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CSIR NEWS

Progress, Promise and Prospects

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Video Coverage of NCSC, 2010 and ISC, 2011*



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*Golden Jubilee Lecture Series at
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*Prof. Gautam Biswas, Director,
CMERI Honoured*



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CSIR Showcases its Achievements in Science Exhibition Held During the Indian Science Congress

The 98th Indian Science Congress (ISC) was held at SRM University in Chennai from 3-7 January, 2011 with the theme, *Quality, Education and Excellence in Science Research in Indian Universities*. One of the major events held during the Indian Science Congress was the Science Exhibition, *Pride of India—Frontier Science & Technologies*. In this exhibition, leading scientific institutions

and various Government Departments showcased their prominent S&T developments and significant contributions to the society.

CSIR had put up an impressive pavilion at the Science Exhibition under the themes: CSIR-800/Agriculture, CSIR-800/Healthcare, Engineering Infrastructure/Mining, Mineral & Infrastructure, Leather/Ecology & Environment, Energy/Chemicals &

Petrochemicals, Strategic and Aerospace.

The exhibition showcased CSIR's scientific & technological developments under these themes and their interventions to the benefit of society and the Nation. Strategic & Aerospace theme was led by CSIR-NAL, which attracted a large number of academicians, including many school children.





CBRI Develops High Capacity Gypsum Calcinator for Small Scale Industry

CBRI, Roorkee has done pioneer work in the field of development of gypsum calcinator in the country. The batch type gypsum calcinator has been developed with the primary aim of replacing the traditional open pan method with an energy efficient system using fossil fuel having the capacity to produce about 8 tonnes of Plaster of Paris per day (8TPD).

Techno-economic feasibility of this calcinator is now well established. A large number of these calcinators have been successfully installed in different

parts of the country and are producing Plaster of Paris based on CBRI know-how. There is a need to design a gypsum calcinator for the production of gypsum Plaster of consistent quality using the ground gypsum (natural/by-product gypsum) having higher capacity.

To meet the requirements of small scale industry, a gypsum calcinator having 20 TPD capacity has been designed which utilizes heat efficiently from flue gases passing over the sides of pan, by providing broken transverse ribs on the periphery of the pan. The

designed system shall produce 20 TPD gypsum plaster of consistent quality and is of modular type.

The calcinator consists of the following components: furnace for liquid fuel/gaseous fuel firing; pan with the broken transverse ribs at its periphery; power operated churning mechanism, temperature sensing and monitoring device and supporting structure for mounting shell, churning mechanism. It has the following salient features:

- Low fuel consumption as compared to conventional methods.

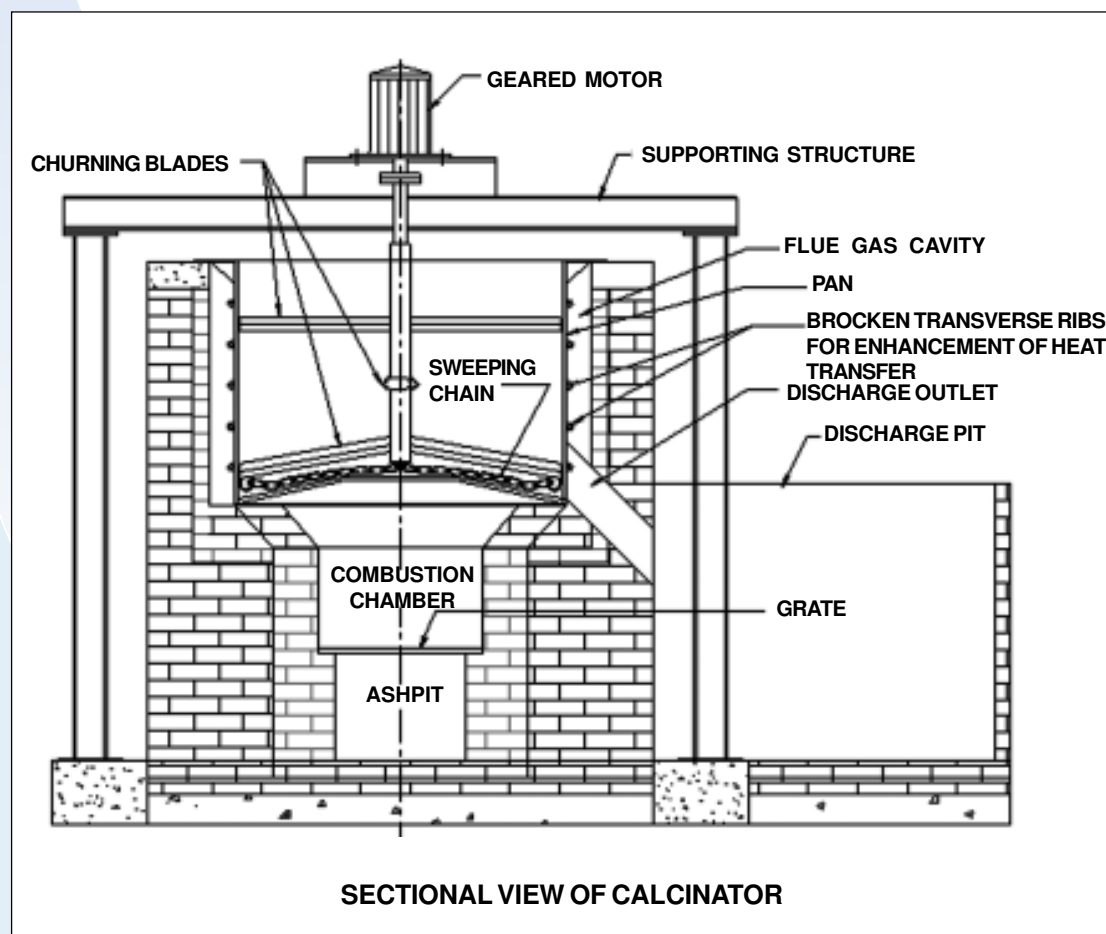
- Temperature control ensures uniform quality plaster pottery, ceramic and surgical grade plaster.

