. Panda, Kishor Naktode, 'Diversity of Imidazolin-2-imine Ligands in Group 2 and 4 Metal Chemistry', TIFR Centre for Interdisciplinary Sciences, 21 Brundavan Colony, Narsingi, Hyderabad, India, 13 November 2014.

Tarun K. Panda, 'Functionalized-Amidophosphines into the Alkali and Alkaline-Earth Metal Coordination Sphere', Graduate School of Engineering Science, Osaka University, Japan, 16 December 2014.

Bhabani Shankar Mallik, 'Molecular dynamic simulation of protic ammonium carboxylate ionic liquids', EMLG - JMLG annual meeting 2014, University Roma Tre, Rome, Italy, 7-12 September 2014.

Bhabani Shankar Mallik, 'First Principles Simulations of Ionic Liquids, Symposium on molecular simulations - Celebrating Aneesur Rahman day', University of Hyderabad, 24 August 2014.

Bhabani Shankar Mallik, 'Dispersion corrected first principles MD simulations of ionic liquids Current Trends in Condensed Matter Physics', National Institute of Science Education and Research (NISER), Bhubaneswar, 19-22 February 2015.

G Satyanarayana, 'Transition Metal Catalyzed Unprecedented Domino Transformations and the Synthesis of Novel Tetracyclic Alkaloid Systems via Domino One-pot Sequence', XVI Main NOST Held at Agra, India, 4-7 April 2014.

Surendra Kumar Martha, 'Li-rich NMC as advanced cathode material for next generation Li-ion batteries', workshop on 'On-board Power Sources for Defence and Aerospace Applications (PoSDAC)', RCI (DRDO), Hyderabad, India , 9-10 June 2014.

Surendra Kumar Martha, '3rd International Symposium on Functionalization and Applications of Soft / Hard Materials Soft / Hard 2014', Ritsumeikan University, Kusatsu, Japan, 7-8 November 2014.

Surendra Kumar Martha, 'Development of LMR-NMC Based Cathode and Si Anodes for High Energy Density Li-Ion Batteries', POSDAC, RCI (DRDO), Hyderabad, India, 28-29 April 2015.

WORKSHOPS / SYMPOSIUMS

2-Day TEQIP Workshop on 'Green Processes in Energy Conversion', S. K. Martha, M. Deepa, Ch. Subrahmanyam, 29-30 December 2014 @ IIT Hyderabad.

'A facile synthesis of 2*H*-indazoles under neat conditions and further transformation into aza-γ-carboline alkaloid analogues in a tandem one-pot fashion', D. S. Sharada, Global Cancer Conference & Medicare Summit, Hyderabad, India, 15-17 September 2014.

AWARDS / RECOGNITIONS

B. M. Birla Science Prize in Chemical Sciences (2013).

J. Org. Chem. 79, 8566–8576 (2014), *This paper is one among the top 20 papers downloaded in the month of September-2014.*

Project based Personnel Exchange Programme Fellowship Granted by DST-DAAD (Indo-German)

'Best Poster' award in CRSI-NSC-17, 6-8 February 2015.

CIVIL ENGINEERING

Our vision is to be the frontrunners in addressing the current and future needs of society in “all things Civil”. That is, in developing and constructing advanced and robust structures, laid on better foundations, in satisfying the water needs of the country, and help develop a cleaner and healthier environment free from chemical and biological pollutants. The department will focus on both applied and basic research, provide solutions for immediate use, and generate new science that will help drive the future evolution of **Civil Engineering (CE)**. Industry interaction and academic exchanges will become an integral characteristic of our department.

The Department of Civil Engineering currently has 15 faculty members. The department offers a Bachelor of Technology (B.Tech) program in Civil Engineering, and two year and three year Master of Technology (M.Tech) programs in three specializations: Structural Engineering, Geotechnical Engineering, and Environmental and Water Resource Engineering. The three year program is ‘thesis-by-research” and allows students to gain in-depth research exposure. The department also offers a Doctor of Philosophy (Ph.D) program in four specializations: Structural Engineering; Geotechnical Engineering; Water Resources Engineering; and Environmental Engineering.

The department is developing state-of-the-art laboratory facilities in each specialization. Key advanced equipment have already been procured and labs will be used both for research and undergraduate teaching. Current facilities include laboratories in Construction Materials, Structural Engineering. Advanced Cement-based Materials, High Performance Concrete, Structural Materials, Large Scale Structures, Computational Structural Mechanics, Advanced Geotechnical Testing, Large Scale testing, Geosynthetics, Advanced Soil Dynamics, Ground Characterization, Computational Geotechnical, Water Quality Analysis Water and Waste Water, Solid waste, Hazardous waste, Trace Contaminants, Microbiology, Air Quality Monitoring, Hydraulic Engineering, Hydrology, Geographic Information Systems (GIS).

With our current and evolving faculty strength, motivated community, and exceptional laboratory facilities, we have all the necessary ingredients in realizing our vision and are confident about it.

Faculty

K.V.L. Subramaniam
Ph.D - Northwestern University, USA
Professor & HoD

Research Areas: Concrete Materials, Reinforced Concrete, Structural Strengthening, Low Energy Binders, Geopolymers

Sireesh Saride
Ph.D - IISc Bangalore
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Research Areas: Pavement Geotechnics, Geosynthetics, Ground Improvement, and Numerical modelling in Geomechanics

Amirtham Rajagopal
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Research Areas: Damage and Fracture Mechanics, Finite element and Mesh free methods, Computational Mechanics.

Anil Agarwal
Ph.D - Purdue University
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Research Areas: Structural fire behavior and design, Structural stability, Structural behavior under extreme loading conditions, Steel structures

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Ph.D - Swiss Federal Institute of Technology
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Research Areas: Emerging contaminants, Environmental science, Environmental health

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Research Areas: Computational Geomechanics, Reliability Based Designs in Geotechnical & Geoenvironmental Engineering, Municipal Soild Waste Landfills, Soil Dynamics and Earthquake Resistant Design of Retaining Structures and Rock Mechanics

B Umashankar
Ph.D - Purdue University, USA
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Research Areas: Foundation Engineering, Reinforced Soil, Soil-Structure Interaction, Recyclable Materials in Geotechnics

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Research Areas: River flow modelling; Hydro-geomorphology; Eco-hydrology; Applications of remote sensing and GIS in hydrology

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Research Areas: Water treatment, wastewater treatment, waste management

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Research Areas: Hydro-Geology; Groundwater Modeling, Gis Applications In Water Resources

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Research Areas: Steel Structures, Steel-Concrete composites, Cold formed Steel, Retrofitting of steel structures

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Ph.D - The Pennsylvania State University
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Research Areas: Rainfall runoff modelling; Uncertainty analysis; Prediction in ungauged basins; Climate and land use change impact on water resources; Multi-objective optimization; Decision making under uncertainty

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Ph.D - IIT Madras
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Research Areas: Bioremediation, contaminant transport modeling, Remote Sensing and GIS applications, Solid and Hazardous waste management, Modeling of Biological systems, Hydro-climate.

S. Suriya Prakash
Ph.D - Missori University of Science & Technology - Rolla, USA
Assistant Professor

Research Areas: Reinforced Concrete, Prestressed Concrete, Precast Systems, FRP Composites, Structural Strengthening

Surendra Nadh Somala
Ph.D - California Institute of Technology (Caltech)
Assistant Professor (on-contract)

Research Areas: Earthquake Engineering, Engineering Seismology

PATENTS FILED

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M. Ramancha, TG Mondal and SS Prakash, 'Softened Truss Model for FRP Strengthened RC Members under Torsion Including Tension Stiffening Effect', Advances in Structural Engineering: Mechanics, Vol. 1, pp. 513-524, *Structural Engineering Convention,* Delhi, 21-23 December 2014.

B. Umashankar, S. Mouli, and C. Hariprasad, 'Settlement of embankment constructed with geofoam', The International Foundations Congress and Equipment Expo, 2015, ASCE, pp. 161-170.

B. Umashankar, C. Hariprasad, and S. Mouli, 'Interface properties of metal-grid and geogrid reinforcements with sand', *International Foundations Congress and Equipment Expo*, 2015, ASCE, pp. 1430-1438.

C. Hariprasad and B. Umashankar, 'Load-settlement response of circular footing resting on reinforced layer system', 15th Asian Regional Conference on Soil Mechanics and Geotechnical Engineering, Japan, 2015.

G. Thejesh Kumar and B. Umashankar, 'Slope stability analysis considering stress dependency on angle of shearing resistance', Indian Geotechnical Conference, Kakinada, 18-20 December 2014.

C. Hari Prasad, G. Thejesh Kumar, and B. Umashankar, 'A micro fabric study of untreated and treated expansive soils using atomic force microscopy', *Indian Geotechnical Conference*, Kakinada, 18-20 December 2014.

B. Durga Prasad, C. Hari Prasad, and B. Umashankar, 'Shear strength of IS sand under various normal stresses', *Indian Geotechnical Conference*, Kakinada, 18-20 December 2014.

K.V.N.S. Raviteja, B. Umashankar, K. Ramu, and R. DayakarBabu, 'Bearing capacity of a strip footing resting on treated and untreated soils', *Indian Geotechnical Conference*, Kakinada, 18-20 December 2014.

B. Umashankar and S. Sasanka Mouli, 'Lateral earth pressure analysis of back-to-back retaining walls', *Indian Geotechnical Conference*, Kakinada, 18-20 December 2014.

B. Umashankar and A. Sahithi, 'Bearing capacity of strip footing on top of sloping ground', *Indian Geotechnical Conference*, Kakinada, 18-20 December 2014.

S. Preethi, B. Umashankar, and M.R. Madhav, 'Settlement analysis of a layered system due to circular loading', *Golden Jubilee Conference of the IGS Bangalore Chapter*, Geo-Innovations, Bangalore, 2014.

S.S. Mouli and B. Umashankar, 'Numerical analysis of MSE walls considering wall friction and reinforcement stiffness', *Proc. of 14th IACMAG*, Japan, 2014, pp. 1119-1123.

B. Umashankar, M. Prezzi, and R. Salgado, 'Pullout resistance factors of metal strips in tire shred-sand mixtures', *Proceedings of the Geo-Shanghai 2014 International Conference*, Geotechnical Special Publication 241, ASCE, 2014, pp. 232- 241.

FUNDED RESEARCH PROJECTS 2014-15

Amirtham Rajagopal, *Mutiscale Modeling of failure in Composites*, AR & DB New Delhi, 17Lakhs.

Amirtham Rajagopal, Meshless Analysis of FGM, DRDO, 9.82 Lakhs, 2015.

D. Bhattacharyya, *Development of an Advanced Electrocoagulation System for Wastewater Treatment*, Rahyals Envergy India Pvt Ltd., Rs. 6 Lakhs, August 2014.

K.V.L. Subramaniam, *Embedded Smart Sensor Design for Internal Stress and Damage Detection in Concrete*, DST (Extra-Mural Scheme), Rs. 36.72 Lakhs, 2014-2016.

K.V.L. Subramaniam, *Center of Excellence in Sustainable Urban Development*', MHRD (Centres of Excellence for Training and Research in Frontier Areas of Science and Technology (FAST)), Rs. 400 Lakhs, 2014-2018.

Shashidhar, *Seasonal Hydrologic Predictions based on Regional Forecasts of Monsoon Rainfall with CWRF and Statistical Downscaling,* Ministry of Earth Sciences, 13.71 Lakhs, 25 September 2014.

Sireesh Saride, Ch. Subrahmanyam, G. Jagannadha Rao, *Evaluation of Fly Ash Treated Recycled Asphalt Pavement (RAP) for Base/Subbase Construction*, Technology Systems Development Scheme of DST, Rs. 89.2 lakhs, Start Date: March 15, 2015.

B Umashankar, S Sireeshand, M R Madhav, *Laboratory Study on the Stabilization of Haul Roads inside Open-Cast Mines*, Neyveli Lignite Co. Ltd. start date: July 2013, 1.5 years.

'Resilient and Sustainable Fiber Reinforced Masonry Systems for Rural India', Principal Investigator, Rs. 35 Lakhs, DST (Ramanujan Fellowship), 2012-2017, Date of Start: 14 September 2012.

'Shear Flow Estimation and Damage Assessment of RC Columns under Combined Loading Including Torsion', Principal Investigator, Rs. 34.5 Lakhs DST (Extra-Mural Scheme), 2014-2016, Date of Start: 12 August 2014.

'Behaviour of Masonry Assemblies Retrofitted with TRM Strengthening', Principal Investigator, Rs. 24,50,000, DST (young Scientist Scheme), 2014-2016, Date of Start: 18 August 2014.

CEP COURSES

RAISE 2015 'Recent Advances in Structural Engineering and Materials' on 14-15 January 2015, Sponsored by TEQIP II.

Conducted Short term course on 'Groundwater Modeling with MODFLOW' to academicians and industry professionals, during 26-27 December, 2014.

NLFEM 2014, short course on Nonlinear Finite Element Method, 12-16 December 2014.

SEMINARS CONDUCTED

'Mosquitoes, weather and landscapes: modeling the risk of vector-borne diseases', Prof. Marilyn O'Hara Ruiz, University of Illinois Urbana-Cha/mpaign (UIUC), 26 June 2015.

'Electrosorption of Ions from Aqueous Solutions by Mesoporous Carbon Materials', Dr. Ketki Sharma, Georgia Institute of Technology (GeorgiaTech), 20 March 2015.

'Sustainable development and management of brownfields', Prof. Rao Surampalli, CEO of Global Institute for Energy, Environment, and Sustainability, 21 January 2015.

'Environmental quality and water resource analysis'. Prof. S Mohan, IIT Madras, 17 November 2014.

'Estimates of Water Storage Variability from Basin to Continental Scale from Space Observations'. Dr. V.M. Tiwari, Principal Scientist and Project Leader, National Geophysical Research Institute (NGRI), 27/08/2014.

'Wind-Resistant Design of Light Gauge Steel and Roof Cladding Systems', Prof. Mahen Mahendran, Professor and group head of Smart and Disaster Resilient Steel Buildings, Queensland University of Technology, Brisbane, Australia, 4/12/2014.

'Vertical Electrical Sounding for finding Groundwater potential zones in IIT Kandi Campus', Hyderabad, Andhra Pradesh, P. Srinivasa Rao, A. Lokesh Kumar, P.V.N. Gautam, S. Karthik, and T. Shashidar, Two day National conference on water, environment & society (NCWES-2014) 30th June and 1 July 2014 at Hyderabad, India Organized by CWR, IST, JNTUH, Hyderabad.

TALKS GIVEN IN INTERNATIONAL / NATIONAL CONFERENCES

Amirtham Rajagopal, 'Moving beyond finte elements: Towards meshless isogeometric analysis', SERC Chennai, 5th ICCMS, 2014.

Asif Qureshi, 'Mercury pollution in India: Emissions, environmental levels and possible future trends', 12th International Conference on Mercury as a Global Pollutant, Jeju, South Korea, 14-19 June 2015.

Krishna R Reddy and B. Munwar Basha, 'Slope Stability of Landfills: State-of-the-Art and Future Challenges', Indian Geotechnical Conference, Kakinada, Andhra Pradesh, India, 18-20 December 2014.

Krishna R Reddy and B. Munwar Basha, 'Reliability Analysis of Nanoiron Particle Transport through Porous Media', Department of Civil and Environmental Engineering, University of Illinois at Urbana Champaign (UIUC), Illinois, United States, 27 June 2014.

Krishna R Reddy and B. Munwar Basha, 'Computation of Reliability based LRF for external seismic stability of reinforced soil walls', GeoApps 2014, JNTU Hyderabad, Andhra Pradesh, India, 4 April 2014.

Krishna R Reddy and B. Munwar Basha, 'ASD to LRFD to Reliability based LRFD, Emerging Trends in Geotechnical Engineering under the aegis of Science and Engineering Research Board (SERB) of Department of Science and Technology (DST), VMCC building, IIT Bombay, 26 March 2014.

Krishna R Reddy and B. Munwar Basha, 'Load Resistance Factor Design of Mechanically Stabilized Earth Walls', Department of Civil and Materials Engineering, University of Illinois at Chicago UIC), Chicago, Illinois, USA, 28 February 2014.

Mahendrakumar Madhavan, 'A Numerical Study on Strengthening of Crack Stop Hole', Seventh International Conference on Thin-Walled Structures, Busan, Korea, 28 September - 2 October 2015.

Mahendrakumar Madhavan, 'An Experimental Study on Flexural Strengthening of Structural Steel Angle Sections using Carbon Fiber-Reinforced Polymer Composites', Seventh International Conference on Thin-Walled Structures, Busan, Korea, 28 September - 2 October 2015.

K.B.V.N. Phanindra, 'Evaluation of Management Practices on Crop Yield simulations in a semi-arid watershed using process based Hydrologic Model', 36th IAHR World Congress, The Hague, the Netherlands, 28 June-3July, 2015.

V. L. Ward, R. Singh, P.M. Reed, and K. Keller, 'Confronting Decision Cliffs: Diagnostic Assessment of Multi-Objective Evolutionary Algorithms' Performance for Addressing Uncertain Environmental Thresholds, American Geophysical Union, Fall Meeting 2014, abstract #H13A-1021, San Francisco, USA, December 2014.

Sireesh S, 'Sustainability of Indian Rural Roads with Reclaimed Asphalt Pavements', *International Conference on Sustainable Civil Infrastructure*, ICSCI-2014, Hyderabad, 17-18 October 2014.

Sireesh S and Deepthi A, 'Reclaimed Asphalt Pavements in Flexible Pavement Applications', *Theme lecture, Indian Geotechnical Conference 2014*, Andhra Pradesh, 18-20 December 2014.

Sireesh S (2014) 'Resilient Behavior of Reclaimed Asphalt Pavements for Pavement Construction', *One day National Seminar on Problems Related to Infrastructure Geotechnics (SPRING-2014),* KKR & KSR Institute of Technology & Sciences, Guntur, 23 August, 2014.

WORKSHOPS / SYMPOSIUMS

Short Course on Nonlinear Finite element Method 12-16 December 2014, IIT Hyderabad.

International Conference on Sustainable Civil Infrastructure, ICSCI 2014 will be held on 16-18 October 2014 in Hyderabad. The conference is organized by the American Society of Civil Engineers - India Section in association with Department of Civil Engineering, Indian Institute of Technology Hyderabad.

Hydrological modelling with SWAT and groundwater modelling with MODFLOW, TEQIP sponsored workshop, 26-27 December 2014, IIT Hyderabad.

Modelling tools for sustainable water resources management, International Conference, 26-27 December 2014, IIT Hyderabad.

India Canada Workshop on Sustainable Infrastructure and Materials, 13 January 2015, Hyderabad, Sponsored by Center for Excellence in Sustainable Development (IIT Hyderabad) and IC-IMPACTS (Canada).

Indian-Japan JICA Friendship Symposium on Sustainable Infrastructure, 23 February 2015, IIT Hyderabad.

Mini-Symposium on Symposium on The great Himalayan Quake: Issues, Challenges and Lessons, 29 May 2015, IIT Hyderabad, Sponsored by Center for Excellence in Sustainable Development (IIT Hyderabad)

5-day workshop on Structural Steel Design titled ISPAT 2015 was conducted from May 25-29 2015.

International Conference on Modeling Tools for Sustainable Water Resource Management (MTSWRM), during 28-29 December, 2014 at IIT Hyderabad.

Geographic Information, Communication, and Dissemination Technologies in Water Resources and Agriculture, during 06-08 January, 2015 at IIT Hyderabad.

TeQIP sponsored workshop on 'Hydrologic Modeling with SWAT and Groundwater Modeling with MODFLOW', during 26-27 December, 2014 at IIT Hyderabad.

International conference on modeling tools for sustainable Water resources management (MTSWRM 2014) 28-29 December 2014 at IIT-Hyderabad.

2-days TEQIP workshop on hydrologic modeling with swat & Groundwater modeling, 26-27 December 2014.

The Great Himalayan Earthquake: Issues, Challenges and Lessons.

India Canada Workshop on Sustainable Infrastructure and Materials, 13-January, 2015, Hyderabad, Sponsored by Center for Excellence in Sustainable Development (IIT Hyderabad) and IC-IMPACTS (Canada).

Indian-Japan JICA Friendship Symposium on Sustainable Infrastructure, February 23, 2015, IIT Hyderabad.

AWARDS / RECOGNITIONS

DST INSPIRE Faculty award: Ongoing (2013-2018)

Elected as Editorial Review Board Member of International Journal of Geotechnical Earthquake Engineering (IJGEE).

Member - External of the Divisional Scientific Committee (DSC) for the Structural Technologies Division of National Aeronautical Laboratory, Bengaluru, India.

Awarded FIRST prize (cash award of Rs. 20 Lakhs to the group) in the 1st Annual Progress Meeting of ITRA-Water Projects, Prof. J. Adinarayana (IIT B), Co-PI: Dr. KBVN. Phanindra (IIT H), Grid Sense.

PhD Student (Mr. P. Srinivasa Rao) was awarded with a cash prize of Rs. 1 Lakh in the 1st Annual Progress Meeting of ITRA-Water Projects.

IGS-AFCONS Biannual Award for the paper titled 'Sulfate Induced Heaving of a Taxiway: A Case Study', Anand J. Puppala, Bhaskar Chittoori and Sireesh Saride, Indian Geotechnical Journal, Springer Publishing, 2014.

Associate Editor, Sireesh Saride, Journal of Materials in Civil Engineering, American Society of Civil Engineers (ASCE) (2014 -2017).

Guest Editor, Sireesh Saride, Special Issue on 'Transportation Geotechnics', Indian Geotechnical Journal, Springer Publishing (2014-2015).

Suriya Prakash is awarded the *Ramanujan Fellowship Award*.

Sameer Sarma, Pradeep Kankeri, Selvan Ganesh (PhD students) are awarded the *PM Fellowship Award* for PhD research work.t

Two PhD students have been awarded '*Prime Minister Fellowship*' sponsored by DST and Confederation of Indian Industries, 2014-2016.

Various conferences / workshops organized by the department of Civil Engineering at IIT Hyderabad.

COMPUTER SCIENCE & ENGINEERING

The Department of Computer Science and Engineering at IIT, Hyderabad is poised for a giant leap through research in cutting-edge computing and technology, while imparting top-class education through innovative pedagogy. The department offers undergraduate (B.Tech) and postgraduate programs (M.Tech. and Ph.D), short courses (Continuing Education Programmes) customized to the needs of industry, and a new Executive M.Tech program in Data Science intended for working professionals from August 2015. The department comprises 12 young faculty members (with several adjunct faculty from reputed academic and industry backgrounds) who are actively engaged in research areas including theoretical computer science, algorithms, graph theory, networking, distributed systems, databases, compilers, machine learning, image/ video processing, data mining and information retrieval. The faculty have large sponsored research projects in the application domains of cyber-physical systems (DeitY, Govt of India) and disaster management (in collaboration with Japan). The department also has regular collaborators in industry and academia, such as KDDI labs (Japan), Uurmi Systems, IISc (Bangalore), Tel Aviv University (Israel), NTU (Singapore), Royal Holloway University of London, INRIA (France) etc. The department has risen in stature over its short existence, evidenced by opening and closing JEE ranks of 632 and 1260 respectively in 2014. To know more about the department and research interests of the faculty, please visit http://cse.iith.ac.in/.

Faculty

Bheemarjuna Reddy Tamma
Ph.D - IIT Madras
Assistant Professor and HoD

Research Areas: Converged Cloud Radio Access Networks, 5G, SDN, IoT/M2M, and Green ICT

C. Krishna Mohan
Ph.D - IIT Madras
Associate Professor

Research Areas: Deep Learning, Video Content Analysis, Sparsity Based Methods, Machine Learning

Ch. Sobhan Babu
Ph.D - IIT Bombay
Assistant Professor

Research Areas: Big Data Analytics, VLSI design and Applied algorithms

Kotaro Kataoka
Ph.D - Keio University, Japan
Assistant Professor

Research Areas: Internet over Broadcast Media, IPv6 Multicast, Post-disaster Networking

M. V. Panduranga Rao
Ph.D - IISc Bangalore
Assistant Professor

Research Areas: Formal Methods

Manish Singh
Ph.D - University of Michigan
Assistant Professor

Research Areas: Databases, Data Mining, HCI, Information Retrieval, Information Visualization

Naveen Sivadasan
Ph.D - Max-Plank Saarbrücken, Germany
Assistant Professor

Research Areas: Algorithms and graph theory

N. R. Arvind
Ph.D - Institute of Mathematical Sciences
Assistant Professor

Research Areas: Combinatorics, graph theory, parameterized algorithms

Sathya Peri
Ph.D - University of Texas at Dallas
Assistant Professor

Research Areas: Parallel Programming: Software Transactional Memory, Operating Systems, Databases theory, Distributed Systems: Peer-to-Peer Computing, Gossip-based Protocols, Social Peer-to-Peer Networks, Grid Computing, Algorithm analysis, Networking algorithms

Subrahmanyam Kalyanasundaram
Ph.D - Georgia Tech, USA
Assistant Professor

Research Areas: Theoretical Computer Science, Algorithms, Complexity theory, Graph Theory.

Upadrasta Ramakrishna
Ph.D - University of Paris and INRIA, Paris
Assistant Professor

Research Areas: Programming languages, Compiler Optimizations, Parallelizing Compilers, Static Analysis, Verification, Algorithms, Combinatorial Optimization

Vineeth N Balasubramanian
Ph.D - Arizona State University, USA
Assistant Professor

Research Areas: Pattern Recognition, Machine Learning, Computer Vision, Multimedia Computing

PUBLICATIONS
(In Peer-Reviewed Journals)

Satya Trinadh, Seetal Potluri, Shankar Balachandran, Ch. Sobhan Babu, V. Kamakoti: XStat: Statistical *X*-Filling Algorithm for Peak Capture Power Reduction in Scan Tests. J. Low Power Electronics 10(1), 107-115 (2014).

Domingos Dellamonica Jr., Subrahmanyam Kalyanasundaram, Daniel M. Martin, Vojtech Rödl, Asaf Shapira, 'An Optimal Algorithm for Finding Frieze-Kannan Regular Partitions', Combinatorics, Probability &Computing 24(2): 407-437 (2015).

