

THE IITG MONITOR



Indian Institute of Technology Guwahati

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13th Convocation 2011



Shri Jairam Ramesh, Dr. Rajendra Pratap Singh and Prof. Gautam Barua along with the medal winners at the 13th Convocation

The 13th Convocation of IIT Guwahati was held on 27 May 2011 at the Institute's auditorium. Shri Jairam Ramesh, Hon'ble Minister of State (Independent Charge), Environment and Forests, Government of India, was the Chief Guest and delivered the Convocation address. The Chairman of Board of Governors, IIT Guwahati, Dr. Rajendra Pratap Singh, was present at the convocation and addressed the graduating students and guests.

737 students – including 340 BTech and BDes, 13 MA, 87 MSc, 237 MTech and MDes, and 60 PhD – were conferred their degrees at the Convocation.

Shri Jairam Ramesh in his finely researched Convocation speech recalled the scientific temper of Jawaharlal Nehru, the first Prime Minister of India. Shri Ramesh cited evidences of Nehru's commitment to use science in national development through his work as the Chairman of the National Planning Committee. Nehru assembled a fifteen-member team of

businessmen, economists, scientists and others. There were five scientists including Meghnad Saha and J. C. Ghosh. Shri Ramesh argued how the western scientific ideologies and eastern spiritualism amalgamated to shape the very core of Nehru's belief. He demonstrated how Nehru viewed scientific temper as something to be inculcated in society at large and questioned whether the same have been applied and propagated these days by the institutes that were established by Nehru. Shri Ramesh concluded with a suggestion to understand how essential it is for the people of the society in general and the people from the field of science and technology in particular to see as continuing responsibility the advancement and diffusion of an open, questioning, liberal, humanistic and rational intellectual culture.

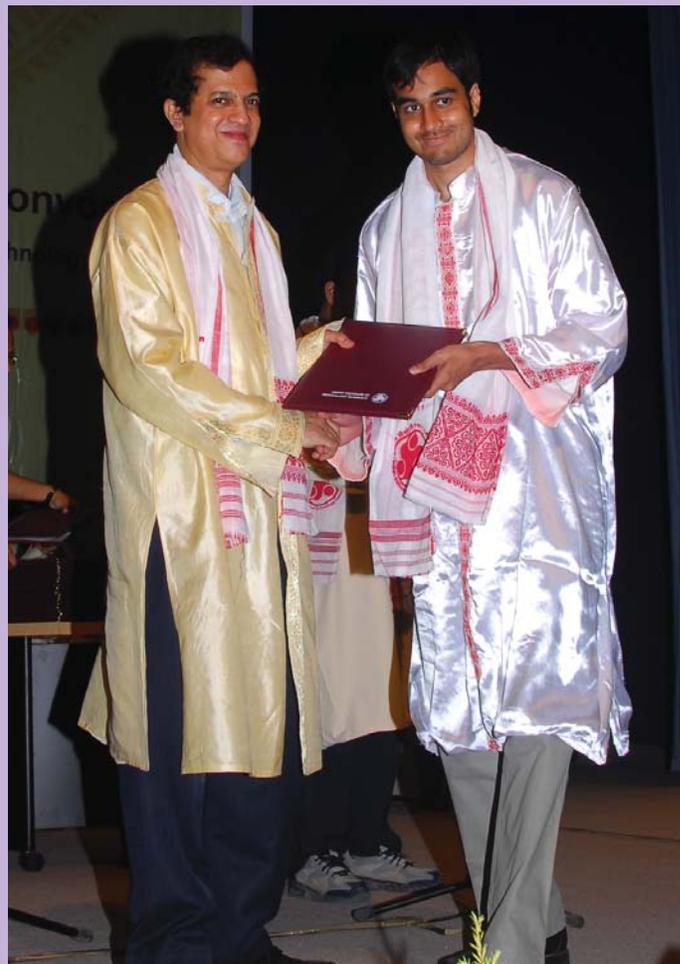
Dr. Rajendra Pratap Singh, Chairman, Board of Governors, IIT Guwahati, emphasised in his speech that IITs should play a pivotal role in creating experts in the field of science and technology who can contribute to the sustainable growth of



the future society. Concrete effort should be made in finding new vistas in the field of bio-medical research, information technology and clean energy technology.