- Power churning maintains uniform temperature of charge during calcination. Design of calcinator is suitable for coal, liquid and gaseous fuel.

- Dustless automatic discharge of hot calcined gypsum.

- Suitable for calcining gypsum for building, pottery, ceramic and surgical grade plaster.

The envisaged impact of the outcome of this work is to provide technology for 20 tons per day capacity gypsum calcinator to produce Plaster of Paris.



SECTIONAL VIEW OF CALCINATOR



CSIR Makes Headway in Nanotechnology – Gold Nanoparticles for Novel Drug Delivery

Dr. P. Cheena Chawla

Enter the world of fantasy – the realm of nanoworld – and you will find structures with dimensions about the size of atoms, which are the building blocks of all matter existing in Nature. The study and design of such structures, measuring in the scale of nanometre or one-billionth of a metre is what nanotechnology is all about. The sheer size of nanostructures is the hallmark of the astounding applications of nanotechnology in diverse fields.

In the field of Medicine, the unimaginably vast potential of nanotechnology has opened up the possibility of designing nanostructures for both diagnosing the diseased tissues and delivering drugs and other therapeutic substances to target areas in the human body. It is a matter of pride that CSIR scientists have made a significant headway in designing nanoparticles of gold for delivering drugs to specific body cells.

Interestingly, these nanoparticles are covered with stabilizing agents that prevent their aggregation and also help the nanoparticles survive in both alkaline and acid media. Gold is chosen for designing these nanoparticles primarily

because of its non-toxic nature, convenient synthesis in a variety of sizes, and ability to attach payloads through various means like electrostatic, covalent or non-covalent interactions.

Thanks to Dr. B. L. V. Prasad, Scientist, Physical and Materials Chemistry Division of National Chemical Laboratory (NCL), Pune and his team who have made painstaking efforts in exploring several biochemical substances that could act as nanoparticle stabilizing agents, which also enhance the functional role of the nanoparticle in carrying the drug and delivering the therapeutic molecules to target cells.

It was found that gellan gum, widely used in food and confectionary industry as thickening and gelling agent, could be used as nanoparticle stabilizing agent, for it has unique structural features. Gellan gum comprises four linked monosaccharides or simple sugars, including one molecule of rhamnose (a sugar found in various plants), one molecule of glucuronic acid (an oxidized glucose molecule), and two molecules of glucose. It is, therefore, a high molecular weight

polysaccharide gum.

Gellan gum is produced by culture fermentation of a carbohydrate by the microbe *Pseudomonas elodea*, which is an aerobic, non-pathogenic, gram-negative bacterium. This water soluble gum having thickening, gelling and stabilizing properties is commercially available and is approved for food, cosmetic and pharmaceutical use in many countries. It has also been an ingredient of hair care products, creams and sunscreens among other such products. According to Dr. Varsha Pokharkar from Poona College of Pharmacy, Bharati Vidyapeeth University, Pune, who has also contributed to this work, the reducing and stabilizing properties of this gum have been crucial for using it in the synthesis of gold nanoparticles.

Nanoparticles stabilized with gellan gum also display superior stability to pH changes. Such nanoparticles have been used to load one of the anthracycline rings with antibiotic, doxorubicin hydrochloride, and tested for their cytotoxic effects against human glioma (brain tumor) cell lines, namely, LN-18 and LN-229.



Dr. Anjali Shiras from National Centre for Cell Science (NCCS), where the activity of nanoparticles on these cells was assessed, says that the drug loaded on nanoparticles shows enhanced cytotoxic effect as compared to pure drug taken at same concentrations as present on the nanoparticle surface, while being effective for a longer period of time.

Normally, anti-cancer drugs targeted at brain tumors face the challenge of crossing the Blood Brain Barrier (BBB) that blocks the drug delivery to the tumor site. On the other hand, nanoparticles have been shown to cross this barrier, which is why such drug delivery systems are a better alternative to delivering drugs in tissues of the brain. In this context, gum loaded nanoparticles having many sugar moieties could have an additional advantage as the BBB contains glucose receptors.

Another exciting application of gold nanoparticles is to counter the challenge of multi-drug resistant microorganisms which develop immunity against certain drugs due to their prolonged and excessive use. According to Dr Pankaj Poddar of NCL, Pune, dressing up or capping nanoparticles with antibiotics has worked well. Dr Poddar and his colleagues used cephalexin, a broad-spectrum betalactam antibiotic, for the *in situ* reduction and capping of gold nanoparticles. Gold nanoparticles have been successful on certain drugs, and research efforts are on for loading some more medicines onto gold nanoparticles for their effective delivery to target body

cells. The glittering gold, treasured by us all for its beauty and monetary value, thus has an exciting facet of its usage in delivering medicines effectively.

The controlled synthesis of nanoparticles is surely an extremely important area of nanotechnology. In fact, exquisite inorganic nano-scale structures are naturally produced by microorganisms like magnetite particles in magnetotactic bacteria and amorphous silica exoskeletons of diatoms. An NCL collaboration involving Dr Murali Sastry (Physical & Materials Chemistry Division), Dr Rajiv Kumar (Catalysis Division), Dr Absar Ahmad and Dr Islam Khan (Biochemical Sciences Division) has demonstrated the synthesis of silver and gold nanoparticles within the cells of a fungus, *Verticillium*. The scientists found that treatment of the fungal biomass with aqueous ions of gold chloride resulted in reduction of the metal ions, resulting in intra-cellular formation of gold nanoparticles. As these gold nanoparticles are formed, the fungal biomass dramatically turns purple in colour.