N. R. Aravind, Subrahmanyam Kalyanasundaram, R. B. Sandeep, Naveen Sivadasan, 'The chromatic discrepancy of graphs', *Discrete Applied Mathematics* 184: 40-49 (2015).

S. Chakraborty, V. Balasubramanian, Q. Sun, S. Panchanathan and J. Ye, 'Active Batch Selection via Convex Relaxations with Guaranteed Solution Bounds', *IEEE Transactions on Pattern Analysis and Machine Intelligence,* Vol.PP, No.99, pp.1,1, January 2015. doi: 10.1109/TPAMI.2015.2389848. (Impact Factor: 5.694).

S. Chakraborty, V. Balasubramanian and S. Panchanathan, 'Adaptive Batch Mode Active Learning, *IEEE Transactions on Neural Networks and Learning Systems,* vol.PP, no.99, pp.1,1, September 2014. doi: 10.1109/TNNLS.2014.2356470. (Impact Factor: 4.37).

V. Balasubramanian, S. Chakraborty and S. Panchanathan, 'Conformal Predictions for Information Fusion', *Annals of Mathematics and Artificial Intelligence*, Vol 74: 1-2, pg 45-65, 2015. doi: 10.1007/s10472-013-9392-4.

V Goyal, S.K. Gupta, M. Singh, A. Gupta, 'Auditing Inference Based Disclosures in Dynamic' Databases, *Secure Data Management*, 5159, 67-81 (2008).

PUBLICATIONS
(In Peer-Reviewed Conferences)

Naresh Vattikuti, Himanshu Sindhwal, Mallesham Dasari, Bheemarjuna Reddy Tamma, 'Delay Sensitive TDMA Slot Assignment in Ad Hoc Wireless Networks, National Conference on Communications', Mumbai, 27 February - 1 March 2015, 10.1109/NCC.2015.7084878.

Vanlin Sathya, Arun Ramamurthy, Bheemarjuna Reddy Tamma, 'Joint Placement and Power Control of LTE Femto Base Stations in Enterprise Environments', IEEE ICNC, Anaheim, California, 16-19 February 2015, 10.1109/ICCNC.2015.7069489.

Milind Tahalani, Vanlin Sathya, Arun Ramamurthy, Suhas U S, Mukesh Kumar Giluka, Bheemarjuna Reddy Tamma, 'Optimal Placement of Femto Base Stations in Enterprise Femtocell Networks', IEEE ANTS, New Delhi, 14-17 December 2014, 10.1109/ANTS.2014.7057240.

Hatim Lokhandwala, Vanlin Sathya, Bheemarjuna Reddy Tamma, 'Phantom Cell Realization in LTE and its performance analysis', IEEE ANTS, New Delhi, 14-17 December 2014, 10.1109/ANTS.2014.7057270.

Anil kumar Rangisetti, Hardik B Baldaniya, Pradeep Kumar B, Bheemarjuna Reddy Tamma, 'Load-aware Hand-offs in Software Defined Wireless LANs', IEEE WiMob, Larnaca, 8-10 October 2014, 10.1109/WiMOB.2014.6962245.

Vanlinsathya, Arun Ramamurthy, Bheemarjuna Reddy Tamma, 'On Placement and Dynamic Power Control of Femtocells in LTE HetNets, IEEE GLOBECOM', Austin, TX, 8-12 December 2014, 10.1109/GLOCOM.2014.7037499.

Debaditya Roy, M. Srinivas, C. Krishna Mohan, 'Sparsifying Dense Features for Action Recognition', *Perception and Machine Intelligence (PerMIn'15)*, Kolkata, 26-27 February 2015,10.1145/2708463.2709047.

N. Pattabhi Ramaiah, Earnest Paul Ijjina, C. Krishna Mohan, 'Illumination invariant face recognition using convolutional neural networks', *IEEE International Conference on Signal Processing, Informatics, Communication and Energy Systems (SPICES)*, Kozhikode, 19-21 February 2015,10.1109/SPICES.2015.7091490.

Earnest Paul Ijjina, C. Krishna Mohan, 'Human Action Recognition Based on Motion Capture Information using Fuzzy Convolution Neural Networks', *IEEE International Conference on Advances in Pattern Recognition (ICAPR)*, Kolkata, 4-7 January 2015,10.1109/ICAPR.2015.7050706.

Earnest Paul Ijjina, C. Krishna Mohan, 'Human action recognition based on MOCAP information using convolution neural networks', *IEEE International Conference on Machine Learning and Applications (ICMLA)*, Detroit, 3-6 December 2014,10.1109/ICMLA.2014.30.

Earnest Paul Ijjina, C. Krishna Mohan, 'Human action recognition based on recognition of linear patterns in action bank features using convolutional neural networks', *IEEE International Conference on Machine Learning and Applications (ICMLA)*, Detroit, 3-6 December 2014,10.1109/ICMLA.2014.33.

Earnest Paul Ijjina, C. Krishna Mohan, 'One-shot periodic activity recognition using Convolutional Neural Networks', *IEEE International Conference on Machine Learning and Applications (ICMLA)*, Detroit, 3-6 Dec. 2014,10.1109/ICMLA.2014.69.

Earnest Paul Ijjina, C. Krishna Mohan, 'Facial expression recognition using kinect depth sensor and convolutional neural networks', *IEEE International Conference on Machine Learning and Applications (ICMLA)*, Detroit, 3-6 Dec. 2014,10.1109/ICMLA.2014.70.

Earnest Paul Ijjina, C. Krishna Mohan, 'Human Action Recognition Using Action Bank Features and Convolutional Neural Networks', *ACCV 2014 IEEE International Workshop on Deep Learning on Visual Data*, Singapore, 2 Nov. 2014,10.1007/978-3-319-16628-5_24.

Earnest Paul Ijjina, C. Krishna Mohan, 'View and Illumination Invariant Object Classification Based on 3D Color Histogram Using Convolutional Neural Networks', *ACCV 2014 IEEE International Workshop on Deep Learning on Visual Data*, Singapore, 2 Nov. 2014,10.1007/978-3-319-16628-5_23.

N. Pattabhi Ramaiah, A. Tirupathi Rao, C. Krishna Mohan, 'Enhancements to latent fingerprints in forensic applications', *IEEE International Conference on Digital Signal Processing (DSP)*, Hong Kong, 20-23 Aug. 2014,10.1109/ICDSP.2014.6900702.

Shyju Wilson, M. Srinivas, C. Krishna Mohan, Dictionary based action video classification with action bank, *IEEE International Conference on Digital Signal Processing (DSP)*, Hong Kong, 20-23 Aug. 2014,10.1109/ICDSP.2014.6900734.

M. Srinivas, C. Krishna Mohan, Medical images modality classification using multi-scale dictionary learning, *IEEE International Conference on Digital Signal Processing (DSP)*, Hong Kong, 20-23 Aug. 2014,10.1109/ICDSP.2014.6900739.

M. Srinivas, Debaditya Roy, C. Krishna Mohan, 'Learning sparse dictionaries for music and speech classification', *IEEE International Conference on Digital Signal Processing (DSP)*, Hong Kong, 20-23 Aug. 2014,10.1109/ICDSP.2014.6900749.

M. Srinivas, Debaditya Roy, C. Krishna Mohan, 'Music genre classification using On-line Dictionary Learning', *International Joint Conference on Neural Networks (IJCNN)*, Beijing, 6-11 July 2014,10.1109/IJCNN.2014.6889516.

Satya Trinadh, Ch. Sobhan Babu, Shiv Govind Singh, Seetal Potluri, V. Kamakoti: DP-fill: a dynamic programming approach to X-filling for minimizing peak test power in scan tests. DATE 2015: 836-84.

Acquisition, Storage, Retrieval and Dissemination of Disaster Related Data, Shaik Asif Ahammed, Sumit Chhuttani, Anuj Gangwar, Anubhav Jain, Rohit Jindal, Neeraj Kumar, Kiran Kumar Manku, Rahul Patil, Mudit Tanwani, Vaibhav Garg, Ravindra Guravannavar, Subrahmanyam Kalyanasundaram, Kotaro Kataoka, M V Panduranga Rao and Naveen Sivadasan, IEEE Region 10 Humanitarian Technology Conference, Chennai, 2014.

AutoHS: The Intelligent Hospital Search, Sudarshan S., Kayathi Rohith, K. P. Sai Krishna, M. V. Panduranga Rao, 5th Workshop on Computational Intelligence in Disaster Management/INCoS, Italy, 2014.

On Polynomial Kernelization of *H*-free Edge Deletion, N. R. Aravind, R. B. Sandeep, Naveen Sivadasan, IPEC (International Symposium on Parameterized and Exact Computation), 28-38 (2014).

S-Gossip: Security Enhanced Gossip Protocol for Unstructured P2P Networks**,** Sumit Kumar Tetarave, Somanath Tripathy, Sathya Peri in 11th International Conference on Distributed Computing and Internet Technology (ICDCIT), Bhubaneswar, India, February 2015.

SWST: A Disk Based Index for Sliding Window Spatio-Temporal Data, M. Singh, Q. Zhu, H. V. Jagadish, IEEE International Conference on Data Engineering, Washington DC, 1-5 April 2012, 10.1109/ICDE.2012.98.

Skimmer: Rapid Scrolling of Relational Query Results, M. Singh, A. Nandi, H.V. Jagadish, ACM Special Interest Group on Management of Data (SIGMOD), Scottsdale, 20-24 May 2012, 10.1145/2213836.2213858.

FUNDED RESEARCH PROJECTS 2014-15

Dr. Vineeth N Balasubramanian, e-DRIShTI: Automatic Determination of Student Engagement for Personalized e-Learning, IBM, November 2014, USD 3000.

Dr. Vineeth N Balasubramanian, Deep Learning Architectures for Human Action Recognition in the Wild, NVIDIA Academic Hardware Grant.

Dr. Vineeth N Balasubramanian, Deep Learning Architectures for Human Action Recognition in the Wild, IIT Hyderabad Startup Grant, August 2014, Rs. 5 Lakhs.

Dr. Sathya Peri, An Efficient Middleware for Multi-Core Systems using Transactional Memory Systems, ANURAG, DRDO, December, 2014, Rs. 10 Lakhs.

Dr. Sathya Peri, Unrestricted Research Grant, Microsoft Research Bangalore, August 2014, Rs. 2.5 Lakhs.

Dr. Sathya Peri, On Increasing Concurrency in Transactional Memory Systems, NetApp, Bangalore, August 2014, Rs. 5.5 Lakhs.

CEP COURSES

Certificate Course on Business Analytics, December 2014.

TALKS GIVEN IN INTERNATIONAL / NATIONAL CONFERENCES

Bheemarjuna Reddy Tamma, 'Placement and Dynamic Power Control of Femtocells in LTE HetNets', IEEE GLOBECOM, Austin, TX, USA, 8-12 December 2014.

Subrahmanyam Kalyanasundaram, 'Introduction to Randomized Algorithms', Invited talk in the Research Promotion Workshop on 'Introduction to Graph and Geometric Algorithms', 15-17 January 2015, Nagpur.

Subrahmanyam Kalyanasundaram, 'Introduction to Randomized Algorithms, Invited talk in the Research Promotion Workshop on 'Introduction to Graph and Geometric Algorithms', 18-20 May 2015, Srinagar.

Shaik Asif Ahammed, Sumit Chhuttani, Anuj Gangwar, Anubhav Jain, Rohit Jindal, Neeraj Kumar, Kiran Kumar Manku, Rahul Patil, MuditTanwani, Vaibhav Garg, Ravindra Guravannavar, Subrahmanyam Kalyanasundaram, Kotaro Kataoka, M V Panduranga Rao, Naveen Sivadasan, 'Acquisition, Storage, Retrieval and Dissemination of Disaster Related Data', IEEE Region 10 Humanitarian Technology Conference, Chennai, 2014.

Sudarshan S., Kayathi Rohith, K. P. Sai Krishna, M. V. Panduranga Rao, 'AutoHS: The Intelligent Hospital Search', 5th Workshop on Computational Intelligence in Disaster Management/INCoS, Italy, 2014.

V. Balasubramanian, 'Conformal Prediction for Reliable Machine Learning and Active Learning for Video Sequence Analysis', workshop on 'Machine Learning and Its Applications', Indian Institute of Space Science and Technology (IIST), Thiruvananthapuram, India, July 2014.

Sri Sathya Sai Institute of Higher Learning, Prasanthi Nilayam, India, V. Balasubramanian, 'Active Learning and Its Application to Video Sequence Analysis, International Workshop on 'Machine Learning and Computer Vision', December 2014.

INVITED TALKS/WORKSHOPS/SYMPOSIA

Architectures and Design for Next-Generation Backbone Telecom Networks, Dr. Chaitanya Vadrevu, Yahoo! USA, Bheemarjuna Reddy Tamma, 29 May 2014.

Privacy Preserving Quantification of Cross-Domain Network Reachability, Dr. Bruhadeshwar B, Nanjing University, China, Bheemarjuna Reddy Tamma, 5 November 2014.

Data Rate Adaptation in Multi-Rate Mesh Networks: Path Length vs Network Contention, Sandip Chakraborty, IIT Guwahati, Bheemarjuna Reddy Tamma, 9 April 2014.

Extreme Classification: A New Paradigm for Ranking & Recommendation, Dr Manik Varma, Researcher and Area Champion of Machine Learning and Optimization at Microsoft Research India, Vineeth N Balasubramanian, 10 February 2015.

Data Science and Advanced Analytics Science: Opportunities and Challenges, Longbing Cao, University of Sydney, Australia, Manish Singh, 26 March 2015.

Involved in the TEQIP meeting with faculty members from MITS Madanapalle on designing their PG level curriculum, Subrahmanyam Kalyanasundaram.

i.School Workshop on Service Innovation in India (collaboration with University of Tokyo), Vineeth N Balasubramanian 7-8 January 2015.

AWARDS / RECOGNITIONS

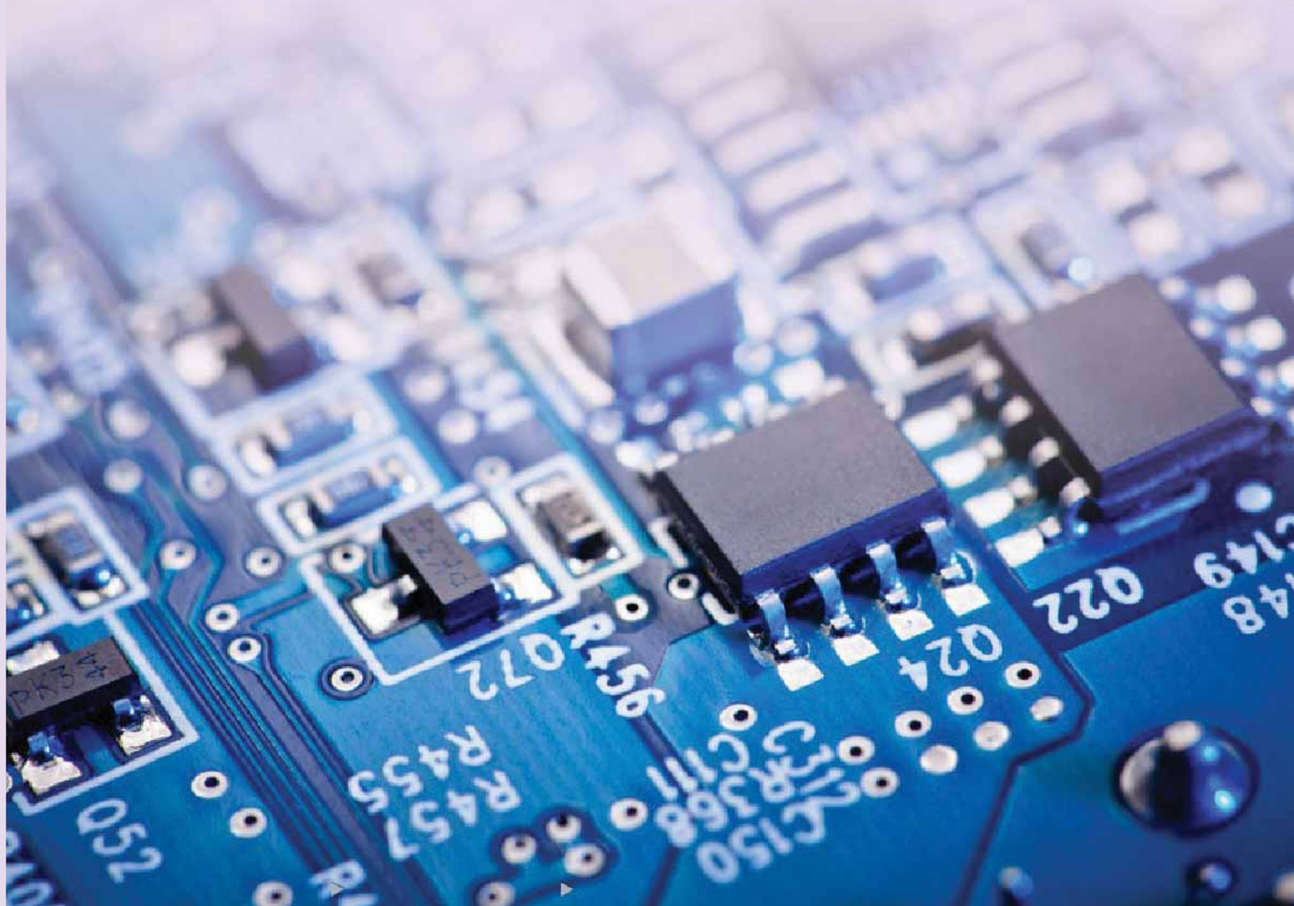
Vineeth N Balasubramanian, NVIDIA Best GPU Paper Award, *IEEE International Conference on High-Performance Computing (HiPC) Student Research Symposium*, 2014. Parallel Learning of Deep Convolutional Neural networks and its Application to Action Recognition, Sai Rajeshwar, A Ravi Sankar, V. Balasubramanian, C.D. Sudheer.

Sathya Peri, Unrestricted Research Grant for Rs. 2.5 Lakhs (~ 5000 USD) by Microsoft Research Bangalore for August 2014 – August 2015.

Upadrasta Ramakrishna, Pratik Bhatu and Ramakrishna Upadrasta. Compile Time Optimizations in Polly. Cash award of $5,500 as stipend for implementing compile-time optimizations into the Polly branch of LLVM compiler. Student proposal accepted into the Google Summer of Code (GSoC) 2015. [link]

Manish Singh, University of Michigan, EECS Department Graduate Fellowship: 2009

Manish Singh, Winner of the Student Travel Award at SIGMOD 2012



DESIGN

The youngest department at IIT Hyderabad, Design currently offers two postgraduate degrees: Master of Design (MDes) and PhD in Design. MDes is a full-time two-year program providing a broad-based understanding of design along with student-driven specializations in varied domains. The MDes in Visual Design, begun in July 2014, focuses on creative thinking, building elements and history of Design from a predominantly visual perspective. Additional specialized courses allow students to diversify into domains like interaction design, experience design, moving images, contemporary photography, design education, design for well-being, collaborative design, urban environments, managing creative industries, and mobility design.

PhD in Design provides a unique platform to pursue practice-based and practice-led research in art, design, culture, creative practices and related areas. The doctoral program aims to infuse the practice-oriented spirit into research in/through/on design, alongside other more traditional modes of doing research in design. The department plans to intervene creatively in the space between technologies and people. This involves engaging in key emergent areas such as: adapting technology to socio-cultural needs, enabling of rights-based and equitable development work, user-operated technologies, participatory and collaborative design, professional ethics/ sustainability, product systems and services, design and education, wellness and crowd-sourced design.

Faculty

Deepak John Mathew
Ph.D - MS University of Baroda
Associate Professor & HoD

Research Areas: Photography, Elements of design, Aesthetics, History of Design

Nandini Ramesh Sankar
Ph.D - Cornell University, USA
Assistant Professor (Associate Faculty in the Department of Design)

Research Areas: 20th-century British and American poetry; Modernism; Aesthetics

Neelakantan P K
Assistant Professor

Research Areas: Architectural Design

Prasad S Onkar
Ph.D - IISc Bangalore
Assistant Professor

Research Areas: Product Design, Computer Aided Conceptual Design, 3D Sketching, Virtual reality, Haptics, Collaborative Design, Interactions design

TALKS GIVEN IN NATIONAL / INTERNATIONAL CONFERENCES

Deepak John Mathew, 'Mapping the 21st century Imagination' at IDC, IIT Bombay, 15 June 2015.

Deepak John Mathew was invited to exhibit at Pune Biennale, International Art Biennale, Pune, 2014.

Deepak John Mathew, invited Artist in Group Exhibition on Himalayas at Amdavadnigufa, Ahmedabad, 2015.

Deepak John Mathew 'Photography as contemporary art', Srishti School of Arts, Trivandrum.

Deepak John Mathew 'Photography medium and techniques', College of Fine Arts.

Deepak John Mathew 'Photography as a medium of expression', college of fine arts Trissur, 2014.

Deepak John Mathew, Award winning photographers camp, Lalitkala Akademy, Vayanad, 2014.

Deepak John Mathew, 'Contemporary documentary photography and Travel Photography' Kanoria center Gallery, Ahmedabad, 2015.

Deepak John Mathew, Seven Articles and curated show on contemporary photography in Indian Architecture and Builder Magazine 2014 and 2015.

Prasad S Onkar, 'Legibility assessment for functional vision of DHM using differential acuity', International Symposium on Tools and Methods for Competitive Engineering (TMCE), Budapest, Hungary, 19-23 May 2014, (Paper presented on behalf of the Authors).

Prasad S Onkar, 'Semantics-Aware support for Computer Aided Conceptual Design of Mechanical Systems', International symposium on Design Semantics 2015, MAIB, Bari, Italy, 30 June 2015.

Prasad S Onkar, 'Career paths in Research – Academic Perspectives', Research in Product Design – Research students' symposium, CPDM, Indian Institute of Science, Bangalore, 30 March 2015.

Prasad S Onkar, 'Learning Environments' in 'Educators for 21st Century Engineers', TEQIP, IIT Hyderabad, Yeddumailaram, 27-28 February 2015.

Prasad S Onkar, 'The Resistance to Intermediality in Wyndham Lewis' in the Seminar I co-organized titled *The Rhetoric of Intermediality* at the Annual Convention of the American Comparative Literature Association, Seattle, 28 March 2015.

Prasad S Onkar, 'Artifice and Authenticity in War Poetry.' Seminar title: *World War I: A Centenary Symposium*. Department of English, University of Hyderabad. 15 September 2014.

Neelakantan P K, 'Learning Environments'in 'Educators for 21st Century Engineers', TEQIP, IIT Hyderabad, Yeddumailaram, 27th, 28th february 2015.

Nandini Ramesh Sankar, 'The Resistance to Intermediality in Wyndham Lewis' in the Seminar I, co-organized titled *The Rhetoric of Intermediality*at the Annual Convention of the American Comparative Literature Association, Seattle, 28 March 2015.

Nandini Ramesh Sankar, 'Artifice and Authenticity in War Poetry. 'Seminar title: *World War I: A Centenary Symposium*, Department of English, University of Hyderabad, 15 September 2014.

SEMINARS CONDUCTED

'Computational Cognitive Systems: The Case of Commonsense, Space, and Change', Prof. Mehul Bhatt, Professor, University of Bremen, Germany, 23 December 2014.

'Architectural Design Cognition: People-CentredVisuo-Spatial Cognition, and its Role in Systems and Educational Discourse for Design Conception', Prof. Mehul Bhatt, Professor, University of Bremen, Germany, 23 December 2014.

'Introduction to Information and Communication Theory', Prof. Uday Athavankar, Emeritus and Bajaj Chair Professor, Industrial Design Centre, Indian Institute of Technology Bombay, 15 February 2015.

'Designing User Interface and User Experience', Prof. Anirudha Joshi, Professor, Industrial Design Centre, Indian Institute of Technology Bombay, 28 January 2015.

'Script writing and Story-telling in graphic novels', Prof. Prakash Moorthy, Professor and HOD, Satyajit Ray Film and Television Institute, Kolkota, 19 January 2015.

'Problem Identification and conceptual Design', Nevin John, Manager MCBD - Australia, Deloitte, 21 March 2015.

WORKSHOPS / SYMPOSIUMS

3-Day TEQIP Workshop on 'Design Innovation and Creative Problem Solving', 15-17 January 2015.

AWARDS / RECOGNITIONS

Prasad S Onkar, European Union's 'Erasmus-Mundus HERITAGE Fellowship for International Research Mobility'.

ELECTRICAL ENGINEERING

The **Department of Electrical Engineering (EE)** at IIT Hyderabad offers a vibrant environment for under graduate, post graduate education and research in many areas of Electrical Engineering. This is one of the earliest department started in IITH. Faculty members of the department are engaged in cutting edge technology research and also very passionate about teaching. The department currently has 18 faculty, 3 staff and 328 (B.Tech - 178, M.Tech - 89 and Ph.D - 61) students. The broad areas of research which are the focus of the department are as follows:

- Microelectronics and VLSI (Micro): The main thrust of this group is on affordability, low power and portability. The goal is to push the limits of silicon in achieving the above as well as being on the frontier of new viable technologies. The research areas that are focused on are 3-D ICs, Analog/RF IC design, Micro scale Energy Harvesting, Pervasive Computing, Data acquisition systems, Biosensors development.
- Communications and Signal Processing (CSP): The main research areas of this group are Cooperative Communication, Speech and Multi-Media Signal Processing, Source Coding, Space-Time Coding, Information Theory, Cognitive Radio/Radar, Cyber Physical Systems, Image and Video Quality Assessment.
- Power Electronics and Power Systems (PEPS):The main research areas of this group are Smart Grids, Micro Grids, Power System Dynamics, Multilevel Inverters, Switched Mode Power Conversion, Wide Area Monitoring, Protection and Control, Information Technology Architectures, Common Information Model (CIM).
- Systems and Control (Syscon): The main research areas of this group are Identification and Estimation, Fault Diagnosis, Micro Grid/ Smart Grid, Advanced Control applications, Statistical Process Monitoring and Control.

