

THE IITG MONITOR



Indian Institute of Technology Guwahati

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Techniche

Techniche-2010 – the annual techno-management festival of the Institute – was organised during 2–5 September 2010 with great success. The twelfth edition of Techniche which followed the motto – Revolutionising Youth, Redefining Technology, was hosted with an aim to provide India's budding engineers, entrepreneurs, innovators and technocrats with a platform to showcase their respective skills. It pitted them against the fiercest of competitors, displayed the marvels of modern technology and gave an opportunity to interact with eminent personalities and intelligentsia from around the world.

One of the main attractions of Techniche was the Lecture Series, where eminent scientists, Nobel laureates, entrepreneurs and

intelligentsia from around the world delivered lectures on their work, shared their experiences and thus greatly inspired the students. This year people from diverse spheres of technology and management visited the Institute. Among them are Mr. Richard M. Stallman (Father of GNU project, a free Unix-like operating system and founder of Free Software Foundation), Mr. Nathan Schulhof (Father of MP3 player industry. He developed the first word processor for Apple Computers Inc.), Dr. Ferid Murad (1998 Nobel laureate in Medicine) all of whom were on their first ever Indian visit. Air Marshal P.K. Borbora (Vice Chief of the Air Staff, Indian Air Force), Mr. Kiran Karnik (Former President of NASSCOM and the guiding force behind the outsourcing



Dr. Ferid Murad



Air Marshal P. K. Borbora



Mr. Richard M. Stallman



Prof. Gautam Barua, releasing the souvenir



Mr. Kiran Karnik (right)



Panel discussion



Exhibition Stall

industry in India) and Mr. Yashavant Kanetkar (Computer Science author and Director, KICIT) also graced the occasion with their presence.

The three day event started with the well known Guwahati Half Marathon promoting awareness about the environment among youth. Mr. Aakash Chopra, former batsman of the Indian Cricket Team and Mr. Mark Toorock, founder of American Parkour (APK)–the US based stunt group were the ambassadors of the Guwahati Half Marathon. Mr. Mark Toorock and his team members of the American Parkour participated in multiple workshops demonstrating their skills and techniques to huge crowds and enthralled them.

Some of the events Techniche-2010 witnessed were junkyard war, robotics, paper presentations, brain churning quizzes, online events, panel discussions, parliamentary debates, management events, demonstration of the National Disaster Response Force, and the international school olympiad technothlon which had a participation of over 1.5 lakh school students.



Guwahati Half Marathan



Demonstration by American Parkour Group



Artistes performing during the Laser Show

Design Philosophy Behind the Indian Rupee Symbol



Mr. D. Udaya Kumar, Assistant Professor, Department of Design has designed the symbol for the Indian Rupee. His design has been selected from among five short listed symbols, by the Government of India. It is worth mentioning here that Mr. Kumar has been selected among the 35 achievers under 35 by *The India Today* in its issue dated 4 October 2010.

This is what Mr. Kumar has to say on the design philosophy behind the Indian Rupee Symbol –

The symbol indicates Devanagiri letterform 'Ra' and partly Roman capital letter 'R' (without the vertical stem). It is derived from the word Rupiah in Hindi and Rupees in English, both denote the currency of India. The letter is drawn with a thick and thin stroke reflecting the calligraphic nature of Indian scripts. The use of shiro rekha of Devanagiri script is unique to India and is not seen in other scripts of the world. The symbol is designed in harmony with the other existing currency symbols of the world. Though it is in harmony, the design clearly distinguishes itself from other designs by the use of the Devanagiri script which brings out the characteristics of Indian design.

The concept is based on the tricolor of our Indian flag and arithmetic symbol 'equal to'. The above two horizontal lines with the equal negative white space between them represent our national flag. The arithmetic sign is incorporated because we always compare one's currency value with the currency value of other nations. The economy of a nation is always relative to others. These lines also represent balance in the economy—we want our economy to be balanced and stable forever.

