IISc Alumni

Newsletter of IISc Alumni Association

Volume 5 Issue 4 December 2012

IIScAA Wishes You *A Happy New Year 2013*

IIScAA Activities

Honouring Senior Gurus

Prof. P. Balaram, Director, IISc, honoured the following Senior Gurus & Centenarian Alumnus on Saturday, September 22, 2012 from 3.00 p.m. to 4.00 p.m. at the Faculty Hall, IISc.

1. *Prof. T. M. Jacob- Biochemistry, IISc; 2. Prof. K. Venkatesan - Organic Chemistry, IISc; 3. Shri. Doraiswamy Iyer - Centenarian Alumnus

*(*Prof. Jacob could not attend the function)*

Prof. Balaram honouring Prof. Venkatesan

Prof. Balaram honouring Shri. Doraiswamy Iyer

Prof. Chandan Dasgupta

Alumni Get-together with UG Students-2012

The Programme " Interaction & Get-together with Alumni " was arranged for the Undergraduate Students (joined in 2012) on Sunday, November 25, 2012 at 10 a.m. in the Choksi Hall, IISc, followed by Lunch. About 20 students and 40 alumni attended the meet and the interaction with students was very good. Many students could not attend due to exams. The Welcome Address was given by Shri. V. Babu Sathian, President, IISc. Alumni Association. Prof. Chandan Dasgupta, Dean, Undergraduate Programme, addressed the gathering. Also, Prof. Vikram Jayaram, Chairman, Department of Materials Engineering, IISc, participated in the event.

UG Students with Alumni

Yoga Classes for Alumni & family

For the first time, IIScAA is organizing the Yoga Classes for alumni & family on all Sundays starting from December 9, 2012. It is presently conducted on every Sunday from 3.30 p.m. – 5.30 p.m. at the IIScAA Office and Mr. Prasad is the Yoga Instructor.

The response for the Yoga Classes has been very good. The inaugural class was attended by 40 members.

Participants of Yoga class

Shri. Sudheer Deshpande, Registrar, S-VYASA and Shri. Chittaranjan, Therapy Yoga Specialist, were the Chief Guest. About 30 members attended the next class on December 16, 2012. We expect more number of alumni to participate in future and avail the benefit of the same.

L N Satapathy

President's Desk

Dear Colleagues,

I extend a very warm greeting and wish you all a very Exciting, Prosperous, New Year 2013 with abundant Peace and Happiness.

Your association has been organizing number of programmes which brings many of the alumni together who have not met or interacted for many years. The alumni association has facilitated in organizing number of golden reunion and silver reunion of many batches. This gave an opportunity for the senior alumni to relive their student days and were delighted in the company of their old batchmates, most of them have become grandfathers.

Our Lecture Series Programme as well as Knowledge Exchange Programme is getting more and more popular thus meeting the purpose. We have been able to arrange a couple of events along with student community which makes the Alumni Association closer to the present students.

IISc. Alumni Association North America is organizing a Global Conference at Chicago on July 19 - 21, 2013, in association with IISc. Alumni Association and I look forward to have a large participation from our side.

We were fortunate to honour a Centenarian Alumnus, Shri. Doraiswamy Iyer, and, in his words, that was one of the happiest moment for him. But, on November 26, 2012, he left the earthly world after having a fulfilling life.

The Executive Committee of IISc. Alumni Association is coming out with the new exciting events including sports event.

V Babu Sathian

Editorial

Dear readers,

On behalf of the editorial board I wish all readers -
"A very Happy & Prosperous New Year 2013".

On behalf of the editorial board, I would like to inform you that the order of presentation of content is changed from this issue. The first and second page focus on the alumni association activities, while the third and fourth pages on departmental information, invited articles, students' programmes, various new activities of the Institute and Alumni Association North America.

The first page highlights the event honouring the senior gurus for their contributions, also the commencement of Yoga classes for Alumni, by S-VYASA, an integrated approach to deal with body, mind and soul at the Association Office. The state-of-art infrastructure in the fourth page depicts the four departments embedded into one single magnificent structure which would be filled with innovations and research programmes for the next 100 years.

A succinct overview of current research activities in the Department of Civil Engineering has been provided by the Department Chairman, Prof. Manohar. Unlike in several other engineering disciplines, research in civil engineering has strong interfaces with nature and society and the tenor of research, as you may evidence from the overview, carries strong flavour of these interfaces.