Faculty

Mohammed Zafar Alikhan
Ph.D - IISc Bangalore
Associate Professor and HoD

Research Areas: Information theory, space-time coding, space-time signal processing, joint Baseband-RF optimization, software defined radio and cognitive radio

UB Desai
Ph.D - Johns Hopkins, USA
Professor

Research Areas: Wireless Communication and Signal Processing

Shiv Govindsingh
Ph.D - IIT Bombay
Associate Professor

Research Areas: 3D IC, Bio Sensors, MEMS, Lab-on-chip, Microfluidics, Energy Harvesting

Abhinav Kumar
PhD - IIT Delhi
Assistant Professor

Research Areas: Green cellular networks, user network selection, device to device communications, and radio resource management in heterogeneous wireless access networks

Amit Acharyya
PhD - University of Southampton, UK
Assistant Professor

Research Areas: VLSI Signal processing, Healthcare Technology, Low Power Architecture Design

Ashudeb Dutta
Ph.D - IIT Kharagpur
Assistant Professor

Research Areas: Ultralow-power CMOS Analog & RFIC design, Energy Harvesting -CMOS IC , CMOS -Automobile Power Electronics IC

G. V. V. Sharma
Ph.D - IIT Bombay
Assistant Professor

Research Areas: Communications

K. Siva Kumar
Ph.D - IISc Bangalore
Assistant Professor

Research Areas: Multilevel inverters, open-end winding induction motor drives, Switched Mode Power Conversion, microgrids, Power quality and control

Ketan Detroja
Ph.D - IIT Bombay
Assistant Professor

Research Areas: Advanced Process Control, Quality control, Fault detection and diagnosis, Co-operative Control

Kuchi Kiran Kumar
Ph.D - University of Texas at Arlington, USA
Associate Professor

Research Areas: Wireless Communication and Signal Processing

P. Rajalakshmi
Ph.D - IIT Madras
Assistant Professor

Research Areas: Wireless Communication Networks and Embedded Systems

Ravikumar Bhimasingu
PhD - IISc Bangalore
Assistant Professor

Research Areas: Power System Security Improvement, AI applications in Power System Protection, Microgrid Protection and Distribution System analysis and Improvements

Shiva Ramakrishna Vanjari
PhD - IISc, Bangalore
Assistant Professor

Research Areas: Biosensors, Solid state devices, MEMS

Soumya Jana
Ph.D - UIUC, USA
Assistant Professor

Research Areas: Biomedical image analysis, Telecardiology, Smart camera networks, Multimedia signal processing, 3D/4D media content generation, Real time information theory, Stochastic spatio-temporal modeling, Monte Carlo inference

Sumohana S. Channappayya
PhD - The University of Texas at Austin, USA
Assistant Professor

Research Areas: Image and Video Quality Assessment, Biomedical Imaging, Cross-layer Optimization

Sushmee Badhulika
PhD - University of California, USA
Assistant Professor

Research Areas: Nanomaterials, devices and circuits

Sri Rama Murty Kodukula
Ph.D - IIT Madras
Assistant Professor

Research Areas: Signal Processing, Speech Analysis, Recognition & Synthesis, Pattern Recognition, Machine Learning

Vaskar Sarkar
Ph.D - IIT Bombay
Assistant Professor

Research Areas: WAMPAC, DSM, Microgrid, Restructured Power System, MPPT and LPPT

Yemula Pradeep Kumar
PhD - IIT Bombay
Assistant Professor

Research Areas: Smart Grids, Common Information Model, Architectures for Power Control Centers, Demand Response, Distribution Automation

PATENTS FILED

A. Krishnan, Snehal Das, Mohammed Zafar Ali Khan, S. Vanjari. 'Silver Nanoparticle Array sandwiched multilayer thin film amorphous silicon photovoltaic device'.

PUBLICATIONS

(In Peer-Reviewed Journals)

Kalpana N, Mohammed Zafar Ali Khan, 'Fast Computation of Generalized Waterfilling Problems', DOI:10.1109/LSP.2015.2440653, *IEEE Signal Processing Letters*, 1884-1887 (2015).

Bolli Sridhar and Mohammed Zafar Ali Khan, 'A Novel LMMSE based Optimized Pervez-Vega Zamanillo Propagation Path Loss Model in UHF/VHF Bands for India', *Progress in Electromagnetic Reivew B*, 63, 17-33 (2015).

Kalpana N, Yuva k., B.M. Baveja, Rakesh K., B. Sridhar, Shyam P., Mohammed Zafar Ali Khan, S. N. Merchant, Uday B. Desai, 'A study of white and gray spaces in India', *Signals and Communication Technology*, 49-73 (2014).

Aravind Krishnan, Snehal Das, Siva Rama Krishna, Mohammed Zafar Ali Khan, 'Multilayer nanoparticle arrays for broad spectrum absorption enhancement in thin film solar cells, Materials, and Fuels, Technological Use of CO_2', *Optics Express*, 22S3, A800-A811 (2014).

Sai Kiran M.P.R, Rajalakshmi P, Siva Krishna Y and Acharyya A.; 'System Architecture for Low Power Ubiquitously Connected Remote Health Monitoring Applications With Smart Transmission Mechanism', *IEEE Sensors Journal*; Vol-15, issue-8, pp:4532-4543. 2015. DOI: 10.1109/JSEN.2015.2413836.

Maheswari, S., Acharyya, A., Schiariti, M., and Puddu, P.E; 'Personalized Reduced 3-Lead System formation methodology for Remote Health Monitoring Applications and Reconstruction of Standard 12-Lead system', *Translational Cardiology, International Archives of Medicine*; Vol-8, No-62, 2015. ISSN: 1755-7682; DOI: 10.3823/1661.

Reddy P. S., Mopuri S. and Acharyya, A., 'A Reconfigurable High Speed Architecture Design for Discrete Hilbert Transform', *IEEE Signal Processing Letters*, Volume 21, Issue 11, November 2014, pp: 1413-1417. ISSN: 1070-9908, DOI: 10.1109/LSP.2014.2333745.

Maheswari, S., Acharyya, A., Rajalakshmi, P., Puddu, P.E. and Schiariti, M; 'Accurate and Reliable 3-lead to 12-lead ECG Reconstruction Methodology for Remote Health Monitoring Applications', IRBM - Innovation and Research in Biomedical Engineering, *Elsevier*, Volume 35, Issue 6, December 2014, pp: 341-350. ISSN: 1959-0318, DOI: 10.1016/j.irbm.2014.07.004.

Sabbavarapu, S., Reddy, B. K., Srinivasulu, N, Acharyya, A., Mathew, J; 'A Novel IC Design Methodology Using Dynamic Library Concept with Reduced NRE Cost and Time-to-Market', *Journal of Low Power Electronics, American Scientific Publishers,* 2014, Volume 10, Issue 3, September 2014, pp: 429-442. DOI: http://dx.doi.org/10.1166/jolpe.2014.1334.

Acharyya, A., Agarwal, A., A. Singh, R. A. Shafik, S. R. Ahamed 'Energy-Efficient and High Speed Robust System Design for Remote Cardiac Health Monitoring', *Journal of Low Power Electronics, American Scientific Publishers*, 2014, Volume 10, Issue 3, September 2014, pp: 519-530. DOI: http://dx.doi.org/10.1166/jolpe.2014.1333.

Maheswari, S., Acharyya, A., Puddu, P.E., Mazomenos, E., Schiariti, M. and Maharatna, K; 'Robust and Accurate Personalized Reconstruction of Standard 12-lead System from Frank Vector-cardiographic System', *Computer Methods in Biomechanics and Biomedical Engineering: Imaging and Visualization; Taylor and Francis*, July, 2014. DOI:10.1080/21681163.2014.931029.

Duryodhan, V., Singh, A., Singh, S.G., and Agrawal, A., 'Convective heat transfer in diverging and converging microchannels,' *International Journal of Heat and Mass Transfer*, Vol. 80, pp. 424-438, 2015.

U. Chatterjee, A. Das, T Ghosh, S. P. Duttagupta, M. N. Gandhi, and S. G. Singh, 'Effect of Post Deposition Annealing on Thermal Evaporated ZnSe:Te towards a Scintillator Application,' *Microelectronic Engineering*, Vol 126 (2014) 84-87.

Anesh K Sharma, Ashu K Gautam, Paola Farinelli, Asudeb Dutta and S G Singh, 'A Ku band 5 bit MEMS phase shifter for active electronically steerable phased array applications', *J. Micromech. Microeng.* 25 035014, 2014. doi:10.1088/0960-1317/25/3/035014.

Duryodhan, V., Singh, S.G., and Agrawal, A., 'Liquid flow through converging microchannel and comparison with diverging microchannel,' *Journal of Micromechanics and Microengineering*, Vol. 24, 125002 (1-13), 2014.

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D. Mishra, S. De, S. Jana, S. Basagni, K. R. Chowdhury, W. Heinzelman 'Smart RF energy harvesting communications: challenges and opportunities', IEEE Comm. Mag., 53(4), 70-78 (2015).

Khan Md, S.; Appina, B.; Channappayya, S., 'Full-reference Stereo Image Quality Assessment Using Natural Stereo Scene Statistics', *Signal Processing Letters, IEEE* , vol.PP, no.99, pp.1,1doi: 10.1109/LSP.2015.2449878.

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Y. V. Pavan Kumar, Ravikumar Bhimasingu, 'Renewable Energy Based Microgrid System Sizing and Energy Management for Green Buildings', *Journal of Modern Power Systems and Clean Energy*, 3 (1), 1-13 (2015).

Yannan Wang, Pradeep Yemula, Anjan Bose, 'Decentralized Communication and Control Systems for Power System Operation', *Smart Grid, IEEE Transactions on,* vol.6, no.2, pp.885 - 893, Mar 2015.

S. Badhulika, Claudia Villarreal, Trupti Terse-Thakoor, A. Mulchandani, 'Synthesis of graphene hybrids and their applications in sensing and energy harvesting', *Frontiers in Chemistry*. 2015;doi: 10.3389/fchem.2015.00038.

A. Kumar and C. Rosenberg, 'Energy and throughput trade-offs in cellular networks using base station switching', *IEEE Transactions on Mobile Computing*, vol. PP, no. 99, 2015, DOI: 10.1109/TMC.2015.2416181.

PUBLICATIONS

(In Peer-Reviewed Conferences)

Mohammed Fayazurrehman, Mohammed Zafar Ali Khan, 'A novel approach to improve the performance of Truncated SED for Cognitive Radio', *IEEE ICC*, London, UK, 8-13 June 2015.

K. Naidu, Mohammed Zafar Ali Khan, 'Weighted Water-Filling Algorithm with reduced computational complexity', *IEEE ICCIT 2015*, Abu Dhabi, UAE, 20-21 May 2015.

N. Rao, Mohammed Zafar Ali Khan, 'Optimal n-out-of- K Voting Rule for Cooperative Spectrum Sensing with Energy Detector over Erroneous Control Channel', *IEEE VTC spring 2015*, Glasgow, 10-14 May 2015.

Yuva Kumar S., Meghan S. Saitwal, Mohammed Zafar Ali Khan, and Uday B. Desai, 'Cognitive GSM OpenBTS', *IEEE MASS 2014*, Philadelphia, Pennsylvania, 27-30 October 2014.

Shaik Qadeer, Mohammed Zafar Ali Khan, Syed Abdul Sattar, 'A Radix-2 DIT FFT with Reduced Arithmetic Complexity', *ICACCI 2014*, New Delhi, 24-27 September 2014.

Bolli Sridhar, Mohammed Zafar Ali Khan, 'RMSE comparison of Path Loss Models for UHF/VHF bands in India', *IEEE TENSYMP 2014*, Kuala Lumpur Malaysia, 14-16 April 2014.

Aaqib Patel, Fernando Reátegui, Mohammed Zafar Ali Khan, Muhammad Ali Imran, Shabbir N Merchant, Uday Desai and Rahim Tafazolli, 'On Bounds and Capacity of Cognitive Multiple Access Z-Interference Channel', *NCC 2014*, Kanpur India, 28th February to 2 March 2014.

Meghan Saitwal, Mohammed Zafar Ali Khan, 'Low Complexity Spectrum Sensing Algorithm Robust to Noise Uncertainty', *NCC 2014*, Kanpur India, 28th February to 2 March 2014.

A. K. Karthik, Jameer Ali M.S, Mohammed Zafar Ali Khan, A. Bhagavathi Rao, 'A Novel Method for Spectrum Sensing of Linear Modulation Schemes', *EWCI 2014*, Bangalore, India, 18-20 February 2014.

N. R. Naguru, G. V. N. Yatendra Babu, V. Sarkar, 'A comparative study on LQR and H∞ control for damping oscillations in power system network considering different operating points', IEEE *International Conference on Smart Electric Grid*, ICSEG 2014, 19-20 September 2014.

N. R. Naguru, V. Sarkar, 'Optimal wide area control of a power system with limited measurements', *IEEE International Conference on Signal Processing, Informatics, Communication and Energy Systems*, IEEE SPICES 2015, 19-21 February 2015.

Arpit Jain, Aashish Amber and A. Acharyya; 'A Low complexity Architecture for Online on-chip Detection and Identification of f-QRS feature for Remote Personalized Health Care Applications', Naresh Vemishetty, *5th IEEE International Symposium on Electronic System Design (ISED 2014)*, Karnataka, India, 15-17 December 2014.

Krishna Bharadwaj Chivukula, Naresh Vemishetty, Agathya Jagirdar and A. Acharyya; 'A Low-complexity Onchip Real-time automated ECG Frame Identification Methodology targeting

Remote health care', *5th IEEE International Symposium on Electronic System Design (ISED 2014)*, Karnataka, India, 15-17 December 2014.

Karunakar Reddy Basireddy, Srinivas Sabbavarapu and A. Acharyya; 'Effect of Constant One and Zero, Shared and Non-decomposed Nodes on Runtime and Graph Size of the Shannon Factor Graph (SFG)', *5th IEEE International Symposium on Electronic System Design (ISED 2014)*, Karnataka, India, 15-17 December 2014.

Srinivas Sabbavarapu, Karunakar Reddy Basireddy and A. Acharyya; 'A New Dynamic Library based IC Design Automation Methodology using Functional Symmetry with NPN class Representation approach to Reduce NRE Costs and Time-to-Market', *5th IEEE International Symposium on Electronic System Design (ISED 2014)*, Karnataka, India, 15-17 December 2014.

Malyala Pavana Ravi Sai Kiran, Yeginati Siva Krishna, P Rajalakshmi and A. Acharyya; 'System Architecture for Smart Ubiquitous Health Monitoring System With Area Optimization in Multiple On-chip Radios Scenario', *5th IEEE International Symposium on Electronic System Design (ISED 2014)*, Karnataka, India, 15-17 December 2014.

V. Naresh, C. K. Bharadwaj, S. Tiwari, M. P. R. Sai Kiran, B. Joseph, A. Jagirdar, J. Bandavu, V. Chaudary, Y. S. Krishna, A. Acharyya, P. Rajalakshmi and P. E. Puddu; 'An On-chip Robust real-time Automated Non-invasive cardiac Remote Health Monitoring Methodology', *41st Annual International Scientific Conference on Computing in Cardiology (CinC 2014)*, Cambridge, Massachusetts, USA, 7-10 September 2014.

U. Panda, S. Maheshwari, G. Padma, T. Murugaiyan, A. Jagirdar, V. Chaudary, V. Naresh, A. Acharyya, P. E. Puddu and M. Schiariti; 'Personalised System-on-chip for Standard 12-lead Reconstruction from the Reduced 3-Lead System Targeting Remote Healthcare', *41st Annual International Scientific Conference on Computing in Cardiology (CinC 2014)*, Cambridge, Massachusetts, USA, 7-10 September, 2014.

G. R. Naik, A. Acharyya and H. T. Nguyen; 'Classification of Finger Extension and Flexion EMG and Cyberglove data with modified ICA weight matrix', *36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Chicago, USA, 26-30 August, 2014. (in press)

S. Mopuri, P. S. Reddy, C. Karthik, A. S. Prasad, A. Acharyya and S. R. Vanjari; 'Low-complexity Underdetermined Blind Source Separation System Architecture for Emerging Remote Healthcare Applications', *36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Chicago, USA, 26-30 August, 2014.

P. N. Jadhav, D. Shanamugam, A. Chourasia, A. R. Ghole, A. Acharyya and G. Naik; 'Automated Detection and Correction of Eye blink and Muscular Artefacts in EEG Signal for Analysis of Autism Spectrum Disorder', *36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Chicago, USA, 26-30 August 2014.

B. Joseph, A. Acharyya and P. Rajalakshmi; 'A Low Complexity On-Chip ECG Data Compression Methodology Targeting Remote Health-Care Applications' *36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Chicago, USA, 26-30 August 2014.

M. P. R. Sai Kiran, P. Rajalakshmi and A. Acharyya; 'On-chip Context Predictor Based Sparse Sensing technique and Smart Transmission Architecture for IOT Enabled remote Health Monitoring Applications', *36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Chicago, USA, 26-30 August 2014.

B.K. Reddy, S. Sabbavarapu and A. Acharyya; 'A New VLSI Design Automation Methodology with Reduced NRE Costs and Time-to-Market Using the NPN Class Representation and Functional Symmetry', *IEEE International Symposium on Circuits and Systems*, Melbourne, Australia, 1-5 June 2014.

Radharamana Mohanty, Chanda Karthik, Siva Rama Krishna V**,** Shiv Govind Singh, 'Area Effective Silicon Micro Structure Only Using Front End Bulk Micro Machining', *ICMEMS 2014*, Chennai, 18-20 December 2014.

Durga Prakash M, Siva Rama Krishna V**,** Shiv Govind Singh, Asudeb Dutta, Chandra S. Sharma 'Development of MWCNT/SU-8 nanofiber composite using Electrospinning Technique for Biosensing applications', *IEEE Sensors 2014*, Valencia, Spain, 2-5 November 2014.

Jose Joseph, Shiv Govind Singh and Siva Rama Krishna V**,** A Low Pull-in SU-8 based Capacitive Micromachined Ultrasonic Transducers for Medical Imaging Applications', Accepted, *36th Annual International IEEE EMBS Conference*, Chicago, 26-30 August 2014.

Gagan G C, Ashudeb Dutta, Shiv Govind Singh, 'Optimized TTSV structure for heat mitigation and energy harvesting', ICSICT, Guilin, China 28-31 October 2014.

Tamal Ghosh, Shiv Govind Singh, Siva Rama Krishna V, 'Electrochemical self-assembled monolayer desorption assisted low temperature Cu-Cu thermocompression bonding', *ICEE 2014*, Bangalore, 3-6 December 2014.

Brince Paul, Chandrasekhar Sharma, Shiv Govind Singh and Siva Rama Krishna, 'Fabrication and Characterization of Zinc Oxide Nanowires for High Sensitivity Sensing applications', *ICEE 2014*, 3-6 December 2014.

Rohit Shrivastava, Kavya Nalluri, Ashudeb Dutta, Siva Rama Krishna, Shiv Govind Singh, 'Microfluid based Energy Harvesting Device simulation & optimization', *ICEE 2014*, IISC Bangalore, 3-6 December 2014.

Tamal Ghosh, Gagan G C, Ashudeb Dutta, Vanjari Siva Rama Krishna, Shiv Govind Singh, 'Hybrid TTSV structure for heat mitigation and energy harvesting in 3D IC', *IEEE ECTC*, San Diego, 26-29 May 2015.

Tamal Ghosh, E. Krushnamurthy, Ch. Subrahmanyam, V. Siva Rama Krishna, A. Dutta, S G Singh, 'Room Temperature Desorption of Self Assembled Monolayer from Copper Surface for Low Temperature & Low Pressure Thermocompression Bonding', *IEEE ECTC,* San Diego, 26-29 May 2015.

Asisa Kumar Panigrahi, Satish Bonam, Tamal Ghosh, Siva Rama Krishna Vanjari and Shiv Govind Singh, 'Low Temperature, Low Pressure CMOS Compatible Cu-Cu Thermo-compression Bonding With Ti Passivation For 3D IC Integration', *IEEE ECTC,* San Diego, 26-29 May 2015.

Pankaj Kumar Jha, Pravanjan Patra, Jairaj Naik, Ashudeb Dutta, Amit Acharya, Shiv Govind Singh and P. Rajalakshmi, 'A 2μW Biomedical Frontend with ADC for Self-powered u-Healthcare Devices in 0.18μm CMOS', *IEEE NEWCAS 2015*.

Pankaj Jha, Pravanjan Patra, Jairaj Naik, Amit Acharyya, Shiv Govind Singh, Rajalakshmi P, Ashudeb Dutta, 'A Reconfigurable Medically Cohesive Biomedical Front-End with ΣΔ ADC for in 0.18μm CMOS', *IEEE EMBC 2015*.

A R Aravinth Kumar, Ashudeb Dutta and Shiv Govind Singh 'Low Power Reconfigurable Multi-Mode LNA utilizing Subthreshold Bias and Low-Q Inductors', *IEEE ISCAS 2015*.

Nisha Gupta, A R Aravinth Kumar, Ashudeb Dutta and Shiv Govind Singh, 'A 1.2V Wide-Band Reconfigurable Mixer for Wireless Application in 65nm CMOS Technology', *IEEE SOCC 2015*.

Pramod. K , Nagaveni V, Anil, A. Dutta, S.G Singh, Nallam, 'Efficient Dual band RF energy harvesting front end for wearable devices', *IEEE ISED*, 2015.

Nagaveni. V, Pramod. K , A. Dutta, S.G Singh, 'A -30 Dbm Sensitive Ultra Low Power RF Energy Harvesting Front End with an Efficiency of 70.1% At -22 Dbm', *IEEE SOCC 2015*.

Shourya Kansal, Ajay Mantha, Gajendranath Chowdary, Shiv Govind Singh and Ashudeb Dutta, 'A Wide Input Voltage Range Start-up Circuit for Solar Energy Harvesting System', *ASQED 2015*.

S. Potluri, A. Satya Trinadh, Sobhan Babu Ch., Shiv Govind Singh and V. Kamakoti, 'Impact of multi-Vt technique in eliminating thermal runaway during testing of 3D chips', Design Automation and Test in Europe, 3D workshop, IEEE, 2015 (Grenoble, France).

A. Satya Trinadh, Sobhan Babu Ch., Shiv Govind Singh, S. Potluri and V. Kamakoti, 'DP-fill: A Dynamic Programming approach to X-filling for minimizing peak test power in scan tests', Design Automation and Test in Europe, IEEE, 2015 (Grenoble, France).

D. Chaurasiya, B. Srinivasan, S. Vanjari, S.G. Singh, 'SU-8 Based Flexure-FET Biosensor to Achieve Ultrasensitive Response', *TechConnect World Innovation*, 15-17, Washington DC, 2015.

D. Chaurasiya, B. Srinivasan, S. Vanjari, S.G. Singh, 'A simple process for selective bio-functionalization of SU-8 surface for Lab-on-a-Chip applications', *TechConnect World Innovation*, 15-17, Washington DC, 2015.

Karthika Vijayan and K Sri Rama Murty, 'Estimation of allpass transfer functions by introducing sparsity constraints to particle swarm optimization', *20th National Conference on Communications (NCC),* Kanpur, India, 2014.

Karthika Vijayan, K Sri Rama Murty, 'Comparative study of spectral mapping techniques for enhancement of throat microphone speech', *20th National Conference on Communications (NCC)*, Kanpur, India, 2014.

Karthika Vijayan, K Sri Rama Murty, 'Epoch extraction from allpass residual of speech signals', *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Florence, Italy, 2014.

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P Raghavendra Reddy, Kallola Rout and K Sri Rama Murty, 'Query word retrieval from continuous speech using GMM posteriorgrams', *International Conference on Signal Processing and Communications (SPCOM)*, Bangalore, India, 2014.

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Manoranjan Sahoo, Siva Kumar K, 'High Gain Step Up DC-DC Converter For DC Micro-Grid Application', *7th International Conference onInformation and Automation for Sustainability (ICIAfS),* 22-24 December 2014.

Kiran Kumar N, Umesh B.S., Sivakumar K., 'A Five-level Inverter Topology for Four Pole Induction Motor Drive Using Four Two-level inverters and Two Isolated DC Sources', 5th International Conference IEEE PEDES, 16-19 Dec 2014.

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B. S. Chandra, C.S. Sastry, S. Jana, 'Reliable low-cost telecardiology: High-sensitivity detection of ventricular beats using dictionaries', IEEE 16th International Conference on e-Health Networking, Applications and Services (Healthcom), Natal, 15-18 October 2014, doi:10.1109/HealthCom.2014.7001859.

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S. Avasarala, S. Jana, P. Akella, 'Rate-Distortion Function for Finite Block Codes: Analysis of Symmetric Binary Hamming Problem', *Twenty First National Conference on Communications (NCC), 2015.*

K. K. Vupparaboina, R. R. Tamboli, P. M. Shenu, S. Jana, 'Laser-based detection and depth estimation of dry and water-filled potholes: A geometric approach', *Twenty First National Conference on Communications (NCC),* pp.1-6, 2015, doi: 10.1109/NCC.2015.7084929.

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Nisha Gupta, A R Aravinth Kumar, Ashudeb Dutta and Shiv Govind Singh, 'A 1.2V Wide-Band Reconfigurable Mixer for Wireless Application in 65nm CMOS Technology', *IEEE SOCC 2015.*

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Nagaveni V., Pramod K., A. Dutta, S.G Singh, 'A -30 Dbm Sensitive Ultra Low Power RF Energy Harvesting Front End with an Efficiency of 70.1% At -22 Dbm', *IEEE SOCC 2015.*

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Y. Aditya, G.V.S.S.Praneeth Varma, G.V.V. Sharma, NCC, 'Maximum Likelihood Detection for Decode and Forward Cooperation with Interference', Mumbai, 27 February-1 March 2015.

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Radharamana Mohanty, Chanda Karthik, Siva Rama Krishna V**,** Shiv Govind Singh, 'Area Effective Silicon Micro Structure Only Using Front End Bulk Micro Machining', *ICMEMS 2014*, Chennai, 18-20 December 2014.

Durga Prakash M, Siva Rama Krishna V**,** Shiv Govind Singh, Asudeb Dutta, Chandra S. Sharma, 'Development of MWCNT/SU-8 nanofiber composite using Electrospinning Technique for Biosensing applications', *IEEE Sensors 2014*, Valencia, Spain, 2-5 November 2014.

