

Mol signed to establish 'Russian-Indian Association of Institutions of Higher Education'. IIT Bombay to lead



Visit of former Russian President, Mr. Dmitry Medvedev at IITB in December 2010

As a major endeavor towards strengthening the Indo-Russian ties, the foundation for the formation of the Russian-Indian Association of Institutions of Higher Education was established through the signing of the Memorandum of Interest (MOI) in the presence of Honorable President of India, Mr. Pranab Mukherjee in Moscow, Russia on May 8, 2015. The MOI was signed by Prof. Devang V. Khakhar, Director IIT Bombay and President of the Russian Rectors' Union, V. A. Sadovnichiy on behalf the universities' community of the both countries. The Association is formed as a non-profit organization, uniting universities of Russia and India on a voluntary basis.

Speaking about the relevance of the Association, Prof. Khakhar, said, *"The Association is a partnership between research and educational institutions in the Russian Federation and India, which will provide a unique forum to cooperate. The Association will facilitate research collaboration, faculty exchange and student exchange among the leading universities of both the countries. We look forward to the fruits of the collaboration in terms of the advancement of high-quality research and development, increased internationalisation of higher education and greater linkages between the two countries."*

Coordinated by IIT Bombay the Institutes and Universities from India participating in the Association are IIT Delhi, IIT Madras, IIT Kanpur, IIT Kharagpur, IIT Roorkee, Indian Statistical Institute, Delhi University, Jawaharlal Nehru University and National Centre for Biological Sciences.

The efforts on the Russian side are coordinated by the Tomsk State University and include Saint-Petersburg State University, Far Eastern Federal University, Kazan (Volga region) Federal University, Moscow Institute of Physics and Technology (State University), Magnitogorsk State Technical University, National Research University "Higher School of Economics", National Research Technological University "Moscow Institute for Steel and Alloys", National Research Tomsk State University, National Research Tomsk Polytechnic University, National Research Nuclear University "Moscow Engineering Physics Institute", Lobachevsky State University of Nizhni Novgorod, Novosibirsk National Research State University, Samara State Aerospace University, Saint-Petersburg National Research University ITMO, Peter the Great Saint-Petersburg Polytechnic University, and Ural Federal University.

IIT Bombay also signed bilateral MoUs with the National Research Tomsk State University, Saint-Petersburg

State University and Skolkova Institute of Science and Technology Russia to encourage collaboration through faculty and student exchange programmes, joint research work and joint research supervision of research work, and joint conferences or symposia on subjects of mutual interests.

Speaking about the MoUs, Prof. Rajiv Dusane, Dean, International Relations, IIT Bombay remarked, "The MoU will encourage students to take up research activities and work under the joint supervision of two reputed Institutions. This is a wonderful opportunity for students who want to explore and put their minds in finding novel solutions to existing problems. I am sure that this will lead to excellent results in the area of academics and research."

The combined efforts on part of the leading universities of both the countries will not only result in providing the knowledge based economies with relevant human resources and scientific and technological platforms but also contribute to broad internationalization of the scientific, educational, and technological components of the activity and promote humanitarian ties between the two countries. IIT Bombay has enjoyed long association with Russia and erstwhile USSR as the former was established with a financial aid from USSR.

IIT Bombay wins the Intellectual Property Awards 2015



Indian Institute of Technology Bombay (IIT Bombay), added another feather to its cap by winning the prestigious 'National Intellectual Property Awards' for 2015. IIT Bombay won the award for the Top India Academic Institution for Patents, Best Commercialization of Patent(s) based in India and the WIPO Users trophy. The award was presented by Smt. Nirmala Sitharaman, Minister of Commerce and Industry, Government of India to Prof. Devang Khakhar, Director, IIT Bombay, Prof. Prasanna M Mujumdar, Dean (R&D), IIT Bombay and Dr. Padma Satish, Chief Technical Officer, IRCC, IIT Bombay, at an event organized by the Confederation of Indian Industry (CII) and the Indian Patents Office (IPO), in New Delhi.

Speaking about the award, Prof. Khakhar remarked, "Research and Development at IIT Bombay has been given a strong emphasis in the recent years with an enhanced thrust to take up meaningful R&D to make a difference to the society, the industry and the nation. With more than 55% of the student strength of 9800 being enrolled for post graduate programmes and the establishment of high end R&D infrastructure, the research output of the institute is sizeable in terms of generation of new knowledge, know-how and intellectual property. We have been steadily refining policies, processes, mechanisms and incentives to promote R&D amongst our faculty, students and staff. The recognition by the Ministry of Commerce, Government of India of our achievements by the IP Awards is evidence that our efforts are yielding fruit and motivates us to continue to work towards the Government's goal of Make in India and scale greater heights."

Conferring the awards, on the eve of World Intellectual Property Day celebrations, Smt. Sitharaman, commended the efforts of individual inventors as well as innovative organisations and institutions for their role in moving India forward on the path of progress and assured them support of Government of India.

Constituted in 2009, the Indian Intellectual Property Office in the Department of Industrial Policy & Promotion of the Ministry of Commerce & Industry, Government of India, confers the annual National Intellectual Property awards on outstanding innovators, organizations and companies in the field of patents, designs, trademarks and geographical indications on the occasion of World IP Day every year. Comprising of Rs 1 lakh in cash, a trophy and a citation, the awards are evaluated on the basis of number of IPRs granted/ registered, growth in IPR portfolio in the past five years, leveraging of IPRs for achieving commercial goals (valuation, licensing, launching of new products/ processes associated with granted/ registered IPRs), efforts for inculcating IPR culture (R&D budget, employment of human resources for R&D, collaborations with industries and universities, licensing from other sources) and contribution towards the socio-economic development of the country. IIT Bombay received a cash prize of Rs.2 lakhs for winning the award in two categories.

Bachelor of Design Programme launched by Industrial Design Centre



Prof. B.K. Chakravarthy, Prof. Ravi Poovaiah and Prof. R. Venkatesh from IDC during Press Conference of B.Des Programme launch

The Industrial Design Centre (IDC) of IIT Bombay has added a new comprehensive, four-year, Bachelor of Design (B.Des) programme and a five-year integrated, Dual Degree B.Des + M.Des programme, from this academic year.

Speaking on the need for initiating such a programme, Prof. B.K Chakravarthy, Head of IDC, IIT Bombay said, "As we progress from the Knowledge Economy towards Creative Economy, there is an increasing need in India for skilled professionals in the area of design. Design can play a crucial role in the development of the nation and work towards improvement of quality of life for all."