It is quite exciting that fungi, which are eukaryotic organisms, can be used in nano-synthesis. As fungi are also good sources of enzymes, the enzymatic processes leading to the synthesis of advanced nano-materials have the potential for scale-up. The NCL group has demonstrated that different genera of fungi can be used to synthesize nanoparticles having different chemical compositions.

In yet another development in

nanotechnology, NCL scientists have shown the biological synthesis of triangular gold nanoprisms. The properties of a metal nanoparticle can be tailored by controlling its size, shape, composition and crystallization. Specific chemicals such as polypeptides secreted by bacteria, namely, *Escherichia coli*, have been shown to induce the growth of flat, triangular gold nanocrystals at a four per cent yield relative to the total nanoparticle formation. Dr. Murali Sastry, Dr. Absar Ahmed and the team at NCL have demonstrated biological synthesis of large amounts of triangular gold nanoprisms by a single-step, room-temperature reduction of gold salt solution by the extract of the plant, lemongrass (*Cymbopogon flexuosus*).

The lemongrass extract on mixing with gold salt solution exhibits a change of colour from pale yellow to a vivid ruby red. The reaction mixture is allowed to stand for six hours to yield a large number of triangular gold nanoparticles of 8-18 nm thickness with an edge length of 200-500 nm. This method has reported a yield of 45 per cent. The scientists also enhanced the percentage of gold nanotriangles in the reaction medium up to 95 per cent of the nanoparticle population by repeated centrifugation. In fact, Nature has already set the rules for us as it has created innumerable nanostructures each being a masterpiece entity in itself. All we have to do is to understand the secrets of Nature for designing our own nanostructures with unique properties that suit our myriad needs.



NAL's Trisonic Wind Tunnel Turns 40,000+

On 12 November 2010 NAL, celebrated the completion of over 40000 blowdowns (40186, to be precise) of its wind tunnel, providing invaluable and strategic experimental aerodynamic data to the national aerospace programmes. Welcoming the dignitaries and invitees to a special programme on this historic day, Sri Nagarajan, Head, NTAF paid tributes to the visionary and first Director of NAL, Dr. P. Neelakantan, who envisioned the 1.2m wind tunnel as early as in the 1960s. At that time, there were practically no aerospace programmes in India. Yet, Dr. Neelakantan had the vision that a trisonic wind tunnel was a major infrastructure requirement, without which no flight vehicle could be indigenously developed.

When the wind tunnel had its first blowdown on 29 May 1967, Dr. Neelakantan was sadly no more and could not feel the arrival of his brainchild. *“Practically everything that flies in the country, except birds, have graduated out of this facility”* is an often-heard statement. This is indeed true, but not absolutely true. Sometimes, some pigeons do try, but fail to graduate; they fall dead in the exhaust section of the wind tunnel, unable to go through the sound barrier of blowdown noise!

Paying tributes to the Heads of the erstwhile Aerodynamics Division, NTAF and past Directors of NAL, Dr. Upadhyaya, Director, NAL remarked that it was a momentous occasion to celebrate 40000+ of blowdowns and wondered if anyone among the audience was present when the first blowdown took place. The two persons, amongst the audience, who were present even at the time of the first blowdown were Sri G. Rajendra and Sri G. Narayan.

Placing on record all those who contributed to the growth of wind tunnel tests in NAL leading to 40000+ blowdowns, the Chief Guest Dr. Prahlada, Chief Controller, R&D, DRDO, Ministry of Defence, Govt. of India, noted that there are bigger

challenges now more than ever before, since the number of national aerospace programmes has zoomed in the last couple of years. “Blowdown no. 40,186, which was on a model of the Crew Module of the Human Spaceflight Programme of ISRO signaled this new growth and challenge,” he remarked.

The last 5000 blowdowns (35K to 40K) have been completed in less than three years, whereas the previous 5000 blowdowns (30 to 35K) took little over 4.5 years. Calling upon NAL scientists to develop newer test techniques and upgrade the existing test facilities, he mentioned that there is a need to develop even bigger wind tunnels to meet the future aerodynamic testing requirements calling for large productivity.





NAL Organized One-Day Seminar on *Acoustic Testing of Satellites and Launch Vehicles*

A one-day seminar on *Acoustic Testing of Satellites & Launch Vehicles* presenting an overview of Acoustic Test Activity and the R&D activities at the Acoustic Test Facility (ATF) of NAL was organized on 8 October 2010 in honour of Dr. Ranjan Moodithaya, the former Head, Acoustic Test Facility and Knowledge & Technology Management Division of NAL, Bangalore, who superannuated on 30 September 2010 after serving for 37 years.

The Inaugural Function was followed by the Technical Session where presentations were made by senior scientists from VSSC and ISAC, the major users of the ATF, besides scientists from ATF, NAL. Attended by scientists from both ISRO and NAL, the Seminar highlighted the contributions of the ATF in general, and that of Dr. Ranjan Moodithaya in particular to the acoustic testing of launch vehicles and spacecrafts.

Shri V. V. Bhat, Member (Finance) and Secretary to the Government of India in Space, Atomic Energy and Earth Science Commissions, was the Chief Guest of the Inaugural Function, which was presided over by Dr. A.R. Upadhyya, Director, NAL. Dr. Ranjan, as he is popularly called, in his invited lecture, *Technical Management – Perspective of Government R&D Organization*, recalled his

experiences and insights on the management and effective utilization knowledge and technology, especially in the Government R&D sector.

