THE IITG MONITOR



Indian Institute of Technology Guwahati

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Photonics 2010

PHOTONICS 2010, the tenth edition of the International Conference on Fiber Optics and Photonics was organised at IIT Guwahati during 11-15 December 2010. PHOTONICS, held biennially in India, is a premier conference in the emerging areas of Photonic science and technologies. The first Photonics conference (then named as CEOT-92 and later re-christened as PHOTONICS) was held at IISc Bangalore in 1992. Since then it has evolved to the leading forum and presently acknowledged as one of the most important conferences in this area.

Organised with an aim to bring together academicians, scientists, professionals, engineers and industrialists specialising in Fiber Optics and Photonics technologies from around the globe to explore recent technical advances in Photonics science and technology PHOTONICS 2010 attracted large number of participants across the globe. The keynote

speech was given by Prof. Philip Russell, Director, Max-Planck Institute for the Science of Light in Erlangen, Germany and Professor of Physics, University of Erlangen- Nuremberg. His speech was titled 'Photonic Crystal Fibres: Keeping Light and Matter in Focus'.

Among the plenary speakers, Satoshi Kawata, Osaka University, Osaka, Japan gave a speech on 'Plasmonics: A New Functional Photonics for Nano-Imaging and Analysis'; David Payne, University of Southampton, UK on 'High Power Lasers: Another Fibre revolution?'; Wayne H. Knox, University of Rochester, NY, USA on 'Ultrafast Science and Technology 2010';

Wolfgang Ecke, IPHT Jena, Germany on 'Fibre Optic Monitoring Supports Advanced Energetics'; Benjamin J. Eggleton, The University of Sydney, Australia on 'Delivering Photonics to Transform the New Information Age – Smaller, Faster and Energy Efficient'; Ortwin Hess, University of Surrey, UK on 'Controlled Slow and Stopped Light in Metamaterials'; Katsunari Okamoto, AiDi Corporation, Tsukuba, Japan on 'Evolution of Planar Waveguide Devices: Communication and Sensing Applications'.

□ New Admissions in PhD Programme

Apart from the invited and contributed paper presentations in oral and poster sessions, a technical exhibition was also organised concurrently with the conference. Dr. Sunil Khijwania, Associate Professor, Department of Physics was the General Chair and Dr. Ashwini K. Sharma, Assistant Professor, Department of Physics and Dr. Agam P. Vajpeyi, Assistant Professor, Department of Physics were the secretaries of the conference.



Prof. Philip Russell lighting the inaugural lamp in the presence of Prof. Gautam Barua, Director, IIT Guwahati (2nd from left) at the inaugural function of PHOTONICS 2010

Seminar/Conference/Workshop/Invited Talk Organised

The Department of Chemistry organised a national conference on Frontiers in Chemical Sciences (FICS)-2010, during 3-4 December 2010. The conference brought together eminent scientists, technologists and young researchers from across the country to provide a common platform for discussing their achievements and newer directions of research in the field of Chemical Sciences. The FICS-2010 conference deliberated on all branches of Chemical and allied sciences encompassing fields from theory and experiment to applications of Chemistry to modern science and technology. The scientific programme consisted of plenary sessions, invited talks, and poster presentations. Prof. Pushpito K. Ghosh, Director, Central Salt and Marine Chemicals Research Institute, Bhavnagar and Prof. S. Thayumanavan, University of Massachusetts, USA took part in the plenary sessions along with other well known researchers.

The Centre of Excellence in Integrated Landuse Planning and Water Resource Management under the Civil Engineering Department conducted a workshop on sustainable development of hilly urban area for mitigating water related hazards during 26-28 October 2010.

The Department of Mathematics organised a workshop on Advanced Instructional School on Numerical Linear Algebra sponsored by the National Board for Higher Mathematics (NBHM) during 2-22 December 2010.

The Department of Physics organised SERC Preparatory School on Modern Optics during 10-23 November. India needs sufficient number of well trained students in optics to play a leading role in the highly competitive scientific world. The aim of the school was to develop willingness and motivation among students, particularly in the north-

eastern part of India, to take up a research career in optics. The lectures were delivered by well-recognised experts who have several years of experience in teaching and research in optics. The school emphasised on training of theoretical and experimental components of optics. In addition to these, there were special seminars by distinguished scientists on frontier areas of optics.