Conference/Seminar Participations, Paper Presentations and Sessions Chaired

Civil Engineering

Prof. Anjan Dutta presented a paper titled "Identification of influence of infill walls on lateral stiffness of RC framed structure" (co-authored with Mr. Arun Ch. Borsaikia, Scientific Officer and Prof. S.K. Deb) in the 5th International Civil Engineering Conference (CECAR5) together with the Australasian Structural Engineering Conference (ASEC2010) in Sydney, 8–12 August 2010.

Prof. Anjan Dutta and **Prof. S.K. Deb** presented a paper titled "Multiple crack identification in a beam using genetic algorithm" (co-authored with Mr. Kamal Kumar) in the 10th International Conference on Computational Structures Technology, held in Valencia, Spain, 14–17 September 2010.

Dr. Kaustubh Dasgupta, Assistant Professor, presented a poster for the paper titled "Improvement in seismic configuration of slender reinforced concrete wall piers on isolated footings" (co-authored with C.V.R. Murty) in the 9th US National and 10th Canadian Conference on Earthquake Engineering at Toronto, Canada during 25–29 July 2010.

Dr. Hemant B. Kaushik, Assistant Professor, presented two papers titled "Influence of ductile detailing on behavior of masonry infilled RC frames" (co-authored with Mr. Sagar V. Manchanda) and "Effect of cracked section on lateral response of RC structures" (co-authored with Mr. Ashish L. Mane) at the 14th European Conference on Earthquake Engineering held at Ohrid, Macedonia during 30 August – 3 September 2010 .

Dr. Hemant B. Kaushik, Assistant Professor, co-chaired a session on "New techniques, technologies and experimental studies" at the 14th European Conference on Earthquake Engineering held at Ohrid, Macedonia during 30 August – 3 September 2010.

Prof. Arup Kr. Sarma presented a paper "Water Resources Development in India: Need, Scope and Constraints" at the International Workshop on Water Management organised by TIFAC, DST and IIASA, Austria during 3–4 September 2010 in New Delhi.

Humanities and Social Sciences

Prof. Archana Barua attended Conference on Hermeneutics and Science: Worlds, Realities and Life at Sigmund Freud University, Vienna, Austria during 26–29 August 2010.

Prof. Archana Barua gave a lecture on Phenomenology and Indian Philosophy at Institute for Philosophy, Dresden University of Technology, Germany on 1 September 2010.

Dr. Mrinal Kanti Dutta presented a paper titled "Institutional factors behind effectiveness of irrigation: A study in the Brahmaputra valley of eastern India" in the 12th Annual Conference of International Network for Economic Research (INFER) organised by University of Muenster, Germany during 3-5 September 2010.

Dr. Sambit Mallick, Assistant Professor, presented a paper titled "Research in science and technology in the era of liberalisation in India: institutional and policy issues" (co-authored with Dr. Liza Das) at the 17th World Congress of Sociology of International Sociological Association held at Gothenburg, Sweden from 11–17 July 2010.

Dr. Nachiketa Tripathi, Associate Professor, presented a paper titled "Organizational learning and the role of contextual variables in Indian public sector organisations: a qualitative study" at the IAAP Division 3 Psychology and Societal Development invited symposium on Globalization and Research Paradigms: Need for Reflection at the 27th International Congress of Applied Psychology held at Melbourne, Australia during July 11–16, 2010.

Mathematics

Prof. Rafikul Alam delivered an invited talk at the special session on Numerical Functional Analysis organized as a part of the ICM Satellite Conference on Functional Analysis and Operator Theory held at ISI, Bangalore during 8–11 August 2010.

Dr. Swaroop Nandan Bora, Associate Professor, presented a paper titled "Scattering of oblique water waves in a two-layer fluid flowing through a channel with bottom deformation" at the International Congress for Mathematician 2010 (ICM 2010) held at Hyderabad during 19–27 August 2010.

Dr. Srinivasan Natesan, Associate Professor, presented a paper titled "Parameter-uniform hybrid numerical scheme for singularly perturbed problems of mixed parabolic-elliptic type" and chaired a session at the International Congress for Mathematician 2010 (ICM 2010) held at Hyderabad during 19–27 August 2010.