Please feel free to express your views about our newsletter by E-mail: iiscaanlg@yahoo.com

H K Anasuya Devi

IIScAA Science Forum – Popular Lecture Series

The Twenty Nineth Lecture (September 22, 2012)

Topic : "Epistemological Aspects for Science - an Indian Perspective"
Speaker : Veda Varidhi Dr. P. Ramanujan, Associate Director, C-DAC, Bangalore
Moderator : Prof. V. V. S. Sarma

The Thirtieth Lecture (October 27, 2012)

Topic : "Creating crucibles for Science and Technology innovations and innovators "
Speaker : Dr. Prahlada, Vice Chancellor, Defence Institute of Advanced Technology (Deemed University), Girinagar, Pune
Moderator : Prof. C. E. Veni Madhavan

The Thirty First Lecture (November 17, 2012)

Topic : "Awakening project consciousness through stakeholders buy in"
Speaker : Mr. Adesh Jain, Hon. National President, PMA-India ; Member, Advisory Board, International Cost Engineering Council (ICEC) ; Chairman,International Institute of Projects & Program Management (I2P2M)
Moderator : Dr. Parameshwar P. Iyer

Link to videos :

http://mmcr.iisc.ernet.in:8008/cgi-bin/nwayfiles.py, In the Folder Name, please select IIScAA and click on Search.

You can view the videos of the Lectures by clicking on Flash, Quicktime, VLC.

H R Parthasarathy

Awards and Achievements

Dept. of Materials Engineering, IISc :

Dr. Suryasarathi Bose – 'Distinguished Young Rheologist' award from TA Instruments (USA)

Dr. Shibayan Roy - 'Student Innovative Thesis Award' of Indian National Academy of Engineering (INAE), Prof. K.P. Abraham Medal for the best thesis award, Materials Engg, IISc.

Prof. S. Ranganathan - 2012 NMD Lifetime Achievement Award by the Ministry of Steel, Government of India, at the 50th National Metallurgists' Day Celebrations on November 16, 2012 at Jamshedpur.

Dept. of Inorganic and Physical Chemistry, IISc :

Prof. S. Umapathy - a. Keynote Lecture – Symposium on Non-lined Ultrafast Microspectroscopy, Melbourne, Australia, b. Invited lectures at ERICE 2013, Workshop on "The Future of Dynamic structural science" organized by Judith Howard FRS at ERICE, Italy.

Prof. S. Sampath - Editorial Advisory board member, "Advanced Porous Materials" Journal

Prof. G. Mugesh : a. Shanti Swarup Bhatnagar Prize, b. Fellow, The National Academy of Sciences, India and c. Editorial Advisory Board Member, Archives of Biochemistry & Biophysics, Elsevier

Prof. S. Ramakrishnan : Associate Editor – Chemical Communication

Prof. E. Arunan : Invited to give A.V. Rama Rao Foundation Prize Lecture 2013

Prof. Partha Sarathi Mukherjee : Swarna Jayanti Fellowship Award of DST, Govt. of India,

Supercomputer Education and Research Centre, IISc :

Prof. Jayant Haritsa, SERC, has been elected as an IEEE Fellow for his stellar contributions in the area of database systems design.

Department of Microbiology and Cell Biology : New appointments - Dr. Saibal Chatterjee.

Dept. of Mechanical Engineering : Dr. Gaurav Tomar – INAE Young Engineer Award 2012

IISc Alumni : Dr. G. Parthasarathy Chief Scientist , CSIR-NGRI, Hyderabad, is elected as a Fellow of Indian National Science Academy.

Department of Civil Engineering, IISc

The Department is more than six decades old and is presently recognized as a Center for Advanced Studies (CAS) by the University Grants Commission of India under Special Assistance Program (2009-2014), a Center of Excellence in Water Resources by the Central Board for Irrigation and Power, and has been recognized by the Department of Science and Technology with funds under the FIST program. An Indo-French Cell for Water Sciences has been functioning in the department under anMoU with the French Government since 2001. The Department served as the nodal centre for execution of the National Program on Earthquake Engineering Education (2003-07) and National Program on Capacity Building in Earthquake Engineering Research and Materials (2004-07).