Admissions to B.Des is being done through the Undergraduate Common Entrance Examination for Design 2015 (UCEED 2015), which was conducted on May 31, 2015 across 9 cities (Ahmedabad, Bengaluru, Chennai, Delhi, Guwahati, Hyderabad, Kolkata, Mumbai and Pune) in India. The first session of B.Des Programme will commence in July 2015.

Academia and industry come together for IITB's Research Park

IIT Bombay will be soon setting up a Research Park on its Campus, with a partial funding from Ministry of Human Resource Development, Government of India, to promote and foster the spirit of innovation. The main objective of IIT Bombay's Research Park will be to build an ecosystem where academic researchers from IITB and industry partners work in close collaboration on cutting edge research problems, technology challenges and product innovation. As an initial step towards it, a day-long Academia-Industry-Meeting (AIM) on the upcoming Research Park was organized on May 30, 2015 by the Institute.

The event kick-started with a welcome address by Prof. Devang Khakhar, Director, IIT Bombay. Giving an overview of the various activities at the Institute, Prof. Khakhar said, "The Research Park at IITB will mutually benefit the Industry as well as the Institute. It will play a pivotal role in removing the barriers between the industry researchers and academic researchers."

Prof. Khakhar's talk was followed by a presentation on the upcoming Research Park by Prof. Abhay Karandikar, Professor In-charge, IIT Bombay Research Park. "Our vision is to establish an innovation hub through industry academia collaboration. The Research Park will undoubtedly increase our levels of engagement with the Industry," he added.

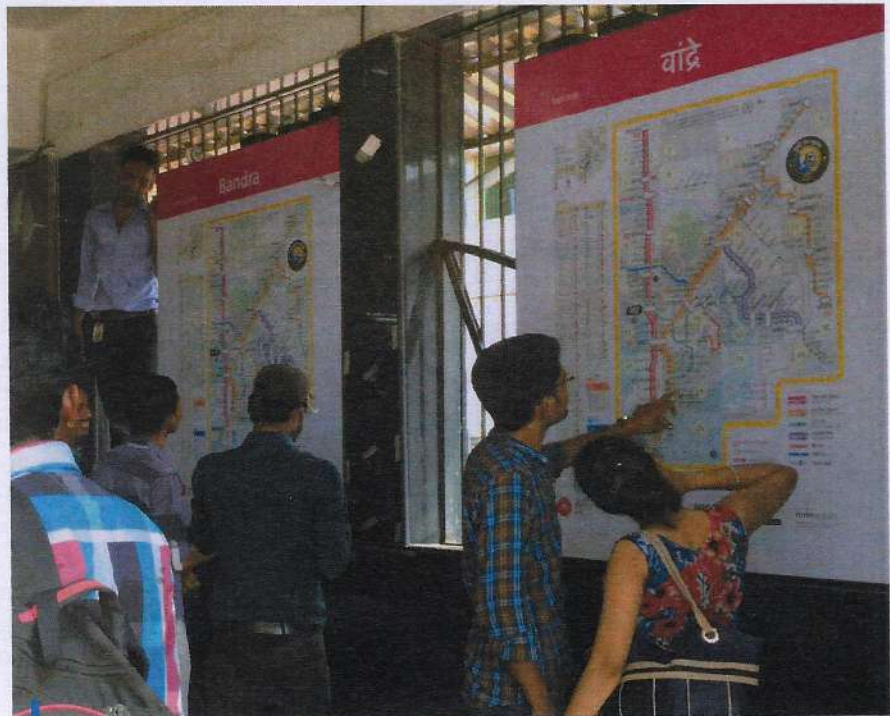
The meet was attended by big names from the industry including Dr. Debasis Bandyopadhyay, Vice-President & Global Head, Tata Consultancy Services, Dr. R. Muralidharan, CTO, Tata Power SED, Dr. Rajkumar Singh, Senior Director, Bharat Forge, Mr. Kapil Bardeja, CEO, Nanosniff Technologies Pvt. Ltd. and many more.



Academia-Industry-Meeting (AIM) for IITB's Research Park.

Mumbai Rail Map by IDC student installed at Bandra and Dadar stations

Rail maps play a critical role in providing the travel related information, to help commuters navigate and to guide them towards making an informed decision for their journey. Unfortunately, for a city like Mumbai, which perhaps has one of the busiest rapid transit systems in the world – operating more than 2000 train services and carrying more than 7 million passengers daily, there were no well designed and authentic maps available of the railway network. Realizing this, Jaikishan Patel, student of Industrial Design Centre (IDC), IIT Bombay has been working on the Mumbai Rail Map (MRM) for a year now. The Map covers the complete suburban rail network, with an easy to understand and commuter-friendly, colour blind friendly, colour-coded railway map for rail commuters in a language of their choice. The map includes connecting routes that link Western, Central, Harbour, Trans-Harbour Metro, Mono, Nerul-Uran Railway Link as well as the shuttle express way which runs from Vasai to Roha. The Maps will be available in three languages English, Hindi and Marathi.



Mumbai Map made by IDC Student installed at Bandra West Station

After the first release of the Mumbai Rail Map (MRM) version 1 in December, 2013 on Facebook, finally MRM is installed at Bandra (W, E) and Dadar (W) Railway stations on the western line. The project is a joint collaboration between MHRD and IIT Bombay under the 'Mumbai Transformation Project'. The idea behind this action oriented projects is to design and implement solutions for public benefit. With permission from western railways, now these rail maps will be installed as 4 x 5 feet back-lit panels in the three languages. These are 'You are Here' (YAH) Maps, where in the station, where these maps are installed is highlighted in the map for easy orientation of the commuter. According to Prof. Mandar Rane, Associate Professor, Visual Communication, IDC, who acted as a guide in this project, *"These maps are put as pilot installations to test how people comprehend these maps and are there any issues regarding usage. IIT Bombay students will be conducting user studies at the site of installations and gathering feedback. This will help us improve the map further and make recommendations regarding overall implementation. We think this is a way of giving back to the society."*

The pleasant and visually appealing map is also designed to cater to the colour blind population. "According to statistics, approximately 13,956 people from different regions in India, suffer from colour-blindness. We have tested the map for the same and made changes accordingly. In the map design it is been considered to an extent that people with colour blindness can differentiate among the routes by the tone and thickness of the rail lines. In that way, the map would be still useful in case of B/W print," added Patel.

