



## Tidings

A biannual newsletter published  
by the School of Engineering,  
Indian Institute of Technology Mandi  
September 2016

### Chief Patron

**Prof. T.A. Gonsalves**  
(Director, IIT Mandi)

### Editorial Team

**Dr. A. Dhar**

**Dr. A. Gupta**

**Dr. D. V. Patil**

**Dr. K. Sarkar**

**Dr. V. Balakrishnan**

### Contact

**Chairperson**  
School of Engineering,  
IIT Mandi, Kamand  
H.P. - 175005, India

**Phone:**  
01905-267138

**Fax:**  
01905-267138

**Web:**  
se.iitmandi.ac.in

**E-mail:**  
chairse@iitmandi.ac.in

## Placements '16

### VISITORS

**Mahindra & Mahindra,**  
**Coal India, Tecumseh,**  
**HPCL, BPCL, CNH**  
**Industrial, Sentiss**  
**Pharma, Cognizant,**  
**TCS Research**

### OFFERS

**64% of the eligible**  
**students were placed**

## Publications

(as per Scopus)

Till date: 489

During 2016: 64

## Present strength

Regular faculty: 22

Visiting professors: 1

Adjunct professors: 2

Mentor professors: 2

Ph.D.: 41

M.Tech./M.S.: 13/17

B.Tech. CE/ME: 50/138

## Chairperson's message...

Greetings!!

It gives me immense pleasure to present the 2nd issue of "TIDINGS". This newsletter is one of the ways in which we disseminate information relating to the School of Engineering of IIT Mandi. Presently, the School has 22 dynamic faculty members with an average age of 35 years. Their teaching and research activities extend over various areas of Civil Engineering, Mechanical Engineering and Material Science. The School offers B.Tech, M.Tech. M.S. & Ph.D. programmes.

The last semester was full of various academic, extracurricular and R&D activities by the students and faculty. As you read through this newsletter, you will realize that the School had a particularly successful semester. I would like to thank all my colleagues for their tireless efforts to help the school grow at a very steady pace.

*Dr. R. Kumar*

## 5WIP '16

IIT Mandi conducted its first 5-weeks long induction programme for freshmen of 2016 batch during 1st Aug - 2nd Sep. The event comprised of a string of scrupulously planned modules relating to the domains of language, soft skills, human values, visual thinking, computer proficiency and engineering. In addition to nurturing essential self-management skills, the modules were directed towards sensitizing the students towards the socio-economic challenges of society and nation at large. The programme also facilitated the development of cordial acquaintances amongst the freshmen and participating faculty members of the institute.

## New Courses

- Groundwater flow and contaminant transport
- Slope stability and retaining structures
- Geosynthetics and their application
- Engineering of ground modification
- Fundamentals of project management
- Geo-informatics
- Photo-geology and photogrammetry
- Analysis of indeterminate structures
- Concrete technology
- Advanced concrete science
- Introduction to heterogeneous computing
- Mechanics of energy system
- Manufacturing of energy systems

## New programmes

- **M.Tech. in Mechanical Engineering with specialization in Energy Systems**
- **M.Tech. in Energy Engineering with specialization in Materials**

The programmes aim to train necessary manpower for energy sector, design of new energy systems, improvement in existing energy systems, investigation of optimum conversion and utilization strategy for various primary energy sources. Admissions to both of these programmes have started from July'16 session.