Shri V. V. Bhatt presented his practical experiences with administrative reforms in several central government organizations with which he was associated for a long time. His references to real-life situations were thought-provoking and illustrative. He emphasized the importance of deployment of computers in improving the operational efficiency, and in bringing out complete transparency in all developmental and administrative activities of Govt. agencies.

Dr. A. R. Upadhyya, in his Presidential Address, brought out the importance of acoustic testing of launch

vehicles and spacecrafts prior to their launch for their qualification under hostile acoustic environment, which they encounter. He recalled the excellent support provided by ATF group led by Dr. Ranjan in accomplishing the same. He pointed out that the ATF group at NAL was handed over the complete responsibility for the design, development and commissioning of ISRO's new state-of-the-art acoustic test facility located at ISRO ISITE Complex amidst tough international competition – a tribute to the confidence they have established in the field of acoustic testing.

The Technical Session was very interactive and informative to the August audience consisting of scientists and engineers from ISRO Satellite Centre,





Vikram Sarabhai Space Centre and NAL, among many others. It was very heartening to see a number of senior and retired ISRO and NAL scientists/engineers, who were pioneers in the acoustic testing in the country, attending and actively participating in the session. Dr. C.V.R. Reddy, formerly from Structures Division of ISRO Satellite Centre, chaired the session and was at his charismatic best in introducing speakers as well as effectively summarizing the presentations at the end.

The Technical Session had three invited talks: Mr. P. R. Murali of the Structural Dynamics Division of VSSC, Thiruvananthapuram in his invited talk on *Acoustic Testing of Launch Vehicles* spoke about the sources of noise and their effects on launch vehicle stages and subsystems as well as payloads in a launch vehicle. He also illustrated the generation of acoustic test spectrum for the heat shield of a launch

vehicle from the corresponding acoustic test results. Mr. S. Shankar Narayan, Head, ESTD, Structures Group, ISAC, spoke on, *Acoustic Testing of Satellites*. He explained at length on the sources of acoustic noise affecting integrity of satellites during lift-off and transonic flight through the atmosphere. He emphasized the importance of proper interpretation of the test results.

Mr. S. Murugan, Scientist, ATF, NAL, gave a detailed talk on the *New Acoustic Test Facility at ISRO ISITE Complex*. The responsibility for design and commissioning of this challenging project, where the state-of-the-art ATF is being established by ISRO, was awarded to NAL. Mr. Murugan presented an overview of the project clearly bringing out the need for such a new facility in ISRO and providing information on the salient features of the new facility, the new technologies being incorporated as well as the constructional challenges faced.

Dr. Ranjan in his wrap-up presentation entitled, *The Challenges in Acoustic Tests at NAL*, highlighted the various problems encountered during acoustic testing, and how they were solved by simple but effective indigenous approaches. One such challenging problem led to the development of critical components of a noise generator paving the way for the first export of NAL technology – ‘The High Frequency Jet Noise Generator’. He recalled many in-house solutions that were developed at ATF to overcome the challenges encountered in meeting the acoustic test needs of ISRO during their successful and timely completion.

The Seminar was indeed a fitting tribute to Dr. Ranjan, a brilliant Acoustic Scientist with basic research dearer to his heart, yet humble, positive and gentle, and a man of few words, for his immense contributions and indelible impressions he had left among his colleagues at large.

First National Conference on *Animal, Microbial, Plant Toxins & Snakebite Management (AMPTOX 2010)*

The 1st National Conference on *Animal, Microbial, Plant Toxins & Snakebite Management (AMPTOX 2010)* jointly organized by Indian Institute of Chemical Biology (IICB), Jadavpur, Kolkata & KPC Medical College & Hospital, Jadavpur, Kolkata was held on 11-12 December 2010 at the Department of Biochemistry, KPC Medical College & Hospital.

Scientists and clinicians from different countries, namely UK, USA, Russia, Slovenia, Australia, Singapore,

Malayasia, Sri Lanka, Bangladesh, Nepal and India participated in the Conference. At the inauguration of the Conference on 11 December 2010, Dr. Aparna Gomes, Organizing Secretary, AMPTOX 2010 and Scientist IICB, delivered the Welcome Address. She stated that the theme of the Conference was *Biotoxins in Health & Disease* whose objective is to provide a common platform to researchers, clinicians, environmentalists, and the Anti-serum industries to exchange their views. She

hoped that AMPTOX 2010 would open collaborative research ventures to strengthen venom-toxin research in India in the near future.

The Guest-in-Chief, Prof. P. Gopalakrishnakone, who is the President of International Society of Toxinology (IST), lit the lamp to mark the inauguration of the Conference. Following this, Prof. C. R. Maity delivered the Keynote Address as the President of the Organizing Committee. Prof. Siddhartha Roy, Chairman,



CONFERENCES



Seated on dais from left: Dr. A Gomes, Prof. F. U. Ahmed, Prof. C. R. Maity, Mrs. Krishna Das, Prof. P. Gopalakrishnakone, Prof. S. Roy, Prof. A. L. Garvey and Prof. S. Bandyopadhyay



Mr. Romulus Whitaker (right) receives the AMPTOX-2010 Lifetime Achievement Award from Prof. P. Gopalakrishnakone (left)

AMPTOX 2010 and Director, IICB in his lecture expressed great pleasure for co-organizing this Conference along with KPC Medical College. He recollected the landmark work by Prof. S. N. De in Kolkata, regarding the discovery of the cholera toxin. He also mentioned the roles of toxins not only in understanding the pathogenesis of diseases but also in therapeutics.

Prof. Roy also mentioned the recent work done by a NIH, USA group where antibody conjugated with *Pseudomonas aeruginosa* toxin had a remarkable effect in treating incurable lymphoma. He hoped that effective collaborations will be worked out between scientists and important results will come out of these collaborations that may have a remarkable impact in health and diseases.