Prof. Gautam Barua, Director, IIT Guwahati, in his speech presented the annual report of the Institute with detailed reports ranging from academic activities to research and development, from physical infrastructure development to students activities and campus placement of students. Prof. Barua highlighted how being an international institute IIT Guwahati is sensitive to the environment it is in. IIT Guwahati has from the very beginning been working on local problems. In recent months, it has been an active participant in the discussions on technical issues regarding the building of hydel projects in the North-East. The faculty have taken up projects on flood mitigation, river erosion, drainage, etc. in the city of Guwahati. Research in Earthquake engineering is a core strength of the Institute. The Institute is strengthening its interaction with Indian Oil Corporation which has three refineries in Assam, and with Oil India Ltd., which has its registered office in Assam. IITG faculty are assisting the Govt. of Assam in areas such as Disaster Management, E-Governance, Higher and Technical Education Policy issues. The faculty are involved in various academic interactions with the educational institutions in the North East. It has special arrangements with NERIST, NITs Silchar and Agartala to assist their faculty complete PhD degrees. Being the premier educational and R&D Institute in the North-East, it is called upon for assistance by various Central Govt. Ministries and the faculty, staff and students of the Institute have delivered to the best of their abilities. The establishment of the Technology Incubation Centre is an opportunity to create a set of entrepreneurs who will invest in this region and help its economy to grow. The opportunities for contributions are huge especially since the problems are so many and so challenging. Prof. Barua urged the faculty and research students to be alert on the opportunities and challenges for research that the North-East would provide.

Shri Prashant Kumar, Department of Chemical Engineering,



received Dr. Shankar Dayal Sharma Gold Medal for the year 2011. The medal is awarded to a graduating student adjudged to be the best in terms of general proficiency including character, conduct, excellence in academic performance, extra-curricular activities and social service.

Shri Aniketh Talwai, Department of Electronics and Electrical Engineering, received the President of India Gold Medal securing the highest Cumulative Performance Index among all the students of the batch receiving the degrees of Bachelor of Technology and Bachelor of Design.



Seminar/Conference/Workshop/Invited Talk Organised

Civil Engineering

Prof. H. W. Graf, Professor of Hydraulics, Lausanne, Switzerland, gave lectures on 'Transport and Mixing of Matter' during 16–18 June 2011.



Prof. Graf (top, 2 from left) along with the faculty and students participating in the lecture programme

Prof. T. G. Sitharam, Professor, IISc Bangalore, delivered a lecture on 'Seismic Microzonation: Principle and Practices' on 28 June 2011.



Dr. B. C. Raymahashay (2 from right) interacting with the faculty and students during his talk on geochemical techniques for evaluation of groundwater quality

Mathematics

Dr. Rama Mishra, Department of Mathematics, IISER Pune, presented a seminar on projective knots on 11 May 2011.

Prof. Ravindra B. Bapat, Theoretical Statistics and Mathematics Unit, Indian Statistical Institute Delhi, delivered a seminar on eigenproblem and permanents over max algebra on 23 May 2011.

Dr. Dambaru Bhatta, Department of Mathematics, University of Texas-Pan American, delivered a seminar on computation of the Landau coefficients due to convective flow in an active mushy layer on 8 June 2011.

Dr. Santanu Dutta, Department of Mathematical Sciences, Tezpur University, delivered a seminar on an introduction to kernel density estimation and beyond on 14 June 2011.

Mechanical Engineering

A team of medical experts led by Dr. M. E. Yeolekar, Director, North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences (NEIGRIHMS), Meghalaya, visited IIT Guwahati on 14 June 2011 in order to initiate research and academic collaboration between the two institutes.

Centre for Energy

The centre mentored the techno-entrepreneurship development programme on utilisation of new and renewable energy organised by the Entrepreneurship Development Cell, Cotton College, Guwahati, during 4-7 April 2011.

Dr. B. P. Pundir, retired professor of IIT Kanpur, delivered a talk on combustion diagnostics on internal combustion engines on 6 May 2011.

Centre for the Environment

Dr. B. C. Raymahashay, former Professor, IIT Kanpur, delivered a talk on geochemical techniques for evaluation of groundwater quality on 21 April 2011. Prof. Raymahashay is known for his path breaking studies related to rock (and soil) and water interaction. He is also the author of the acclaimed book *Geochemistry for Hydrologists*.

Mr. Subhankar Chakraborty of Young Ecologists Talk and Interact (YETI) programme gave a talk on the YETI programme on 25 May 2011. YETI is the largest ecology and environment student gathering in India with about a thousand participants in its 2010 conference held at IISc, Bangalore. It is conducted entirely by a student group.

Dr. Utpal Das, Research Scientist, Department of Neurosciences, School of Medicine, University of California San Diego, presented a talk on mechanism of axonal transport of proteins and implications in neurodegenerative disorders on 1 April 2011 under IITG-DBT Biotech Hub Lecture series.