## New faculty members



**Dr. Sunny Zafar** holds a Ph.D. from IIT Roorkee. His research interests include microwave material processing, surface engineering, experimental tribology, advanced welding and manufacturing processes and materials characterization



**Dr. Rik Rani Koner** holds a Ph.D. from IIT Guwahati. Her research interests include hybrid materials development for energy storage applications and water quality assessment. She has previously worked as a postdoctoral fellow at the universities of Case Western Reserve, USA and Leipzig, Germany



**Dr. Himanshu Pathak** holds a Ph.D. from IIT Patna. His research interests include computational fracture mechanics, mesh-free

algorithms and software development for crack growth analysis. He was previously working at the Shiv Nadar University, Noida

## Courses organized since Jan'16

**Short term course on Finite Element Method (25-28 Jul.)**

**1-day short workshop on Smart Materials and Structures (29 Jul.)**

**Organizer:** Dr. R. Kumar

**IIT Mandi Speakers:** Dr. Mohd. Talha, Dr. R. Ghosh, Dr. A. Gupta, Dr. K. Sarkar

**External Experts:** Prof. Wolfgang Seemann, Karlsruhe Institute of Technology, Germany; Prof. K. Gupta, IIT Delhi; Prof. T. Sundarajan, IIT Madras

## Distinguished visitors

**Prof. Vinayak Eswaran (IIT Hyderabad)** delivered an institute colloquium on "The Problem of Human Origins" on 8th March. He also advised students on career planning during an interaction session

**Prof. K Muralidhar (IIT Kanpur)** offered a short course on "Experimental Methods in Fluid and Thermal Science" during 16th-22nd May. He also interacted with the SE faculty

**Prof. Anindya Chatterjee (IIT Kanpur)** during his April 25-26 visit delivered a talk on "Simple models for frictional hysteresis", participated in faculty meetings and interacted with the research groups of SE

**Prof. Balthasar Novak, Prof. Harald Garrecht & Prof. Silke Wieprecht (University of Stuttgart, Germany)** visited IIT Mandi during 23-27 April for research collaborations in the area of Civil Engineering

**Prof. Wolfgang Seemann (KIT, Germany)** visited IIT Mandi during 26th July- 10th August to explore research collaborations

## Recently commenced projects

- Study of synergistic use of hydrogen and other alternative fuel in a dual fuel engine for emission reduction  
*PI: Dr. A. Dhar; Budget: INR 32.30 lakhs; Sponsor: DST; Duration: 3 years*
- Design of quieter hard disk and optical drive using sonic crystal  
*PI: Dr. A. Gupta; Budget: INR 31.66 lakhs; Sponsor: DST; Duration: 3 years*
- Solar energy storage using change material for space heating application  
*PI: Dr. P. Anil Kishan; Budget: INR 31.20 lakhs; Sponsor: DST; Duration: 3 years*
- Development of adaptive unstructured angular discretisation grid for the finite volume method of radiative transfer equation for collimated beam radiation  
*PI: Dr. P. Kumar; Budget: INR 25.97 lakhs; Sponsor: DST; Duration: 3 years*
- Nonlinear thermo-electro-elasticity analysis of geometrically imperfect functionally graded curved panels with material uncertainties  
*PI: Dr. Mohd. Talha; Budget: INR 14.85 lakhs; Sponsor: DST; Duration: 3 years*

## Continuing projects

- A study on photocatalytic activity in ferroelectric ceramics
- Glass-based materials for electrical energy storage applications
- Photocatalytic transparent glass nano/micro crystal composites for wastewater treatment  
*(Contact: Dr. R. Vaish)*
- Nonlinear analysis of piezo-laminated composite structure
- Development of analytical method to determine transient torques developed under faults and its grid interaction effects on turbine generator shaft system
- Design & development of high performance synchronous machine (PMSM) based drives for motion control  
*(Contact: Dr. R. Kumar)*
- Novel routes for nano-crystallization of energetic compounds  
*(Contact: Dr. J. K. Randhawa)*
- Site specific growth and nano manufacturing of aligned carbon nanotube (CNT) for device applications  
*(Contact: Dr. V. Balakrishnan)*
- Web enabled automatic medicine dispenser for the elderly
- Electromagnetic radiation response of metals and alloys during deformation at low temperature conditions  
*(Contact: Dr. V.S. Chauhan)*
- Arsenic and Heavy Metal Mapping in Water, Coal & Fly-Ash Samples from Urjanchal (Singrauli) area of central India  
*(Contact: Dr. D. P. Shukla)*