Current research in the department addresses wide ranging issues which include: condition assessment of ageing infrastructure, natural hazard and risk analyses, watershed hydrology, hydrochemistry, impact of climate change on hydrology, satellite hydrology and urban hydrogeology, computational structural mechanics, fracture and damage mechanics, structural behavior under fire loads, alternative building materials, geoenvironmental engineering, optimization of transportation systems, driver behaviour and road safety, and soil reinforcement and geosynthetics. A snapshot of some of these activities follows.

Uncertainty analysis of engineering and environmental systems

Quantitative modeling of uncertainties in safety-critical engineering systems such as nuclear power plants is of fundamental importance. Over the past several years, the Department of Civil Engineering at the Indian Institute of Science has been actively involved in R&D and education activities in the areas of stochastic analysis of engineering systems. This has led to a host of publications in leading international journals, development of several graduate courses (covering probabilistic modeling, random vibration analysis, structural reliability analysis, seismic risk analysis of engineering systems, stochastic finite element methods, stochastic calculus, probabilistic system identification, and Monte Carlo simulation methods), research training of masters and doctoral students, successful execution of several sponsored research projects, interactions with industries on problems of safety analysis, and contributions to continuing education programmes. A coordinated research project in this area of research has been recently initiated with financial support from the Department of Atomic Energy covering the following themes: safety and global sensitivity analyses of structures with alternative uncertainty models; stochastic modeling of hydration process in concrete: investigation into creep and shrinkage; petrographical, chemical and computational studies on concrete at high temperature; studies on fatigue crack growth in graphite; uncertainty quantification in multiscale analysis of nanocomposite materials; stochastic modeling of groundwater flow and contaminant transport modeling at a proposed uranium tailings pond; and development of probabilistic design and analysis procedures in radioactive waste disposal in NSDF and design of NSDF closure.

Hydrometeorological feedbacks and changes in water storage and fluxes

Land use is fundamentally changing water resources. Water extraction is drawing down water tables and lowering river levels; land use change affects the partitioning of water fluxes; changes in surface runoff and aquifer recharge will affect surface water and groundwater resources; while changes in evapotranspiration may feedback to precipitation regimes. Given the interactions between different hydrometeorological processes, a systems approach is needed. This project is the first to combine both climate impacts on the hydrological regime and hydrological feedbacks on the climate. This is accomplished by using a state-of-the-art suite of data assimilation, new process understanding, and integrated modelling of the atmosphere surface groundwater system. The set-up will be used to evaluate anthropogenic and natural changes in major water fluxes and resources for the Gangetic Plain. The northern Indian plains have experienced land use changes and water exploitation at an unprecedented scale, posing extraordinary scientific challenges to understand, quantify and predict availability of water resources. We focus on the following questions: (1) to what extent do the large-scale, human-induced land use changes and groundwater depletion that have taken place in India feed back to the hydrological and climate system at a basin scale? (Figure 1 shows the digital elevation map developed as a part of this study for the Upper Ganga Basin), (2) how should climate model outputs be disaggregated to provide the boundary conditions needed for hydrological and water resource systems modelling, and do the results of such modelling provide suitable reductions in the uncertainty of projections?, and (3) can large-scale modelling studies inform localised, ecosystem-based management decisions to improve water availability and security? The Ganga River is not only crucial for the socio-economic development of the country; it also provides a unique case of large-scale river systems dominated by groundwater resources. The project specifically addresses the scope of the call, especially the themes on interactions between the surface and subsurface, water cycle drivers and mechanisms, and the water cycle-anthropogenic interface. This is a collaborative project coordinated jointly by IISc Bangalore and Imperial College London.

Remediation of contaminated groundwater

Fluoride contamination of groundwater from geochemical sources is a serious environmental issue in India as 62 million people spread over 17 Indian states is at risk from drinking fluoride-contaminated water. The Indian Standard for drinking water prescribes 1.5 mg/L as the permissible limit for fluoride in drinking water. Ingestion of fluoride-contaminated water can cause dental and skeletal fluorosis. Fluoride build up in ground water are controlled by the geology of host rocks, contact time with fluoride minerals, groundwater chemical composition and climate. A new method based on use of magnesium oxide (called theIISc method) has been developed for defluoridation of drinking water. The IISc method has been successfully implemented at selected households from 2005 to 2008 with support from various funding agencies in Kolar District, Karnataka by us. The IISc method was implemented by NGO (VEDS)in Pavagada District of Karnataka from 2009 to 2011 with the DST support. The method is being currently implemented in LakshmangarhDistrict, Rajasthan with the DST support and in Anantpur District, Andhra Pradesh with community participatory based approach. A patent has been awarded for this process.