Jose Joseph, Shiv Govind Singh and Siva Rama Krishna V**,** 'A Low Pull-in SU-8 based Capacitive Micromachined Ultrasonic Transducers for Medical Imaging Applications', Accepted, *36th Annual International IEEE EMBS Conference*, Chicago, 26-30 August 2014.

Tamal Ghosh, Shiv Govind Singh, Siva Rama Krishna V, 'Electrochemical self-assembled monolayer desorption assisted low temperature Cu-Cu thermocompression bonding', ICEE 2014, Bangalore, 3-6 December 2014.

Brince Paul, Chandrasekhar Sharma, Shiv Govind Singh and Siva Rama Krishna, 'Fabrication and Characterization of Zinc Oxide Nanowires for High Sensitivity Sensing applications', ICEE 2014, 3-6 December 2014.

Tamal Ghosh, E. Krushnamurthy, Ch. Subrahmanyam, V. Siva Rama Krishna, A. Dutta, S G Singh, 'Room Temperature Desorption of Self Assembled Monolayer from Copper Surface for Low Temperature & Low Pressure Thermocompression Bonding', IEEE ECTC, San Diego, 26-29 May 2015.

Asisa Kumar Panigrahi, Satish Bonam, Tamal Ghosh, Siva Rama Krishna Vanjari and Shiv Govind Singh, 'Low Temperature, Low Pressure CMOS Compatible Cu-Cu Thermo-compression Bonding With Ti Passivation For 3D IC Integration', IEEE ECTC San Diego, 26-29 May 2015.

Y. V. Pavan Kumar, RavikumarBhimasingu, 'Design of Agent Control Schemes for Interfacing Urban Community Buildings to Microgrid', In Proc. of IEEE Control Systems Society 1st Indian Control Conference (ICC), Indian Institute of Technology Madras (IITM), Chennai, Tamil Nadu, India, ISBN: 978-1-4673-2042-9, pp. 1-6 January 2015.

Y. V. Pavan Kumar, BhimasinguRavikumar, 'Review and Refined Architectures for Monitoring, Information Exchange, and Control of Interconnected Distributed Resources', In Proc. of Springer 23rd International Conference on Systems Engineering (ICSEng), University of Nevada, Las Vegas, Nevada State (NV), USA, ISBN: 978-3-319-08422-0, pp. 383-389, August 2014.

Y. V. Pavan Kumar, Ravikumar Bhimasingu, 'Investigating the Power Quality Improvement Strategies for Urban Building Microgrids', In Proc. of IEEE 5th International Conference on Power Electronics, Drives, and Energy Systems (PEDES), Indian Institute of Technology Bombay (IITB), Mumbai, Maharashtra, India, ISBN: 978-1-4799-6373-7, pp. 1-6 December 2014.

Y. V. Pavan Kumar, Ravikumar Bhimasingu, 'Optimal Sizing of Microgrid for an Urban Community Building in South India using HOMER', In Proc. of IEEE 5th International Conference on Power Electronics, Drives, and Energy Systems (PEDES), Indian Institute of Technology Bombay (IITB), Mumbai, Maharashtra, India, ISBN: 978-1-4799-6373-7, pp. 1-6 December 2014.

Y. V. Pavan Kumar, Ravikumar Bhimasingu, 'Technology Refresh in Asset Management Systems for Smart Distribution Buildings,' In Proc. of IEEE 6th PES-IAS & PELS-IES Power India International Conference (PIICON), IEEE Delhi Section, Delhi, India, ISBN: 978-1-4673-2042-9, pp. 1-6 December 2014.

Y. V. Pavan Kumar, Ravikumar Bhimasingu, 'Performance Analysis of Green Microgrid Architectures by Comparing Power Quality Indices,' In Proc. of 18th National Power Systems Conference (NPSC), Indian Institute of Technology Guwahati (IITG) and IEEE Kolkata Section, Guwahati, Assam, India, ISBN: 978-1-4673-2042-9, pp. 1-6 December 2014.

P. M. Kishore, Y. V. Pavan Kumar, Ravikumar Bhimasingu, R. K. Nema, 'Implementation of Diode Clamped Multilevel Inverter using DSPf28335 for Microgrids', In Proc. of Elsevier and Systems Society of India (SSI) 38th National Systems Conference (NSC), JNTUH University, Hyderabad, India, ISBN: 978-935107297-3, pp. 21-27 November 2014.

Charan Teja. S, Pradeep Yemula, 'Power Network Layout Generation using Force Directed Graph Technique', *18th National Power Systems Conference (NPSC)*, Guwahati, December 2014.

Viplav Chaitanya, Charan Teja. S, Pradeep Yemula, 'Fast Identification of Fault Location with Fault Passage Indicators under Network Reconfiguration', *India Smart Grid Week (ISGW),* Bengaluru, March 2015.

FUNDED RESEARCH PROJECTS 2014-15

Mohammed Zafar Alikhan, TVWS-Trials, Deity, January 2015, Rs. 39.468 Lakhs.

Amit Acharyya, Proof of concept implementation of low-complexity feature extraction algorithm using ANUDSP, DRDO, April 2014, Rs.19 Lakhs.

K Siva Kumar, A fault tolerant multi level inverter configuration for islanded mode photovoltaic generation system, SERB, 4 June 2014, Rs. 19.40 Lakhs.

Siva Rama Krishna Vanjari, *A low cost solution for thyroid stimulating hormone (TSH) quantification using fabric-based immunoassays and mobile-based image processing algorithms,* Grand Challenges Canada, 18 months, 100,000 CAD.

Sushmee Badhulika, Inspire Faculty Fellowship, 2015, DST, 5 Years, Rs. 35 Lakhs.

Sushmee Badhulika, Indian Nanoelectronics Users Program (INUP), 2015, DIT, 2 Years.

TALKS GIVEN IN INTERNATIONAL / NATIONAL CONFERENCES

Hybrid TTSV structure for heat mitigation and energy harvesting in 3D IC, IEEE ECTC, San Diego, Shiv Govind Singh, 26-29 May 2015.

Challenge in 3D IC fabrication, Invited talk, ICEE, Bangalore, Shiv Govind Sing, 3-6 December 2014.

Multiphase induction motor drive with 1:3:9:15 speed ratios for gear free electric vehicle application, *7th International Conference onInformation and Automation for Sustainability (ICIAfS),* Colombo, Sri Lanka, Sivakumar K, 22-24 December 2014.

High Gain Step Up DC-DC Converter For DC Micro-Grid Application, *7th International Conference onInformation and Automation for Sustainability (ICIAfS),* Colombo, Sri Lanka, Sivakumar K, 22-24 December 2014

Fault Tolerant Power Balancing Strategy in an Isolated Microgrid via Optimization, *the 19th IFAC World Congress*, Cape Town, South Africa, Ketan P. Detroja, 2014.

Low-cost Mobile-based Image Processing Solutions for Improved Rural Healthcare', invited talk at IC-IMPACTS Optical Summer Institute, Toronto, Canada, Channappayya, S.S., 19 June 2015.

Nanobiosensors using aligned Carbon Nanofibers, Invited talk, ICEE, Bangalore, Siva Rama Krishna Vanjari, 3-6 December 2014.

'Review and Refined Architectures for Monitoring, Information Exchange, and Control of Interconnected Distributed Resources,' In Proc. of Springer 23rd International Conference on Systems Engineering (ICSEng), University of Nevada, Las Vegas, Nevada State (NV), USA, Ravikumar Bhimasingu, August 2014.

Keynote address at the two day conference on 'Smart Grids for Smart Cities' College of Engineering(A), Andhra University, Visakhapatnam, A.P., India, Ravikumar Bhimasingu, 7- 8 November, 2014.

Expert Talk on Security of Modern Power Systems & related Softwares, three-day workshop on 'Applications of Simulation Tools to Modern Power Systems', RavikumarBhimasingu, 7-9 May 2015, University College of Engineering, OSMANIA UNIVERSITY, HYDERABAD.

Keynote Address: Smart Grid Challenges in India, 3rd International workshop on Software Engineering Challenges for the Smart Grids (SE4SG), Hyderabad International Convention Center, Pradeep Yemula, June 2014.

Guest Lecture: Smart Cities in Indian scenario, IITH-UOT symposium on Smart cities and wireless network, Pradeep Yemula, Feb 2015.

Pre-Conference Tutorial: Introduction to Smart Grids, 1st India Smart Grid Week (ISGW) 2015, Pradeep Yemula, March 2015. (also invited for Tutorial in ISGW 2016).

Jury Panelist and Guest Lecture: BR'IT'E IDEAS: Technical Paper Presentation @ Infosys Hyderabad SEZ,Pradeep Yemula, Feb 2015.

Guest Lecture: Valedictory Function of CVR College of Engineering, Ibrahimpatnam, Technical Association Electrocruise, Pradeep Yemula, April 2015.

SEMINARS CONDUCTED

'Solar rectifying antennas: a new power conversion paradigm', Jeffrey Gordon, Professor, Department of Solar Energy & Environmental Physics, Blaustein Institutes for Desert Research, Ben-Gurion University of the Negev, SedeBoqer Campus 84990, Israel, 8 April 2015.

'Synthetic Aperture Radar for defense applications', Dr. Bhogendra Rao, Scientist F, DRDL, Hyderabad, 1 July 2015.

'Electricity Trading and Renewable Energy Certificate (REC) Market in India', Vishal Pandya, Director, REconnect Energy, Pradeep Yemula, 31 January 2014.

WORKSHOPS / SYMPOSIUMS

A Five Days of TEQIP Workshop on 'MEMS and NEMS (Design and Fabrication)', Shiv Govind Singh, 22-26 December 2014 (Inter Department).

'Research and Teaching Methodologies in Electrical Engineering', TEQIP Workshop, K Sri Rama Murty, Siva Rama Krishna Vanjari, 11-12 December 2014.

AWARDS / RECOGNITIONS

Mohammed Zafar Alikhan, Certificate of Merit, IEEE Signal Processing Society 2014-2015.

Shiv Govind Singh, Our paper entitled, Area Effective Silicon Micro Structure Only Using Front End Bulk Micro Machining, received best paper awards at ICMEMS conference in 2014.

Shiv Govind Singh, Our paper entitled, Low Temperature, Low Pressure CMOS Compatible Cu-Cu Thermo-compression Bonding With Ti Passivation For 3D IC Integration shortlisted for best paper awards at IEEE ECTC 2015 conference at Sandiago, USA.

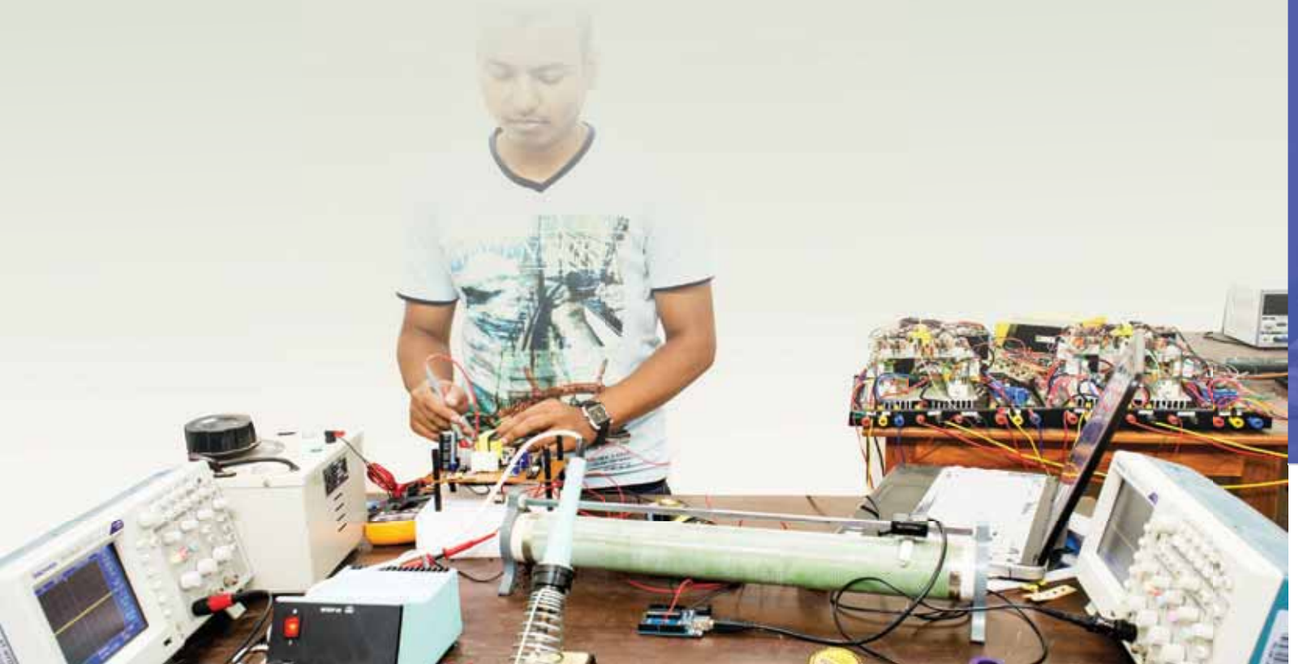
Sivakumar K, Best Paper Award for 'Multiphase induction motor drive with 1:3:9:15 speed ratios for gear free electric vehicle application' in the track of Solid State Drives and control, *7th International Conference onInformation and Automation for Sustainability (ICIAfS),* Colombo, Sri Lanka 22-24 December 2014.

Ashudeb Dutta, First Prize Winner in Cadence Design Contest-India (2014).

Sushmee Badhulika, Inspire Faculty Award, Department of Science and Technology, Government of India, 2014.

JICA Travel Fellowship for 2014. Invited seminar 'Hybrid nanomaterials in sensors and bioanalytical applications' at the Department of Bioengineering and Robotics, Tohoku University, Japan, 28 May 2015.

JICA Travel Fellowship for 2015. Invited Seminar 'Carbon nanotubes and its hybrids in gas sensing and bioanalytical applications' at the Department of Micro Engineering, Kyoto University, Japan, 26 December 2015.



LIBERAL ARTS

The Department of Liberal Arts (LA) at IIT Hyderabad is a leading center for the study of a highly diverse range of subjects including Anthropology, Cultural Studies, Economics, English, Sociology and Fine Arts. Unique in its constitution and vision, the department of Liberal Arts at IIT Hyderabad strives to pursue excellence in teaching and research to benefit students, academics and the wider society.

The primary focus of the Department of Liberal Arts at IIT Hyderabad is to produce world-class research in the broad fields of humanities, social sciences. The broad areas of ongoing research in the department are Economic growth, Macroeconomics, Monetary economics, International finance, Gender studies, Cultural studies, Clinical Psychology, Positive Psychology, Literary Theory, Rhetoric and Composition, Modernist Fiction, Literature and the Visual Arts, Health Psychology, Psycho-oncology, Cultural Psychology, Indigenous Healing, Medical Anthropology, Anthropology of the Media, Sculpture, Painting, and New Media Art.

With a congregation of excellent faculty having expertise on diverse range of subjects, Liberal Arts at IIT Hyderabad is devoted towards the development of teaching and research that has both academic and practical relevance. The department of Liberal Arts offers academic programs for Ph.D., M.Phil and Minor Economics. The department also offers LA electives to the B.Tech program.

Faculty

Badri Narayan Rath
Ph.D - ISEC, Bangalore
Assistant Professor & HoD

Research Areas: Economic Growth, Industrial Economics & Econometrics

Amrita Deb
Ph.D - BHU, Varanasi
Assistant Professor

Research Areas: Positive psychology, Clinical psychology, personality psychology

Haripriya Narasimhan
Ph.D - Syracuse University - NY, USA
Assistant Professor

Research Areas: Anthropology of Media, Health, Gender, Globalisation

Indira Jalli
Ph.D - Hyderabad Central University
Assistant Professor

Research Areas: Feminist Studies, Human Rights, Gender and Caste, Multiple Marginalities, Cultural Studies

Mahati Chittem
Ph.D - University Sheffield, UK
Assistant Professor

Research Areas: Health psychology

Nandini Ramesh Sankar
Ph.D - Cornell University, USA
Assistant Professor

Research Areas: 20th-century British and American poetry; Modernism; Aesthetics

Prabheesh K.P
Ph.D - IIT Madras
Assistant Professor

Research Areas: International Finance, Monetary economics, Applied econometrics

Prakash Chandra Mondal
Ph.D - IIT Delhi
Assistant Professor

Research Areas: Linguistic Theory, Philosophy of Language, Semantics, Language and Computation, Language and Biology

Shubha Ranganathan
Ph.D - IIT Bombay
Assistant Professor

Research Areas: Cultural psychology, qualitative research methods, mental health, gender and health

Srirupa Chatterjee
Ph.D - IIT Kanpur
Assistant Professor

Research Areas: Contemporary and Multi-ethnic American Fiction

PUBLICATIONS
(In Peer-Reviewed Journals)

Sonali Mohapatra, Badri Narayan Rath, 'Do Macroeconomic Factors Matter for Stock Prices in Emerging Countries? Evidence from Panel Cointegration and Panel Causality, *International Journal of Sustainable Economy*, 7 (2), 140-154, 2015.

Debi Prasad Bal, Badri Narayan Rath, Public Debt and Economic Growth in India: A Reassessment, *Economic Analysis and Policy*, 44 (3), 292-300, 2014.

Badri Narayan Rath, Purna Chandra Parida, Did Openness and Human Capital affect Total Factor Productivity? Evidence from the South Asian Region, *Global Journal of Emerging Market Economies*, 6 (2), 103-118, 2014.

2014 (with V. Boddu, Mala Rao et al) The best laid plans: Access to the Rajiv Arogyasri Community Health Insurance Scheme of Andhra Pradesh. Health, Culture and Society. Vol.6, No.1, 85-97, 2014.

(with C.J.Fuller) Tamil Brahmans: The Making of a Middle-Class Caste. Chicago: The University of Chicago Press, 2014.

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M. Chittem, P. Butow, Responding to family requests for nondisclosure: The impact of oncologists' cultural background. *J Cancer. Res. Ther.*, 11(1), 174-180, 2015.

M. Chittem, B. Lindstrom, R. Byrapaneni and G. Espnes, Sense of coherence and chronic illnesses: Scope for research in India. *J. Soc. Health. Diabetes.,* 3(2): 79-83, 2015.

Chittem, M., Understanding coping with cancer: How can qualitative research help? *J Cancer. Res. Ther.*, 10(1), 2014.

M. Chittem and R. Byrapaneni, Using health behavior change theory to guide health promotion in coronary care in India. . In H.K. Chopra, S. Ramakrishnan, A.K. Pancholia & M. Bansal (Eds.), State of the Art CSI Cardiology Update 2014. CSI Update: New Delhi, 2014.

Bhavesh Garg, K.P. Prabheesh, Causal Relationships between the Capital Account and the Current Account: An empirical investigation from India, Applied Economics Letters, 22, 446-450, 2015.

Paresh Kumar Narayan, Huson Ali Ahmed, Susan Sunila Sharma, K. P Prabheesh, How Profitable is the Indian Stock Market?, *Pacific-Basin Finance Journal*, 30, 44-61, 2014.

P. Mondal, How does the Faculty of Language Relate to Rules, Axioms and Constraints?, *Pragmatics and Cognition*, 21(2), 270-303, 2014.

P. Mondal, On the Computational Character of Semantic Structures, *International Journal of Conceptual Structures and Smart Applications*, 2(1), 57-67, 2014.

Ranganathan, S. Narrative approaches to illness and suffering: An ethnographic study of spirit possession in Maharashtra. In Kumar Ravi Priya and Ajit K. Dalal (Eds.). Qualitative research on illness, well-being and self-growth: Contemporary Indian perspectives. New Delhi: Routledge, 2015.

Repudi, H. K, Ranganathan, S. . Academic difficulties among tribal children in remote areas of Guntur district. In D. Chatterjee, S.P. Pati, P.N. Rajeev, & M. Dhal (Eds.). Let's Learn. New Delhi: Bloomsbury, 2014.

A space to eat, trance, and sleep: the healing power of Mahanubhav temples in Maharashtra (India), *Mental Health, Religion & Culture*, 18 (3), 185-195, 2015.

Rethinking 'Efficacy': Ritual Healing and Trance in the Mahanubhav Shrines in India, S. Ranganathan, Culture, Medicine, and Psychiatry. DOI: 10.1007/s11013-014-9421-8, 2014.

Healing temples, the anti-superstition discourse and global mental health: Some questions from Mahanubhav temples in India, S. Ranganathan, South Asia: Journal of South Asian Studies, 37 (4), 625-639, 2014.

FUNDED RESEARCH PROJECTS 2014-15

Badri Narayan Rath, Productivity, Efficiency and Firm Growth: A comparison between manufacturing and service sectors in India, ICSSR, January 2015, Rs. 7 Lakhs.

Haripriya Narasimhan, Sociology of Digital Cities, MHRD, December 2014, Rs. 50 Lakhs.

Mahati Chittem, Avatar: Real-time online counselling system for mental health care, DEIT, July 2015, Rs. 1.3 crore.

TALKS GIVEN IN INTERNATIONAL / NATIONAL CONFERENCES

Behavior and Attitude towards Avoidance of Regular Health Checkups: A case study from Telangana state in India, Annual Conference of the Indian Health Economics and Policy Association (IHEPA), University of Rajasthan, Jaipur, Badri Narayan Rath, 13-14 February 2015.

A Panel Data Analysis of Supply Response of Milk Production in BRIC countries, 51th Annual Conference of The Indian Econometrics Society (TIES), Patiala University, Punjab, Badri Narayan Rath, 12-14 December 2014.

Lectures on Panel Data Models to officers of Indian Economic Service (IES), organized by Pondicherry University, Badri Narayan Rath, 31 March 2015.

Lecture on Time Series Econometrics to officers of the Directorate of Economics & Statistics, Department of Planning, Government of UP, Organized by ASCI Hyderabad, Badri Narayan Rath, 26 March 2015.

Lectures on Introduction to Econometrics to officers of the Directorate of Economics & Statistics, Department of Planning, Government of UP, Organized by ASCI Hyderabad, Badri Narayan Rath 23 March 2015.

Lectures on Compilation of IIP and ASI Data to officers of the Directorate of Economics & Statistics, Department of Planning, Government of Maharashtra, Organized by ASCI Hyderabad, Badri Narayan Rath, 4 March 2015.

Lectures on Applied Time Series and Panel Data Model in Labour Economics in SARNET training programme for young labour economists, organized by International Labour Organization (ILO), New Delhi, Badri Narayan Rath, 4-6 December 2014.

Lectures on Introduction to STATA, School of Economics, University of Hyderabad, Badri Narayan Rath, 22-26 September 2014.

Lecture on CSO-NSSO Database, Workshop on Scientific Research Writing, School of Economics, University of Hyderabad, Badri Narayan Rath, 29 April 2014.

Small screen parivaar: Family and Kinship in Hindi television soap operas. Paper to be presented at the International Union of Anthropological and Ethnological Sciences (IUAES), Bangkok, Thailand, HaripriyaNarasimhan, 15 July 2015.

Going virtual, Maneuvering control: An Ethnography of online fans of television soap-operas in India. Digital Futures: Content, Community and Communication. MICA, Ahmedabad, HaripriyaNarasimhan, 19 February 2015.

Discussant on the panel 'Understanding New Media: Emerging Perspectives'. One day workshop on 'New Media and Digital Philosophy: A dialogue with Shanyang Zhao', MICA, Ahmedabad, HaripriyaNarasimhan, 2 March 2015.

Depicting 'Tier's of the Nation: a look at the 'region' in Hindi Television serials. National Seminar on REGIONS, NEIGHBOURHOODS, AND IMAGINATIONS OF SPACE, Center for Regional Studies, University of Hyderabad, Haripriya Narasimhan, 23 March 2015.

The remote and the internet: New media technologies and television audience in India. Paper presented at the European Conference on South Asian Studies (ECSAS), Zurich, Switzerland, HaripriyaNarasimhan, 27 July 2014.

What do you want, let me count the ways: Experiences of disclosure vs. nondisclosure of cancer diagnosis in India. Paper presented at the 4th Meeting of Asia-Pacific Psycho-Oncology Network (APPON), Taipei, M. Chittem, Taiwan, 2014.

I thought it was the end, but it isn't: Patients' experiences of cancer in India. Poster to be presented at the 4th Meeting of Asia-Pacific Psycho-Oncology Network (APPON), Taipei, Taiwan, M. Chittem, 2014.

What do you want, let me count the ways: Experiences of disclosure vs. nondisclosure of cancer diagnosis in India. Paper presented at the 16th International Psycho-oncology Society Congress, Lisbon, Portugal, M. Chittem, 2014.

I thought it was the end, but it isn't: Patients' experiences of cancer in India. Poster to be presented at the 16th International Psycho-oncology Society Congress, Lisbon, Portugal, M. Chittem, 2014.

The Resistance to Intermediality in Wyndham Lewis in the Seminar I co-organized titled The Rhetoric of Intermediality at the Annual Convention of the American Comparative Literature Association, Seattle, 28 March 2015.

Artifice and Authenticity in War Poetry. Seminar title: World War I: A Centenary Symposium. Department of English, University of Hyderabad, K.P Prabheesh, 15 September 2014.

Factors explaining India's services trade: What does it reveal?, Trends in multidisciplinary business and economic research, Bangkok, Thailand, K.P Prabheesh, 25-26 March 2015.

How profitable is the Indian stock market? 4th India Finance Conference, Indian Institute of Management Bangalore, K.P Prabheesh, 17-19 December 2014.

Convener of panel Margins and thresholds of the medical in contemporary India and paper Ritual medicine: Mental health encounters at a religious shrinepresented at the Association for Asian Studies Annual Conference in Philadelphia (Pennsylvania), S. Ranganathan, 27-30 March 2014.

New England Puritanism and America's Dark Romantics. Seminar titled Religion and Literatures. Osmania University Center for International Programmes, Osmania University, Hyderabad, Srirupa Chatterjee, 29-31 January 2015.

Teaching Literary Forms/Genres and Academic Publications. Sessions conducted as resource person for Refresher Course in English for Assistant Professors. UGC – Academic Staff College, Maulana Azad National Urdu University, Hyderabad, Srirupa Chatterjee, 22 January 2015.

