



॥ त्वं ज्ञानमयो विज्ञानमयोऽसि ॥

VOLUME 01 ISSUE 1-2

JANUARY-JUNE 2015

# खम्मा घणी...!!

## Khamma Ghani...!!

IIT Jodhpur

### कुछ नये पहल!

2015 में हमने अपने परिवार में कुछ नये, विनीत एवं नीरव विचारों को आकृति देने की चेष्टा की है, जो तथापि आशाजनक सूत्रपात भी हैं। इनमें हमारे बी.टेक. छात्रों का ग्रीष्म कालीन इंडस्ट्री इमर्शन कार्यक्रम में जाना, आई.आई.टी. जोधपुर का नये स्नातकोत्तर कार्यक्रमों का संचालन, नवीन उपकरणों एवं परियोजनाओं की प्राप्ति, एवं संस्थान में परिसंवाद का आयोजन सम्मिलित हैं। साथ ही संस्थान के स्थाई परिसर में निर्माण कार्य भी प्रगति पर है। 2 मई 2014 को हमने जो संस्थान के स्थाई परिसर में भूमिपूजन कर संस्थान के निर्माण कार्य की नींव स्थापन की, वह निर्माण कार्य अब स्थिर गति से आगे बढ़ रहा है। इस बीच हमारे छात्रों द्वारा प्राप्त किये गये पुरस्कार एवं उपलब्धियाँ, तथा प्राद्यापकों द्वारा रचित वैज्ञानिक पत्र तथा लेखों का विज्ञान जगत में मान्यता प्राप्त पत्रिकाओं में प्रकाशित होना, एवं उनके ज्ञान प्रतिभा का वैज्ञानिक समाज में अभिज्ञात होना, हमारे लिये हर्षनीय हैं।

इस सार्थक अनुभव प्राप्ति के साथ हम आशा करते हैं कि आने वाले महत्वपूर्ण समय में संस्थान निर्माण तथा वृद्धि-विस्तार जैसे उत्कृष्ट कार्यों में योगदान देने की हमारी सामूहिक क्षमता में दिन दिन प्रवर्धमान संवृद्धि होगी।

क्षेमा प्रकाश (संपादक)

### BIG NEWS

#### **Industry-Immersion Program begins a new journey in technology learning...**

In July 2014, when the Institute launched the blended Technical Education model at the B.Tech. level, the intent was to inspire students to build passion for technology to solve the grand technology challenges of the Indian Industry. One of the elements of the model is to have industry captains give the first lectures of each course to lay the cornerstone by giving the big-picture of sectoral technologies, industry needs and research opportunities. The model gained momentum with *Vanguard Lecture Series*, and now this has become a distinctive feature of the *blended Technical Education Model* for the B.Tech. Program of the Institute. Then, this was followed by the *Grand Technology Projects (GTPs) Competition* during January-March 2015, and interested students showed special excitement. Most students are now seeing merit in converting their *B.Tech. Projects* to *GTPs*.

Currently, five industry partners have joined the Industry Immersion Program at the B.Tech. level, namely:

- (1) Mahindra & Mahindra Limited, Mumbai;
- (2) Larsen & Toubro Limited, Mumbai;
- (3) Tata Motors Limited, Mumbai;
- (4) TVS Motor Company Limited, Chennai; and
- (5) Tata Power Limited, Mumbai.

Beginning 11 May 2015, 31 Students and 5 Faculty Members *immersed* inside these leading *technology Industries* as the first of the three successive summer engagement. The key features of this *Industry Immersion Program (IIP)* include:

- (a) **For Students:** Learning-by-doing, Experiential and cooperative learning, Working on live assignments under the tutelage of industry professionals, and Engaging in industry-supported projects spanning over 2½ years starting IV semester.
- (b) **For the Institute:** Faculty Members will be able to look beyond the Institute and develop linkages with Industry; Course curricula will become more real – a silent advantage; Faculty Members will have opportunities for research and consultancy projects that are current and impactful; and greater sensitivity to integrate industry needs in academia, to benchmark students and Faculty Members from Industry perspective, and to reflect and undertake needed correction in strategies of the Institute.