Additionally, a Mobile App named MRM has been designed and launched. Users can have the map in their mobile phones and can highlight their route on the map by entering from and to destinations. Such an app will be handy for tourists who visit Mumbai and for all novice rail commuters. The App is available for FREE download on Andriod – google, playstore and for ios Apple, App store. The App can be downloaded from www.mrmapp.in

IITB felicitates the 'Water Man of India' Mr. Rajendra Singh

IIT Bombay recently felicitated Mr. Rajendra Singh, popularly known as 'Water Man of India' in recognition of his contributions in community-based efforts in water harvesting and water management. Mr. Singh has been selected for the prestigious **Stockholm Water Prize 2015**, an award known as 'the Nobel Prize for water'. He is also a proud recipient of the Ramon Magsaysay Award in 2001, for his pioneering work in community-based efforts in water harvesting and water management.

Welcoming Mr. Singh and other dignitaries at the function, Prof. N.C. Narayanan from Centre for Technology Alternatives for Rural Areas, IIT Bombay said, *"Mr. Singh is known for his long standing work in the area of water management. He has brought water governance and ensured democratization of water in his area. It is indeed our pleasure to have him with us today at IIT Bombay Campus."*

Mr. Singh was felicitated by Prof. Narayan Rangaraj, Dean (Academic Programme), IIT Bombay, who presented him a shawl and memento. Speaking at the occasion, Mr. Singh remarked, *"It is high time that we move away from technologies that promote pollution, extraction and exploitation to technologies that nurture natural resources. The solutions to the global environmental challenges can actually be found locally. I urge the budding engineers and scientists of this Country to combine their modern knowledge with local, traditional knowledge and technologies and it can do wonder for the society."*

While delivering the vote of thanks, Mr. Janak Daftari, alumnus of IIT Bombay, emphasized that three key



Prof. Narayan Rangaraj, Dean (AP) felicitating Mr. Rajendra Singh

things need to be followed by everyone to save water – Stop misuse of water, minimize use of water, and recycle used water.

Mr. Singh runs an NGO called 'Tarun Bharat Sangh' (TBS), that has helped villagers take charge of water management in the semi-arid areas close to Thar Desert, through the use of *johad*, rainwater storage tanks, check dams and other time-tested as well as path-breaking techniques. Starting from a single village in 1985, over the years TBS helped build over 8,600 johads and other water conservation structures to collect rainwater for the dry seasons, has brought water back to over 1,000 villages and revived five rivers in Rajasthan, Arvari, Ruparel, Sarsa, Bhagani and Jahajwali.

Faculty members from IITs and IISc join hands to Support Net Neutrality

Net neutrality, has been a hot topic of discussion since a few months. Everyone seems to have their own opinion on the topic. But, what do experts feel about this? What is their take on the consultation paper of TRAI? As individuals who understand the technical aspects of this debate well, several faculty members of Computer Science and Engineering Department (CSE) and Electrical Engineering Department (EE) at Indian Institute of Technology Bombay (IITB) prepared a joint statement on net neutrality. The statement counters arguments put forward in the consultation paper of TRAI which advocates compromising or weakening of network neutrality. The statement has been supported and

signed by around 50 faculty members from IIT Bombay, IIT Madras, IIT Patna, IIT Kharagpur, IIT Kanpur, IIT Delhi, IISc Bangalore, IIM Calcutta etc.

The Joint Statement is appended below:

The TRAI has recently come out with a consultation paper, which has been the cause for much debate around net-neutrality, and for good reason. Network neutrality (or net-neutrality for short) is an operational principle of the Internet, where Internet Service Providers (ISPs) or telecom operators, i.e., anyone who manages any part of the Internet, is neutral to (a) the origin and destination of any traffic, and (b) the content of the traffic.

The consultation paper includes several arguments for why network neutrality must be compromised or weakened. This joint statement counters those arguments, focusing on four technical aspects of digital networks, and urges the TRAI to strongly support net neutrality.

Net neutrality and congestion: The first and foremost argument put forth by the consultation paper is that net neutrality must be violated to solve congestion in the network: "10% of mobile users actually consume 90% of operators' bandwidth" (5.2, similar statements also in 5.17, 5.26, 5.28). This argument is fundamentally flawed technically, for congestion can effectively be addressed by looking only at the *quantity* of data, while preserving net neutrality. For instance, it would be well within the principles of net neutrality to serve the first GB of a user's data fast, and the second GB of data slower. The second GB can also be priced higher. Such mechanisms are all too common in the physical world of mails. If the post office gets 90% postal mail from 10% of its users, it can either (a) impose limits of quantity of mail, or (b) price differentially based on amount of mail sent, or (c) simply increase its capacity. What it cannot do is to pry open every letter and price differently based on the content. To do so would be absurd. Likewise, if a road network is facing congestion, it would be absurd to charge road tax based on the identity of who is using the road, or based on whether the commuter is going to a bank or to a grocery store next to the bank.

Net neutrality and service differentiation: The second major argument put forth by the consultation paper, in different words (e.g. in 5.18, 5.21, 5.22), is that net neutrality must be violated to provide service differentiation, which is necessary for example in telemedicine applications or for specific business customers. This argument is also technically flawed. Network neutrality does not mean there is no service differentiation. It means that the choice for better service is made by the end customer, not by the network. For instance, if a remote clinic wants a certain network capacity to a city hospital's telemedicine portal, it chooses to buy that extra capacity by paying the network operator. On the other hand, if net neutrality is violated, and the network operator made the choice, the clinic could end up with the same network capacity, not to the required hospital website, but to an e-commerce website of no use to the intended telemedicine.

Intelligence at the edge: Net neutrality is at the heart of the Internet architecture. The Internet architecture is

essentially one where intelligence is pushed to the edge of the network: these are the content servers as well as the clients of these services at the other edge of the network (the smart-phones and laptops and PCs). This idea is fundamental to Internet's success. This is the reason why any small developer or business can develop a website or smart-phone app and have it used by its customers. This contrasts the traditional telephone architecture where the end device is dumb and the network is intelligent (relatively speaking): you can do nothing but punch numbers or receive phone calls using the end device. The relative success of each of these models and the fact that even telephone companies have adopted the Internet model speaks for itself as to which architecture is better for innovation, for the economy, and for society. So when telecom network operators seek more control of how much traffic is used to which website or application (i.e., violate net neutrality by having "intelligence" in the network), the fundamental idea behind the Internet is under threat. The implications of this are huge, given that the Internet is central to today's information age. (To its credit, the TRAI document acknowledges this in 5.6, 5.13, but not with sufficient weightage).