WORKSHOPS / SYMPOSIUMS

Half-day workshop on Mindfulness for Everyday Living hosted by the Dept. of Liberal Arts, IITH.

One-day IPOS Academy workshop on Communication Skills Training for Healthcare Professionals involved in Cancer Care in partnership withCancer Research and Relief Trust (CRRT), The International Psycho-Oncology Society (IPOS), and the World Health Organization (WHO).

TEQIP Session on 'Innovative Teaching' at TEACHER EFFECTIVENESS WORKSHOP, 5-6 December 2014.

JICA Friendship Project Travel Fellowshipto visit Keio University, Japan (2015).

Coordinator and faculty of a two day TEQIP workshop on Teacher Effectiveness: Nurturing your well-being (2015).

Coordinator and faculty of a two day TEQIP workshop on Teacher Effectiveness (2014).

Convenor and faculty of a one-day seminar on Health practices and engagements in India hosted by the Dept. of Liberal Arts, IITH (2014).

'Computational Cognitive Systems: The Case of Commonsense, Space, and Change' by Prof. Mehul Bhatt, Professor, University of Bremen, Germany, 22 December 2014.

'Architectural Design Cognition: People-Centred Visuo-Spatial Cognition, and its Role in Systems and Educational Discourse for Design Conception', by Prof. Mehul Bhatt, Professor, University of Bremen, Germany, 23 December 2014.

'Introduction to Information and Communication Theory', Prof. Uday Athavankar, Emeritus and Bajaj Chair Professor, Industrial Design Centre, Indian Institute of Technology Bombay, 15 February 2015.

'Designing User Interface and User Experience', Prof. Anirudha Joshi, Professor, Industrial Design Centre, Indian Institute of Technology Bombay, 28 January 2015.

'Script writing and Story-telling in graphic novels', Prof. Prakash Moorthy, Professor and HOD, Satyajit Ray Film and Television Institute, Kolkota, 19 January 2015.

'Problem Identification and conceptual Design' Mr. Nevin John, Manager MCBD - Australia, Deloitte, 21 March 2015.

3-Day TEQIP Workshop on 'Design Innovation and Creative Problem Solving', 15-17 January 2015.

AWARDS / RECOGNITION

Badri Narayan Rath, The Indian Econometrics Society has nominated as the Executive Council Member of this society for the year 2015.

Mahati Chittem, APPON (Asia Pacific Psycho-Oncology Network) Young Investigator Award (2014).

MATERIALS SCIENCE & METALLURGICAL ENGINEERING

The department of **Materials Science and Metallurgical Engineering (MSME)** at IITH started in 2008 with the vision "Atoms to Applications", aiming to be a globally recognized centre of excellence in materials research, translating fundamental understanding into development of innovative, sustainable and environment-friendly technologies and products for social needs. Currently, MSME has eight faculty members with research interests spanning across various disciplines of structural, functional and computational materials science. One of the recent focuses of the cumulative and collaborative effort of the department is to understand the materials genome by correlating composition, structure, processing, characterization and properties ('The MSME Pentagon').

The MSME department at IITH offers unique innovative courses, which are unparalleled with courses at other IITs. Research programs are closely designed with national research laboratories and industries. Currently, MSME has over 30 PhD and 14 MTech students working in fundamentals to advanced and emerging areas, some of which are thermo-mechanical processing, thin films and devices, nano-materials, soft matter, biomaterials, energy materials, and electron microscopy. The department publishes around 15 journals papers every year and has INR 3.1 Cr of project funding. The department started its bachelors program in July, 2014 with a unique curriculum comprised of fractal courses which facilitates expansion of the core subject acumen as well as personal skills. The department prepares its students for research roles as well as other professional roles by providing a conducive environment for all round development.

Faculty

Pinaki P. Bhattacharjee
Ph.D - IIT Kanpur
Associate Professor (HOD)

Research Areas: Bulk ultrafine and nanostructured materials produced by severe plastic deformation processes and structure and structure-property relationship in such materials, Crystallographic texture, Electron microscopy, Recrystallization behavior of metallic materials, Mechanical behaviour of materials, Development of Light metals (e.g. Al, Mg, Ti) alloys for novel applications, High entropy alloys

Atul S. Deshpande
Ph.D - Max-Plnack Institute of Colloids and Interfaces - Potsdam, Germany
Assistant Professor

Research Areas: Nanoparticle synthesis and self-assembly, Sol-gel processes, Templating techniques, novel nanostructured materials for advanced applications including catalysis, Solid oxide fuel cells (SOFC), Ferroelectric materials, Bone replacement materials and Drug delivery systems.

Suhash R. Dey
Ph.D - University Paul-Verlaine - Metz, France
Assistant Professor

Research Areas: Alloys design and development through combinatorial approach (Ni-Cu alloy system for functional applications and beta-Ti alloy systems for bio-applications); Development of CuInSe2, CuInGaSe2 and Cu2ZnSn(S/Se)4 (CZTS) layers through chemical, Electrochemical and vacuum based routes for solar applications; Joining and characterization of similar/dissimilar alloys through Friction Stir Welding.

Saswata Bhattacharya
Ph.D - IISc Bangalore
Assistant Professor

Research Areas: Phase transformations in alloys and oxides, Phase-field modelling of microstructural evolution, Microstructure-property correlations, Modelling deformation behaviour using discrete dislocation dynamics, Continuum crystal plasticity, Multiscale modelling of functional materials

Ranjith Ramadurai
Ph.D - IISc Bangalore
Assistant Professor

Research Areas: Multiferroic oxide thin films for fundamental science and functional device applications. Surfaces and interfaces of oxide hetero structures on silicon and single crystalline oxide substrates. Influence of process conditions, strain engineering and interface engineering on domains and domain dynamics of multiferroic thin films utilizing scanning probe microscope.

Mudrika Khandelwal
Ph.D - University of Cambridge, UK
Assistant Professor

Research Areas: Materials-understanding structure, mechanism & applications, High performance green composites, Liquid crystals and self-assembly of rod-like entities, Fibre spinning, Strategies for developing anti-fouling and anti-microbial materials, Materials for tissue scaffolding

Bharat B. Panigrahi
Ph.D - IIT Kharagpur
Assistant Professor

Research Areas: Powder Metallurgy Manufacturing, Sintering Mechanisms, Nanocrystalline materials, MAX Phases & Advanced Ceramics, Composites (MMCs & CMCs), Light Metals, Steels and Grain Boundary Engineering, Porous Implants & Biomaterials, Wear and Tribology.

Subhradeep Chatterjee
Ph.D - IISc, Bangalore
Assistant Professor

Research Areas: Phase transformations, Electron microscopy, Welding and solidification processing, Microstructural modelling

PUBLICATIONS
(In Peer-Reviewed Journals)

G.D. Sathiaraj and P.P. Bhattacharjee, Analysis of microstructure and microtexture during grain growth in low stacking fault energy equiatomic CoCrFeMnNi high entropy and Ni–60wt.%Co alloys, *J. Alloys Comp.*, 637, 267-276 (2015).

J.R. Gatti and P.P. Bhattacharjee, Nucleation behavior and formation of recrystallization texture in pre-recovery treated heavily cold and warm-rolled Al-2.5wt.%Mg alloy, *Mater. Char.*, 106, 141-151 (2015).

J.R. Gatti and P.P. Bhattacharjee, Microstructure and texture of Al-2.5wt.%Mg processed by combining Accumulative Roll Bonding and conventional rolling, *J. Mater. Eng. Perf.*, 23, 4453-4462 (2014).

M. Zaid and P.P. Bhattacharjee, Electron Backscatter diffraction study of deformation and recrystallization textures of individual phases in a cross-rolled duplex steel, *Mater. Char.*, 96,263-272 (2014).

M. Zaid and P.P. Bhattacharjee, Evolution of microstructure and texture during isothermal annealing of a heavily warm-rolled duplex steel, *ISIJ Int.*, 54, 2844-2853 (2014).

J.R. Gatti and P.P. Bhattacharjee, Annealing textures of severely cold and warm-rolled Al-2.5%Mg alloy, *J. Alloys Comp.*, 615, 950-961 (2014).

K. Rajamallu, M. K. Niranjan and S. R. Dey, First principles theoretical investigations of low Young's modulus beta Ti-Nb and Ti-Nb-Zr alloys compositions for biomedical applications, *Mater. Sci. Eng. C*, 50, 2015, 52-58.

S. Mandati, B.V. Sarada, S. R. Dey and S. V. Joshi, Enhanced photoresponse of Cu(In,Ga)Se2/CdS heterojunction fabricated using economical non-vacuum methods., *Elect. Mater. Lett.,*2014.

S. Mandati, B.V. Sarada, S. R. Dey and S. V. Joshi, Photoelectrochemistry of Cu(In,Ga) Se2 thin-films fabricated by sequential pulsed electrodeposition, *J. Power Sources*, 273, 2015, 149-157.

P. Srinivas, S. Hamann, M. Wambach, A. Ludwig and S. R. Dey, Fabrication of a Ni-Cu thin film materials library using combinatorial pulsed electrodeposition, *J. Electrochem.Soc.*, 161(10), 2014, D504-D509.

A. Manivannan, S. K. Miana, K. Miriyala, S. Sahu and R. Ramadurai, Low power threshold switching characteristics of thin GeTe6 films using conductive atomic force microscopy, *Appl. Phys. Lett.*, 105, 2014, 243501.

B. Mallesham, R. Ranjith and M. Manivelraja, Scandium induced structural transformation and B:B cationic ordering in $Pb(Fe_{0.5}Nb_{0.5})O_3$ multiferroic ceramics, *J. Appl. Phys.*, 116, 2014, 034104.

T.D. Rao, R. Ranjith and S. Asthana, Enhanced magnetization and improved insulating character in Eu substituted BiFeO3, *J. Appl. Phys.*, 15, 2014, 124110.

K. Thangavelu, R. Ramadurai and S. Asthana, Evidence for the suppression of intermediate anti-ferroelectric ordering and observation of hardening mechanism in $Na_{1/2}Bi_{1/2}TiO3$ ceramics through Cobalt substitution, *AIP Adv.*, 4, 2014, 017110.

C. N. Babu, P. Suresh, P. Das, A. Sathyanarayana, R. Ramadurai, N. Sampath and G. Prabusankar, Synthesis, crystal structure and spectral properties of copper(II) monomer decorated copper(II) coordination polymer, *J. Mol. Str.*, 1062, 2014, 141.

A. Lahiri, T. A. Abinandanan, M.P. Gururajan and Saswata Bhattacharya, Effect of epitaxial strain on phase separation in thin films, *Phil. Mag. Lett.*, 94, 2014, 702-707.

L. Chen, J. Chen, R.A. Lebensohn, Y.Z. Ji, T.W. Heo, S. Bhattacharyya, K. Chang, S. Mathaudhu, Z.K. Liu and L.-Q. Chen, An integrated fast Fourier transform-based phase-field and crystal plasticity approach to model recrystallization of three dimensional polycrystals, *Comp. Meth. Appl. Mech. Eng.*, 285, 2015, 829-848.

Ramakrishna, M. Khandelwal, Attributes of Engineers and Engineering Education for the 21st Century, World PES, J. Eng. Edu. Trans., 27, 17-28, 2014.

PUBLICATIONS
(In Peer-Reviewed Conferences)

M. Zaid and P.P. Bhattacharjee, Microtexture of constituent phases in a heavily warm-rolled and annealed duplex stainless steel, *17th International Conference on Textures of Materials (ICOTOM 17)*, Dresden, 24-29 August 2015, 10.1088/1757-899X/82/1/012046.

J.R. Gatti, P.P. Bhattacharjee, Evolution of microstructure and texture during annealing of Al-2.5%Mg-0.2%Sc severely deformed by a combination of accumulative roll bonding (ARB) and conventional rolling, *17th International Conference on Textures of Materials (ICOTOM 17)*, Dresden, 24-29 August 2015, 10.1088/1757-899X/82/1/012045.

G. D. Sathiaraj, C. Lee, C. W. Tsai, J. W. Yeh and P. P. Bhattacharjee, Evolution of microstructure and crystallographic texture in severely cold rolled high entropy equiatomic CoCrFeMnNi alloy during annealing, *17th International Conference on Textures of Materials (ICOTOM 17)*, Dresden, 24-29 August 2015, 10.1088/1757-899X/82/1/012068.

B. K. Kodli, K. K. Saxena, S. R. Dey , V. Pancholi and A. Bhattacharjee, Texture studies of hot compressed near alpha titanium alloy (IMI 834) at 1000°C with different strain rates, *17th International Conference on the Textures of Materials (ICOTOM 17)*, Dresden, 24-29 August 2015, 10.1088/1757-899X/82/1/012032.

M. P. Meshram, B. K. Kodli and S. R. Dey, Mechanical-Crystallographic Analyses of Friction Stir Welded Austenitic Stainless Steel AISI-316L. *Seminar on Automotive Steel*, Metallurgical and Materials Engineering Department and Centre of Excellence (TEQIP-II) in Phase Transformation and Product Characterisation, Jadavpur University, Kolkata, Conference Proceedings, 2014, 34-36.

B. K. Kodli, K. K. Saxena, S. R. Dey, V. Pancholi and A. Bhattacharjee, Flow behaviour of IMI 834 titanium alloy under hot deformation using Gleeble 3800, GUWI 2014, *4th Gleeble User Workshop India*, IIT Madras, Conference Proceedings, 2014.

B. B. Panigrahi, R.Mane, A. Joshi, Y. Rajkumar, Densification of some MAX phases powders using sintering aids, *World Congress on Powder Metallurgy and Particular Materials*, Orlando (USA), May 18-22, 2014.

FUNDED RESEARCH PROJECTS 2014-15

P.P. Bhattacharjee, Recrystallization behavior and evolution of microstructure and mechanical properties in bulk nanostructured duplex steels processed by severe plastic deformation, DRDO, Rs. 72 Lakhs, 2014.

Suhash R. Dey, Development of novel high strength harmonic Ti-Nb-Sn compositions for biomedical applications, Indo-Japan Cooperative Science Program, 2014, Rs. 12.32 Lakhs.

Ranjith Ramadurai, Effect of anisotropy on exchange bias of multiferroic oxides with modulated spin structures for novel magnetic field sensor applications, BRNS-DAE, 2014, Rs. 17 Lakhs.

Saswata Bhattacharya, Pearlitic transformations in steels through phase field models, Tata Steel, 2014, Rs. 12 Lakhs.

SEMINARS CONDUCTED

Unusual solid-state phase-transformation phenomena in metallic materials, Dr. Sairam Meka, Max Planck Institute (MPI) for Metals Research, Stuttgart, Germany, 6 August 2014.

Role of Combinatorial Materials Science and Informatics for Accelerated Materials Discovery, Santosh K. Suram, California Institute of Technology, 21 October 2014.

Self-healing liquid metal battery for grid scale storage applications, Dr. Satyajit Phadke, Battelle Science and Technology India Pvt. Ltd, Pune, 9 December 2014.

Nanocrystalline High Entropy Alloys - A New Class of Exciting Materials, Prof. B.S. Murty, IIT Madras, 31 December 2014.

Satyanarayan Kuchibhatla, Investigating the Nanostructures – A multi-technique Approach, Battelle Science and Technology India Pvt. Ltd, Pune, January 28.

Dr. Pratap Kollu, Novel Magnetic Nanocomposites

for Next Generation Sensing, Energy and Antimicrobial Applications, University of Cambridge, February 9, 2015.

Dr. Arijit Maitra, Interpreting Single Molecule Response under Mechanical Stress, SUNY, Stony Brook, February 12, 2015.

TALKS GIVEN IN INTERNATIONAL / NATIONAL CONFERENCES

'Development of high entropy alloys as novel structural materials', *2nd Workshop on Materials Behavior and Modeling*, GE-JFWTC, Bangalore, India, 18-19 March 2015.

'Evolution of Microstructure and texture during Thermo-mechanical Processing of High Entropy Alloys', *1st National workshop on High Entropy Alloys*, IIT Chennai, India, 28-29 March 2015.

'Understanding and control of recrystallization texture', ETS Montreal, Canada, 26 May 2015.

'Design and Fabrication of Biocompatible β Titanium alloys for Orthopedic Implants'. (Invited Talk), *8th International Symposium on Nanostructures*, Kyoto (Japan), 1-3 March 2015.

'Mechanical-Crystallographic Analyses of Friction Stir Welded Austenitic Stainless Steel AISI-316L'. (Invited Talk), *Seminar on Automotive Steel*, Metallurgical and Materials Engineering Department and Centre of Excellence (TEQIP-II) in Phase Transformation and Product Characterisation, Jadavpur University, Kolkata, 20-21 August 2014.

'Nano Scale Control on Electrical Transport and Low Power Ovonic Threshold Switching Characteristics of GeTe6 Thin Films using Conductive - Atomic Force Microscope', R. Ramadurai, *Second International Conference on Nanostructured Materials and Nanocomposites (ICNM 2014)*, Kottayam, 19-21 December 2014. (Invited Talk)

B. B. Panigrahi, 'Development of New Class of Ductile Metallic-Ceramics', *National Conference on Materials Science and Manufacturing Engineering (NCMSME 2015)*, Hyderabad, 30-31 January 2015. (Key Note)

A. Equbal, R. B. Mane and B. B. Panigrahi, 'Synthesis of FeCrCoMnNi high entropy alloy powders by mechanical alloying', *International Conference on Powder Metallurgy*, Mumbai, 19-21 January 2015.

R. B. Mane, Y. Rajkumar, B. B. Panigrahi, 'Phase evolution during synthesis of Ti3SiC2 powder through mechanical alloying', *International Conference on Powder Metallurgy*, Mumbai, 19-21 January 2015.

Y. Rajkumar, P. A. Aakash, S. Bhattacharya, B. B. Panigrahi, 'Mechanically activated synthesis of nanocrystalline Cr2AlC powders', *International Conference on Powder Metallurgy*, Mumbai, 19-21 January 2015.

B. B. Panigrahi, 'Nanolayered MAX Phase Ceramics and Composites', *Second International Conference on Nanostructured Materials and Nanocomposites (ICNM-2014)*, Kottayam, 19-21 December 2014. (Invited Talk)

B. B. Panigrahi, R. Mane, A. Joshi, Y. Rajkumar, 'Densification of some MAX phases powders using sintering aids', *World Congress on Powder Metallurgy and Particular Materials*, Orlando (USA), 18-22 May 2014.

S. Bhattacharya, 'Understanding dislocation mediated phenomena in particle-strengthened materials', *2nd Workshop on Materials Behavior and Modeling*, GE-JFWTC, Bangalore, 18-19 March 2015.

S. Bhattacharya, 'Nonlinear Methods in Materials Science', *School on Nonlinear Finite Element Method (NLFEM)*, IIT Hyderabad, December 2014.

S. Bhattacharya, 'Fundamentals of phase-field modeling – precipitation, spinodal decomposition, grain growth, elastic stress effects', *NRC-M workshop on phase-field modeling*, IISc Bangalore, June 2014.

'Novel conducting paper from Bacterial cellulose and Polyaniline', *29th Engineering congress*, Hyderabad, December 2014.

AWARDS / RECOGNITIONS

Dr. Pinaki P. Bhattacharjee was awarded Visiting Researcher Fellowship (May 2015-July, 2016) of ETS Montreal, Canada.

Best Oral Presentation Award to Mr. Palli Srinivas (Ph.D. scholar with Dr. Suhash Ranjan Dey) at COMBI14, Cairns, Australia.

Ph.D. scholar (Dr. Mandati Sreekanth) with Dr. Suhash Ranjan Dey received Dr. K.V. Rao Scientific Society Young Scientist Award of citation 2014-15 in Chemistry.

Ranjith Ramadurai, Alexander Von Humboldt renewed research stay for duration of 3 months May–July 2014, in Institute of Electronic Materials and Devices, in Leibniz university of Hannover, Germany.

Ramjith Ramadurai, BRNS 'Young scientist award' for the project titled 'Effect of anisotropy on exchange bias of multiferroic oxides with modulated spin structures for novel magnetic field sensor applications' granted in May 2014.

Best Poster Award for the contribution 'Control over microstructure and doping of TinOxide films through PLD for gas sensing applications', S. Mohan M, K. Fujiwara, R. Ranjith and H. Tanaka, in Second International Conference on Nanostructured Materials and Nanocomposites (ICNM 2014), Kottayam, 19-21 December 2014.

Second Best poster Award for the contribution 'Optical and magnetic studies in Y1-xBixCrO3 compounds prepared by sol-gel route', V. Rao M and R. Ranjith, in Second International Conference on Nanostructured Materials and Nanocomposites (ICNM 2014), Kottayam, 19-21 December 2014.

WORKSHOPS / SYMPOSIUMS

TEQIP Workshop on 'Advanced Materials Characterization Techniques', 1-2 November 2014.

Technology and Engineering Conclave, 5 November 2014 (co-organized by MAE, ChE and MSME).

MATHEMATICS

The **Department of Mathematics** was one of the six departments that was founded along with the Institute and offers programmes at the masters and doctoral level. Since its inception, the department has made a conscious effort to grow in sync with the directions of the Institute and an awareness of the larger needs of the society. In consonance with this philosophy, the department envisages the following:
"To foster eclectism and excellence in mathematical education and research which is well poised between abstraction and application."

The Department has young and dedicated faculty working both in pure and applied branches of Mathematics who actively collaborate with their counterparts from the other engineering departments. Faculty members have achieved many distinctions - for instance, they have been invited to be part of research committees of the Government of India, are established resource personnel in programmes promoting both basic and advanced Mathematics, are members of the editorial board of reputed journals.

Despite its nascency, the department can already boast of a very healthy publication record. So far the number of peer-reviewed publications with IITH affiliation stands at a respectable 80, with more than 30 international journal publications. Further, the faculty have garnered many externally funded research projects to the tune of Rs. 75 Lakhs.

Faculty

D. Sukumar
Ph.D - IIT Madras
Assistant Professor and HoD

Research Areas: Banach algebra, Numerical functional analysis

Prabhakar Akella
Ph.D - Sri Satya Sai University, Puttaparthi
Visiting Assistant Professor

Research Areas: Fuzzy logic, Fuzzy set based operators, Aggregation operators

Balasubramaniam Jayaram
Ph.D - Sri Satyasai Institute of Higher Learning
Assistant Professor

Research Areas: Multi-valued Logic, Approximate reasoning, High dimensional data analysis

Pradipto Banerjee
Ph.D - University of South Carolina
Assistant Professor

Research Areas: Number theory

C. S. Sastry
Ph.D - IIT Kanpur
Assistant Professor

Research Areas: Sparse representation Theory, Wavelets, Inverse problems

Tanmoy Paul
Ph.D - ISI Calcutta
Assistant Professor

Research Areas: Functional analysis, Banach space theory, Geometry of banach spaces

CH VG Narasimha Kumar
Ph.D - TIFR Bombay
Assistant Professor

Research Areas: Algebraic Number Theory

Venku Naidu Dogga
Ph.D - IIT Madras
Assistant Professor

Research Areas: Harmonic analysis, Functional analysis

G. Ramesh
Ph.D - IIT Madras
Assistant Professor

Research Areas: Operator theory, Functional analysis

P A Lakshmi Narayana
Ph.D - IIT Kharagpur
Assistant Professor

Research Areas: Heat transfer, Mass transfer, Porous media

PUBLICATIONS
(In Peer-Reviewed Journals)

J. Ganesh, G. Ramesh and D. Sukumar, 'the structure of absolutely minimum attaining operators', *J. Math. Anal. And Applications*, 428, 457-470 (2015).

N.R. Vemuri and B. Jayaram, 'Representations through a Monoid on the set of Fuzzy Implications', *Fuzzy Sets and Systems*, 247, 51-67 (2014).

S. Mandal and B. Jayaram, 'Bandler-Kohout Subproduct with Yager's classes of Fuzzy Implications, *IEEE Trans. on Fuzzy Systems*, 22(3), 469-482 (2014).

N.R. Vemuri and B. Jayaram, 'Homomorphisms on the Monoid of Fuzzy Implications and the Iterative Functional Equation I(x,I(x,y)) = I(x,y)', *Info. Sci.*, 298, 1-21(2015).

N. Deepika and P A L Narayana, 'Effects of Vertical Throughflow and Variable Gravity on Hadley-Prats Flow in a Porous Medium', Transport in Porous Media., DOI 10.1007/s11242-015-0528-3.

G. Ramesh, 'Structure theorem for AN-operators', *J. Aust. Math. Soc.* 96, 386-395 (2014)

C.R. Jayanarayan and Tanmoy Paul, 'Strong proximinality and intersection properties of balls in Banach spaces', *J. Math. Anal. Appl.* 426 (2015), no. 2, 1217-1231.

P Banerjee, 'Galois groups of generalized Laguerre polynomials whose discriminants are squares', J. Number Theory, 141(2014), 36–58.

PUBLICATIONS
(In Peer-Reviewed Conferences)

B. S. Chandra, C. S. Sastry and S. Jana, 'Reliable Low-Cost Telecardiology: High-Sensitivity Detection of Ventricular Beats using Dictionaries,' In Proc. 16th IEEE Healthcom, pp: 305-310, Natal, Brazil, 2014. (DOI: 10.1109/HealthCom.2014.7001859)

Srinivas Avasarala, Soumya Jana, Prabhakar Akella, 'Rate-Distortion Function for Finite Block Codes: Analysis of Symmetric Binary Hamming Problem', National Conference on Communications, Indian Institute of Technology Bombay, 27 February - 1 March 2015.

FUNDED RESEARCH PROJECTS 2014-15

D. Sukumar, Analytical and Computational Perspective of Condition Spectrum, DST SERC, May 2014, Rs. 12 Lakhs.

BalasubramaniamJayaram, Similarity Based Reasoning and Fuzzy Relational Inference: A Comprehensive Study, CSIR, Nov 2014, Rs. 2 Lakhs.

SEMINARS CONDUCTED

The Star-composition - A Novel Generating Method of Fuzzy Implications: An Algebraic Study, Nageshwar Rao Vemuri, IIT Hyderabad, 1 April 2014.

Bandler-Kohout Subproduct with Yager's Families of Fuzzy Implications: A Comprehensive Study, Sayantan Mandal, IIT Hyderabad, 8 April 2014.