Participants of the workshop on Optical Microscopy

A workshop on Optical Microscopy was organised during 16-17 June 2011 under IITG-DBT Biotech Hub project being executed in the Centre for the Environment. In the two day introductory workshop theory lectures on basics of optical and fluorescence microscopy were delivered respectively by Dr. B. R. Boruah, Assistant Professor, Physics, and Dr. U. Bora, Associate Professor, Biotechnology. Hands on laboratory training sessions were conducted by Dr. B. R. Boruah and Dr. R. Tamuli, Assistant Professor, Biotechnology. Additionally, a tutorial was also held to supplement the theory and laboratory sessions. A special lecture on the history and development of microscopy as a technique was delivered by biotechnologist Prof. K. Kannan, Vice Chancellor, Nagaland University. The workshop was coordinated by Dr. B. R. Boruah and was attended by more than thirty participants from various institutions of higher education and research of the North East region.

New Projects Started

Biotechnology

Title: Silk based scaffolds for neural tissue engineering
Sponsor: DBT, Govt. of India
Principal Investigator: Utpal Bora

Centre for Energy

Title: Design and development of digester for utilisation of lignocellulosic waste for biogas production
Sponsor: Defence Research Laboratory (DRDO), Tezpur
Principal Investigator: P. Mahanta

Title: Design and development of compact cistern system for blackwater utilisation
Sponsor: Defence Research Laboratory (DRDO), Tezpur

Principal Investigator: P. Mahanta

Title: Utilisation of biowaste for generation of power in diesel engine

Sponsor: Defence Research Laboratory (DRDO), Tezpur
Investigators: U. K. Saha, N. Sahoo

Centre for the Environment

Title: Institutional biotech hub
Sponsor: DBT, Govt. of India
Principal Investigator: Utpal Bora

Centre for Nanotechnology

Title: Novel nanoscale materials targeted towards antimicrobial and anticancer activities
Sponsor: Department of Biotechnology
Principal Investigator: Siddhartha Sankar Ghosh

Publications (Research Journal/Book/Book Chapter)

Research Journal

Biotechnology

U. Bora, D. K. Kannoujia, P. Sharma and P. Nahar, "Photochemical activation of polyethylene glycol and its application in PEGylation of protein", *Process Biochemistry*, 46 (6), 1380–1383, 2011

R. K. Das, P. Sharma, P. Nahar and U. Bora, "Synthesis of gold nanoparticles using aqueous extract of *Calotropis procera* latex", *Materials Letters*, 65 (4), 610–613, 2011

Chemical Engineering

V. Singh, M. K. Purkait and Chandan Das, "Cross flow microfiltration of industrial oily wastewater: experimental and theoretical consideration", *Separation Science and Technology*, 46, 1213–1223, 2011

P. V. V. Prasad, Chandan Das and Animes Kumar Golder, "Reduction of Cr(VI) to Cr(III) and removal of total chromium from wastewater using scrap iron in the form of zerovalent iron (ZVI): Batch and column studies", *Canadian Journal of Chemical Engineering*, DOI: 10.1002/cjce.20590, 2011

Civil Engineering

A. Dey and P. K. Basudhar, "Flexural response of surface strip footing resting on reinforced viscoelastic foundation beds", *International Journal of Geotechnical Engineering*, 5 (2), 165–179, 2011

Rajib Kumar Bhattacharjya, "Solution of groundwater flow inverse problem using spreadsheet solver" *Journal of Hydrologic Engineering*, ASCE, 16 (5), 472–477, May 2011

N. K. Sahoo, K. Pakshirajan and P. K. Ghosh, "Biodegradation of para-nitrophenol using *Arthrobacter chlorophenolicus* A6 in a novel upflow packed bed reactor", *Journal of Hazardous Materials*, 190, 729–737, 2011

Electronics and Electrical Engineering

M. K. Bhuyan P. K. Bora and D. Ghosh, "An integrated approach to the recognition of a wide class of continuous hand gestures", *International Journal of Pattern Recognition and Artificial Intelligence*, 25 (2), 227–252, 2011

R. Subadar and P. R. Sahu, "Performance of χ^2 -MRC receiver over equally correlated η - μ fading

channels," *IEEE Transactions on Wireless Communications*, 10 (5), 1351–1355, May 2011

R. Subadar and P. R. Sahu, "Performance of χ^2 -independent and dual correlated selection combiners in hoyt fading channels," *IEEE Transactions on Wireless Communications*, 59 (4), 923–929, April 2011