Misleading terminology: Finally, the consultation paper is misleading and confusing in title and terminology. The title as well the entire document uses the term "over-the-top" (OTT) services as though such services are some special services or applications. Now, any standard digital networks textbook, likely in its first chapter, would tell that any service or application using the Internet, runs "over-the-top" of the network. There is no example of an application which is not "over-the-top". Thus the proposed regulatory framework encompasses *every application* and *every use* of the Internet, not just some special services. While the term OTT is common outside the consultation paper, it is misleading all the same. It is like a road construction company calling a school accessible by the road as an over-the-top service. Sure, one has to use the road to reach the school, but the term suggests that the road somehow has a role in the school's education service over and above just using the road to reach the school.

In summary, there are no sound technical or economic reasons to violate net neutrality. In fact, such violation threatens the essential idea of the Internet itself. We urge the TRAI to maintain net neutrality in its strongest possible form, as this is crucial for a digitally empowered India.

IITB tops the DQ-CMR Best Tech-School Survey

Indian Institute of Technology Bombay has been ranked as number one engineering institute in India in the recently conducted "Dataquest-CMR Best Technical School Survey 2015". The Institute was consecutively at 4th position for last three years and is back to being number one, this year.

Research in Focus

Transparent UV Masks



Wouldn't it be nice to have a transparent sunscreen lotion and yet protect your skin from harmful UV? Engineered nanoparticles can now provide the right kind of mask.

Sunscreen products work by absorbing or scattering UV radiation. Formulating superior sunscreen is of utmost importance in protecting our skin from sunburn, skin cancer and other deleterious effects. This is especially true for people with light skin due to lower concentration of melanin in their skin, which is the natural absorber and dissipater of UV radiation. The normal ZnO used as an active ingredient in sunscreen are micro-dimensional and because of this, they

scatter light and appear white when applied on the skin, which is not aesthetically pleasing. Hence, sunscreen industry is now considering ZnO nanoparticles (NPs) as an efficient UV blocker, which can reduce the scattering problem faced by its bulk counterpart, thereby making it appear transparent when applied to skin surface. However, these transparent ZnO nanoparticles (NPs) have UVA (~385 nm) emission, which penetrates up to the dermal layer of skin. This highly penetrating UVA emission from ZnO NPs will enhance the generation of cancer inducing radicals. Therefore, the elimination of this harmful UVA emission from ZnO NPs is much sought after for the development of safer ZnO NPs based sunscreens.

In an effort to tackle this problem, research scholar Mr. A. Asok, Prof. A. R. Kulkarni and Dr. M. N. Gandhi have come up with an ingenious solution that promises to play a significant role in the science of sunscreen active ingredients. They have engineered a more potent form of zinc oxide (ZnO), the core ingredient in most conventional sunscreens, by introducing non-stoichiometric defects in the zinc oxide nanocrystals. They refer to it as engineered zinc oxide (E-ZnO) nanoparticles. These E-ZnO NPs have characteristic optical transition profiles which can bypass the harmful UVA emission present in normal ZnO NPs, at the same time making it a broad band UV absorber and broad band visible emitter. This visible emission is neither harmful nor dangerous for the skin when compared to UVA emission from normal ZnO NPs. In addition to its improved safety, the broad band emission from E-ZnO NPs matches well with the in vivo human skin autofluorescence. This property of E-ZnO also imparts an illusion of smoothing wrinkled skin and this camouflaging effect can find its utility in wrinkle free creams. Thus E-ZnO clearly stands out as the potential and promising candidate for one of the major ingredients of sunscreen formulation not only for its protecting ability from harmful UVA emission but also for its cosmetic value.

For more information please visit : <http://www.iitb.ac.in/research-highlight/transparents-uv-masks>.

Staff News

Birth anniversary celebrations of Dr. B. R. Ambedkar and Chhatrapati Shivaji Maharaj



Hon'ble MP & President of RPI, Shri Ramdas Athawale with Director, IIT Bombay and other functionaries

The staff welfare association for SC/ST and OBC staffs of IIT Bombay and; Magaswargiya Karmachari Sansad (MKS) celebrated 124th and 388th birth anniversary of Dr. Babasaheb Ambedkar and Chhatrapati Shivaji Maharaj respectively at IIT Bombay Campus on April 17 2015. Hon'ble Member of Parliament & President of Republican Party of India (RPI) Shri Ramdas Athawale was the Chief Guest for the occasion.

Workshop for Children on making Solar Lamps at IIT Bombay



Children learning to make solar lamps during the workshop

The Staff Club of IIT Bombay along with a Hyderabad based solar company organized a workshop for Children to learn about Solar energy and the ways to assemble Solar Lamp in the Institute campus. The workshop witnessed participation from 78 students including some from the slum dwellings. The workshop was open for all Children who are 10 years and above.

Talking about the relevance of such a workshop Mr. Ganesh Bhorkade, General Secretary, Staff Club said, "This was a unique learning experience for the participating children. They learned how to make solar lamps and understand how the solar energy can be used for lighting purposes. This gave them a hands on experience and will be quite beneficial for them in the future."

The participating children were given the raw material and the representatives from the Hyderabad based solar company helped them fix the lamp. The children were allowed to take the lamp they had assembled as a token of appreciation. Children were quite excited and happy about this new experience.

Another 40 lamps were distributed in the nearby slum areas and children of casual workers at the Institute.

Blood Donation Drive



Blood Donation Camp at the Institute.

The Sthaniya Lokadhikar Samiti of IIT Bombay in association with KEM Hospital's Blood Bank organized a Blood Donation Camp on April 11, 2015 in the Institute. Students, Faculty, Staff and their families participated in the event which lead to collection of about 246 bottles of blood through this drive. Dedicated efforts by Dr. Ingole and his team from KEM Blood Bank, along with IIT B volunteers and extended support by Institute Authorities made it a successful drive.