Prof. Rajen K. Sinha chaired a session on Numerical Analysis and Scientific Computing at International Congress for Mathematician 2010 (ICM 2010) held at Hyderabad during 19–27 August 2010.

Dr. P.A.S. Sree Krishna, Assistant Professor, participated in the International Congress for Mathematician (ICM 2010) held at Hyderabad during 19–27 August 2010.

Mechanical Engineering

Prof. Santosha K. Dwivedy presented a paper titled "Numerical investigation of chatter in rolling mill" (co-authored with S. S. Dhutekar, P. Eberhard) at the 4th International Conference on Advanced Computational Engineering and Experimenting (ACE-X 2010) held in Paris, France during 8–9 July 2010.

Prof. Santosha K. Dwivedy presented a paper titled "Free vibration control of MRE embedded viscoelastic cored sandwich beam with time varying magnetic field" (co-authored with Mr. B. Nayak and Dr. K.S.R.K. Murthy) at the ASME 10th Biennial Conference on Engineering Systems Design and Analysis (ESDA 2010) held at Yeditepe University,

Istanbul, Turkey during 12–14 July 2010.

Prof. Santosha K. Dwivedy visited Institute of Engineering and Computational Mechanics, Stuttgart University, Germany, during May–July 2010 under the Excellence in Simulation Technology (SimTech) Programme and delivered two seminars namely “Nonlinear vibration of viscoelastic and magnetoelastic beams” on 22 June 2010 and “Chatter in cold rolling mill” on 1 July 2010.

Physics

Dr. Subhradip Ghosh, Associate Professor, presented two papers titled “Complex magnetic interactions in off-stoichiometric Ni₂MnGa alloys” and “First principles based calculations of phonon spectra in substitutionally disorder alloys” at the Psi-K 2010 conference held at Berlin, Germany during 12–16 September 2010.

Prof. S. Ravi delivered an invited talk titled “Spintronics and

diluted magnetic semiconductors” in the Second National Conference on Advanced Materials held at PSN College of Engineering, Tirunelveli, Tamil Nadu during 25–27 August 2010.

Energy

Ms. Lepakshi Barbora, Scientific Officer, was invited as a speaker to the All India Seminar on New Renewable Energy Sources held in Shillong, Meghalaya, on 18 September 2010.

Mr. Pankaj Kalita, Scientific Officer, delivered a talk on “Improved cooking stove” in Capacity Building on Rural Energy Service Delivery for NGO Professionals at Guwahati on 13 August 2010. The event was organized by Resource Centre for Sustainable Development, Guwahati.

Mr. Pankaj Kalita, Scientific Officer, was invited as a speaker to the national workshop on Energy Efficiency, Codes and Ratings in Building held in Shillong, Meghalaya, during 16–17 September 2010.

Publications (Research Journal/Book/Book Chapter)

Research Journal

Chemical Engineering

M. K. Singh and **S. K. Majumder**

“Theoretical study on effect of operating parameters on mass transfer in bubbly Flow”, *Journal of Engineering and Applied Science*, Vol: 5 (2), pp 163-170, 2010

S. K. Majumder, S. Ghosh, A. K. Mitra and G. Kundu

“Gas-Newtonian and gas-non-Newtonian slug flow in vertical pipe: Part-I: Gas holdup characteristics”, *International Journal of Chemical Reactor Engineering*, Vol: 8 (A117), pp 1-23, 2010

Civil Engineering

Richard H. Scott, **Sajal K. Deb** and **Anjan Dutta**

“Strain distribution in external reinforced concrete beam-column joint subjected to cyclic loading”, *Concrete*, Concrete Society, UK, Vol: 44 (7), pp 57-59, 2010

Humanities and Social Sciences

Nachiketa Tripathi

“Privacy and control: Are they related?”, *Psychological Studies*, Vol: 55 (2), pp 108-117, 2010

Mathematics

J. Mohapatra, **Srinivasan Natesan**

“Parameter-uniform numerical method for global solution and global normalised flux of singularly perturbed boundary-value problems using grid equidistribution”, *Computers and Mathematics with Applications*, Vol: 60, pp 1924-1939, July 2010