Civil Engineering

Topic: Technical presentation on advances in triaxial soil testing; Speaker: Mr. Fred Evans, Wykeham Farrance Division, Controls Testing Equipment Ltd., UK; Date: 10 December 2010

Mathematics

Topic: Singularities; Speaker: Prof. R.V. Gurjar, TIFR, Mumbai; Date: 8 November 2010

Topic: Atsuji Spaces and Equivalent Versions; Speaker: Prof. A. B. Raha, Statistics and Mathematics Unit, ISI Kolkata; Date: 7 December 2010

Topic: Symmetry Studies: An Introduction to the Analysis of Structured Data in Application; Speaker: Prof. Marlos Viana, University of Illinois at Chicago, USA; Date: 15 December 2010

Centre for Energy

Topic: Translational Research and the R&D Institutions in India; Speaker: Dr. Jayanta Bishwa Sarma, United Kingdom; Date: 4 November 2010

Topic: Vertical axis wind turbine and its potential; Speaker: Anand Tembe and Shirish Potnis of SATARA Steel; Date: 22 December 2010

PanIIT Conclave 2010

IIT Guwahati participated in the PanIIT 2010 Conclave held at India Exposition Mart LTD, Greater Noida during 29-31 October 2010. PanIIT 2010 Conclave addressed the imperative of an emerging 'New India', where the speakers and delegates spoke on the various facets of growth and transformation and to identify ways and means to ensure sustainable and equitable use of available human and natural resources in India. A delegation of faculty members, students and staff headed by Prof. Gautam Barua, Director, IIT Guwahati, attended the conclave. An alumni meet of the Institute was organised at the conclave venue which was attended by many alumni of the Institute. Apart from other issues, discussions were held at the alumni meet on opening of Institute alumni association chapters in Bangalore, NCR and Mumbai and reunion of the BTech/BDes batches of 1999 and 2000 together in 2011.



Delegates and alumni of IIT Guwhati at the PanIIT Conclave 2010

Publications (Research Journal/Book/Book Chapter)

Biotechnology

Seema Patel, Naresh Kasoju, **Utpal Bora** and **Arun Goyal** "Structural analysis and biomedical applications of dextran produced by a new isolate Pediococcus pentosaceus screened from biodiversity hot spot Assam", *Bioresource Technology*, 101, 6852-6855, 2010

Rishikesh Shukla, Ilia Iliev and Arun Goyal

"Purification and characterisation of dextransucrase from Leuconostoc mesenteroides NRRL B-1149", *Biotechnology and Biotechnological Equipment*, 24(2)SE, 576-580, 2010

Ranjan Tamuli, Ravi Kumar, Rekha Deka

'Cellular roles of neuronal calcium sensor-1 and calcium/ calmodulin-dependent kinases in fungi,' *Journal of Basic Microbiology*, DOI: 10.1002/jobm.201000184, November 2010

P. Srivastava, N. Kasoju, **U. Bora** and **Rakhi Chaturvedi** "Accumulation of Betulinic, Oleanolic, and Ursolic acids in In vitro Cell Cultures of Lantana camara L. and their Significant Cytotoxic Effects on HeLa Cell Lines", *Biotechnology and Bioprocess Engineering*, 15 (6), 1038-1046, December 2010

P. Srivastava and Rakhi Chaturvedi

"Simultaneous determination and quantification of three pentacyclic triterpenoids-betulinic acid, oleanolic acid, and ursolic acid-in cell cultures of Lantana camara L.", *In Vitro Cellular and Developmental Biology – Plant*, 46 (6), December 2010

M. Singh and Rakhi Chaturvedi

"Improved clonal propagation of Spilanthes acmella Murr. for production of scopoletin", *Plant Cell, Tissue and Organ Culture*, 103 (2), 243-253, November 2010

Urmila Saxena, Mitun Chakraborty, **Pranab Goswami** "Covalent immobilisation of cholesterol oxidase on self-assembled gold nanoparticles for highly sensitive amperometric detection of cholesterol in real samples", *Biosensors and Bioelectronics*, DOI: 10.1016/j.bios.2010.12.009, 2010

Preety Vatsyayan and Pranab Goswami

"Acidic pH conditions induce dissociation of the haem from the protein and destabilise the catalase isolated from Aspergillus terreus MTCC 6324", *Biotechnology Letters*, DOI: 10.1007 /s10529-010-0442-2, 2010.