Student News

3rd International Convention of SPICMACAY held at IIT-Bombay



Prof. Devang V. Khakhar, Director, IIT Bombay along with other Dignitaries during the Inauguration Ceremony

The 3rd International Convention of SPICMACAY (Society for the Promotion of Indian Classical Music and Culture Amongst Youth) was held at the IIT Bombay from May 31, 2015 to June 6, 2015. The inauguration ceremony witnessed performances from Kathak maestro Pandit Birju Maharaj and Hindustani vocals by Vidushi Girija Devi. The inaugural function was presided by Shri Balram Das Tandon, Hon'ble Governor of Chhattisgarh, Shri. Kaptan Singh Solanki, Hon'ble Governor of Punjab and Haryana, Prof. Devang Khakhar, Director, IIT Bombay, Mr. Jawhar Sircar, CEO, Prasar Bharti, Mr. Arun Sahay, Chairman, SPICMACAY and Prof. Soumyo Mukherji, Dean of Student Affairs, IIT Bombay, among others. The week long event was organized by Roots, and IIT Bombay Cultural Council, in association with SPICMACAY.

In his welcome address, Prof. Devang Khakhar said, "SPICMACAY has been very successful in promoting Indian culture among youth. I wish all the delegates a very memorable stay at IITB and hope they have an enriching experience".

The Convention witnessed more than 200 artists of international repute and 1700 delegates across 17 countries including participation from SAARC nations, North America and Europe.

Highlights of the Convention

Concerts: There were two concert every day by some of the living legends and icons of India. Some of the key performers during the event were Pandit Shivkumar Sharma, Prof. T.N. Krishnan; Smt. Malavika Sarukkai, Ustad Sahid Parvez, Shri Shekhar Sen. Meanwhile, there were other performances like Puppetry by Dadi Pudumjee; a theatre performance "Kabir" by Shekhar Sen; Qawwali by Warsi Brothers and many more captivating performances.

Overnight Music Concert: Another unique feature of the event this year was the overnight music concert which started on the night of June 5, 2015 from 8 pm and went on till 6 am in the morning of June 6, 2015. Renowned artistes like Balamurali Krishna, Aswani Bhide Deshpande, Pandit Vishwa Mohan Bhatt, Wasifuddin Dagar performed during the overnight concert.

All in all, it was an enriching experience for the participants which helped them to introspect and increase awareness about India's rich culture and heritage.

Launch of EVo 4.0 Formula Student Electric Racing Car



EVo 4.0 Formula Student Electric Racing Car

The much awaited Official Launch of EVo 4.0 Formula Student Electric Racing Car was held on May 16, 2015 at the IIT Bombay Campus. The IITB Racing Club are a group of students from IIT Bombay who are united by their passion for engineering and the desire to put India on the world map of race car manufacturers. This year, the team is all geared up to launch a high performance car, which would participate in FS UK 2015, thus moving a step closer to it's vision of "Revolutionizing Electric Mobility in India, through focusing on Sustainable Technologies and Innovations". The Racing Club has been operative since 2008 and has targeted excellence in Formula SAE- a student design competition organized by SAE International and Baja SAE, an intercollegiate design competition run by the Society of Automotive Engineers (SAE). Over the years, the cars designed by the IIT Bombay students have won various awards at both these competitions.

IIT Bombay to implement ERP System

Enterprise Resource Planning (ERP) is a business management software that is widely used across sectors to efficiently conduct businesses, streamline processes and enhance productivity. ERP is being increasingly used in the education world, and universities opting for ERP have reported radical improvement in processes across stakeholders.

IIT Bombay is gearing up to install ERP software, and move from home grown software to SAP based ERP during 2016. The changeover to ERP is planned in two waves. Wave-1, starting from 1st April, 2016 shall cover - accounts, payroll, HR and estate – while Wave-2 scheduled during December, 2016 shall cover entire *student life cycle management*.

Upon completion of Wave-2, IITB-ERP will automate more processes than the status quo and move towards paperless administration.

ERP Story at IITB So Far

2010: ERP activities initiated by ASC. Director appoints '*ERP Implementation Committee*', subsequently expanded and renamed '*ERP task force*' under the stewardship of DD(FEA). Creation of '*ERP Vision Committee*', to setup the tenor of IITB-ERP endeavour.

2011: Creation of '*ERP cell*'. Appointed ERP-OSD to engage with leading ERP vendors and consulting firms, facilitate discussions between ERP *visions committee/task force*, and interface with ERP experts.

2012: *Ernst & Young* engaged as external consultant to assess IT needs of IITB. E&Y compiles IITBs *functional requirement specifications*, which form the core of '*Request for proposal*' for ERP tendering process.

2013-14: ERP tendering initiated and driven by the *ERP task force*.

2015: After long drawn ERP/vendor selection process, M/s *Atos India Pvt Ltd* was (Atos) selected on a seven year contract as the system integrator, and SAP chosen to be the ERP software.

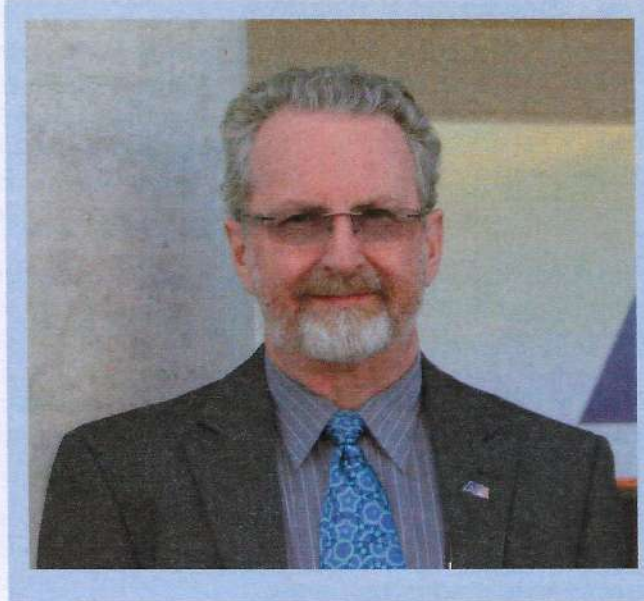
Road Ahead

The project initiation meeting was held on 16th March 2015. Task Force is now dissolved. ERP related activities are coordinated by ASC and the office of Dean (AA) with active participation from a large number of institute functionaries, faculty and staff. There now exists a '*Steering Committee*' to oversee the implementation, while '*ERP Core Team*' interacts with Atos consultants. An in-house '*Project Management Office (PMO)*' manages the project, though a third-party PMO may be engaged in the future. Atos has finished documenting the existing processes pertaining to Wave-1. All administrative processes except academic are expected to be integrated into IITB-ERP by 1st April, 2016.

Future

IITB-ERP bears the vision proposed by the Vision Committee. IITB administration envisages that ERP software be owned by IITB staff to remove vendor dependence. This shall be achieved by training internal workforce in customization and maintenance of SAP-ERP. It is envisaged that the IITB-ERP promises to enhance the productivity, efficiency and transparency of administrative processes at IIT Bombay.