S. Mohapatra and **Swaroop Nandan Bora**

“Reflection and transmission of water waves in a two-layer fluid flowing through a channel with undulating bed”, *ZAMM (Journal of Applied Mathematics and Mechanics / Zeitschrift für Angewandte Mathematik und Mechanik)*, July 2010, DOI: 10.1002/zamm.200800216

Energy

Lepakshi Barbora, Rupesh Singh, Nivedita Shroti and **Anil Verma**

“Synthesis and characterization of neodymium oxide modified nafion membrane for direct alcohol fuel cells”, *Materials Chemistry and Physics*, Vol: 122, pp 211-216, 1 July 2010

Book

Sambit Mallick

The Intellectual Property Rights Regime and Scientific Practices: Response of the Scientific Community in India, Germany: LAP Lambert Academic Publishing AG & Co. KG, 2010

Book Chapter

Sambit Mallick

“Changing Protocols of IPRs and Scientific Practices in the Age of Liberalisation: The Case of Plant Molecular Biology in India” in *Liberalising Research in Science and Technology: Studies in Science Policy*, eds Nadia Asheulova, Binay Kumar Pattnaik, Eduard Kolchinsky and Gregory Sandstrom, The Russian Academy of Sciences, Saint-Petersburg, pp. 437-473, 2010

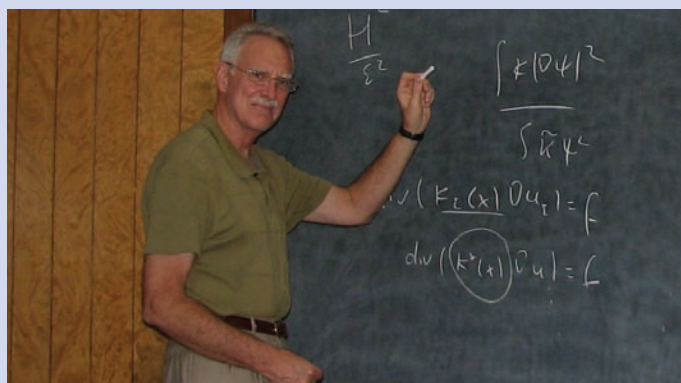
Memoranda of Understanding

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

1. Georg-August-University Gottingen (GAUG), Germany in July 2010.
2. The University of Nottingham, UK in August 2010

Seminars/Conferences/Workshops/Invited Talks Organised

The Department of Mathematics organised an International Workshop on Recent Advances in Computational Fluid Dynamics (RACFD), a satellite event of ICM 2010 during 30 August – 2 September 2010. The workshop aimed at bringing researchers together to discuss recent advances in Computational Fluid Dynamics (CFD) techniques and their applications to real-world problems. Various leading experts reviewed some of the major topics and new trends in this area. Some of them are Prof. Jerry L. Bona, University of Illinois at Chicago; Prof. Suresh Madhusudan Deshpande, Jawaharlal Nehru Centre for Advanced Scientific Research; Prof. Yalchin Efendiev, Texas A & M University; Prof. Jitesh S.B. Gajjar, University of Manchester; Prof. Roddam Narasimha, Jawaharlal Nehru Centre for Advanced Scientific Research; Prof. Pradip Niyogi, formerly at IIT Kharagpur; Prof. Olivier



A session of RACFD

Pironneau, University of Paris VI (Pierre et Marie Curie). Around forty participants from various colleges and universities across India congregated for the event.

Mathematics

5 August, 2010

Speaker: Dr. Mainul Haque, School of Mathematical Sciences, University of Nottingham

Topic: "A systems-biology investigation of heat-shock protein regulated gene networks: mathematical models, predictions and laboratory experiments"

11 August, 2010

Speaker: Prof. Amiya Kumar Pani, Industrial Mathematics Group, Department of Mathematics, IIT Bombay

Topic: "Navier Stokes Equations : A Million Dollar Open Problem"

23 August, 2010

Speaker: Prof. Bhabani P. Sinha, Advanced Computing and Microelectronics Unit, Indian Statistical Institute Calcutta