Preety Vatsyayan, Sandip Bordoloi, **Pranab Goswami** "Large catalase based bioelectrode for biosensor application", *Biophysical Chemistry*, 153, 36-42, 2010

Chemical Engineering

A. Ashok Kumar and Anugrah Singh

"Dynamics of bi-dispersed settling suspension of non-colloidal particles in roatting cylinder", *Advanced Powder Technology*, 21, 641-651, 2010

Civil Engineering

A. S. Kalamdhad, M. Ali and M. Khwairakpam "Thermal analysis of rotary drum composting of different

waste combinations", International Journal of Environmental Science and Engineering Research (IJESER), 1(1), 38-44, 2010

Satish Chandra, Vishal Sharma and **Rajan Choudhary** "Characterisation of Fly Ash Bituminous Concrete Mixes", *Journal of Materials in Civil Engineering*, 22 (12), 1209-1216, December 2010

K. Dasgupta, R. Goswami and C. V. R. Murty "Seismic Shear Design of Deep RC Vertical Members: A Review of Codal Provisions", *The Indian Concrete Journal*, 84 (9), 39-50, 2010

K. Dasgupta, R. Goswami and C. V. R. Murty "Seismic Shear Design of Deep RC Vertical Members: Recommended Provisions for Indian Codes", *The Indian Concrete Journal*, 84 (9), 59-63, 2010

Bimlesh Kumar and Achanta Ramakrishna Rao "Performance comparison of batch and continuous flow surface aeration systems", *Korean Journal of Chemical Engineering*, 27 (6), 1796-1800, 2010

Bimlesh Kumar

"Energy Dissipation and Shear Rate with Geometry of baffled surface aerator", *Chemical Engineering Research Bulletin*, 14 (2), 92-96, 2010

Bimlesh Kumar, G. Sreenivasulu and A. Ramakrishna Rao "Regime Relationships of Alluvial Channel with Seepage", *Journal of Hydraulic Research*, 48 (3), 315-319, 2010

Bimlesh Kumar, G. Sreenivasulu and A. Ramakrishna Rao "Design of Seepage affected Incipient Alluvial Channels using Radial Basis Function network", *Journal of Hydrology and Hydromechanics*, 58 (2), 102-113, 2010

Bimlesh Kumar and Ankit Bhatla

"Genetic algorithm optimised neural network prediction of friction factor in mobile bed channel", *Journal of Intelligent Systems*, 19 (4), 317-337, 2010

Bimlesh Kumar, G. Sreenivasulu and A. Ramakrishna Rao "Incipient Motion Design of Sand Bed Channels affected by Bed suction", *Computer and Electronics in Agriculture*, 74 (2), 321-328, 2010

Humanities and Social Sciences

N. Tripathi, S. Nongmaithem, L. Ristic, M. Mitkovic and J. Zdravkovic

"Assertiveness and personality: Cross-cultural differences in Indian and Serbian male students', *Psychological Studies*, 55 (4), 330-338, 2010

Mathematics

Rupam Barman and Anupam Saikia

"A note on Iwasawa mu-invariants of elliptic curves", *Bulletin* of *Brazilian Mathematical Society* (N.S.), 41 (3), 399–407, 2010

Rupam Barman and Anupam Saikia

"Coefficients of a p-adic measure on (Z_p)^n and Iwasawa lambda-invariant of its Gamma transform", *Asian-European Journal of Mathematics*, 3 (4), 545-554, 2010

Anupam Saikia

"Ribet's construction of a suitable cusp eigenform", Proceedings of Workshop on Iwasawa Theory of Totally Real Fields, Ramanujan Mathematical Society, 12, 49-65, 2010

G. Barua and Swaroop N. Bora

"Hydraulics of a partially penetrating well with skin zone in a confined aquifer", *Advances in Water Resources*, 33, 1575-1587, December 2010