By choosing to join the *Industry Immersion Program*, select students have chosen a path different from others. It will put them on a pedestal of *competence* and *accomplishments* - beyond the qualification by the *B.Tech. Degree*.

## ACADEMICS

### **IIT Jodhpur rolls out new academic programs: M.Sc. & M.Tech.**

From July 2015, IIT Jodhpur is rolling out five new academic programs, namely:

- (1) M.Sc. in Chemistry,
- (2) M.Sc. in Mathematics,
- (3) M.Sc. in Physics,
- (4) M.Tech. in Electrical Engineering, and
- (5) M.Tech. in Mechanical Engineering.

Admissions into these programs are underway.

## R&D

### **New Infrastructure: Magnetic Property Measurement System (MPMS/SQUID)**

IIT Jodhpur has added yet another State-of-the-Art facility in the field of material characterization. Recently a magnetic property measurement system MPMS (SQUID) has been installed. This will provide a wide temperature range (2K–1000K) for both DC and AC magnetic measurements in conjunction with field dependent magnetic measurements. Such measurements will help in understanding magnetic properties and associated spin dynamics in magnetic materials.

### **New Research Projects**

Ambesh Dixit, Assistant Professor, Department of Physics, has been awarded the sponsored research project “Development of plasmonic metal hybrid electrode system for II-VI quantum dot sensitized solar cells (QDSSCs) realization of carrier multiplication for better efficiency” by the Department of Science & Technology (DST), Government of India. The duration of the project is 3 years (2015-18).

Ankita Sharma, Assistant Professor, Department of Humanities & Social Sciences, has been awarded the sponsored research project “Wisdom as cognitive and motivational-emotional heuristics in ecologically rational decision making” by the Department of Science & Technology (DST), Government of India. The duration of the project is 3 years (2015-18).

Mahesh Kumar, Assistant Professor, Department of Electrical Engineering, has been awarded the sponsored research project “Ion-Beam Synthesis and Characterization of Gallium Nitride Based Nanocrystals embedded in Si based Matrices for New-Generation Photodetector and Light-Emitter Applications” by the Department of Science & Technology (DST), Government of India. The duration of the project is 3 years (2015-18).

Sandeep K. Yadav, Assistant Professor, Department of Electrical Engineering, has been awarded the sponsored research project “Algorithms for Blind Signal Detection and Demodulation” by the Department Research & Development Organisation (DRDO), Government of India. The duration of the project is 3 years (2015-18).



## STUDENTS

### **Activities & Achievements**

Aniruddh Ramrakhyani, Suryateja Voruganti, and Alvin Roy Aliath, final year B.Tech. (Electrical Engineering) students were awarded Second Prize at the Student Innovation Pavilion of 5th International Exhibition and Conference GRIDTECH 2015, for their project “Short-time Transformer-less Dynamic Voltage Restorer”. They carried out the project under the guidance of Dhaval C. Patel, Assistant Professor, Department of Electrical Engineering. The prize was given away by Shri Girish Pradhan, Chairman, CERC. Supported by the Ministry of Power (Government of India), the event was organised by PGCIL from 8-10 April 2015 at Pragati Maidan, New Delhi.



Three of our III Year B.Tech. Students, Jinank Jain (CSE) and Navneet Mittal (CSE), and Manish Soni (EE), have been awarded Working Internship in Science and Engineering (WISE) for 2015 by Deutscher Akademischer Austauschdienst (DAAD), i.e., the German Academic Exchange Service.

Six of our III Year B.Tech. Students have been awarded Internship by Panasonic Corporation to work on two research projects. Saurav Kumar (EE) and Akarsh (EE), and Sonu, S. B. (ME) will work in the project “Simple Water Quality Monitoring Unit Concept analysis and Validation” project, and Thani Ashwanth (ME) and Kanak Shrivastava (ME), and Kunal Dadheech (CSE) will work in the project “Concept creation and analysis of Hybrid Sedimentation Continuous Flow Systems”. They will work on campus on the said projects supported by Panasonic Corporation at IIT Jodhpur.