Topic: "Energy Efficient Communication in Low Power Wireless Networks"

2 September, 2010

Speaker: Prof. Aldric Brown, University College London

Topic: "Energy Efficient Communication in Low Power Wireless Networks"

Energy

Project Title: Development of polymer electrolyte membrane fuel cell using indigenously prepared low cost composite bi-polar plate

Sponsors: CSIR

Amount Sanctioned: ₹ 13 Lakhs

Investigator: Dr. A. Verma

Project Title: Design and optimisation of 1, 3- Propanediol and n-butanol from biodiesel derived crude glycerol using immobilized Clostridial strains

Sponsors: CSIR

Amount Sanctioned: ₹ 15 Lakhs

Principal Investigator: Dr. V. S. Moholkar

Project Title: Design and Performance Analysis of Twisted Two Bladed, Two Stage Savonius Rotor for 500 W Power Generation

Sponsors: ADnENERGY

Amount Sanctioned: ₹ 8 Lakhs

Principal Investigator: Dr. U.K. Saha

Co-Investigator: Prof. P. Mahanta, Dr. N. Sahoo, Mr. D. Bhagawati

New Projects Started

Physics

Project Title: Magnetic Properties in SnO₂ based Diluted Magnetic Semiconductors

Sponsors: Board of Research in Nuclear Sciences

Amount Sanctioned: ₹ 31 Lakhs

Principal Investigator: Prof. S. Ravi

Co-Investigator: Dr. A. Perumal

Achievements/Awards/Felicitations

Dr. Hemant B. Kaushik, Assistant Professor, Department of Civil Engineering was awarded the INAE Young Engineer Award 2010 by Indian National Academy of Engineering.

Dr. Abhijit Mitra, Associate Professor, Department of Electronics and Communication Engineering was elected as a fellow of the Institution of Electronics and Telecommunication Engineers (IETE), New Delhi and received the NV Gadadhar Memorial Award 2010 given by IETE.

Prof. Subhash C. Mishra, Department of Mechanical Engineering, has been elected a fellow of the Indian National Academy of Engineering (INAE).

Dr. S. Senthilvelan, Associate Professor, Department of Mechanical Engineering, was awarded BOYSCAST fellowship of Department of Science and Technology, Govt. of India, and visited Gear and Power Transmission Research Laboratory, Ohio State University, Columbus, USA during 19 May – 19 August 2010.

Short Term Courses/Trainings

Physics

A Quality Improvement Programme (QIP) short term course on “Smart Materials and Devices” was conducted by the Department of Physics during 9–13 August 2010. Prof. S. Ravi and Dr. D. Pal, Assistant Professor, were co-ordinators of the course.

Energy

A training on Solar Home Lighting System was organised during 24–27 July 2010. It was sponsored jointly by Department of Forests, Assam and Ministry of New and Renewable Energy, Govt. of India. More than hundred participants from across Assam attended the training.

IIT Guwahati hosted an interaction session and a lecture-cum presentation on “Internship programme for Indian Diaspora Youth” on 14 September 2010. The programme was organised by the Confederation of Indian Industry (CII), Ministry of Overseas Indian Affairs, Govt. of India in partnership with the Govt. of Assam as the host state. 29 young achievers from 9 different countries, and students and research scholars of IIT Guwahati participated in the discussion.



Meeting for research collaboration

A team from United Kingdom consisting of six delegates from University of Nottingham, University of Birmingham and University of Loughborough visited IIT Guwahati for probable research collaboration in the areas of energy technology during 9–10 August 2010.

Other Events



Industry Academia Symposium

IIT Guwahati hosted an industry academia symposium on the “Role of connectivity with South East Asian neighbours to facilitate cross border trade and commerce” in collaboration with ICC, Kolkata and supported by the Ministry of External Affairs, Govt. of India, on 31 July 2010. About 250 delegates comprising members of the top bureaucracy, industry leaders, academicians and research scholars participated in the programme.

Mr. Laurant Reyes, In-Charge, University Cooperation in West Bengal and North-East, French Embassy visited the Institute and held an interactive session on the exchange programme with French institutes and projects developed with French counter parts on 19 August 2010. Departmental Heads along with other faculty members of the Institute participated in the discussion.