R. V. Gurjar and V. Wagh

"Relations between multiplicity and divisor class group for rational surface singularities", *International Journal of Mathematics, World Scientific*, 21 (7), 915-938, October 2010

Mechanical Engineering

Sachin D. Kore, P. P. Date, S. V. Kulkarni, Satendra Kumar, Dolly Rani, M. R. Kulkarni, S. V. Desai, R. K. Rajawat, K. V. Nagesh and D. P. Chakravarty

"Application of Electromagnetic Impact Technique for Welding Copper-to-Stainless Steel Sheets", *International Journal of Advance Manufacturing Technology*, DOI: 10.1007/ s00170-010-2981-z, October 2010

S. K. Singh and R. Tiwari

"Identification of a Multi-Crack in a Shaft System using Transverse Frequency Response Functions", *Mechanism and Machine Theory*, 45, 1813-1827, DOI: 10.1016/ j.mechmachtheory.2010.08.007, December 2010

Physics

Bappaditya Pal and P. K. Giri

"High temperature ferromagnetism and optical properties of Co doped ZnO nanoparticles", *Journal of Applied Physics*, 108, 084322, 2010

Dilip K. Singh, Parameswar K. Iyer and P. K. Giri

"Diameter dependence of oxidative stability in multiwalled carbon nanotubes: Role of defects and effect of vacuum annealing", *Journal of Applied Physics*, 108, 084313, 2010

Soumen Dhara and P. K. Giri

"Self-catalytic growth of horizontal and straight Si nanowires on Si substrates using a sputter deposition technique", *Solid State Communication*, 150, 1923, 2010

Dilip K. Singh, P. K. Iyer and P. K. Giri

"Diameter dependence of interwall separation and strain in multiwalled carbon nanotubes probed by X-ray diffraction and Raman scattering studies", *Diamond and Related Materials*, 19, 1281, 2010

Book

Chemical Engineering

Bishnupada Mandal and Arun Jain

Removal of Acid Gas Impurities using Tunable Alkanolamine Solvent: Modelling and Simulation, LAP Lambert Academic Publishing, Germany, December 2010

Book Chapters

Mechanical Engineering

The following two contributions to IUTAM bookseries published in November 2010 by Springer (ISBN 978-94-007-0019-2) in relation with IUTAM Symposium on Emerging Trends in Rotor Dynamics, held in New Delhi, March 2009, Ed. K. Gupta:

- 1. **R. Tiwari** and V. Chakravarthy, 'Identification of the Bearing and Unbalance Parameters from Rundown Data of Rotors', 479-489
- 2. S. K. Singh and **R. Tiwari**, 'A Multi-Crack Identification Algorithm Based on Forced Vibrations from a Shaft System', 505-513
- **S. D. Kore**, J. Imbert, M. Worswick, Y. Zhou 'Electromagnetic Welding of Mg Alloys', *Welding and Joining of Magnesium Alloys*, Ed. L. Liu, Woodhead Publishing, Cambridge, October 2010

Campus Placement

The campus placement scenario at IIT Guwahati for the year 2010-2011 has been very encouraging. A total of 74 companies from various sectors have already participated in the recruitment process. A total of 552 students of which 328 are BTech/BDes and 224 MTech/MDes students are taking part in the campus placement. The feedback on the performance of the students received from the recruiters is excellent.

The overall placement of the BTech and BDes students has been very good with majority of them have been placed. Similarly, the recruitment of the MTech and MDes branches have also picked up recently. The highest pay package offered is ₹ 20 lakhs, and the average salary stands at ₹ 9.5 lakhs. The placement session will continue upto May 2011.

World Philosophy Day Celebrated

The Department of Humanities and Social Sciences celebrated World Philosophy Day with the sponsorship of ICPR on 30 November 2010. Prof. Ashok Vohra, former HOD, Department of Philosophy, DU, gave the keynote lecture on 'Lifestyle, Value and Meaning of Life'. The Department also felicitated a renowned philosopher and a dedicated philosophy teacher who taught more than a decade in Cotton College, Guwahati, Dr. Jyotsna Bhattacharjee for her pioneering work in popularising philosophy among young students and researchers of the region. Dr. Bhattacharya addressed the students and the faculty and enthralled them with her scholarly talk.