## PERMANENT CAMPUS

### Construction Updates...

The Contractor, M/s. Nagarjuna Construction Company Limited, has begun work in April 2015, with the Central Public Works Department awarding them the work on a competitive public tender process. Construction has started of Phase 1 buildings at the Permanent Campus of IIT Jodhpur. The first set of buildings includes Boys Hostel, Type B Quarters, Chemistry, Computer Science & Engineering, Mechanical Engineering, and Physics departments' buildings, basic laboratories, Administrative Building and Library. Also, a 4mx5m reinforced concrete tunnel, one of the unique features of the campus, is a prominent service facility under construction. Some pictures of buildings under construction are as below.



Meanwhile, the construction of the project office building is completed. The first migration to the permanent campus will be the Solar Energy Research Team and the Infrastructure Engineering Team of the Institute. We cheer and encourage our Infrastructure Engineering team and Campus Development team to reach the timely completion of construction work.

## OUTREACH

### **Undergraduate Research Initiative 2015**

IIT Jodhpur started the Undergraduate Research Initiative (UGRI) Program in 2011 with the objective of promoting research and innovation among undergraduate students. This program is organised every summer; it helps participating students improve their professional knowledge and skills. Students from across the country were encouraged to participate in the UGRI Program. This year, 18 students are participating in the UGRI 2015. Students were selected on the basis of their academic achievements and the merit of the research proposal submitted by them, be it an analytical one or an experimental one. It began on 11 May 2015 and will end on 10 July 2015. Selected students are provided accommodation in Students' Hostel at IIT Jodhpur. During this period, the participating students are offered a token financial assistance to meet their basic expenses. During this 10 week program, the students worked on their projects under the mentorship of Faculty Members at IIT Jodhpur. Barun Pratiher, Assistant Professor (Mechanical Engineering) is organizing the event.

### **9<sup>th</sup> NatFoE Symposium @ IIT Jodhpur**

The National Frontiers of Engineering Symposium was launched by the Indian National Academy of Engineering (INAE) in 2006 as its annual flagship event. Past Symposia were organized at IIT Delhi (4-5 February 2006), IIT Delhi (31 March-1 April 2007), IIT Madras (24-25 October 2008), IGCAR Kalpakkam (16-17 September 2009), Siksha 'O' Anusandhan University, Bhubaneswar (3-5 August 2010), IIT Hyderabad (2-3 September 2011), IIT Guwahati (12-14 October 2012) and IIT Gandhinagar (5-6 September 2014). This year INAE hosted its Ninth edition, the 9<sup>th</sup> National Frontiers of Engineering Symposium (9NatFoE), in Jodhpur during 5-7 June 2015. This symposium was organized by Arun Kumar Singh, Assistant Professor, Department of Electrical Engineering, Indian Institute of Technology Jodhpur. The Symposium brought together about 30 active engineers (ages ~30-45 years) from companies, universities, and government laboratories to discuss leading-edge research and technical work across a range of engineering fields. Convening engineers from disparate fields and challenging them to think about developments and problems at the frontiers of areas different from their own, lead to a variety of desirable results. These include collaborative work, transfer of new techniques and approaches across fields, and establishment of contacts among the next generation of leaders in engineering. The format of Symposium encouraged informal, collective, as well as one-on-one discussions among participants. Speakers focused their talks on current cutting-edge research in their disciplines to colleagues outside their field and to address questions such as: What are the major research problems and distinctive tools of your field? What are the current limitations in advancing your field? How might insight derived from other fields contribute to overcoming these limitations?

This year, the young engineer participants and INAE fellows from 7 IITs, IISc, 4 DRDO laboratories and 6 industries participated in the event. The participating agencies were Indian Institute of Technology- Bombay, Delhi, Gandhinagar, Jodhpur, Kanpur, Roorkee, Ropar; IISc Bangalore, BISR Jaipur, DRDO laboratories – Defence Laboratory, Defence Electronics Application Laboratory, Vehicle Research and Development Establishment & Combat Vehicle Research and Development Establishment; and industries like Tata Motors, Reliance Power, Bidgley India Pvt. Ltd., Keysight Technologies, Nanosniff Technologies and Biomedical Engineering and Technology (Incubation) Center.

#### **Format**

The 9NatFoE Symposium was a two and a half days' event (starting the evening of 5 June 2015 and finishing in the afternoon of day 7 June 2015) conducted through evenings. The participants did steal a moment to visit the Mehrangarh Fort and some of them to the Umaid Bhavan Palace Museum.