Convergence of slices and geometric aspects in Banach spaces, P. Shunmugaraj, IIT Kanpur, 29 April 2014.

Spectral Theorem for normal operators and Quaternionic Hilbert spaces, Santosh K. Pamula, IIT Hyderabad, 5 August 2014.

Topological Dynamics, Gunjan Sapra, IIT Hyderabad, 7 October 2014.

Condition spectrum and almost multiplicative function, D. Sukumar, IIT Hyderabad, 13 January 2015.

An Introduction to RKHS, D. Venku Naidu, IIT Hyderabad, 20 January 2015.

Best Approximation in Banach spaces Part I, T. Paul, IIT Hyderabad, 27 January 2015.

Best Approximation in Banach spaces Part II, T. Paul, IIT Hyderabad, 3 February 2015.

Primal-dual active set strategy for large scale optimization of cardiac defibrillation, Nagaiah Chamakuri, RICAM, Austria, 10 February 2015.

Modular Class of a Lie algebroid with a Nambu Structure, Shilpa Gondhali, University of Haifa, Israel, 17 February 2015.

Optimization Methods in Structural Dynamics: Linking mathematics to Industry, Biswa Nath Datta, Northern Illinois University, 18 February 2015.

Condition Numbers of Bases, B. V. Limaye, IIT Bombay, 24 February 2015.

Geometric properties of phi-uniform domains, Swadesh Kumar Sahoo, IIT Indore, 3 March 2015.

Sparsity based methods for reconstruction in Computed Tomography, Prasad Theeda, IIT Hyderabad, 10 March 2015.

Dictionaries for Sparse Representation: Theory and Applications, Ramu Naidu, IIT Hyderabad, 24 March 2015.

Are You Connected? Detecting Connectivity Patterns in Networks, Govindan Rangarajan, IISc, 31 March 2015.

TALKS GIVEN IN INTERNATIONAL / NATIONAL CONFERENCES

D Sukumar, 'Condition spectrum and almost multiplicative function', Workshop in Analysis and Probability seminar, Texas A&M in College Station, USA on 18 July 2014.

D Sukumar 'Biggest open ball in invertible elements of a Banach algebra', Conference on Geometry of Banach space and Operator Theory, IIT Kanpur on 26-29 March 2015.

C S Sastry, 'Deterministic dictionaries for sparse representation: Theory and applications', Sparse Signal Processing and Compressive Sensing, Osmania University, Hyderabad on 20 December 2014.

C S Sastry, 'Sparse approximation of linear systems', ICAFW, Amrita Viswavidya Peetham, Coimbatore on 11 January 2015.

Balasubramaniam J, 'Distances in High Dimensions: Who is your best friend?, IEEE Computational Intelligence Society Workshop, Singapore on October 2014.

Ramesh G 'Absolutely minimum attaining closed operators', Geometry of Banach Spaces and Operator Theory, IIT Kanpur on 26-30 March 2015.

Ch VG Narasimha Kumar, 'Introduction to Quadratic Forms', Lecture Series on Quadratic Forms, IISER, Mohali on 2-8 June 2014.

Ch VG Narasimha Kumar, 'p-adic aspects of modular forms', RMS Annual Meeting IISER, Pune on 23-27 June 2014.

Ch VG Narasimha Kumar, 'Algebraicity of Fourier coefficients of half-integral weight modular forms', International congress of Mathematicians, Seoul, South Korea on 13-20 August 2014.

Ch VG Narasimha Kumar, 'Heegner points', Workshop and conference on Elliptic Curves, Beijing, China on 8-14 December 2014.

WORKSHOPS / SYMPOSIUMS

To commemorate the 127th birth anniversary of legendary mathematician Srinivasa Ramanujan, the Department of Mathematics at IITH organized a one-day symposium on 22 December 2014 titled '**Ramanujan Memorial Symposium on Mathematics and Applications 2014**'.

TEQIP

The Dept of Mathematics IIT Hyderabad conducted TEQIP (Technical Education Quality Improvement Program) on 23-24 December 2014.

This event, slated to have its emphasis on Functional Analysis and Allied topics, aimed at covering the fundamental concepts in Linear algebra, basic Banach space theory with some celebrated results, Fourier Analysis and Plancherel theorem, Discrete Fourier transform, Fast Fourier transform and Frames. The event provided due importance to emerging trends in the fascinating field of Functional Analysis and their relevance to applications. The following delegates presented lectures in this event.

- Prof P. Veeramani (IIT Madras)
- Prof Anil Karn (NISER Bhubaneswar)
- Prof Rudra Sarkar (ISI Kolkata)
- Prof Binod Kr. Sahoo (NISER Bhubaneswar)
- Prof. Biswa Ranjan Behra (ISI Kolkata)

Nearly 50 participants registered and attended this event.

School Camp

The Department of Mathematics conducted a week long summer camp for schools situated in nearby areas where most of the students come from an economically weak background. The camp is intended to provide a stimulating and supportive environment for students to develop their mathematical problem solving ability and to motivate them to pursue higher studies. The camp was conducted between 5th and 8th of May, 2014. All the faculty, scholars and masters students actively participated in this program.

AWARDS / RECOGNITIONS

Balasubramaniam Jayaram, 'Award for Excellence in Teaching', IIT Hyderabad, 2014.

MECHANICAL & AEROSPACE ENGINEERING

The **Department of Mechanical & Aerospace Engineering (MAE)** has faculty members with specializations in the fields of solid mechanics, structural vibration and control, acoustics, robotics, materials, manufacturing, rapid-prototyping, fluid mechanics, heat transfer, combustion, computation fluid dynamics, etc. Currently, the Department has established many state of-the art teaching and research labs, and is offering undergraduate (B.Tech.) and post graduate (M.Tech and Ph.D.) programs in Mechanical Engineering.

The UG and M.Tech programs have a dual orientation towards a strong foundation in fundamentals coupled with a strong industry orientation. The latter results in hands-on experience on software tools for Computer-aided Design, Finite-Element Analysis, Computational Fluid Dynamics, Kinematic and Dynamics, Computational Mathematics, etc., in the many project oriented courses in the curriculum. This prepares the students to take up jobs in India's burgeoning Industrial R&D sectors after they graduate. The M.Tech program has one year in advanced course-work followed by one year of thesis work, in which research problems in either applied industrial or fundamental research areas can be taken up, on the choice of the student.

The PhD program has a strong foundation of advanced course-work for one year, which is more rigorous than usual in most IITs, followed by research work in fundamental areas, where the focus is on developing the capacity for independent research and research leadership in the student. Because of the generous funding available through MHRD, very high-end research equipment has been installed at IITH to facilitate PhD research.

Faculty

V. Eswaran
Ph.D - State University of NY at Stony
Professor and HoD

Research Areas: Computational Fluid Dynamics (CFD) and heat transferAtomization & spray, CFD, GPU parallelization

N. V. Reddy
Ph.D - IIT Kanpur
Professor

Research Areas: Analysis of Manufacturing Processes with emphasison Generative and Formative Manufacturing. Integrated Design and Manufacturing, Additive/Generative/Digital Manufacturing

Abhay Sharma
Ph.D - IIT Roorke
Associate Professor

Research Areas: Manufacturing processes, Modeling and simulation, Welding engineering, Process modelling and optimization

M. Ramji
Ph.D - IIT Madras
Associate Professor

Research Areas: Composite repair, Fatigue and Fracture, Damage Mechanics, Material Characterization, Experimental Solid Mechanics

Raja Banerjee
Ph.D - University of Missouri Rolla - USA
Associate Professor

Research Areas: Mutliphase flow, Atomization & spray, CFD, GPU parallelization

R. Prasanth Kumar
Ph.D - IIT Kharagpur
Associate Professor

Research Areas: Robotics, multibody dynamics

Ashok Kumar Pandey
Ph.D - IISc Bangalore
Assistant Professor

Research Areas: Linear and nonlinear vibration; Vehicle dynamics; MEMS / NEMS

B. Venkatesham
Ph.D - IISc Bangalore
Assistant Professor

Research Areas: Acoustics & vibration

Chandrika Prakash Vyasarayani
Ph.D - University of Waterloo, Canada
Assistant Professor

Research Areas: Time delayed systems, parameter identification, structural dynamics, MEMS

Harish Nagaraj Dixit
Ph.D - Jawaharlal Nehru Centre for Advanced Scientific Research
Assistant Professor

Research Areas: Vortex dynamics, Interfacial Fluid Mechanics, Coating flows, Hydrodynamic Stability, Geophysical flows

K Venkatasubbaiah
Ph.D - IIT Kanpur
Assistant Professor

Research Areas: Computational heat transfer and Hypersonic flows

Karri Badarinath
Ph.D - National University of Singapore
Assistant Professor

Research Areas: Cavitation, Bubble dynamics, High-speed imaging, Optimization, Scheduling

Nishanth Dongari
Ph.D - University of Strathclyde, UK
Assistant Professor (on contract)

Research Areas: Microfluidics, Rarefied Gas Dynamics, Compressible Gas Flows, Thin Film Coatings, Molecular Dynamics, Direct Simulation Monte Carlo and Extended Hydrodynamics

Pankaj S Kolhe
Ph.D - The University of Alabama, USA
Assistant Professor

Research Areas: Alternative fuels, Combustion diagnostics, Tomographic reconstruction, Turbulence measurements in dynamic flows

R Gangadharan
Ph.D - IISc, Bangalore
Assistant Professor

Research Areas: Non-destructive testing and evaluation, Structural health monitoring, Analysis and design of composite structures, Variable angle tow composites, Buckling and post-buckling analysis

Saravanan Balusamy
Ph.D - University of INSA of Rouen, France
Assistant Professor

Research Areas: Combustion, Laser diagnostics, Stratified combustion, I.C. Engines, Fluid mechanics, Pulverized oxy-fuel coal combustion

S. Surya Kumar
Ph.D - IIT Bombay
Assistant Professor

Research Areas: Additive manufacturing, 3D Printing, CAD / CAM

Syed Nizamuddin Khaderi
Ph.D - University of Groingen, Netherlands
Assistant Professor

Research Areas: Computational solid mechanics, Impact loading of structures, Fluid structure interaction

Viswanath Chinthapenta
Ph.D - Brown University, USA
Assistant Professor

Research Areas: Computational solid mechanics, Bio mechanics, SHM, Composites, Fracture mechanics

PATENTS FILED

B. Venkatesham and Ajay, 'Low Frequency Noise Attenuation Structure', Indian Provisional Patent (reference number-4389/CHE/2014).

PUBLICATIONS
(In Peer-Reviewed Journals)

Anil Bhaurao Wakale, K. Venkatasubbaiahand Kirti Chandra Sahu, 'A parametric study of buoyancy-driven flow of two-immiscible fluids ina differentially heated inclined channel', *Computers & Fluids*, Vol. 117, pp: 54-61, (2015).

Rajesh Nimmagadda and K. Venkatasubbaiah, 'Conjugate heat transfer analysis of micro-channel using novel hybridnanofluids (Al2O3 + Ag/ Water)', *European Journal of Mechanics -B/Fluids*, Vol. 52, pp: 19-27(2015)

Rakeshkumar K Patel and K. Venkatasubbaiah, 'Numerical simulation of Orion CEV re-entry vehicle', *Journal of Aerospace Engineering*, 28(2), 04014067: 1-8, (2015).

R. Harish and K. Venkatasubbaiah, 'Numerical study of water spray interaction with fire plume in dual chambers connected to tall shaft', *Fire Safety Journal*, Vol. 74, pp: 1-10(2015).

R. Harish and K. Venkatasubbaiah, 'Large eddy simulation of thermal plume behavior in horizontally partitioned dual enclosure', *Building and Simulation: An International Journal*, Vol. 8(2), pp:137-148(2015).

R. Harish and K. Venkatasubbaiah, 'Numerical investigation of instability patterns and nonlinear buoyant exchange flow between enclosures by variable density approach', *Computers & Fluids*, Vol. 96, pp:276-287(2014).

Saranath, K. M., Abhay Sharma, and M. Ramji, 'Zone wise local characterization of welds using digital image correlation technique', *Optics and Lasers in Engineering 63* (2014): 30-42.

Sharma, Abhay, Navneet Arora, and Bhanu K. Mishra, 'Mathematical model of bead profile in high deposition welds',

Journal of Materials Processing Technology 220 (2015): 65-75.

Panaskar, Nitin J., and Abhay Sharma, 'Surface Modification and Nanocomposite Layering of Fastener-Hole through Friction-Stir Processing', *Materials and Manufacturing Processes 29*, no. 6 (2014): 726-732.

Banerjee, Nilanjan, and Abhay Sharma, 'Identification of a friction model for minimum quantity lubrication machining', *Journal of Cleaner Production 83* (2014): 437-443.

Moinuddin, Syed Quadir, and Abhay Sharma, 'Arc stability and its impact on weld properties and microstructure in anti-phase synchronised synergic-pulsed twin-wire gas metal arc welding' *Materials & Design* 67 (2015): 293-302.

Kumar, Bhoopati M., Nitin J. Panaskar, and Abhay Sharma, 'A fundamental investigation on rotating tool cold expansion: numerical and experimental perspectives', *The International Journal of Advanced Manufacturing Technology 73*, no. 5-8 (2014): 1189-1200.

Bhatia, Jigar, J. P. Srivastava, Abhay Sharma, and Jitendra S. Sangwai, 'Production performance of water alternate gas injection techniques for enhanced oil recovery: effect of WAG ratio, number of WAG cycles and the type of injection gas', International *Journal of Oil, Gas and Coal Technology 7*, No. 2 (2014): 132-151.

Kapil, Angshuman, Abhay Sharma, 'Magnetic pulse welding: an efficient and environmentally friendly multi-material joining technique', *Journal of Cleaner Production 100* (2015): 35-58.

Pruthviraj Namdeo Chavan and B. Venkatesham, 'Free Vibration Analysis of Rectangular duct with different axial boundary conditions', *International Journal of Acoustics and Vibration,* 20 (1), 10-14 (2015).

Santhosh Doreswamy Vishwakarma, Ashok Kumar Pandey, Jeevak Parpia, Darren Robert Southworth, Harold G. Craighead, and Rudra Pratap, 'Evaluation of Mode Dependent Fluid Damping in a High Frequency Drumhead Microresonator', *IEEE Journal of Microelectromechanical System*, Vol 23(2), 334-336, 2014.

R Srilakshmi, M Ramji, V Chinthapenta, 'Fatigue crack growth study of CFRP patch repaired Al 2014-T6 panel having an inclined center crack using FEA and DIC', *Engineering Fracture Mechanics*, Vol. 134, pp. 182-201 (2015).

Abhishek Kumar Kothari, Xingcheng Xiao, Brian W Sheldon, V Chinthapenta, 'The impact of nanocrystalline diamond grain boundary chemistry on frictional response in sliding contact with 319Al alloys', *Journal of Material Science*, Vol. 50, pp. 2993-3003 (2015).

Meng, J. P, Dongari, N., Reese, J. M., and Zhang, Y. H., 'Breakdown parameter for kinetic modeling of multi-scale gas flows', *Physical Review E*, 89 (6), 063305, 2014.

PUBLICATIONS

(In Peer-Reviewed Conferences)

V. Jadon, G. Agawane, A. Baghel, B. Venkatesham, R. Banerjee, A. Getta, H. Viswanathan, A. Awasthi, 'An Experimental and Multiphysics Based Numerical Study to Predict Automotive Fuel Tank Sloshing Noise', *SAE Technical Paper 2014-01-0888*, SAE World Congress, Detroit, MI, 8-10 April 2014.

J. Sebastian, N. Sivadasan, R. Banerjee, 'GPU Accelerated Three Dimensional Unstructured Geometric Multigrid Solver', *International Conference on High Performance Computing & Simulation (HPCS 2014)*. 2014: Bologna, Italy, 21-25 July 2014.

R. Reddy, R. Banerjee, 'Simulation of a Gas Blasted Liquid Sheet on GPU Architecture', *ILASS – Europe 2014*, 26th Annual Conference on Liquid Atomization and Spray Systems. 2014: Bremen, Germany, 8-10 September 2014.

G.S. Reddy, R. Banerjee, 'Simulation of 2D and 3D Bubble and Droplet Dynamics Using Shan and Chen Lattice Boltzmann Model', *IUTAM Symposium of Multiphase Flow with Phase Change: Challenges and Opportunities*, 2014: Hyderabad, India, 8-11 December 2014.

G.S. Reddy, R. Banerjee, 'Evaluation of Forcing Schemes in Pseudo-Potential Based Multiphase Lattice Boltzmann Model', *5th International and 41st National Conference on Fluid Mechanics and Fluid Power,* 2014: Kanpur, India, 12-14 December 2014.

V. Sharma, R. Banerjee, 'Turbulent Simulations of Forced Coaxial Jets on 3-Dimensional Unstructured Grids', *IUTAM Symposium on Advances in Computation, Modeling and Control of Transitional and Turbulent Flows*, 2014: Goa, India, 15-18 December 2014.

Ravi Tej, K., Naveen Sivadasan, Vatsalya Sharma, Raja Banerjee, 'Parallel AMG Solver for Three Dimensional Unstructured Grids Using GPU', *21st IEEE Conference on High Performance Computing (HiPC – 2014)*, 2014: Goa, India, 17-20 December, 2014.

Rahul Dixit and R Prasanth Kumar, 'Cable-Stiffened Flexible Link Manipulator', *IEEE International Conference on Intelligent Robots and Systems,* Chicago, September 2014.

N. Satish, K. Venkatasubbaiah and R. Harish, 'Effect of buoyancy on turbulent mixed convection flow through vertical and horizontal channels', *IUTAM Symposium on Advances in Computation, Modeling and Control of Transitional and Turbulent flows*, 15-18 December 2014, Goa, India.

Angshuman Kapil, Abhay Sharma, 'Coupled Electromagnetic Structural Simulation of Magnetic Pulse Welding', *Proceedings of the 5th International and 26th All India Manufacturing Technology, Design and Research Conference*, AIMTDR 2014, Indian Institute of Technology Guwahati, ISBN: 978-8-19274-612-8.

Vamshidhar Done, B. Venkatesham, Bhaskar Tamma, Kunal Soni, Subhrajit Dey, Shruti Angadi, and Vishal G P, 'Muffler Design for a Refrigerator Compressor', *International Compressor Engineering Conference*, West Lafayette, 14-17 July 2014.

Nagaraja Jade and B. Venkatesham, 'Fan noise Source Characterization using NAH Methods', *Proceedings of NSA*, Mysore, 12-14 November 2014.

Tapan K. Mahanta and B. Venkatesham, 'Correlation of Objective and Subjective data of Automotive Horn', *Proceedings of NSA*, Mysore, 12-14 November 2014.

Sachin Bhirodkar and B. Venkatesham, 'Acoustical Signature Analysis of Voen', *Proceedings of NSA*, Mysore, 12-14 November 2014.

M.A. Somashekara, S. Suryakumar, 'Determination of Process Parameter for Twin-Wire Weld-Deposition Based Additive Manufacturing', *ASME 2014 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, Buffalo, New York, USA, 17-20 August 2014, 10.1115/DETC2014-34658

Prashant N. Kambali and Ashok Kumar Pandey, 'Electrostatic Forces in Fixed-Fixed Microbeams under Direct and Fringing Field Effects', 2nd IEEE International Conference on Emerging Electronics, 4-6 December 2014, Indian Institute of Science, Bangalore, Karnataka, India.

FUNDED RESEARCH PROJECTS 2014-15

Dr. B. Venkatesham, *Flow Modifiers and its effect on noise control*, Eaton Pvt. Ltd, Pune, November 2014, Rs. 19 Lakhs.

CEP COURSES

A short course on 'Engineering Noise Control' at IIT Hyderabad, B. Venkatesham, 22-24 December 2014.

TALKS GIVEN IN INTERNATIONAL / NATIONAL CONFERENCES

B. Venkatesham, 'Experimental Modal Analysis & Numerical model updating, Vibration analysis and condition monitoring of machines (VACMM2015)', CBIT Hyderabad, 9-10 January 2015.

B. Venkatesham, 'Application of evaluated mechanical properties for designing actual components', DMRL Hyderabad, 19 February 2015.

S. Surya Kumar, 'Rapid Manufacturing of Metallic Objects All India Seminar on Civilian Applications of Aerospace Technologies', Institute of Engineers, Hyderabad, 27-28 March 2015.

Nikhil V S, Amirtham Rajagopal and Ashok Kumar Pandey, 'Linear Finite Element Analysis of Surface and Nonlocal Effects in Nanoscale Devices', International Conference on Advancements in Polymeric Materials 2015, IISc Bangalore, Karnataka, India, 20-22 February 2015.

Nikhil V S, Prashant N. Kambali, Amirtham Rajagopal and Ashok Kumar Pandey, 'Surface and Nonlocal Effects on Resonance Frequencies of Nanobeams, International Conference on MEMS and Sensors 2014', IIT Madras, Tamilnadu, India, 18-20 December 2014.

Prashant N. Kambali and Ashok Kumar Pandey, 'Generalized Expressions for Capacitance of Mems / nems Devices under Direct and Fringing Electrostatic Fields', International Conference on MEMS and Sensors 2014, IIT Madras, Tamilnadu, India, 18-20 December 2014.

Sriram H, Vinu V, M Ramji, V Chinthapenta, 'Fatigue life prediction of GFRP laminates using FEA simulation method', 6th ICTACEM 2014, Indian Institute of Technology Kharagpur.

R Harilal, Anwar Sadath, C P Vyasarayani, Viswanath Chinthapenta, 'Numerical modelling of wave propagation in cracked and uncracked functionally graded beams using spectral

Chebyshev elements', 6th ICTACEM 2014, Indian Institute of Technology Kharagpur.

Sriram H, Yogesh W, M Ramji, V Chinthapenta, 'Quantifying crack tip displacements with DIC and estimation of fracture parameters with XFEM for CT specimen', 6th ICTACEM 2014, Indian Institute of Technology Kharagpur.

Kharagpur, Rajesh Kumar M, V Chinthapenta, 'Blast resistance of sandwich beam comprising of mechanical meta-material (Auxetic) core', 6th ICTACEM 2014, Indian Institute of Technology.

Kharagpur, Jis Tom, Vikrant Veerkar, M Ramji, V Chinthapenta, 'Evaluations of mixed mode fracture parameters for parallel cracks from displacement fields', 6th ICTACEM 2014, Indian Institute of Technology.

Rajesh Kumar M, V Chinthapenta, 'The blast resistance of sandwich beam with an Auxetic core', 5th ITMAEAP 2014, Jawaharlal Nehru University.

WORKSHOPS / SYMPOSIUMS

International Symposium on Digital Fabrication (ISDF-2015) at Hyderabad, 2-3 March 2015, S. Surya Kumar.

AICTE Sponsored FDP on 'Finite Element Method and its Applications' at Jayamukhi Institute of Technological Sciences. Narsampet, Warangal 29 December 2014. Scalar field Problems: 1-D Heat conduction- 1D finite elements- 2D heat conduction- analysis of thin plates- Composite slabs, V Chinthapenta.

Short Course on Engineering Noise Control under TEQIP Program, B. Venkatesham.

One-day workshop for Cyient Employees on 'Additive Manufacturing' at IIT Hyderabad, S Surya Kumar, 28 March 2014.

TEQIP workshop on 'Additive / Generative Manufacturing Technologies' at IIT Hyderabad, S Surya Kumar, 7-8 July 2014.

TEQIP workshop on 'Principles of Additive/ Generative Manufacturing Technologies' at IIT Hyderabad, S Surya Kumar, 1-5 December 2014.

TEQIP Workshop on 'MEMS and NEMS (Design and Fabrication)' at IIT Hyderabad on 15-19 2014, organized by Ashok Kumar Pandey, Chandrashekar Sharma, Prem Pal.

Symposium on 'Future Indian Aerospace (SoFIA2015) funded by DST, TEQIP and Private Industries.

PHYSICS

The **Department of Physics,** IIT Hyderabad is one of the most vibrant and active departments in the institute and it conducts cutting edge research in many frontier areas of physics such as high energy physics, condensed matter physics, atomic and molecular physics and Laser physics. The department has 13 faculty at present and trying to expand in various areas of physics. The theme of the department is to focus on research at smaller scales and become an outstanding center for physics in the next decade.

The department offers Ph.D, M.Sc and B. Tech (Engineering Physics) programs. Since its inception, faculty has established several research labs (Advanced Functional Materials Lab, MEMs lab, Magnetic Materials and Device Physics Lab, Micromagnetism Lab, Advanced Detector lab, Materials Design and Simulations Lab). In addition to the above research labs, department of physics also has sophisticated M. Sc and B. Tech laboratories which enrich student's technical skills in addition to theory. The department also has plans to establish a computational nano-science lab, a Physics-at-small-scales Lab and a Laser & Photonics lab. It plans to offer an integrated Ph.D. program in Physics and an interdisciplinary M.Tech program in Nano-Science & Technology.

Faculty

Anjan Giri
Ph.D - Utkal University
Professor & HoD

Research Areas: High energy physics

Prem Pal
Ph.D - IIT Delhi
Associate Professor

Research Areas: MEMS, Silicon Micromachining, Thin film for MEMS, Wet anisotropic etching

Saket Asthana
Ph.D - IIT Bombay
Associate Professor

Research Areas: Ferroic materials, Structure-property correlation, Magnetoresistive materials, Magneto-electric materials, Piezochromic materials and Energy harvesting materials

Venkatakrishnan Kanchana
Ph.D - Anna University
Associate Professor

Research Areas: Exploring thermoelectric materials, Scintillators, Magnetism in solids, Superconductivity, Elastic and mechanical properties of solids, Materials under extreme conditions

Debasish Chaudhuri
Ph.D - Jadavpur University
Assistant Professor

Research Areas: Soft matter physics, Active particles, Biological physics, Chromosomes, Cytoskeleton, Neurons

Jyoti Ranjan Mohanty
Ph.D - Humboldt University, Germany
Assistant Professor

Research Areas: Nanoscale magnetism, Ultrafast magnetism, Patterned media, Magnetic Nanoparticle, Magnetic Imaging, Micromagnetics

Jammalamadaka Suryanarayana
Ph.D - IIT Madras
Assistant Professor

Research Areas: Magnetic materials and devices

Manish K. Niranjan
Ph.D - University of Texas at Austin, USA
Assistant Professor

Research Areas: Theoretical condensed matter physics, Computational materials science, Semiconductor heterostructures, Oxide materials and heterostructures, Electron transport in nanostructures

Narendra Sahu
Ph.D - IIT Bombay
Assistant professor

Research Areas: Astroparticle physics, dark matter, neutrino

Raghavendra Srikanth Hundi
Ph.D - Harish Chandra Research Institute
Assistant Professor

Research Areas: Physics beyond standard model, Neutrino masses

Sai Santosh Kumar Raavi
Ph.D - University of Hyderabad
Assistant Professor

Research Areas: Lasers, Ultrafast laser spectroscopy, Optical spectroscopy of advanced functional materials, Physics of solar cells

Vandana Sharma
Ph.D - PRL, Ahmedabad
Assistant Professor

Research Areas: Femtosecond lasers systems, Attosecond pulse trains and Ultrafast atomic and molecular dynamics

PUBLICATIONS
(In Peer-Reviewed Journals)

'$CsMgCl_3$: A promising cross luminescence material', G. Shwetha, V. Kanchana, G. Vaitheeswaran, *J. of Solid State Chemistry,* 227, 110-116, 2015.