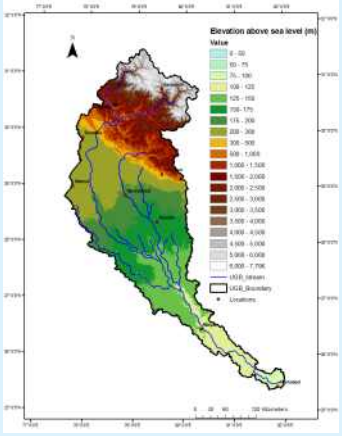

Fig. 1 Digital elevation map of the Upper Ganga basin prepared with the ASTER data.

C S Manohar
Chairman, Department of Civil Engineering, IISc

State-of-the-art Infrastructure

The single largest building in the IISc campus is the 3,24,000 sft new Biological Sciences Building. It houses the departments of MRDG, Biochemistry, MCB and CES. This state-of-the-art building has been designed and built to very exacting requirements of advanced research facilities in the field of biological sciences.

The main entry to this building leads to a spacious double- high lobby which branches into three clusters of labs. The primary open space as soon as we enter the building has nice stepped court with a passage covered by pergolas with a play of light and shade. The library and conference rooms overlook the central court, which also has a grand staircase. The clusters of lab wings allow good natural lighting with large openings and court yards.

This ground+3 floors building, with floor to floor height of 4 m, consists of five blocks, A to E, all interconnected with circulation corridors. The labs are positioned on either side of corridors. The building has 59 faculty labs., 12 central labs., 7 labs for young investigators and some teaching labs. As a support system to these main labs, there are 20 freezer rooms, 52 cell culture rooms, 12 dark rooms, 21 cold rooms, 22 autoclave rooms, 16 AHU's, 12 instrument rooms and one animal holding. Apart from the labs, the building has been provided with 9 conference and meeting rooms, seminar halls, 5 lecture halls, one auditorium,10 visiting faculty rooms etc..

Carefully selected finishes have been used in the building. For flooring: polished granite in the reception lobby, Kota stone for corridor and

staircase, anti-skid ceramic tiles in the toilets, and vitrified floor tiles for the rest of the building. For doors and windows : teakwood frames and flush shutters and aluminium windows with colour anodisation. For a building of this type and magnitude, it is natural to expect a huge electrical power requirement. The provided total connected load after diversity is 4000 KVA.

Other features of this building include centralized air-conditioning system, false ceiling in corridors, complete fire protection system, centralized De-ionisation plant and an effluent treatment plant.

This building was inaugurated by Prof. C.N.R. Rao on 2nd March, 2012. Prof. K. Muniyappa of Biochemistry Department and buildings' co-ordinator of Biological Sciences, remarks :

The New Biological Sciences building is a world-class purpose-built research and teaching facility which houses the department of biochemistry, microbiology and cell biology, MRDG, and ecological sciences. It features state-of-the-art AC labs, instrument rooms for specialized equipment, auditorium, meeting rooms and common spaces. By bringing diverse areas of biological sciences under one new roof might help promote collaboration between student and faculty researchers in different disciplines, and future of research at IISc.

K S Subba Rao

Upcoming events

Dept. of Materials Engineering, IISc :
Workshop on Mechanical Behaviour of Systems at Small Length Scales - February 24 - 28, 2013

IIScAA Science Forum Lectures :

a. February 23, 2013 : Lecture by Lt Gen Ramesh Halgali, Deputy Chief of Army Staff , on "Army and its role in nation building" at 4.00 p.m. in the Faculty Hall, IISc.
b. March 23, 2013 : Lecture by Shri. J. Soli Sorabjee, Former Attorney General for India, on “Fundamental Rights and Duties” at 4.00 p.m. in the Faculty Hall, IISc.

Published by the Indian Institute of Science Alumni Association (IIScAA)
Printed at : Navbharath Press, Seshadripuram, Bangalore - 560 020, Ph: 2356 1142, 2346 4682, E-mail : navbarat@gmail.com