Independence Day Celebrated

The 64th Independence Day of India was celebrated with much gaiety on 15 August 2010 in the Institute campus. The Director of the Institute, Prof. Gautam Barua, hoisted the tricolour and addressed the gathering. This was followed by a colourful cultural programme presented by the students of the Institute, the IIT Guwahati Kendriya Vidyalaya and Akshara School and children of the campus. Various competitions were also organised to encourage the young minds.



Prof. Gautam Barua delivering the Independence Day speech

Technology Incubation Centre (TIC) Inaugurated

The premises of the Technology Incubation Centre (TIC) of the Institute was inaugurated by Dr. R. P. Singh, Chairman, Board of Governors, on 27 August 2010. The centre has been established with an aim to allow entrepreneurial activities to start on campus. The TIC will provide support to start up entrepreneurial initiatives to alumni of the Institute as well as other government colleges of Assam.



Dr. R. P. Singh (3rd from left), Chairman, BoG along with Prof. Gautam Barua, Director; Prof. V. K. Singh, Shri P. C. Neogy, members BoG and Shri B. Barooah, CEO, TIC while inaugurating the TIC, IIT Guwahati

Hindi Divas Celebrated

IIT Guwahati celebrated Hindi Divas on 14 September 2010 with the rest of the country. The event was attended by faculty members, staff, and students of the Institute.



A part of the cultural programme

The event began with a chorus sung by the staff members of the Institute. On the occasion, Prof. R. Swaminathan, Chairman, Official Language Implementation Committee, IIT Guwahati, gave the welcome address. Prof. Gautam Barua, Director, IIT Guwahati addressed the gathering. Prizes were handed over by him to the winners of various competitions held to mark the occasion. It was followed by a cultural programme where students and the IIT Guwahati community participated and enthralled the audience.

Appointments



Dr. Arunansu Sil
Assistant Professor
Physics



Dr. Rajesh Kr. Upadhyay
Assistant Professor
Chemical Engineering



Dr. Agam Prakash Vajpeyi
Assistant Professor
Physics



Dr. Krishnamachar Sreenivasan
Visiting Professor
Computer Science and
Engineering



Dr. Ashis Kr. Sen
Assistant Professor
Mechanical Engineering



Dr. Benny George K.
Assistant Professor
Computer Science and
Engineering



Mr. D. Udaya Kumar
Assistant Professor
Design



Dr. Arabin Kr. Dey
Assistant Professor
Mathematics



Dr. Dipankar Deb
Assistant Professor
Electronics and
Communication Engg.



Dr. Jitendriya Swain
Assistant Professor
Mathematics



Dr. H. Ramesh
Assistant Professor
Mathematics

Commencement of New Academic Session

The new academic session (2010–2011) commenced from July 2010. A total number of **1204** students were admitted in various programmes across all the Departments/Centres as given in the table below –

Department/Centre	BTech/BDes	MSc/MA	MTech/MDes	PhD
Biotechnology	43	—	30	17
Chemical Engineering	63	—	39	15
Chemistry	33	38	—	26
Civil Engineering	66	—	64	14
Computer Science and Engineering	72	—	52	6
Design	43	—	21	5
Electronics and Communication Engineering	109	—	46	24
Humanities and Social Sciences	—	44	—	10
Mathematics	36	42	—	6
Mechanical Engineering	77	—	62	18
Physics	31	41	—	8
Centre for Nanotechnology	—	—	—	3
Total	573	165	314	152

Total Number of Students on Campus as on September 2010

Programme	No. of Students
Preparatory	7
BTech	1694
BDes	108
MTech	548
MDes	35
MSc	214
MA	61
PhD	639
Total	3306

Total Number of Scholars awarded PhD by IIT Guwahati during July–September 2010

Department/Centre	PhD
Biotechnology	2
Chemical Engineering	1
Chemistry	2
Civil Engineering	1
Electronics and Communication Engineering	1
Humanities and Social Sciences	2
Centre for Nanotechnology	1
Total	10