Mrs. Krishna Das, on behalf of the Chairman, KPC Group, congratulated scientists, budding researchers, students and medical practitioners who were attending this Conference and wished them all a great success. Prof. Farouque Uddin Ahmed, Principal KPC Medical College & Hospital, expressed hope that

this Conference would result in partnerships between research laboratories and hospitals. Prof. Alan Harvey, who is also the Editor-in Chief of *Toxicon*, similarly hoped that this would be a very positive meeting. He mentioned that more than 100 years back Captain Eliot from Scotland had come to India with a special assignment on snake venom research.

The Guest-in-Chief, Prof. Gopalakrishnakone, from National University of Singapore, wished all success to the Conference on behalf of IST and extended its collaboration to the toxinologists. He was pleased that the toxinology community was growing with enthusiasm and hoped that National Toxinology Society India (NTSI) will collaborate with the IST. He reiterated that production of cheap and effective anti-venom is our first priority. Secondly he mentioned the necessity to look for alternative therapy against envenomation. He further mentioned the importance of medicinal uses and discovery of drugs from venom.

Prof. Gopalakrishnakone said that it was unique that IICB and KPC had

co-organized the meet and congratulated them for this effort. He stated that WHO has announced snakebite to be a neglected disease. He advised that India needs the military planning and vision to remove the enemy snakebite consequences. He expressed concern that though India has progressed a lot and has a economic boom now, still a common sociomedical problem like snakebite continues to be neglected.

During the Inaugural Session, the Lifetime Achievement Award was conferred upon Mr. Romulus Whitaker, the renowned herpetologist and environmentalist from India. He expressed concern about the anti-venom production, and the need to collect venom from different species for research at different labs. More than 200 delegates participated in the Conference. Anti-serum Production houses like Bharat Serums, VINS Bioproducts, Premium Serums & Vaccines were active participants from the corporate sector.

The scientific programme comprised the inaugural lecture, special invited lectures, orations and invited lectures by



national and foreign delegates. There were ten sessions including the inauguration and valediction. In addition, there was a Snake Awareness Programme coordinated and chaired by Mr. Romulus Whitaker, where the documentary, *King Cobra Telemetry* was shown. The inaugural lecture, entitled, *Cholera toxin: From De to today* was delivered by Dr. G. B. Nair, Director, NICED, Kolkata. Special invited lectures were presented by Dr. R. Nagaraj, Scientist, CCMB, Hyderabad whose topic was *Delta-Lysin — A Cytolytic Peptide Secreted by Staphylococcus aureus— Transforming a Foe to Friend* and by Mr. Gerry Martin, Environmentalist/ Herpetologist, who addressed to the

socio-economic perspective of snakes.

Prof. P. Gopalakrishnakone delivered Prof. S. C. Lahiri Memorial Oration Lecture entitled, *Designed Peptides from sPLA2 Inhibitors as Drug Leads for Treating Inflammation with Special Reference to Rheumatoid Arthritis*. Prof. T. V. Gowda of Mysore University delivered the Prof. A. K. Nag Chaudhury Memorial Oration where he reflected on *Phospholipase A2 of Russel's Viper Venom are Tissue Targeting Toxins* and Prof. Antony Gomes of University of Calcutta delivered the Aleena Alam Oration Lecture on *Anti-cancer Drug Clues from Venoms Toxins*. Participants got the opportunity to listen to 40 invited lectures by scientists and clinicians, of

which 14 were by foreign delegates. There were two oral sessions comprising of 17 speakers and 34 poster presentations.

VINS Bioproducts declared an Award for the Best Student's Presentation. Dr. M. V. Khadilkar of Premium Serums & Vaccines delivered a lecture entitled, *Good Quality Snake Venom: Key to Produce Safe and Effective Anti-snake Venom Serum*. The Conference concluded on 12 December 2010 with Valedictory Session chaired by Prof. C. R. Maity. Prof. Gopalakrishnakone expressed that the Conference was truly of International standard and hoped that in this age of Skype and internet communication, collaborative research work would come to work.

International Workshop on *Recent Trends in IP Practice and Management* at CDRI, Lucknow

As a part of its Diamond Jubilee Year celebrations, Central Drug Research Institute (CDRI), Lucknow, organized an International Workshop on *Recent Trends in IP Practice and Management*, in collaboration with the United States Patent & Trademark Office (USPTO), during 5-6 October 2010 at the Institute. The objective of the Workshop was to impart first-hand exposure of current IP practices for research scientists and those involved in IP filing, etc. The focus of deliberations was on patenting pharmaceuticals and



Mr. Vinay Tripathi, Organizing Secretary of the Workshop on, *Recent Trends in IP Practice and Management*, addressing the audience

biological materials, encompassing the aspects of *prior art* search, documentation, establishing patentability, attending office actions, claims, drafting and interpretation, comparative IP practices, technology transfer and portfolio management.

A total of 130 participants comprising patent coordinators and inventors participated from the following institutes, universities, colleges and industries: CSMCRI, Bhavnagar; CBRI, Roorkee; CDRI, Lucknow; CIMAP, Lucknow; CLRI, Chennai; IGFRI, Jhansi; IGIB, New Delhi; IIT Kanpur; IITR, Lucknow; IPMD-CSIR, New Delhi; NBRI, Lucknow; NBFGR, Lucknow; NEERI, Nagpur; NEIST, Jorhat; NII, New Delhi; URDIP, Pune; ICMR, New Delhi; Biotech Park, Lucknow; Banaras Hindu University, Varanasi; C.S.M. Medical University,



Lucknow; Integral University, Lucknow; Lucknow University, Lucknow; Saraswati Dental College, Lucknow; Saurashtra University, Rajkot; College of Pharmacy, Moradabad; NIPER, Rae Bareilly; Azad Institute of Pharmacy & Research, Lucknow; Tata Chemicals Limited, Pune and Astron Research Ltd., Ahmedabad.