#### **(a) Talks**

The 9NatFoE drew attention over four sessions on the following four technology challenges of India:

1. Arid Zone Technologies (e.g., Solar Energy, Water, and Green and Smart Buildings)
2. Critical Technologies (e.g., Defence Technologies, and Space Technologies)
3. Healthcare Technologies (e.g., Devices for Diagnostics and Treatment, and Therapeutics)
4. Automotive Technologies (e.g., Hybrid Transport, and Defense Transport Vehicles)

#### **(b) Panel Discussion**

It was on: "How to increase engagement of IITs in National Technology Missions?" The discussion focused on innovation eco-system problems and solutions, and policy changes required. The panellists were the Session Co-chairs and the discussion was moderated by the Symposium Co-chairs. This happened in the morning of 7 June 2015.

#### **(c) Pre-dinner Talks**

Two pre-dinner talks were given by Distinguished Engineers of the country, one each in the evenings of 5 June 2015 and 6 June 2015. The first one was delivered by Dr. B. N. Suresh, President, INAE, on *Space for National Development*, and the second one by Professor M. S. Ananth, Former Director, IIT Madras, on *Industry-Academia Interactions: Research Park at IIT Madras*.

## Ishaan Vikaas

A special program in the name of Ishaan Vikaas, an initiative of the Ministry of Human Resource Development, has been launched as a comprehensive plan to bring selected school girls and boys, from the North-Eastern states into close contact with the IITs and IISERs during their vacation periods with the objective of opening up the young minds and giving them a broad overview of the future paths which they would like to traverse. They should get a wider perspective on how they can take a much more proactive role in shaping their own future. At the same time, as a part of Ishaan Vikaas, an academic activity will take place to encourage internship for the engineering college students of North-Eastern states in various institutes of national importance.

From this year onwards, IIT Jodhpur is taking part in this Government's mission to give whole-hearted support for the success of this Program. During this summer, about 30 school children, accompanied by two school teachers and 5 B.Tech. Students, accompanied by one Faculty Member will visit IIT Jodhpur for two weeks (30 June - 9 July 2015) and eight weeks, respectively. In this context, a tentative schedule has been prepared for the school children, while each visiting B.Tech. Student will be assigned a well-defined research problem under the mentorship, guidance and supervision of the Faculty Members of respective department.

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## AWARDS & RECOGNITIONS

Amit Mishra, Assistant Professor, Department of Biology, IIT Jodhpur, and Mahesh Kumar, Assistant Professor, Department of Electrical Engineering, IIT Jodhpur, have been chosen by Indian National Science Academy (INSA) Council as one of the Founding Members of the Indian National Young Academy of Science (INYNAS). Their term will be for a period of five years, upto 31 December 2019.

Satyajit Sahu's (Assistant Professor, Department of Physics) research work on finding signatures of hidden information processing network, received recognition and has appeared in Scientific Reports published by Nature Publishing Group.

Amit Mishra has been selected for the "Young Researcher Award" in the category of (Cellular and Molecular Neuroscience) of the Venus International Foundation Faculty Awards (VIFFA) 2015. This award will be presented to him at the VIFFA 2015 event.

## INDUSTRY RELATIONS

An MoU has been signed between IIT Jodhpur and TVS Motor Company, Chennai on 9 June 2015. This MoU is aimed at expanding Industry-Academia Cooperation by offering an opportunity to the Faculty Members and Students at IIT Jodhpur to get industry experience, and in turn, to the senior professionals of TVS to get academic experience. This cooperation will aid in developing an industry-immersion based technical education model for the B.Tech. Program at IIT Jodhpur which will enable the B.Tech. Students and Faculty Members of IIT Jodhpur to immerse in the industry for 8 weeks each year, over three successive summers, in addition to the engagement in IIT Jodhpur for 8 semesters thereby offering the connect between the classroom and practice. It is expected that the Program will enable the Students of IIT Jodhpur to gain practical knowledge, technical experience and get sensitised to the professional environment in the industry before graduating. The Program will also offer an opportunity to the Students and Faculty Members of IIT Jodhpur to engage with industry live projects.

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IIT Jodhpur Newsletter



Vol. 01(1-2)  
2015