**Institute Colloquium /
Lectures & Seminars**



Prof. Prabhu R. Nott, Department of Chemical Engineering, IISC Bangalore, delivered an Institute Distinguished Lecture in the memory of Professor K.C. Khilar on the topic "How similar to fluids are collections of grains? Similar, and very different." on April 16, 2015.

Prof. Alexander H. King, Director of Critical Materials Institute, Ames Laboratory, US Department of Energy, Iowa, USA, delivered an Institute Lecture on "Critical Materials for Energy System" on April 27, 2015.

Departmental Lectures

Department of Metallurgical Engineering & Materials Science

Dr. Roopali Kukreja, University of California, San Diego, (Ex student of MEMS Dept), delivered a seminar talk on "Verwey transition in Magnetite; How fast does an insulator become a metal?" on April 9, 2015.

Dr. Nitya Nand Gosvami, Dept. of Mechanical Engineering & Applied Mechanics, University of Pennsylvania, Philadelphia, delivered a seminar talk on "Nanoscale Processes in Tribology: Fundamental Investigations and Industrial Applications" on May 25, 2015

Climate Studies

Dr. Sameer Maithel, Director, Greentech Knowledge Solutions Pvt. Ltd., gave a presentation on the

"Environmental Impacts of Brick production & A Roadmap for Cleaner Brick Production in South Asia" on April 15, 2015.

SJM School of Management

Mr. Senge Hasnan Sering, Director, Gilgit Baltistan National Congress, delivered a talk on "An Untold Kashmir Story: Perspective from across the LOC" on April 15, 2015.

Department of Humanities and Social Sciences

Dr. Silvia Luraghi, University of Pavia, Italy, delivered a talk in a seminar on "Asymmetries in Italian temperature terminology" on April 29, 2015.

Prof. S.V. Srinivas, Azim Premji University, Bengaluru, delivered a talk in a seminar on "Politics on YouTube: Some Thoughts on Practicing Humanities in the Present" on May 5, 2015.

Dr. Ahonaa Roy, Jindal School of Government and Public Policy, Sonapat, Haryana delivered a talk in a seminar on "Trans Bioscope: Passionate Aesthetics and the Embodied Desires" on April 17, 2015

Prof. John Russon, University of Guelph, Canada, delivered a talk in a seminar on "The Limits of Money: Phenomenological Reflections on Selfhood and Value" on April 16, 2015

Centre for Urban Science and Engineering (C-USE)

Prof. Eric Isaacs, University of Chicago, delivered a lecture on "Solving the Grand Challenge of the World's Cities: Urban Sciences and Energy" on April 30, 2015

Conference /
Invited Lectures

Prof. Sanjeeva Srivastava, Department of Biosciences & Bioengineering, delivered an invited talk entitled "Developing novel label-free proteomic techniques for translational research" at the Label-free Technologies, Advances and Applications International Conference organized at the Cambridge, MA, USA during March 12-14, 2015.

He also delivered a guest lecture entitled "Proteomics for Translational Research in Brain Tumors" at the Department of

Human Molecular Genetics & Biochemistry, Sackler Faculty of Medicine, Tel Aviv University, Israel on May 13, 2015.

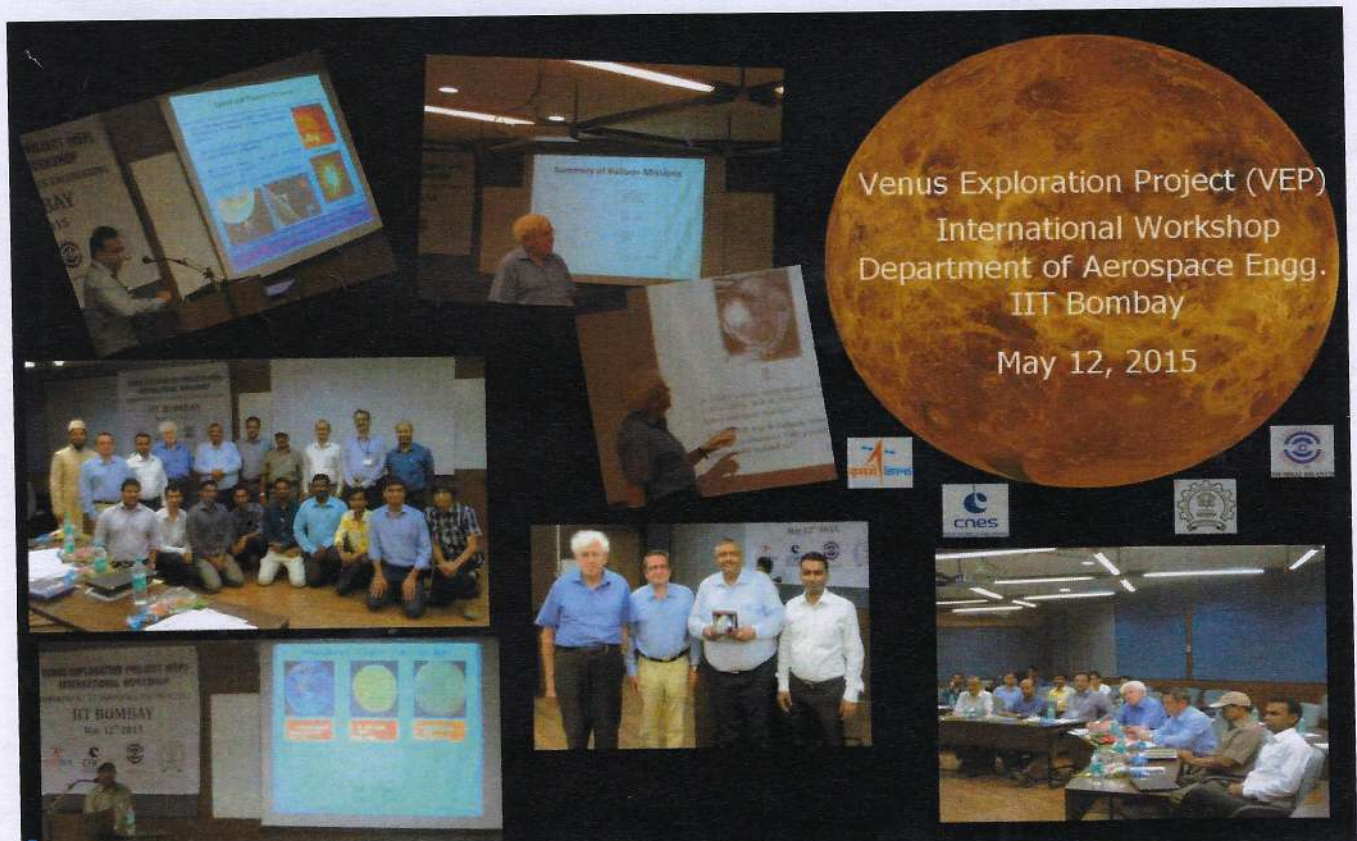
Prof. U. A. Yajnik, Department of Physics, delivered a colloquium lecture titled "A universe, the Universe, or Multiverse" at Physics Department, Punjab University Chandigarh, April 1, 2015