'High pressure structural behavior of YGa_2: A combined experimental and theoretical study', M. Sekar, N.V.C. Shekar, R. Babu, P.C. Sahu, A.K. Sinha, A. Upadhyay, M.N. Singh, K. Ramesh Babu, S. Appalakondaiah, G. Vaitheeswaran, V. Kanchana, *J. of Solid State Chemistry,* 226, 11-16, 2015.

'Investigation of structural, vibrational and ferroic properties of AgNbO3 at room temperature using Neutron diffraction, Raman Scattering and Density-functional theory', Manish K. Niranjan, K. Ganga Prasad, Saket Asthana, S. Rayaprol, V. Siruguri, *J. Phys. D: Applied Phys.* 48, 215303, 2015.

'Ferroelectric, piezoelectric and mechanical Properties In Lead Free $(0.5)Ba(Zr_{0.2}Ti_{0.8})O_3 - 0.5)(Ba_{0.7}Ca_{0.3})TiO_3$ Electroceramics', A Srinivas, R.V. Krishnaiah, V.L. Niranjani, S.V. Kamat, T. Karthik and Saket Asthana, *Ceramics International,* 41, 1980, 2015.

'Effect of poling process on piezoelectric properties of sol–gel derived BZT–BCT ceramics', J. Paul Praveen, T. Karthik, A.R. James, E. Chandrakala, Saket Asthana, Dibakar Das, *J. Eur. Ceram. Soc.* 35, 1785, 2015.

'A comprehensive review on convex and concave corners in silicon bulk micromachining based on anisotropic wet chemical etching', P. Pal and K. Sato, *Micro and Nano Systems Letters*, 3, 1-42, 2015.

'Anisotropic etching in low concentration KOH: Effects of surfactant concentration', P. Pal, A. Ashok, S. Haldar, Y. Xing, and K. Sato, *Micro & Nano Letters*, 10, 224-228, 2015.

'Particle swarm optimization-based continuous cellular automaton for the simulation of deep reactive ion etching', Y. Li, M.A. Gosalvez, P. Pal, K. Sato, Y. Xing, *J. Micromech. Microeng.*, 25, 055023 (13pp), 2015.

'Synthesis of anodic oxide thin films on Si{100} wafers and their characterization in TMAH for MEMS', A. Ashok and P. Pal,*ECS Journal of SolidState Science and Technology*, 4, Q1-Q7, 2015.

'Dipolar dark matter in light of the 3.5 keV x-ray line, neutrino mass and LUX data', Sudhanwa Patra, Nirakar Sahoo and Narendra Sahu, *Phys. ReV.D* 91, 115013,1-12, 2015.

'Double beta decay, lepton flavor violation and collider signatures of left-right symmetric models with spontaneous D-parity breaking', Frank F. Deppisch, Tomas E. Gonzalo, Sudhanwa Patra, Narendra Sahu and Utpal Sarkar, *Phys.Rev.D* 91, 015018,1-18, 2015.

'Pumping single-file colloids: Absence of current reversal', Debasish Chaudhuri, Archishman Raju, Abhishek Dhar, *Phys. Rev. E* 91, 050103(R), 2015.

'Stochastic ratcheting of two dimensional colloids: Directed current and dynamical transitions', Dipanjan Chakraborty, Debasish Chaudhuri, *Phys. Rev. E* 91, 050301(R), 2015.

'Absence of jamming in ant trails: Feedback control of self propulsion and noise', Debasish Chaudhuri, Apoorva Nagar; *Phys. Rev. E* 91, 012706, 2015.

'Dynamics and inertia of skyrmionic spin structure', F. Buettner, C. Moutafis, M. Schneider, B. Krueger, C. M. Guenther, J. Geilhufe, C. v. Korff-Schmising, J. Mohantyet. al, *Nature Physics*, DOI:10.1038/nphys3234, 2015.

'Baryonic b ->sll transition decays', R. Dutta, A Bhol and A. Giri, *J. Phys. G: Nucl. Part. Phys.*, 41, 065002, 2014.

'Excitonic effects in oxyhalide scintillating host compounds', G. Shwetha, V. Kanchana, M.C. Valsakumar, *J. of Applied Physics*, 116, 133510, 2014.

'High-pressure study of binary thorium compounds from first principles theory and comparisons with experiment', V. Kanchana, G. Vaitheeswaran, A. Svane, S. Heathman, Leif Gerward, J. Staun Olsen, *ActaCrystallographica B*, 70, 459-468, 2014.

'Ab initio study of Fermi surface and dynamical properties of Ni_2XAl (X = Ti, V, Zr, Nb, Hf and Ta)', P.V. Sreenivasa Reddy, V. Kanchana, *J. of Alloys and Compounds*, 616, 527-534, 2014.

'Phase transitions in the rare earth tellurides under pressure', L. Petit, A. Svane, G. Vaitheeswaran, V. Kanchana, W. M. Temmerman, *J. of Phys: Cond. Matter.,* 26, 274213, 2014.

'Skutterudites under pressure: An ab initio study, Swetarekha Ram', V. Kanchanaand M. C. Valsakumar, *J. of Applied Physics*, 115, 093903-1-8, 2014.

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A. Svane, G. Vaitheeswaran, V. Kanchana, Yuming Xiao, Paul Chow, Changfeng Chen and Yusheng Zhao, *Applied Physics Letters*, 104, 042601-1-4, 2014.

High-Pressure Structural Stability and Optical Properties of Scheelite-type $ZrGeO_4$ and $HfGeO_4$ X-ray Phosphor Hosts, G. Shwetha, V. Kanchana, K. Ramesh Babu, G. Vaitheeswaran, and M. C. Valsakumar, *J. of Phys. Chem., C*, 118(8), 4325-4333, 2014.

Lattice dynamics and superconducting properties of antiperovskite La_3InZ (Z=N, O), Swetarekha Ram and V. Kanchana, *Solid state communications*, 181, 54-59, 2014.

Thermoelectric properties of marcasite and pyrite FeX_2 (X=Se,Te): A first principle study, Vijay Kumar Gudelli, V. Kanchana, G. Vaitheeswaran, M. C. Valsakumar and S. D. Mahanti, 2014, *RSC Advances*, 4, 9424-9431, 2014.

Evidence of improved ferroelectric phase stabilization in Nd and Sc co-substituted $BiFeO_3$, T. Durga Rao and Saket Asthana, *J. Appl. Phys.* 116, 164102, 2014.

Study of structural effect on Eu-substituted LSMO manganite for high temperature coefficient of resistance, Sudarshan Vadnala, T. Durga Rao, Prem Pal, Saket Asthana, *Phyisca B: Condensed Matter*. 448, 277, 2014.

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Electrical switching to probe complex phases in a frustrated manganite, Saket Asthana, Kohei Fujiwara and Hidekazu Tanaka, Solid State Commun. *187*, 64, 2014.

Effect of $CoFe_2O_4$ mole percentage on Multiferroic and Magnetoelectric properties of Na0.5Bi0.5TiO3/CoFe2O4particulate composites, R.V. Krishnaiah, A. Srinivas, S.V. Kamat, T. Karthik, Saket Asthana, *Ceramics International* 40, 7799, 2014.

Investigation of anodic silicon dioxide thin films for MEMS applications, A. Ashok and P. Pal, *Micro & Nano Letters*, 9, 830-834, 2014.

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A detailed investigation and explanation to the appearance of different undercut profiles in KOH and TMAH, P. Pal, S. Haldar, S. S. Singh, A. Ashok, Y. Xing and K. Sato. *J. Micromech. Microeng.* 24, pp.095026 (9pp), 2014.

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Signal of right-handed charged bosons at the LHC ?, Frank F. Deppisch, Tomas E. Gonzalo, Sudhanwa Patra, Narendra Sahu, Utpal Sarkar, *Phys.Rev.D* 90, 053014,1-5, 2014.

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Unoccupied electronic structure and relaxation dynamics of Pb/Si(111), M. Sandhofer, I. Yu. Sklyadneva, V. Sharma, V. Miksic-Trontl, P. Zhou, M. Ligges, R. Heid, K.-P. Bohnen, E. V. Chulkov, and U. Bovensiepen, *J. Electron Spectrosc. Relat. Phenom.*, 195, 278, 2014.

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Structural magnetic and magnetostrictive properties of $Tb_{0.3}Dy_{0.7-x}Nd_xFe_{1.93}$ [x = 0, 0.05, 0.1, 0.15 and 0.2] compounds, S. Narayana Jammalamadaka, G. Markandeyulu, Krishnan Balasubramaniam and J. AroutChelvane,*J. Alloys. Comp,* 624, 40, 2014.

X-ray-induced persistent photoconductivity in vanadium dioxide, S. H. Dietze, M. J. Marsh, Siming Wang, J. –G. Ramirez, Z. –H Cai, J. R. Mohanty, et. al, *Physical Review B*, 90, 165109, 2014.

Photoactive Molecular Junctions Based on Self-Assembled Monolayers of Indoline Dyes, L. Caranzi, G. Pace, S. Guarnera, E. V. Canesi, L. Brambilla, Sai Santosh Kumar Raavi, A. Petrozza, and Mario Caironi, *ACS Appl. Mater. Interfaces*, **6**, 19774 – 19782, 2014.

PUBLICATIONS

(In Peer-Reviewed Conferences)

V. Kanchana, N. Yedukondalu, and G. Vaitheeswaran, 'Lattice dynamics and electronic structure of mixed halofluoride scintillators under high pressure', *AIP Conf. Proc.*1665, 090009, (2015), DOI: 10.1063/1.4917989

P. V. Sreenivasa Reddy, G. Vaitheeswaran and V. Kanchana, 'Fermi surface study of $ScAu_2$(Al, In) and $ScPd_2$(Sn, Pb) compounds', *AIP Conf. Proc.*1665, 090035 (2015), DOI: 10.1063/1.4918015

G. Shwetha, G. Vaitheeswaran, and V. Kanchana, 'Optically isotropy in scintillator host compounds M_2LaCl_5 (M= Rb, and Cs): Ab-initio Study', *AIP Conf. Proc.*1665, 120026 (2015), DOI: 10.1063/1.4918133

Vijay Kumar Gudelli, G. Vaitheeswaran and V. Kanchana, 'Thermoelectric properties of $CuAlCh_2$ (Ch = S, Se and Te)', *AIP Conf. Proc.*1665, 110027 (2015), DOI: 10.1063/1.4918083

Vijay Kumar Gudelli, V. Kanchana, G. Vaitheeswaran, A. Svane and N. E. Christensen, 'Thermoelectric properties of binary LnN (Ln = La and Lu): First Principles Study, Sreeparvathy P. C.', *AIP Conf. Proc.*1665, 110008 (2015), DOI: 10.1063/1.4918064

Sudarshan Vadnala, Saket Asthana, Prem Pal and S. Srinath, 'Effect of A-site ionic size variation on TCR and electrical transport properties of $(Nd_{0.7-x}La_x)_{0.7}Sr_{0.3}MnO_3$with x=0,0.1 and 0.2', *IOP Conf. Series:* Materials Science and Engineering 73 012047 (2015).

A. Ashok and P. Pal, 'Room temperature synthesis of SiO_2 thin films for mems and silicon surface texturing', 28th *IEEE International Conference on Micro Electro Mechanical Systems (MEMS-18)*, Estoril, Portugal, 18-22 Jan1, 2015.

G. Shwetha and V. Kanchana, 'Optical properties of halide and oxide compounds including the excitonic effects', *AIP Conf. Proc.* 1591, 1485-1487 (2014), DOI: 10.1063/1.4873004

Vijay Kumar Gudelli and V. Kanchana, 'Elastic constants and Fermi surface topology change in Calaverite $AuTe_2$: A density functional study', *AIP Conf. Proc.* 1591, 1161-1163 (2014), DOI: 10.1063/1.4872889

P. V. Sreenivasa Reddy and V. Kanchana, 'Electronic and mechanical properties of Zr_2TiAl : A first principles study', *AIP Conf. Proc.* 1591, 1121-1123 (2014), DOI: 10.1063/1.4872874

Sudarshan Vadnala, Saket Asthana, Prem Pal, 'Enhanced TCR with room temperature T_{MI} for potential application in microbolometer', *Physics of Semiconductor Devices, Environmental Science and Engineering* 499 (2014).

A. Ashok and P. Pal, 'Study of anodically grown silicon dioxide thin film in TMAH', *7th Asia-Pacific Conference on Transducers and Micro-Nano Technology (APCOT)*, Daegu Korea, 29 June-2 July, 2014.

S. Vadnala, S. Asthana, and P. Pal, 'Tunable magnetocaloric effect, temperature coefficient of resistance and magnetoresistance near room temperature for different sensors applications', *7th Asia-Pacific Conference on Transducers and Micro-Nano Technology (APCOT)*, Daegu Korea, 29 June-2 July 2014.

S. S. Singh, Y. Li, Y. Xing and P. Pal, 'Simulation of thin film deposition profile on complex 2-D MEMS structures', *7th Asia-Pacific Conference on Transducers and Micro-Nano Technology (APCOT)*, Daegu Korea, 29 June-2 July 2014.

A. Ashok, S. Premee, and V. Sudharshan, and P. Pal, 'Surface Texturing of Si{100} using TMAH with Different Concentrations for Solar Cells', *2nd International Conference on Advance Trends in Engineering and Technology' (ICATET-2014)*, Jaipur Rajasthan, India, 18-19 April 2014.

V. Sudharshan, R. Singh, S. Asthana, and P. Pal, 'Experimental investigation on high TCR manganites at room temperature for uncooled microbolometer applications', *2nd International Conference on Advance Trends in Engineering and Technology' (ICATET-2014)*, Jaipur Rajasthan, India, 18-19 April 2014.

S. Haldar, A. Ashok, and P. Pal, 'An experimental investigation of the appearance of different planes at convex corner in TMAH and KOH solutions', *2nd International Conference on Advance Trends in Engineering and Technology' (ICATET-2014)*, Jaipur Rajasthan, India, 18-19 April 2014.

'Ultrafast charge photogeneration in low band-gap semiconducting polymer based solid-state dye sensitized solar cell (sDSC)', *Optical Nanostructures and Advanced Materials for Photovoltaics*, Canberra, Australia, 2-5 December 2014, 10.1364/PV.2014.PTu4B.5.

'Femtosecond to nanosecond excited states dynamics of novel Corroles', *12th International Conference on Fiber Optics and Photonics*, Kharagpur, 13-16 December 2014, 10.1364/PHOTONICS.2014.M3B.5.

FUNDED RESEARCH PROJECTS 2014-15

Prem Pal, 'Anodic oxidation for advanced applications in silicon-based MEMS/NEMS', *Council of Scientific and Industrial Research* (CSIR), Rs. 6.5 Lakhs, October 2014.

Vandana Sharma, 'Designing and fabrication of reaction microscope to study ultrafast dynamics of atoms and molecules', *Department of Science and Technology (DST)*, Rs. 27.87 Lakhs, Start date: 17 March 2015.

SEMINARS CONDUCTED

'Collapse transition in protein-L', Dr. Himadri Sekhar Samanta, *University of Maryland*, 9 April 2014.

'Thermoelectric Performance of Single Walled Nanotube-Filled Polymer Composites', Dr. Parvathalu Kalakonda, *Carnegie Mellon University*, 9 May 2014.

'Occurrences of fast and possibly cannibalistic solar coronal mass ejections: insights from flux rope simulations', Dr. Piyali Chatterjee, *High Altitude Observatory*, 16 May 2014.

'Spectroscopy of multiply charged molecular ions induced by Kev-electrons and studied by ion-ion coincidence technique', Prof. R. Shanker, *Atomic Physics Laboratory*, 10 July 2014.

'Nanotechnology applications of lasers: From bond breaking to precision Nano manufacturing', Dr. Prashant Kumar, *Purdue University*, 16 July 2014.

'Novel Processing Techniques and Materials for High-Performance Flexible Electronics', Dr. Jayanta K. Baral, *University of Massachusetts*, 17 July 2014.

'Nanotechnology applications of lasers: From bond breaking to precision Nano manufacturing', Dr. Prashant Kumar, *Purdue University*, 17 July 2014.

'Resummed Transverse Momentum Distribution of the Higgs Bosons: Summing up a Divergent Series', Dr. Anurag Tripathi, *Univ of Turin*, 20 August 2014.

'Thermoelectric Materials for Energy Sustainability', Dr. Sriparna Bhattacharya, *Clemson University*, 10 September 2014.

'Electrical conductance of Nano contacts made from rare-earth metals', Dr. Christoph Sürgers, *PhysikalischesInstitut Karlsruhe Institute of Technology*, 8 October 2014.

'Atomic reconstruction in ultrathin cuprates: novel structural, electronic and magnetic phenomena', Dr. Debakanta, *Max Planck Institute for Solid State Research*, 20 October 2014.

How does a system re-equilibrate after a temperature quench 'Spectrum - Physics Seminar Series', Prof. Subodh R Shenoy, *TCIS, TIFR*, 22 October 2014.

'On the Origin of Neutrino Mass and Experimental Searches', Dr. Manimala Mitra Durham, 24 October 2014.

'Medical Physics at Duke Kunshan University – A global learning experience toward a career in physics and medicine', Dr. Anuj Kapadia, *Duke University*, 19 November 2014.

'Role of density field in an active nematic', Dr. Shradha Mishra, *SNBNCBS*, 19 November 2014.

'Jamming transition in a driven lattice gas', Dr. Sudipto Muhuri, *University of Pune*, 24 November 2014.

'Shear localization in three-dimensional amorphous solid', Dr. Pankaj Kumar Mishra, *Weizmann Institute of Science*, 5 January 2015.

'Chirality Induced spin selectivity in electron transmission through self-assembled monolayers of biomolecules', Dr. Debabrata Mishra, *Weizmann Institute of Science*,12 January 2015.

'Aspects of non-equilibrium many-body phenomena in quantum matter and light', Dr. Manas Kulkarni, *The City University of New York*, 14 January 2015.

'Coronal Heating in Solar Active Regions', Dr. Srividya Subramanian, Max-Planck-Institütfür Eisenforschung, Düsseldorf and a Visiting Astronomer, *Armagh Observatory*, 11 February 2015.

'The Universe of Neutrinos', Prof. A. Dighe, *TIFR*, 13 March 2015.

'Point contact Germanium detectors towards direct detection of dark matter', Dr. Arun Kumar Soma, *Institute of Physics*, 25 March 2015.

TALKS GIVEN IN INTERNATIONAL / NATIONAL CONFERENCES

Anjan Giri, *Some important topics in Belle II*, Belle Analysis Workshop 2015, IIT Madras, 11 March 2015.

Anjan Giri, *Light from the Dark Side*, Workshop on Light from the Dark Side of Universe, BHU, 18 March 2015.

V. Kanchana, *Electronic structure and thermoelectric properties of natural minerals*, Advanced Materials for Energy and Environmental Applications (AMEEA-2015), Department of Physics, Bharathiar University, Coimbatore, 18-20 March 2015.

V. Kanchana, *Natural minerals for thermoelectric applications*, Indo-US workshop on thermoelectric, National Physical Laboratory (NPL), New Delhi, 15-17 December 2015.

V. Kanchana, *Fermi surface topology of binary and ternary superconductors: Ab initio study*, QTS-6 (Quantum Theory of Solids - 6) international workshop, Aarhus University, Denmark, 24-26 June 2014.

V. Kanchana, *Pressure effect on the Fermi surface topology of binary and ternary superconductors: Ab initio study*, Department of Materials Science and Engineering, Royal Institute of Technology, Stockholm, Sweden, 12 June 2014.

S. Asthana, *Hard to soft ferroelectric transition with enhanced piezoelectric properties assisted by global and local structural variations in a lead free 0.92NBT-0.08BCZT ceramics*, World Congress and Expo on Nanotechnology and Materials Science, Dubai, UAE, 13-15 April 2015.

S. Asthana, *Effect of oxygen pressure and substrate temperature on structural and magnetic properties of $CoFe_2O_4$ films deposited by pulsed laser deposition*, International Conference on Magnetic Materials and Applications (MagMA2014), Pondicherry University, Pondicherry, India, 15 -17 September, 2014.

S. Asthana, *Tunable magnetocaloric effect, temperature coefficient of resistance and magnetoresistance near room temperature for sensitive sensors applications*, The 7th Asia-Pacific Conference on Transducers and Micro/Nano Technologies APCOT 2014, EXCO, Daegu, S. Korea, 29th June to 2nd July 2014.

S. Asthana, *Experimental investigation on high TCR manganites at room temperature for uncooled microbolometer applications*, 2nd International Conference on 'Advance Trends in Engineering and Technology' (ICATET-2014), 18-19 April 2014 Jaipur, India

S. Asthana, *Effect of Thickness on Lattice Strain and Morphology of Lead-Free Ferroelectric $Na_{0.5}Bi_{0.5}TiO_3$(111) Epitaxial Thin Films*, Nanotechnology Platform on 'Molecule & Material Synthesis Platform Heisei 25 year Symposium' Tsukuba International Congress Center (Epochal Tsukuba), Japan, March 2014.

S. Asthana, *Fabrication of thickness dependent nanostructured lead-free $N_{0.5}B_{0.5}TiO_3$ epitaxial thin films on SRO buffered /STO (111) substrates using Pulsed Laser Deposition*, International Conference on Nano Science and Technology (ICONSAT 2014), Chandigarh 3-5 March 2014.

S. Asthana, *Structural, microstructural correlation with electrical studies in nanostructured $Na_{0.5}Bi_{0.5}TiO_3$ (NBT)*, International Conference on Nano Science and Technology (ICONSAT 2014), 3-5 March 2014, Chandigarh.

S. Asthana, *Enhanced relaxor features, lattice relaxation and softening mechanism in 0.94NBT – 0.06BCZT solid solution*, 2nd International Conference on Advanced Functional Materials (ICAFM-2014), Thiruvananthapuram, Kerala, 19-21 February 2014.

S. Asthana, *Enhanced magnetization and electrical polarization in Nd and Sc co-substituted $BiFeO_3$*, 2nd International Conference on Advanced Functional Materials (ICAFM-2014), Thiruvananthapuram, Kerala, 19-21 February 2014.

Prem Pal, *Micromechanical Structures for BioMEMS,National Workshop on Recent Trends in MEMS for Biomedical and Weather Monitoring Applications (RTMBWMA-2014)*, LBR College of Engineering, Mylavram, AP, 18-19 October 2014.

Narendra Sahu, '*Invisible matters in light of PLANCK data*', invited talk presented at 'School of Physics, University of Hyderabad', during 26-28 February 2015.

Narendra Sahu, '*Inert Fermion Doublet Dark matter in light of neutrino mass and LUX data*', invited talk presented at 'LHC & DARK MATTER', held at IACS, Kolkata, India, 9-28 February 2015.

Narendra Sahu, '*Inert scalar and fermion doublet dark matters in light of neutrino mass and LUX data*', University Libre de Brussels, 3 October 2014.

Narendra Sahu, *Resurrecting left-handed sneutrino dark matter in light of neutrino mass and LUX data*', contributory talk presented at DESY Theory workshop' held at DESY, Hamburg, Germany on 23-26 September 2014.

Debasish Chaudhuri, *Forced desorption of semiflexible polymers*, adsorbed and driven by molecular motors, Second Indian Cell mechanics Meeting, held at Raman Research Institute, Bangalore, 24-26 April 2015.

Debasish Chaudhuri, *Macrospin in external magnetic field: Anomalous entropy production and fluctuation theorems*, 2nd Indian Statistical Physics Community Meeting, held at IISc Bangalore, 13-15 February 2015.

Debasish Chaudhuri, Invited lecture on *Soft and Active Matter*, at Institute of Physics, Bhubaneswar, on 6 February 2015.

Debasish Chaudhuri, Invited lecture on *Active Brownian particles: stochastic thermodynamic approach* at NISER Bhubaneswar on 4 February 2015.

Debasish Chaudhuri, *Stochastic pump of interacting colloids*, StatPhys-Kolkata VIII conference held at S.N. Bose National Centre for Basic Sciences, 1-5 December 2014.

Debasish Chaudhuri, *Invited lectures on Stochastic thermodynamics and its implications for active particles at (i) MPI- PKS Dresden*, Germany on 12 June 2014; (ii) Institute of Physiology, Academy of Sciences of Czech Republic, Prague, on 27 May 2014.

Debasish Chaudhuri, Stochastic thermodynamics of active Brownian particles, *Indian Statistical Physics Community Meeting* at IISc Bangalore from 1-3 February 2014.

Debasish Chaudhuri, Stochastic pump of interacting particles, *Workshop on Soft Matter: Self Assembly and Dynamics* hosted jointly by TIFR-Hyderabad and University of Hyderabad, from 9-10 January 2014.

Debasish Chaudhuri, *Emergent structure of bacterial chromosomes*, Young Investigator Meet on Soft Matter-1, Pondicherry, 5-7 January 2014.

Vandana Sharma, *Wavelength dependence of rescattering electron spectra of CO_2 molecule*, 12-17 October 2014

Vandana Sharma, *Ultrafast electron Diffraction Imaging*, SPARC-FAIR Meet, TIFR-Mumbai, 28-29 January 2014.