Annual Lecture Series

Prof. Emeritus André Béteille delivered the sixth lecture on 'India's Middle class' in the Annual Lecture Series of the Department of Humanities and Social Sciences on 8 November 2010. Prof. André Béteille's talk was well attended by faculty and students across disciplines.

Memoranda of Understanding

IIT Guwahati signed MoUs on exchange of faculty, student, researcher and research collaboration with the following universities:

- 1. Paris Tech-Paris Institute of Science and Technology, Paris,
- 2. University of Pardubice, Czech Republic

An MoU with Wipro Technologies for research and technical paper creations, and two MoUs with TCS Limited were signed for technology development and research grant to scholars of the department of Computer Science and Engineering of the Institute.

New Projects Started

Biotechnology

Title: Prebiotics and neutraceuticals production from Lactic acid bacteria

Sponsor: Indo-Bulgarian joint project, Department of Science and Technology

Principal Investigator: Prof. Arun Goyal

Title: Bioinformatics Infrastructure Facility for creating

Bioinformatics Centre

Sponsor: Department of Biotechnology

Coordinator: Prof. Arun Goyal Deputy Coordinator: Dr. V. K. Dubey

Civil Engineering

Title: Seepage effect on Regime condition of Alluvial Channel Sponsor: SERC, Department of Science and Technology Principal Investigator: Dr. Bimlesh Kumar

Mechanical Engineering

Title: Exploratory Studies on Magnetic Pulse Welding of Tubes

Sponsor: AMVE Panel, AR&DB

Principal Investigator: Prof. P. P. Date, IIT Bombay

Co-Principal Investigator: Prof. S. V. Kulkarni, IIT Bombay and

Dr. S. D. Kore, IIT Guwahati.

Physics

Title: Development of high quality SiC and Diamond thin films using hot wire chemical vapor deposition techniques for plasma diagnostics applications

Sponsor: Board of Research in Fusion Science, IPR, Gandhi

Principal Investigator: Dr. Pratima Agarwal Co-Principal Investigator: Professor Alika Khare

Title: Studies on Rhodium coated mirror deposited by Pulsed **Laser Deposition**

Sponsor: Board of Research in Fusion Science and Technology (BRFST), Institute for Plasma Research, Ganghinagar

Principal Investigator: Prof. Alika Khare

Achievement/Award/Felicitation

Prof. Arun Goyal, Department of Biotechnology was awarded Dr. C. V. Raman Award for the 4th IES National Young Teachers Excellence Award 2010 by IES Group of Institutions, Bhopal on 27 November 2010.

Dr. Kannan Pakshirajan, Associate Professor, Department of Biotechnology, was awarded the Indian National Science Academy (INSA) Medal for Young Scientists 2010 at the academy's annual general meeting held at Indian Institute of Science, Bangalore, during 28-30 December 2010.



Dr. Pakshirajan receiving the award

Dr. Anugrah Singh, Associate Professor, Department of Chemical Engineering, has been awarded Indo-US Science and Technology Forum fellowship for the year 2010 to visit California Institute of Technology, USA for six months starting from February 2011.

Dr. Sachin D. Kore, Assistant Professor, Mechanical Engineering was felicitated at International Workshop on Electromagnetic Forming Technique 2010 by Dr. A. P. J. Abdul Kalam, former President of India, held at Anna University, Chennai, 11-12 November 2010.

Short Term Courses/Trainings

The following Quality Improvement Programme short term courses were organised by various Departments and Centres of the Institute

Course Title: Road Maintenance and Safety, Department: Civil Engineering, Coordinator: Dr. A. K. Maurya and Dr. Rajan Choudhary, Period: 11-15 October 2010

Multimedia Communication, Computer Science and Engineering, Prof. Sukumar Nandi and Dr. Arijit Sur, 20-26 October 2010

Ergonomics and Technology Applications, Design, Dr. S. Karmakar and Prof. D. Chakrabarti, 25-29 October 2010

Seismic Design of Building and Bridges, Civil Engineering, Dr. A. Chakraborty and Dr. K. Dasgupta, 29 November - 3 December 2010