Humanities and Social Sciences

Sambit Mallick, "Knowledge production in biotechnology in India," *IEEE Technology and Society*, 30 (2), 46–54, June 2011

Rohini Mokashi-Punekar, "The poetry of Vikram Seth: Anti-romantic, postmodern or simply kitsch?," *JSL*, New Series 14, 39–46, 2011

Mathematics

Rafikul Alam, Shreemayee Bora, Ralph Byers and Michael L. Overton, "Characterisation and construction of the nearest defective matrix via coalescence of pseudospectral components", *Linear Algebra and its Applications*, 435 (3), 494–513, 2011

Mechanical Engineering

U. S. Dixit, S. N. Joshi and J. P. Davim, "Incorporation of material behaviour in modelling of metal forming and machining processes: A review", *Materials and Design*, 32 (7), 3655–3670, 2011

M. Chandrasekaran, M. Muralidhar and U. S. Dixit, "An interactive online finish milling process optimisation", *International Journal of Applied Engineering Research*, 6 (5), 949–959, 2011

Physics

B. R. Boruah, G. D. Love and M. A. A. Neil, "Interferometry using binary holograms without high order diffraction effects", *Optics Letters*, 36 (12), 2357–2359, 2011

Abhijit Das and B. R. Boruah, "Optical sectioning microscope with a binary hologram based beam scanning", *Review of Scientific Instruments*, 82, 043702, DOI:10.1063/1.3574796, 2011

Amarendra K. Sarma, "Solitary wave solution to the generalised nonlinear Schrodinger equation for dispersive permittivity and permeability", *European Physical Journal D*, 62, 421, 2011

Amarendra K. Sarma and Manirupa Saha, "Modulational instability of coupled nonlinear field equations for pulse propagation in a negative index material embedded into a Kerr medium", *Journal of Optical Society of America B*, 28 (4), 944, 2011

Centre for Energy

R. S. Patil, M. Pandey and P. Mahanta, "Parametric studies and effect of scale up on wall-to-bed heat transfer characteristics of circulating fluidised bed risers", *Experimental Thermal and Fluid Science-International Journal of Experimental Heat Transfer, Thermodynamics, and Fluid Mechanics*, 35 (3), 485-494, 2011

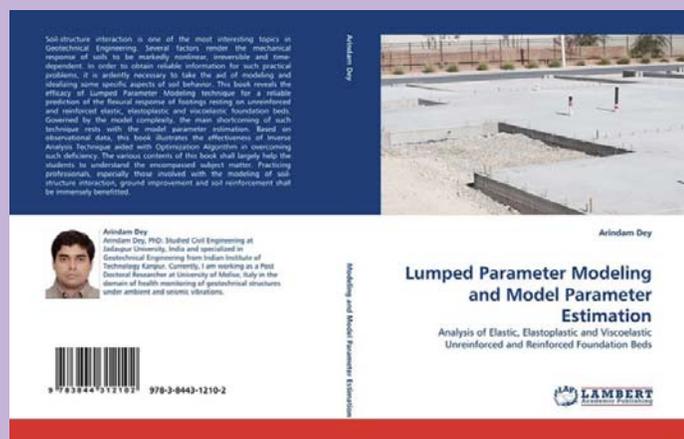
B. Buragohain, P. Mahanta and V. S. Moholkar, "Investigations in gasification of biomass mixtures using thermodynamic equilibrium and semi-equilibrium models", *International Journal of Energy and Environment*, 2 (3), 551-578, 2011

Amrita Ranjan and V. S. Moholkar, "Comparative study of various pretreatment techniques for rice straw saccharification for the production of alcoholic biofuels", *Fuel*, doi:10.1016/j.fuel.2011.03.030, 2011

Book

Civil Engineering

Arindam Dey, *Lumped Parameter Modelling and Model Parameter Estimation: Analysis of Elastic, Elastoplastic and Viscoelastic Unreinforced and Reinforced Foundation Beds*, Lambert Academy Publishing, Germany, pp. 504, ISBN No. 978 3 8443 1210 2, 2011



Book Chapter

Humanities and Social Sciences

Rohini Mokashi-Punekar, 'Views from a different India: Not Hinglish but Nagamese', *Chutneyfying English: the Phenomenon of Hinglish*, edited by Rupert Snell and Rita Kothari, Penguin Books, New Delhi, 128-141, 2011 (ISBN 978 0 14 3416395)

Arpana Nath and Rohini Mokashi-Punekar, 'Fasting, Feasting: Food, consumption and the politics of power' in *The Writer's Feast: Food and the Cultures of Representation* edited by Supriya Choudhuri and Rimi B. Chatterjee, Orient Blackswan, New Delhi, 92-104, 2011 (ISBN 978 81 25041955)