Prof. Rajkumar S. Pant, Department of Aerospace Engineering, visited Instituto Tecnológico de Aeronáutica (www.ita.br <<http://www.ita.br>>), the most prestigious Aerospace Institute of Brazil, as a

Distinguished Visiting Researcher for two months starting mid-May 2015, under the Science Without Borders program of Govt. of Brazil.

Prof. Sridhar Balasubramanian, Department of Mechanical Engineering, visited University of Notre Dame, USA, as an Adjunct visiting professor in the Department of Civil & Environmental Engineering and Earth Sciences during the period May 11-June 14, 2015. He conducted collaborative research with Prof. Harindra J Fernando (Wayne and Diana Murdy Endowed Professor at University of Notre Dame) on topic related to "Entrainment and mixing dynamics of dense gravity currents".

Workshops



First International Workshop on Venus Exploration Projects (VEP)

First International Workshop on Venus Exploration Projects was (VEP) using LTA Technologies was held on campus on May 12, 2015. The event was organized by CNES in association with ISRO, and was partly sponsored by committee members of Aeronautical Society of India, Mumbai branch. The keynote speaker of the day was Padmashri Prof. Jacques Blamont. He made an exciting presentation on Balloons for Exploring Venus which included a detailed description of the planetary exploration missions using balloons carried out by CNES in

association with other space agencies. He emphasized on Venus's atmosphere and utilizing its properties for the balloon missions by using multiphase lifting gases. He also discussed the requirements of various components of the balloons like envelope, battery and electronics and also provided the possible candidates in each area. Other speakers during the event were Dr. Prakash Chauhan, Space Applications Centre, ISRO, Ahmedabad, Prof. S.V.S. Murty, Physics Research Laboratory (PRL), Ahmedabad, Prof. R.K. Sharma, Karunya University, Coimbatore and Mr. Francis Rocard, CNES, Paris. The Workshop ended with a panel discussion among all experts present. The event was chaired by Prof. R.S. Pant, faculty member at Department of Aerospace Engineering in IIT Bombay.

Prof. Ambarish Kunwar, Department of Biosciences and Bioengineering, participated in workshop on "Advanced Techniques for Scientific Programming and Management of Open Source Software Packages" during April 13-24, 2015 at ICTP-SAIFR Centre in Sao Paulo, Brazil and attended international workshop on "Random Walks and Nonlinear Dynamics in the Life of Cells" held at Max Plank Institute for the Physics of Complex Systems, Dresden during May 18-22, 2015 and gave a oral presentation entitled "A new strategy to regulate bi-directional cargo transport by molecular motors"

Awards and Distinctions

Prof. U. K. Anandavardhanan, Department of Mathematics, has been chosen by the INSA Council to be one of the founding members of the National Young Academy of Science (IN-YAS).

Prof. Rohit Srivastava, Department of Biosciences & Bioengineering, has been selected for the "Biotech Product & Process Development and

Commercialization Award" for the year 2014-2015. This is a prestigious award instituted by the Department of Biotechnology, Government of India, for recognition of outstanding contributions of scientists, innovators, entrepreneurs, institutions and companies for developing a new process, product and commercialization of a technology in the areas of Biotechnology and biological sciences.

Prof Ravi Poovaiah, Department of Industrial Design Centre has been awarded an IBM Faculty Award for the year 2014.

EDITORIAL ROLE

Prof. Sanjeeva Srivastava, Department of Biosciences & Bioengineering, joined Editorial Board of Scientific Reports, a journal from Nature Publishing Group, the publishers of Nature. He was also the Guest Editor, Special Issue "Proteomics Research in India" Nature India.

Publications

Ray S, Kumar V, Bhawe A, Singh V, Gogtay NJ, Thatte UM, Talukdar A, Kochar SK, Patankar S and **Prof. Srivastava S** published a paper titled "Proteomic analysis of Plasmodium falciparum induced alterations in humans from different endemic regions of India to decipher malaria pathogenesis and identify surrogate markers of severity", in J. Proteomics., 2015 (in press).

Reddy PJ, Ray S and **Prof. Srivastava S** published a paper titled "The quest of the human proteome and the missing proteins: digging deeper", in OMICS, 2015 19(5):276-82.

Reddy PJ, Sinha S, Ray S, Sathe GJ, Chatterjee A, Prasad TS, Dhali S, Srikanth R, Panda D and **Prof. Srivastava S** published a paper titled "Comprehensive Analysis of Temporal Alterations in Cellular Proteome of Bacillus subtilis under Curcumin Treatment", in PLoS One. 2015, 10(4):e0120620.

Reddy PJ, Atak A, Ghantasala S, Kumar S, Gupta S, Prasad TS, Zingde SM and **Prof. Srivastava S** published a paper titled "Proteomics research in India: An update" in J. Proteomics. 2015, pii: S1874-3919(15)00163-3.

Özdemir V, Faris J and **Prof. Srivastava S** published a paper titled "Crowdfunding 2.0: the next-generation philanthropy: a new approach for philanthropists and citizens to co-fund disruptive innovation in global health", in EMBO Rep., 2015, 16(3):267-71.

Sahana A S, **Prof. Subimal Ghosh**, Auroop Ganguly, and Raghu Murtugudde, Department of Civil Engineering, and Interdisciplinary Program in Climate Studies, published a paper titled "Shift in Indian Summer Monsoon Onset during 1976/1977" in Environmental Research Letters, 10 054006 doi:10.1088/1748-9326/10/5/054006

Hiteshri Shastri, Supantha Paul, **Prof. Subimal Ghosh** and Subhankar Karmakar, Interdisciplinary Program in Climate Studies, published a paper titled "Impacts of urbanization on Indian summer monsoon rainfall extremes" in Journal of Geophysical Research-Atmosphere, 120, 495-516, doi:10.1002/2014JD022061

Prof. U. A. Yajnik, Department of Physics, presented a paper entitled "Leptogenesis: The scale of gauged B-L symmetry" at the International Workshop on Baryon & Lepton Number Violation - BLV2015 organized at the University of Massachusetts Amherst during April 26-30, 2015.