Advances in Biofuel Research, Centre for Energy and Department of Chemical Engineering, Dr. K. Mohanty and Dr. V. V. Goud, 29 November - 3 December 2010

Scientific Computing in Chemical Engineering, Chemical Engineering, Dr. P. Balasubramaniam and Dr. S. K. Majumder, 6-10 December 2010



Participants of the short term training programme on Modern Surveying Techniques



Participants of the short term course on Analytical and Numerical Solutions of Differential Equations

Analytical and Numerical Solutions of Differential Equations, Mathematics, Dr. S. Natesan, 6-10 December 2010

Rotors Supported on Hydrodynamic bearings, Mechanical Engineering, Dr. S. K. Kakoty, 6-10 December 2010

Science Technology and Society, Humanities and Social Sciences, Dr. Sambit Mallik and Dr. Liza Das, 13-17 December 2010

Recent Advancement of Intelligent Materials and its Applications, Mechanical Engineering, Dr. D. Bandopadhya and Dr. D. Chakrabarty, 14-18 December 2010

Department of Civil Engineering organised a short term training programme on 'Modern Surveying Techniques' between 7-11 and 13-17 of December 2010 for a group of officials of Assam Government. The programme was sponsored by Deprtment of Revenue and Disaster Management, Government of Assam. The course was coordinated by Dr. Rajib Kumar Bhattacharjya.

Appointments



Mr. Tony Jacob Assistant Professor Electronics and Communication Engineering



Mr. Praveen Tripathy Assistant Professor Electronics and Communication Engineering

Student Achievement

Sri Sahil Salunke, student of undergraduate (BTech) programme in Mathematics and Computing, won the Classmate Ideas for India Challenge – a nationwide contest organised by ITC to make the youth of India think and come out with ideas which could change India for the better. Sahil was among the five best award winners chosen among over 60,000 entries received nation wide.



Sahil was awarded a trophy and a cash prize of rupees one lakh, an international study tour, and an internship with ITC or any of the partner organisations which include CII-ITC centre, Tony Blair Faith Foundation, World Wide Fund for Nature and more.

Other Events

The Department of Humanities and Social Sciences organised an interactive session with visiting scholars and dignitaries from Bangladesh on 23 November 2010. Prof. Sirajul Islam, former Professor of History, Dhaka University and author; Mr. A. K. M. Farook, Ambassador; Prof. Shaheen M. Kabir, Professor of English, Jahangirnagar University along with others took part in the panel discussion. A good number of faculty members and students of the Institute participated in the programme.

Inter IIT Sports Meet

IIT Guwahati students participated in the 46th Inter IIT sports meet 2010 held at IIT Delhi winning six gold, seven silver and three bronze medals. Golds were won in high jump, pole vault, javelin, 400m run (w), 400m free style and cricket. Golla Nani Babu broke the long unchallenged record in the pole vault in Inter IIT sports meet.

Staff Sports Meet

In the Inter IIT Staff sports meet held in IIT Delhi from 23-26 December 2010 the faculty and staff members of the Institute fared well with one gold in discuss throw and three bronze in shotput, 100m dash and lawn tennis.

PhDs Completed During October-December 2010

Department/Centre	No. of PhDs
Biotechnology	1
Civil Engineering	3
Design	2
Humanities and Social Sciences	1
Mathematics	1
Mechanical Engineering	3
Centre for the Environment	1

New Admissions in PhD Programme

Department/Centre	No. of students
Biotechnology	7
Chemical Engineering	3
Chemistry	12
Civil Engineering	8
Computer Science and Engineering	5
Electronics and Communication Engineerin	g 5
Humanities and Social Sciences	6
Mathematics	2
Mechanical Engineering	13
Physics	7
Centre for Nanotechnology	2
Total	70



A view of the exhibition of works of the students of Design Department held in November 2010



The new Conference Centre with four halls and a utility space has recently become functional.



A view of the Lecture Theatre



Newly completed faculty quarters by the serpentine lake



Contingent of IIT Guwahati taking part in the march past of the Inter IIT Staff Sports Meet held at IIT Delhi



The gold medal winning cricket team of IIT Guwahati at the Inter IIT Students Sports Meet held at IIT Delhi

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