New Faculty



S. Senthilkumar
Assistant Professor
Biotechnology



Biman Behari Mandal
Assistant Professor
Biotechnology



Nanda Kishore
Assistant Professor
Chemical Engineering



Prakash Kotecha
Assistant Professor
Chemical Engineering



Vimal Katiyar
Assistant Professor
Chemical Engineering



Chandan Mukherjee
Assistant Professor
Chemistry



Sumana Dutta
Assistant Professor
Chemistry



Arindam Dey
Assistant Professor
Civil Engineering



Brijesh Rai
Assistant Professor
Electronics and Electrical
Engineering



Gautam Kumar Das
Assistant Professor
Mathematics



Swarup Bag
Assistant Professor
Mechanical Engineering



Subhash Thota
Assistant Professor
Physics

Session on EU–India Relations

An information session on EU–India relations in science and technology and possibilities for cooperation was held on 21 June 2011 to promote research and innovation cooperation between India and the European Union. Faculty members and students of the Institute took active participation in the session. The programme was hosted by External Relations Section.

Memoranda of Understanding

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

1. University of New South Wales, Australia
2. Ghent University, Belgium (One student has already joined the University for internship under this MoU for three months)

Three students of IIT Guwahati have joined Karlstad University, Sweden, for internship of three months under the MoU with IIT Guwahati.

PhDs Completed During April–June 2011

Department/Centre	No. of PhDs
Chemical Engineering	2
Chemistry	9
Civil Engineering	2
Electronics and Electrical Engineering	4
Humanities and Social Sciences	1
Mechanical Engineering	2
Physics	3
Centre for Energy	3
Centre for Nanotechnology	1



A view of the IIT Guwahati campus from the Nilachal Hill

Why I Love IIT Guwahati?



Calm placid lakes around the campus nestled among low rising hills catch your eyes as you drive in along the long winding road leading up to the security stop near the Market Complex. As I settled in at the Guest House I thought of all the campuses I have visited and could not help comparing notes. Penn (University of Pennsylvania in Philadelphia) used to be in a shady part of the city and was known for its riots during the summer of 1964 when the mayor moved the tanks in to control the rioters. Not exactly a scenic campus. Princeton campus is very good but does not have Brahmaputra nor the rolling hills, just golf courses and tennis courts. Harvard and MIT are along the Charles but hardly belong in the same neighborhood as IITG in terms of campus beauty. Stanford comes close but is dry and brown with dry grass for 9 months of the year and is too urban and the noise of El Camino Real is no help. Santa Cruz campus comes very close with its gorgeous views of the Pacific but lacks the peace and quiet of IITG. Santa Barbara and La Jolla are good and close seconds.

Wisconsin has a lovely campus along a lake in Madison but their winters are very severe. Oxford and Cambridge are lovely but no Brahmaputra nor the rolling hills. Grenoble in southern France has lovely hills and is a small town but no river. University of Moscow campus has a lovely view of the city and a wonderful inexpensive Metro but their winters are another story. Rio de Janeiro and Salvadore (eastern most tip of Brazil) have nice views of Atlantic but somehow lack the IITG ambience (very few speak English).

IITG beats them all hands down. It is sufficiently far away from the city and we can ignore the city's din and stench.

And the campus is vibrant full of very smart, eager, curious, ambitious youngsters who are a delight to talk to. Seminars of all our departments cover a wide range of subjects and are a joy to attend. I take in as many as my schedule permits. We get gifted speakers from different parts of the world talking about grid computing at Hedron, water conservation in the upper Assam valley, or why is Telugu close to Italian, or how Ramayana is adopted by the commoners to express their own views, or how to fix beaches from disappearing in Morocco.

Let me not make the campus grander than it really is. It has its share of warts; unruly undergraduates, not so skilled post graduate students, and passive babudom. This is true of all the campuses in the world. Detection of plagiarising is part of teaching now. It is as human as breathing. It is not a unique malaise afflicting IITG.

But what irks me the most is that our undergraduates who enter our campus as the world's best and leave us to work in industry or abroad and do world class work, do very little when they are here at IITG. This does not apply to everyone but to most of them. They can put in an extra ounce of effort to help us do world class research. We will all benefit from it. And it is a challenge to me and all my colleagues; how do we make this gifted group do work when they are here? After all our aim is not to chop the trees in the forest but to irrigate the desert. The very best of the very best to you all. Go forth and conquer the world and email us about all your conquests.

Krishnamachar Sreenivasan

Visiting Professor

Computer Science and Engineering