Jammalamadaka Suryanarayana, *Resistive switching in ultra-thin La0.7Sr0.3MnO3/SrRuO3 superlattices*, ICMAGMA - 2014, Pondicherry University on 15-17 September 2014.

Jammalamadaka Suryanarayana, '*Ferromagnetism and Exchange Bias in Graphene Nanoribbons*' Osaka University, Japan on 24 February 2015.

Jammalamadaka Suryanarayana, '*Magnetostrictive Materials and their Applications*' at Osaka University, Japan on 24 February 2015.

Jammalamadaka Suryanarayana, *Resistive switching behavior in ultra-thin LSMO/SRO superlattices*, Kansai University, Japan on 25 February 2015.

Jyoti Ranjan Mohanty, *Magnetism at nanoscale (invited)*, Electronic Inspired interdisciplinary research institute, Toyohashi Technical University, Japan, 27 February 2015.

Jyoti Ranjan Mohanty, *Magnetism at nanoscale: Nano-small meets ultrafast (invited)*, Institute of material research, Tohoku University, Japan, 25 February 2015.

Jyoti Ranjan Mohanty, *Magnetic domain dynamics in magnetic multilayer*, Indo-Japan workshop on magnetism at nanoscale (invited), NISER, Bhubaneswar, 9-12 January 2015.

Jyoti Ranjan Mohanty, *Magnetic domain dynamics in magnetic multilayer (invited)*, International conference on physics of surface and interface, Puri, India, 24-28 February 2014.

Jyoti Ranjan Mohanty, *Magnetism at nanoscale: Nano-small meets Ultra-fast (invited)*, ICONBMS 2014, Hyderabad, India, 8-10 January 2014.

R. S. Hundi, *Implications of Higgs boson to diphoton decay rate in the bilinear R-parity violating supersymmetric model*, Workshop on LHC and Dark Matter, held at IACS, Kolkata, 9-28 February 2015.

R. S. Hundi, *New physics and Higgs at the LHC*, Frontiers in Physics-2014, held at University of Hyderabad, Hyderabad, 17-18 October 2014.

Sai Santosh Kumar Raavi, *the role of molecular charge transfer states in ultrafast photo-charge generation in solid-state dye sensitized solar cells*, Theme meeting on Ultrafast Science (UFS) 2014, Manipal, 30 October - 1November 2014.

Sai Santosh Kumar Raavi, *Ultrafast charge photogeneration in low band-gap semiconducting polymer based solid-state dye sensitized solar cell (sDSC)*, Optical Nanostructures and Advanced Materials for Photovoltaics, Canberra, Australia, 2-5 December 2014.

Sai Santosh Kumar Raavi, *Femtosecond to nanosecond excited states dynamics of novel Corroles*, 12th International Conference on Fiber Optics and Photonics, Kharagpur, 13-16 December 2014.

Sai Santosh Kumar Raavi, *Impact of Molecular Charge-Transfer States on Photocurrent Generation in Solid State Dye-Sensitized Solar Cells Employing Low-Band-Gap Dyes*, International conference on Frontiers in Nano Science, Technology and Applications (FiNSTA'14), Puttaparthi, 20-22 December 2014.

AWARDS / RECOGNITIONS

V. Kanchana, 'DAE Young achiever award' in 2014 at 59th DAE Solid State Physics Symposium (DAE-SSPS-2015).

V. Kanchana, Elected as a Member in National Academy of Science, India (2014).

S. Asthana, Dr. K.V. Rao, 'Young Scientist' Award (Ist position winner) for Mr. Karthikunder Physics and Applied science category.

Debasish Chaudhuri, Nominated as 'Simon Visitor' at the 'Simon Centre for the Study of Living Machines, NCBS/TIFR, Bangalore'.

Vandana Sharma, 'DST - Fast-Track Young Scientist' award (2014).

Jammalamadaka Suryanarayana, DAAD fellow (as part of IIT - DAAD Faculty exchange program (2014).

Sai Santosh Kumar Kumar, 'Department of Science and Technology (DST) International Travel Award', December 2014.

WORKSHOPS / SYMPOSIUMS

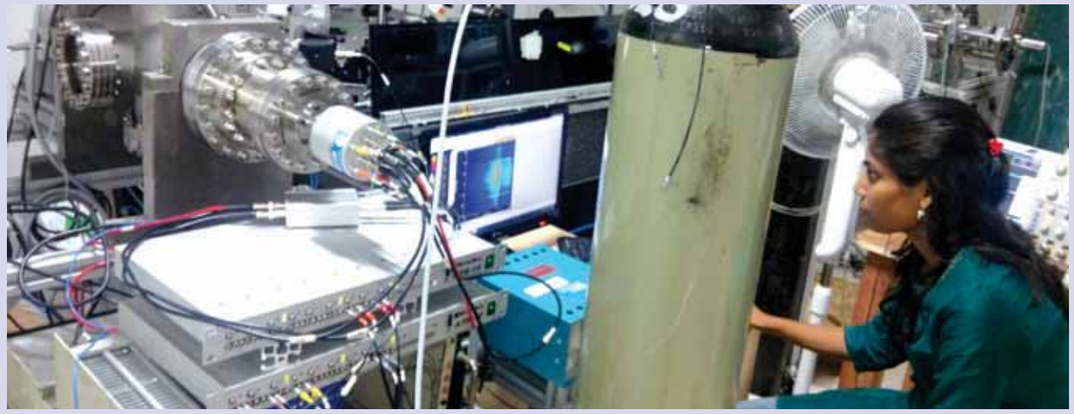
Workshop on Invisible matters: Neutrino and dark matter, IIT Hyderabad, 29-31 October 2014.

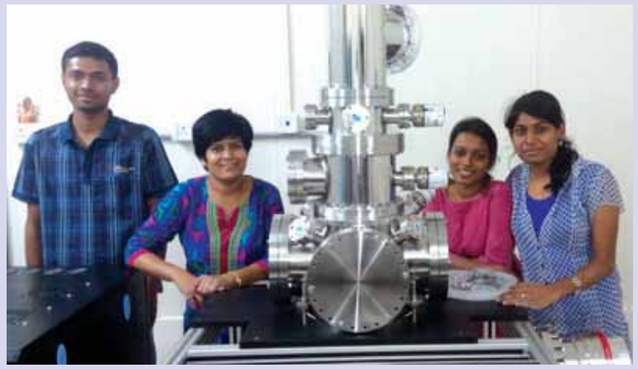
IITH-KEK-Japan meet, 13-14 November 2014.

TEQUIP workshop on Spintronics and advanced magnetic materials, 15-16 November 2014.

TEQUIP workshop on MEMS & NEMS (Design and Fabrication), 15-19 December 2014.

RESEARCH INFRASTRUCTURE





ηVision

ηVision 2014 was a spellbinding two-day technical festival of the Indian Institute of Technology, Hyderabad. The event comprised of 35+ events, exhibitions and competitions, talks by eminent scholars and workshops with over 50 colleges and 2,000 students from across India participation.

ηvision 2014 had many scintillating events to showcase. There was a very enlightening talk by Padmashri Dr. Ananda Shankar Jayant who inspired us to better endeavours in life. The General Quiz on the second day of the fest was conducted by renowned quiz master, Mr. Prasanna Karmarkar. For proshows, there was a mesmerising performance by Murray Molloy, internationally renowned sword swallower. The very own IIT Hyderabad's band Ring of Smoke enthralled the audience with their stunning performance. The DJ made everyone sway to his music on the second night of the fest. Apart from these, there were infi events like treasure hunt, Wheel of Fortune, Classic cake and so on throughout both days to keep the participants entertained as well.

The Events in ηvision were divided into 13 disciplines with highlight events in each of them. For instance, Robotics domain included exciting events like Robowars, RoboSoccer and Arcade run. Other domains include Elektronica (with events like DTMF Race, Electronic Bloopers and Circuit Design Challenge), Infero(Code A Bot, Proquest and Algorithma), Kludge(Hackamaze ,Enigma, Gotroot), Cepheid (Aquanaut, Celestrial inquisition, Eureka & The Galileo project), Torque(Drift king, Minestrife, Automobile Quiz, Cadpro), Ecell(Business Stimulation and Crowd Pitch), Equilibria (Brick up, Project X, Make it green), Online Events(Codeabot and Hello World), Informals, Paper Presentation, Proshows and Exhibitions(by renowned companies like DRDO, ISRO and Robosoft systems).

The main motto of ηvision 2014 was to create a platform for all the tech enthusiasts to explore their creativity with their hard work and dedication and also to keep them entertained throughout.

TEDx

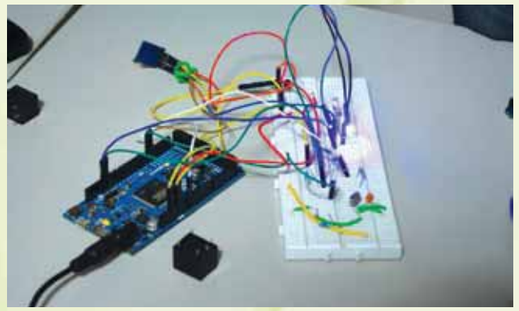
Sharing ideas hasn't always been easy. With the theme of 'Ideas beyond Horizon', TEDxIITH Club aims at promoting the similar vibrant culture among people in general and students in particular. Through short, powerful talks featuring thinkers, ideators, leaders and do'ers of 21st century, we seek to share ideas that we believe matters to our society. No ideas are small or big, each of them has the potential to bring about significant changes and through TEDxIITHyderabad we perceive to provide the required platform for our society, where ideas - that we believe matters, can be explored.

On 21st March of 2015 IIT Hyderabad, under the guidance of Prof.U.B.Desai organised its first TEDx talk with speakers around the country who came to inspire and spread ideas they believed are worth spreading. The event was organised and implemented by the tedx club of IIT Hyderabad under the licence by the TED organisation. Four of the leaders and visionaries from India - Dr V. K. Sharaswat (Ex DRDO Chief), Dr Neeraj Jain (Reacher at NBRC), Dr Ananda Shankar Jayant (India's Leading classical dancer), Subhas Chandra (Film maker and director), all came together under a roof to share their idea's to the world on the theme of 'IDEAS BEYOND HORIZON' which was recorded and shared on youtube cannel of TED organisation.

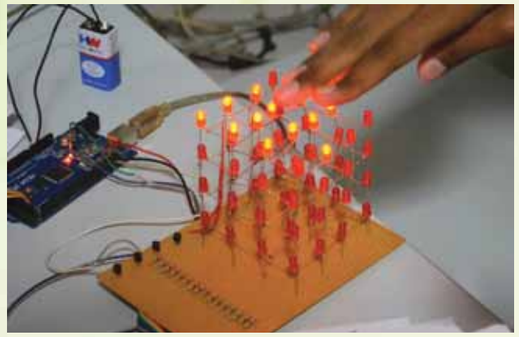
Science and Technology Council 2014-15

Tenure of Science and Technology council can be divided into three phases namely summer, odd semester and even semester.

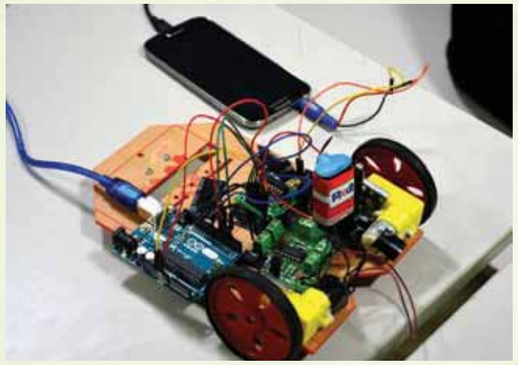
Summer: The new science and technology team was formed and summer projects were floated in the month of April and about 50 students applied for various projects taken up by the clubs. Budget was approved and productive work was carried out in the month of July. Some of the projects include 3D LED cube, drawing pad using touch pad, surveillance bot, web crawler, secret sharing etc.



Interfacing Microcontroller with blue tooth



3D LED Tube

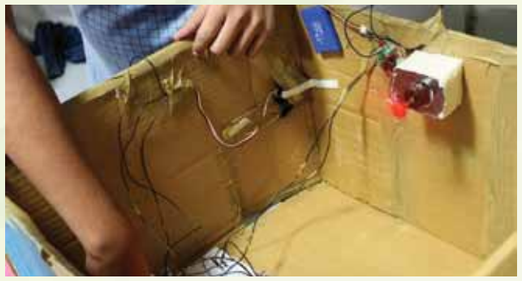


Surveillance bot

Odd semester: The clubs mainly focussed on imparting basic knowledge and nurturing the interest of the new club members. Clubs conducted discussion sessions, hands-on sessions and quizzes to encourage the interested students. However, some of the projects, which couldn't be completed in summer were completed and solid foundation is laid for the new club members to take up new projects.

Discussion session

Astro Quiz



Smart Room Project

Even Semester: Sci-Tech clubs participated in the 3rd Inter IIT tech meet held at IIT Kharagpur. Lot of time and effort were spent during December and January by the clubs on the tech meet. Budget for tech meet was approved and all the teams strived very hard to make our mark in the elite competition.

Inter IIT tech meet: The science and technology council 2014-15 takes great pride and delight to inform that IIT Hyderabad secured one silver (Open software challenge) and two bronze medals (Model Village and Business Case Study) in the inter IIT tech meet. We stood 6th in the overall championship and were just a silver away from prestigious podium finish.

Clubs picked up pace in February with events, projects and club nights. New initiative of Inter Club Project was taken up and Quadcopter (Aerial photography and surveillance) project was successfully completed. Almost all the clubs had club nights. Elektronica continued its good showing with 'Smart Room Project'.

Code yards, hacking nights and several quizzes were conducted. Unfinished projects (RC car, Rubik's cube solver, track a droid etc.) were also completed.

Cepheid Night

RC Car

Sci-Tech day: All the projects completed in the tenure are displayed on 15 April 2015 in LH-1 to students and faculty. Overall, positive feedback is received from the faculty and the director. In recognition to the excellent work and innovative projects, Elektronica received the best club award on Gymkhana day 2014-15.

Director speaking to the students

Student explaining to a faculty

Cultural Council

Cultural council being one of the most active and vibrant in the Campus has accomplished the following in the Financial Year 2014-15.

Participation Outside

Dance, LitSoc and Music clubs have participated and won many events like Elan, Pearl(Bits Hyderabad). etc; in Hyderabad where we won runner up position in many events. We have also participated in some famous events like Shuffle (IIT Kgp), Beats General Quiz by Hashmi Brothers (Bengaluru) where our teams got the podium finish.

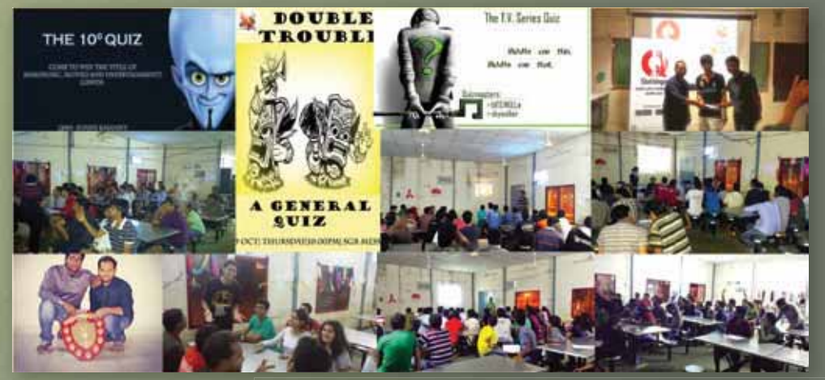
Events

Events like Ice Cream and Dj night have been organized followed by Cultural Night (Open Mic).

Many of our clubs have given a healthy contribution to Elan and Nvision in conducting the events.

Sessions

There were regular meeting and sessions taken by all the clubs. There were some projects like Thursday quiz, Karaoke night, Guitar sessions, Dance workshops, Project Aqua, Rangoli competition, Painting competition, Photoshop Sessions, Photography Sessions and Photo walks , VFX sessions(Fly like super man), JAM.



ELAN 2k15, one of the biggest techno cultural fests of India concluded this February 8th after a three day fun filled extravaganza. Since its inception, ELAN grew bigger and better every year and this 6th edition of ELAN is a testament to the effort put in by the students. As a build up to the fest, three technical workshops were conducted across the year. Book donation was conducted in local schools as a part of our social cause events.

ELAN kicked off in the evening of February 6 with a hot air balloon lighting ceremony by the Director of IIT Hyderabad, Prof. U.B. Desai. It was followed by the finals of a classical dance event, Nrithyanjali, which witnessed some of the finest Indian classical performances. The participants instilled a cultural fervor with their performances which was followed by the finals of Loose your feet, a solo dance event. This event witnessed overwhelming participation from various dance schools and colleges across the country and the participants set the stage on fire with their electric performances. Various technical events were held earlier that day which included Junkyard wars, Project X and OJO CAD (CAD designing event). Students enjoyed their time by participating in fun activities on the Informal stage.

Mechanical bull was set up in the institute football ground to enthrall the students attending the fest. Literary events like JAM and MELA quiz witnessed a good amount of participation. An EML lecture, think 3D session were conducted in the evening.

The second day saw mind boggling participation for all the technical, cultural, informal and literary events. The institute corridors and lecture halls were filled with continuous activity by the participants of Robo wars, Robo Soccer, Robo epic, poster presentation and various other quizzing prelims. Manthan (Hindi band competition) and ElaneJung (English band competition) participants entertained the crowd with their own compositions.

While informal events were being held on the informal stage to entertain the students, Lord of Donuts, a donut eating competition was conducted for food buffs. Then it was time for the most awaiting events of the day. Spaghettify & Shock Therapy bands had the crowd on their feet with their mesmerizing 60 minutes each performances which raised the enthusiasm of the crowd. After an hour of serious head banging, the band performed their last song of the night. The by then exhausted crowd then clicked pictures with the members of the band and selfies of course.

With the standards being set by the first two days, the third day of ELAN only made the feel better by setting the stage for one of the highlight events of ELAN, Mr. & Ms. ELAN, in the evening.

Beautiful girls walked the ramp to set the temperatures rising, which was then followed by the war of DJs. This was judged by DJ Shekhar. A mobile making workshop was organized to give a technical touch to the participants. Break free(Group dance competition) saw some tremendous performances by professional dance schools and college dance troupes. This was judged by Tollywood stars, Navdeep and

Naveen Chandra. While on informal stage, the duo dance competition saw some romantic performances which were judged by Tollywood actors, Varun Sandesh and Vithika Sheru. The technical and literary events set the institute corridors and lecture halls busy with a tremendous amount of participation. It was then the time for the organizing team of ELAN to roll down some tears down their cheeks after an yearlong hard work.

ELAN is surely on course to become the best of its kind.

NSS ACTIVITIES 2014–15

NSS IITH has been successfully doing its part to the society since its dawn. Here's a descriptive list of all the activities it has undertaken during the academic year 2014-15.

Cloth Donation

The NSS-IIT Hyderabad team carried out an extensive collection drive of old but usable clothes within the campus. NSS team set up collection boxes outside each hostel before summer and autumn breaks so that students do not face any issues for donating the clothes. In addition to that volunteers went to each room to inform about the event. As a consequence of the effort put in by the NSS team there was a huge turn out to the event. NSS volunteers went to the nearby slums in Hyderabad and distributed the collected clothes to the needy people on 15 March 2015. The people who received the clothes were very happy and thanked our institution for such an initiative.

Fire Fighting

Emergencies will never come with notice. Hence, the NSS IITH team organized fire-fighting demonstration on 19 October 2014 in collaboration with IITH security to spread awareness among all the students of IITH. Starting with an introduction on the importance of fire training and history, students were given knowledge regarding types of fire extinguishers, fire triangle, extinguishing methods, actions that should be undertaken in case of fire and also emergency telephone numbers. Fire fighters demonstrated the use of stirrup pumps, extinguishers through a live activity. Students took part in the hands on session held in the presence of security team of IITH.

Vidyadaan

The benefit of education is derived most when shared! Vidyadaan is the most frequently conducted event. It is organized in the government schools near IITH premises where a group of volunteers spend 3 to 4 hours in teaching students of classes V to X. Vidyadaan works as a remedial session to clarify the doubts of the kids and ensure that the students learn the concepts through traditional and as well as a fun way of teaching. Students were also shown short videos of interesting topics to arouse curiosity. The team received huge accolades from the Principal of ZPHS when 100% of students have successfully passed their 10th class board exams.

Maargdarshan

Career guidance program under NSS IITH aimed at guiding the high school students to choose the right career path. It was conducted in the Z.P.H.S nearby IITH. It was mainly designed to assist individuals in making and implementing informed educational and occupational choices. In this students are presented with a planned sequence of activities and experiences to achieve specific competencies such as self-appraisal, decision making, goal setting and career planning. Interactive sessions were also held where volunteers patiently answered the doubts raised by students related to the career path which they were interested in choosing.

Book donation

"A book which is useless to one person, can be of great help to the other!"

As part of 'Each one give one' initiative, NSS team of IITH has organized Book donation activity on 10 October 2014. NSS members and the social cause team members of Elan 2015, the cultural and technical fest of IITH, have volunteered to collect books for donation. The collected books were distributed among students of different Government schools in the vicinity.

Swacch Bharat

Swacch Bharath Abhiyan, a cleanliness drive initiated by Honorable Prime Minister Narendra Modi was launched on Mahatma Gandhi's 145th birth anniversary. In response to this call NSS IIT Hyderabad team initiated the Swacch Bharath program at the IIT Hyderabad campus on 8 November 2015. NSS team cleaned not only the institute, hostel premises but also the nearby regions of the institute. This activity received huge participation from the student community and our students set an example for the society by being 'the change' that is required.

Blood Donation

NSS-IIT Hyderabad organized a blood donation camp on 31 January 2015. This event was conducted in association with 'Some hospital'. To promote this event, the NSS team initiated an awareness drive which cleared the common misconceptions of the donor with posters and mails. There was a huge response from the student community and also the institute professors for the event. Only medically fit people were allowed to donate blood. The donors were given fruits and beverages after the donation and their effort was acknowledged by giving them a certificate of appreciation. The event was conducted successfully for nearly six hours.

Girl Child Day

With an aim to enlighten and lift the veil of ignorance which has deprived Indian women of their rights, NSS IIT Hyderabad team celebrated Rashtriya Balika Diwas on 20 January 2015. As a part of the celebration, a series of well-researched lectures and workshops were conducted in rural and suburban areas to improve their understanding on the importance of girl child education, their rights and various incentives that government of India has taken up for their betterment. The villagers actively participated in the event.

Science Fair

To encourage the exposure of students to the practical aspect of learning, NSS IIT Hyderabad initiated the event of science fair. In this activity the school children were divided into groups and each group was allocated a mentor who would help the students to understand the already developed projects and provide guidance for developing new projects.

Children's Day at ZPHS

The children participated enthusiastically in general quizzes which were conducted in English and Telugu. They were also asked to identify eminent personalities. ZPHS students have very good general knowledge. The children were asked to paint their ideas which portray their vision of a cleaner India with acrylic paints and paintbrushes.

Plantation

NSS IIT Hyderabad organized a Tree Plantation Program in the college and hostel premises. Many students actively participated in the event and planted as many trees as possible. Along with that NSS team also made sure that the planted trees are taken care of by organizing the event 'watering plants' activity at regular intervals. The faculty members were also present for providing guidance about. House-keeping maids also offered a helping hand during the event.

Orphanage Visit

As goodwill ambassadors of NSS IIT Hyderabad, our goal is to bring smiles on the young faces, who are less privileged, but are our brothers and sisters. We visited an orphanage in Lingampally, and played with kids on 28 March, 2015. It was great to see them playing and enjoying. We, at NSS IIT Hyderabad believe in giving the most valuable gift every human has, the gift of love. We all pledge our allegiance to carry on this legacy forward.

SPORTS

Friendship race 2014

Cricket

Hockey

With a strength of around 500 students, the National Sports Organization started its full-fledged program for the academic year 2014-15 in the month of August. The list of events goes as follows:

- **Friendship Race:** It was conducted on 3 August 2014 as a part offreshmen interaction. It had a huge participation of around 700 from students, staff and faculty. It had participants from University of Austin, the students who were under the student exchange program. Prizes for the event were distributed on the eve of Independence day.
- **Interaction Matches:** As another major part of freshmen interaction program, football, cricket, volleyball, basketball, badminton etc were conducted from the date of registration till 15 August 2014.
- **NSO:** The main aim of NSO, IIT Hyderabad is to inculcate sportive spirit in the students. With five coaches in total for various events and sports equipment for about 8 team events and athletics, it has been and is functioning smooth. New registrations for NSO were invited from the freshmen. After enrollment, NSO hours have been conducted on every Wednesday and Friday for all the NSO registered B.Techs.
- **Inter IIT Sports Meet 2014:** 12 December 2014 saw the grand opening ceremony of the 50th Inter IIT Sports Meet in the Gymkhana grounds of IIT Bombay, beginning with Sachin Tendulkar declaring the meet open at 3:30PM followed by march past at 4:00PM. With a contingent of 112, IIT Hyderabad has participated in Badminton(M&W), Basketball, Cricket, Football, Hockey, Lawn Tennis(M&W), Table Tennis(M&W), Volleybaii(M&W), Weight-lifting and athletic

SPORTS









events. The football team entered semifinals and stood 4th among all 16 IITs. In the events of Volleyball, Badminton, Table Tennis, IIT Hyderabad entered quarter finals. The 22nd Inter IIT Staff Meet was opened on 22 December 2014. With a contingent of around 25 faculty and staff members, IIT Hyderabad participated in various events.

- **Run for Unity:** It was organized on 31 October 2014 on the eve of Rashtriya Ekta Diwas. It had huge participation from students, faculty and staff.
- **Friendly Tournaments:** Students of IIT Hyderabad have played friendly tournaments with institutes like BITS Hyderabad, GITAMS Hyderabad and lilT Hyderabad.
- **Intra-Mural Sports:** Informal leagues for badminton, basketball, cricket, hockey and volleyball were conducted.

The 7th annual sports meet was Interdepartmental. It covered all the team events along with athletic events as that of the Inter IIT sports meet. Women's basketball was introduced. Prizes were distributed on Gymkhana day.

Glimpses of our New Campus



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