The Workshop started with a formal welcome by Dr. A. K. Saxena, Acting Director, CDRI. While welcoming the dignitaries, speakers and participants he stressed on strengthening of IP awareness among the bench level scientists. Mr. R. K. Gupta, Head, IPMD-CSIR presented a brief introduction of IP portfolio of CSIR, and reiterated the need of enhancing the position of CSIR by way of quality patent applications.

Ms. Kalpana Reddy, First Secretary to Intellectual Property, US Embassy at New Delhi gave an account of activities at USPTO and later Prof. Dr. (Mrs.) Saroj C. Gopal, Vice-Chancellor, CSMMU; Lucknow who was the Chief Guest emphasized the role of IPRs in today's competitive business environments. Mr. Vinay Tripathi, Organizing Secretary proposed the Vote of Thanks.

All areas relating to IP practice and management were covered in six Technical Sessions. The speaker, Dr. Ram R. Shukla, Senior Supervisory Examiner from USPTO touched upon issues like Patenting in U.S., Patenting Chemical Entities, Biological and Herbal Materials, Patent Examination and Searching, Claim Construction and Interpretation. On the first day, there was also a lecture on *Basic Principles of IP Management & Strategies* by Ms. Kalpana Reddy, U.S. Embassy, New Delhi. There were talks also by Dr. K.S. Kardam, Dy. Controller of Patents, IPO, New Delhi; Dr. M.D. Nair, Consultant to Healthcare Industry and Mr. Goutam Bhattacharyya, Attorney, KNS Partners, New Delhi. After the hectic technical sessions, the music and dance show by an amateur group of dancers led by Mr. Lahiri, Lucknow came to delegates as a respite for the day.

The second day started off by a talk on *New Initiatives at the Patent Office* by Dr. Ram R. Shukla, USPTO and a series of lectures including Intellectual Property Asset Management and Technology Transfer, Organization and Responsibilities of a Technology

Transfer Office; Tips on License Drafting and Negotiation; Common Pitfalls in Drafting IP License Agreements, Infringement: Detection & Remedies; Theft of IP: Case Studies on Patent Infringement; Prosecution Procedures in IP Infringement; Burden of Proof on Plaintiff and Respondents, Valuation of IP: Importance and Methodologies of IP Valuation, IP Audit: How to Conduct a Systematic IP Audit? The speakers were: Ms. Kalpana Reddy; Ms. Sanjit Kaur Batra from U.S. Embassy, New Delhi; Mr. R.K. Gupta, Head, IPMD-CSIR, New Delhi; Dr. R.R. Hirwani, Head, CSIR-URDIP, Pune and Mr. Rahul Dutta, Attorney at IP Law, Lucknow.

The Valedictory Function was chaired by Dr. V. P. Kamboj, Former Director, CDRI. He enquired the audience about the learning of the Workshop, and posed related queries especially to the youngsters. He stressed on the need on updating oneself on the trends in IPRs, which is a highly dynamic area at the global level. All participants were given certificates and the Vote of Thanks was proposed by the Organizing Secretary.



A view of the audience



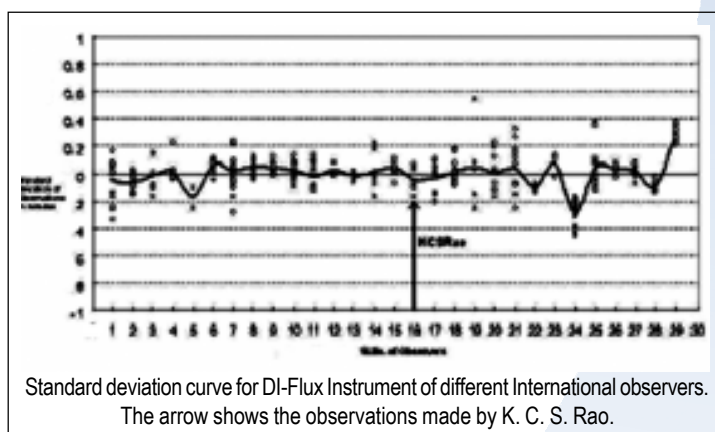
K. C. S. Rao Acknowledged as Expert Observer at IAGA Workshop

Mr. K. Chandrasekhar Rao, Technical Officer working in the NGRI Magnetic Observatory, participated in the IAGA 2010 Workshop on Geomagnetic Instruments, Measurement Session and Data Acquisition and Processing during 13-23 September 2010 at Changchun, China. He calibrated the DI-Flux Instrument, which has been recently repaired. He also presented a poster on methods using analogue La Cour variometer data to fill gaps in 1-minute digital data, which is extremely important to maintain INTERMAGNET standards.



Mr. K. C. S. Rao (left) along with observers at the Measurement Session of IAGA Workshop

A remarkable achievement of the visit was that his measurements during the intensive observation session were of very high consistency and accuracy, which secured him the fourth position among the international group of expert observers as recorded by IAGA. He has been invited to assist and participate in installation of new observatories in the low latitude regions of the world by leading scientists of the community.



Training Programme on, *Muga Sericulture for Silkworm Growth and to Enhance Production of Cocoon Crop*

A two-day Workshop cum Training Programme on, *Sericulture for Silkworm Growth and to Enhance Production of Cocoon Crop* was organised by Indian Institute of Chemical Technology (IICT), Hyderabad in collaboration with North East Institute of Science and Technology (NEIST), Jorhat. It was the sixth training programme in the series from the year 2007 in Golaghat, Assam on 20-21

October 2010.