## Achievements made by students

**Dr. Satyanarayan Patel** has been awarded the prestigious *Humbolt Research Fellowship* to carry out post doctoral research work at *TU Darmstad*, Germany for a period of 2 years. His doctoral thesis was in the area of *multiclaoric effects in ferroelectric materials for solid state refrigeration devices*. He worked under the supervision of Dr. R. Vaish

**Mr. Chander Kant Susheel** successfully defended his Ph.D. thesis, "*Geometric nonlinear shape and vibration control of functionally graded smart structures*". He worked under the supervision of Dr. R. Kumar

**Mr. Tarun Kumar** successfully defended his M.S. dissertation, "*Finite element modeling and analysis of bi-stable piezoelectric energy harvester*". He worked under the supervision of Dr. R. Kumar

**Mr. Aditya Chauhan (M.S. student)** has been awarded with the Acta Student Award for primary contribution to the manuscripts, "Multicaloric effect in  $\text{Pb}(\text{Mn}_{1/3}\text{Nb}_{2/3})\text{O}_3\text{-}32\text{PbTiO}_3$  single crystals," *ActaMaterialia* 89 (2015), 384-395 and "Multicaloric effect in  $\text{Pb}(\text{Mn}_{1/3}\text{Nb}_{2/3})\text{O}_3\text{-}32\text{PbTiO}_3$  single crystals: Modes of measurement," *ActaMaterialia*, 97 (2015), 17-28. He worked under the supervision of Dr. R. Vaish

**Mr. Abhimanyu Sharma (Ph.D. student)** secured 10/10 in the GIAN course on *Optimization methods for groundwater resources management*, organized at IIT Guwahati

**Mr. Sumeet Kr. Sharma** and **Mr. Amit Kumar (Ph.D. students)** co-authored a research paper titled, "Detection of electromagnetic radiation in ferroelectric ceramics for non-contact sensing applications", in the *Journal of Alloys and Compounds*, Vol. 662, pp. 534-540. They work under the supervision of Dr. V. S. Chauhan

**Mr. Sharad Gupta (Ph.D. student)** co-authored a book chapter titled, "Geospatial technology for landslide hazard zonation and prediction", in *CSDMT, Environmental Applications of Remote Sensing*, pp. 281-308. He works under the supervision of Dr. D. P. Shukla

## Achievements & Outreach made by faculty

**Dr. R. Kumar** was conferred with the institute foundation day award for successfully coordinating the B.Tech. course Design Practicum for 4 years

**Dr. D. Swami, Dr. D. P. Shukla** and **Dr. V. S. Chauhan** were hosted by *TU Karlsruhe, TU Dresden & TU Braunschweig* in Germany for a period of 3 months as guest scientists under BMBF-funded program to facilitate research collaborations

**Dr. R. Vaish** visited *TU Darmstadt* between 11 May- 8 Aug. under the INSA-DFG exchange program

**Dr. K. Sarkar** visited *ILEK, University of Stuttgart* to facilitate research collaboration. He also guided a visiting M.Sc. student Ms. Ramona Sygulla

**Dr. D. V. Patil** visited the universities of *Edinburgh* and *Herriot-Watt* in Scotland for research collaborations and to attend an invited meeting. He also visited the *Hamburg University of Technology* in Germany, being awarded with a DST-ITS grant, to present a research paper at *ICMMES-2016*

**Dr. K. V. Uday, Dr. D. Swami and Dr. K. Sarkar** delivered invited talks on the topics of landslides, retaining structures, groundwater and FEA at *JNGEC, Sundernagar*

**Dr. D.V. Patil** received the TeslaK40 card, worth INR 2.50 lakhs, from nVIDIA, USA as an aid to support research and teaching activities

Faculty members worked dedicatedly towards the establishment of partnerships with private industry and state agencies like Himachal Pradesh State Electricity Board, Sutlej Jal Vidyut Nigam Ltd., Central Ground Water Board and Institute of Public Health