Hareesh Raval and **Prof. U. A. Yajnik**, Department of Physics, published a paper titled "Infrared Abelian dominance without Abelian projection", in Phys. Rev. D 91, 2015, 085028.

Harish N. Mirajkar, Siddhesh Tirodkar, and **Prof. Sridhar**

Balasubramanian, Department of Mechanical Engineering, published a paper titled "Experimental study on growth and spread of dispersed particle-laden plume in a linearly stratified environment", in Environmental Fluid Mech., 2015, 10.1007/s10652-015-9412-5, pp. 1-24.

Prof. Sridhar Balasubramanian, Department of Mechanical Engineering, presented a paper entitled "Effect of Dispersed Particles on Buoyant Plumes in Stratified Environments" at the 10th Pacific Symposium for Flow Visualization & Image Processing held at University of Naples, Italy during June 15-18, 2015.

Prof. Rajkumar S. Pant, Department of Aerospace Engineering presented the following five papers co-authored by his students and co-workers from IIT Bombay at the 10th International Symposium of The Airship Association held in Friedrichschafen, Germany, during 17-19 April 2015:

- A Simplified Thermal Model for Design of Stratospheric Airships, co-authored by O. V. Bichkar.
- An Improved Methodology for Multidisciplinary Design Analysis and Optimization Of High Altitude Airship Configurations, co-authored by M. I. Alam.
- Design and Development of a Semi Rigid Remotely Controlled Airship, co-authored by A. Kshirsagar and V. Sharma
- Design of an Autonomous Control System for an Indoor Airship, co-authored by P. Vivek and P. Dharawath
- Design of a Tethered Aerostat System for providing Wireless Communications in a University Campus, co-authored by Jadhwar, J. H.

Appointments

Shri K.V. Reghuthaman, has been appointed as Deputy Registrar on April 23, 2015.



Prof. Ashutosh Gandhi, Department of Metallurgical Engineering and Materials Science, has been appointed as Associate Professor on April 21, 2015.



Dr. Priya Saxena, Department of Chemistry, has been appointed as Post Doctoral Fellow on May 15, 2015.



Dr. Pintu K. Kundu, Department of Chemistry has been appointed as Post Doctoral Fellow on May 26, 2015



Retirements on April 30, 2015

Prof. J.K. Nayak, Department of Energy Science and Engineering, retired after 33 years of service.



Prof. I.K. Rana, Department of Mathematics, retired after 29 years of service.



Prof. Neelima Talwar, Department of Humanities and Social Sciences, retired after 42 years of service.



Prof. K.M.Subuddhi, Associate Professor, Department of Humanities and Social Sciences, retired after 31 years of service.



Ms. Mulki N. Janardhan, Jr. Supdt, Department of Computer Science and Engineering, retired after 31 years of service.



Shri Ramdas S. Wakode, Sr. Attdt, Electrical Maintenance Division, retired after 35 years of service.



Retirements in May 31, 2015

Prof. D.K. Sharma, Department of Electrical Engineering, retired after 24 years of service.



Shri Arun S. Chabukswar, Sr. Audit Officer, Audit Section, retired after 32 years of service.



Shri Pradipkumar Narayan, Sr. Asstt. Engineer, Estate Office, retired after 30 years of service.



Ms. Sushila S. Joshi, TGT (SS),
Campus School,
retired after 38
years of service.



Shri Bhagavant D. Pawar, Jr.
Supdt, Dean
(IPS), retired after
38 years of
service.



Shri Kalusingh Birbahadur,
Watchman (SG),
Security Section,
retired after 34
years of service.



Shri Sanjay S. Godbole,
Superintendent,
Department of
Chemistry, retired
after 39 years of
service.



Ms. Philomina Chacko, Staff
Nurse, Hospital,
retired after 16
years of service.



Shri Kanderao R. Kedare,
Cook (SG),
Hospital, retired
after 39 years of
service.



Shri Vilas Laxman Revandkar, Jr.
Tech. Supdt,
Center of Studies
in Resources
Engineering,
retired after 34
years of service.



Shri Arun R. Mane, Peon (SG),
Accounts Section,
retired after 40
years of service.



Shri Vinay Singh, Jr. Supdt, Guest
House, retired
after 29 years of
service.



Shri Daji V. Sawant, Watchman
(SG), Security
Section, retired
after 34 years of
service.



In the
Wilderness



Photo Credit :
Mr. B. Nagarkar
Retired Staff, IIT Bombay

SALT 'N PEPPER

by Dr. Arun Inamdar

OF COURSE, WE CAN DO WITHOUT 'A' TYPE.
...BUT IMAGINE MISSING OUT ON THE
SHEER JOY OF LOOKING DOWN ON OUR
CAMPUSITES, FROM THE LUXURIOUS 'A'
TYPE QTRS.!!



CEP courses scheduled during July - August - September 2015

No.	Course Title	Course Coordinator / Department	Duration
1	Monsoon HCI	Prof. Anirudha Joshi, Industrial Design Centre	July 22 – August 5, 2015 (15 days)
2	Management Program in Entrepreneurship and Family Business Enterprise	Prof. Dinesh Sharma, School of Management	July 25, 2015 (40 days)
3	13th Batch of Executive Programme in Management with Specialization in Marketing & HRM	Prof. S. Bhargava School of Management	July 25, 2015 (40 days)
4	Building Global CIO Competencies	Prof. S. Bhargava School of Management	July 30 – August 1, 2015 (3 days)
5	Analytics for Management	Prof. Usha Ananthakumar School of Management	August 1 - 4, 2015 (4 days)
6	Expo PDI	Prof. Ravi Poovaiah, Industrial Design Centre	August 20 – 22, 2015 (3 days)
7	Solar Photovoltaic Training for Master Trainers of Technicians	Prof. Chetan S. Solanki Energy Systems Engineering	August 31- Sept. 4, 2015 (5 days)
8	Management of Technology and Innovation for Competitiveness	Prof. Kirankumar S. Momaya School of Management	September 29 – Oct 1, 2015 (3 days)

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BOOK POST