The Training Programme was a part of the sericulture project to be implemented in Assam and Manipur sponsored by CSIR Rural Development Programme awarded to Dr U. S. N. Murty Principal Investigator, IICT Hyderabad. The event was attended by 25 muga sericulture farmers from Golaghat and other parts of Assam for the upliftment of their socio-economic

status. The inaugural programme was chaired by Dr. B. G. Unni, Scientist 'G' & Area Coordinator (Biotechnology/Biological Sciences), NEIST, Jorhat.

Dr. B. G. Unni delivered the Welcome Address in the August presence of the dignitaries, Dr. U. S. N. Murty, Principal Investigator, Dr. Sunil Misra, Scientist, Mr. Ravinder, IICT Hyderabad, Mr. A. K. Baruah, ADC of Golaghat District, Mr. P. K. Baruah,



TRAINING PROGRAMMES

Project Director DRDA, Mr. S. K. Das, DDM, NABARD, and Mr K. Duarah. State Sericulture Superintendent. The dignitaries and the officials present on the dais spoke about the importance of the Training Programme.

On the occasion, *Terminalia chebula* based “Muga Heal 1”, for the control of ‘flacherie’ (a disease in muga silkworm) and for enhancing silk production was released to farmers for field application. All the farmers were provided with 1 kg of dry *Helica* powder and the simple protocol for application was demonstrated to them. Speaking on the occasion, Mr. P. K. Baruah, Director DRDA, and Mr. A. K. Baruah ADC, appreciated and lauded the efforts of Dr. U. S. N. Murty and Dr. Unni. They thanked the Principal Investigator for selecting the States of Assam and Manipur for the rural development programme.

Delivering his address, Dr. Murty said that IICT offers globally competitive and environmentally viable technologies and has collaboration in many frontier areas of science. He said that the Training Programme is basically a project developed by CSIR under rural development scheme. Some of the main objectives of the project are implementation of package practices for the better cocoon crop yield, impart training to the selected farmers in various activities of farm sector, organizing farmer meets, workshops with technical experts, representatives of financial institutions and technology transfer.

Dr Murty added that SAMADHAN KENDRA developed by his group at IICT is a rural Information Technology Centre for the benefit of community residing in rural areas. The software also provides details about Govt. schemes,

subsidies and loan facility, list of Banks offering loans etc. for the benefit of the rural population. He also discussed the technology of pupal oil extraction and benefits of using pupal oil in various industries. He stressed that the pupal oil has various nutraceutical properties and has a lot of potential health benefits. Mr. T. Ravinder of IICT gave a demonstration of extraction of pupal oil and also reiterated the benefits of this oil.

Addressing the farmers Dr. Sunil Misra discussed the various types of infestation affecting the mulberry plant and explained in detail how to identify the diseases and prevent the attack on the host plant. Mr. P. K. Handique and Mr. Kartik Neog discussed about rearing technologies, disease management and field maintenance during cultivation of the cocoon crop.

The topics discussed in the Training Programme were on better seed production, rearing technologies of silkworms, disinfection techniques, disease and pest management, eco-friendly technologies, self employment through sericulture for rural development in North Eastern region of India, pupal oil production from muga pupae and availability of loans for Self Help Groups, and NGOs from NABARD. A farmers’

interactive session was held with the resource persons. The officials from NGOs and Self Help Groups evinced keen interest to adopt the technology of pupal oil production which was developed by IICT, Hyderabad.

One of the senior farmers in the Training Programme, Mr Boloram Chetia, expressed that the State of Assam has lot of potential especially in muga rearing which is endemic to Assam. He also expressed that the technologies of IICT and NEIST should be adopted seriously by the State Muga farmers.

Interacting with the farmers Mr. Das of NABARD and Mr. Sarma, Branch Manager, Life Insurance Corporation (LIC) Jorhat explained about the various schemes available for community rearing, process of taking loans, and compensation on crop loss. They also explained about the various schemes available for women. Mr. Das further explained about the availability of schemes like *Microenterprise Development Programme* and *Joint Liability Group*. This Training Programme cum Workshop for the sericulture farmers was an integral part of Golden Jubilee Celebrations (2010-2011) of NEIST, Jorhat.



Dr. U. S. N. Murty, Dr. B. G. Unni and resource persons with farmers during the Training Programme



NEIST Organizes Training Under CSIR-800

Under the *CSIR 800* banner, the North East Institute of Science and Technology (NEIST), Jorhat organized a Training-cum Awareness Programme on, *Mushroom Cultivation Technology* on 16 November 2010 at Meleng, Jorhat jointly with the Society for North East Handmade Paper Development (A KVIC certified organization), Jorhat.

All aspects of mushroom cultivation were demonstrated along with training. Mushroom spawn packets along with polythene bags in order to facilitate mushroom cultivation were also distributed among the participants. The training was attended by over 21 members coming from different SHG's/NGOs who expressed their keen interest to adopt mushroom cultivation not only for their diet supplement but also for economic benefit.

The training was conducted by Dr. P. R. Bhattacharyya, Scientist F & Head, MAEP Division and Dr. A. K. Bordoloi,

Principle Technical Officer, MAEP Division who were assisted by Ms. Juthika Bezboruah, Project Assistant, MAEP Division.



Dr. P. R. Bhattacharyya, Head, MAEP Division, distributing mushroom spawn packets to the participants

Inauguration of Post-Graduate Course on, *Advanced Modeling and Simulation in Chemical Engineering and Science* at NCL, Pune

CSIR's Post Graduate Research Program in Engineering (PGRPE), now part of the Academy of Scientific and Innovative Research (AcSIR) activities, was started in 2009. National Chemical Laboratory (NCL), Pune started participating in this program in 2010 through a program on Advanced Modeling and Simulation in Chemical Engineering and Science. This is a two-year residential program designed to train graduates in chemical engineering and allied disciplines through a combination of formal coursework followed by a one-year research project.

Dr. Chetan Gadgil, the course coordinator welcomed the speaker,

newly joined students and the audience. He gave a brief background of the research program. The Program consists of about ten courses covering fundamental aspects of Chemical Engineering such as transport, reaction engineering, thermodynamics, mathematics, as well as advanced courses in modeling and simulation such as nonlinear analysis, statistical and numerical methods, computational fluid dynamics, and applications in materials and biological sciences.

The one-year project working with a NCL scientist will serve to impart training in research through participation in a 'live' on-going project. Nine students

selected from among 1200 applicants based on their undergraduate performance and technical interviews have chosen to join this program despite competing offers from reputed institutes such as IITs/ IISc. This is the first program at NCL as part of the AcSIR activities.

The Course was flagged off at a Function held on 10 August 2010. Dr B. D. Kulkarni, Distinguished Scientist, CSIR was the featured speaker. Dr Kulkarni welcomed the students to NCL and remarked that it was a dream come true personally for him as well as for the Chemical Engineering and Process Development Division to have a



postgraduate program at NCL distinct from the PhD program run in affiliation with various universities and IITs. He shared his vast experience with the students in the areas of modeling and simulation of chemical processes and equipment.

Dr Kulkarni compared modelers to poets who capture the essence of a thesis in an elegant (mathematical) form and hence gain deep understanding into

not only the particular process being modeled but the entire class of processes that are amenable to description by similar equations. As such, a modeler is respected in the technical world not only for the obvious knowledge about his or her area of specialization but also for the seemingly uncanny ability to possess insight on a diverse range of technologies.

Dr Kulkarni urged the students to

take full advantage of the teaching and research facilities at NCL and expressed his confidence that on completion of the course they will be highly sought-after as employees by both academic and industrial research organizations, or as Ph.D. students in leading institutions including NCL. The Function concluded with a Vote of Thanks followed by an informal interaction of the students with faculty and Dr Kulkarni.

Discussion Meeting on, *Aerodynamics of High Speed Vehicles: Challenges & Directions*

The Experimental Aerodynamics Division (EAD) of NAL, Bangalore conducted a half-day Discussion Meeting on *Aerodynamics of High Speed Vehicles — Challenges & Directions*, on 9 November 2010 in honour of Dr Sajeer Ahmed, Head, EAD, and Advisor (M&A), NAL who superannuated on 30 October 2010. The aim of the discussion meeting was to get the experts in the field of high speed vehicles to share their research experiences and direct the future course of research activities in the area of high speed vehicle design and development.

The Discussion Meeting was inaugurated by Director Dr A. R. Upadhyaya. Dr L Venkatakrishnan, Head, EAD welcomed the invited speakers and participants. He briefly introduced the goals of the Division and purpose of the Discussion Meeting. The Presidential Address was delivered by Director, NAL who complimented the Division for developing advanced flow diagnostic techniques and the research initiatives taken in the fields like the

aerospike nozzles and jet aero-acoustics. He highlighted the contributions of the Division towards solving the buzz problems in the intake of LCA aircraft. He emphasized the need for developing more application oriented research programs and a thrust towards active flow control.

Dr Sajeer Ahmed delivered the Keynote Address on *Perspectives on High Speed Flow Studies at NAL*. In his lecture, Dr Sajeer recollected his pleasant memories and research experiences at NAL. He traced the evolution of NAL research from the self-driven open-ended research of





yester-years to the highly focused, project based R&D of today. He discussed the difficulties in the intake configuration design, development, and testing for Hypersonic Research Vehicles. He concluded by suggesting future directions for research in the areas of double delta wings and flow control in the intake duct.

Talks were delivered by Prof. Job Kurian, Dr Paneerselvam, Prof. K. P. J. Reddy, Prof G. Jagadeesh, Mr B. Vasudevan, Dr Thiagarajan, Dr K. P.

Singh and Dr S. B. Verma, covering a wide range of topics such as Intake Flows, Nozzle Flows, Hypersonic Shock Interactions and Tejas Aerodynamics. The Discussion Meeting concluded with Dr L. Venkatakrishnan requesting Dr Sajeer Ahmed to summarize on some of the important outcomes of the meeting.

Dr Sajeer pointed out three important areas to focus future research interest on, namely: Shock-Shock Interaction, Nozzle Flows and Double-

delta Wings. He pointed out that even though there is active interest in these research areas, much has to be done to effectively understand the flow physics behind such flows. He also recommended that research in aero-acoustics should be carried ahead rigorously and effective ways in controlling jet noise should be developed. In the end, the Vote of Thanks was delivered by Dr G. Ramesh, Joint Head, EAD.

NEIST Substation, Imphal organized DNA-TERI clubs-Inaugural Function cum Co-ordinators Meeting for Hill Districts of Manipur State

The North-East Institute of Science and Technology (NEIST), substation, Imphal organized the Inaugural function cum Coordinators meet for Hill Districts of Manipur on 18 September 2010 for setting up DNA clubs in 21 schools in the hill districts of Manipur. This project is under the sponsorship of Department of Biotechnology (DBT), New Delhi, Government of India through the Energy and Resources Institute (TERI), Guwahati. The Implementing Agency for the said project is North East Institute of Science and Technology, Sub-Station, Imphal.

The Inaugural Function cum coordinators meet was presided by Dr. U. Deven Singh, Hon'ble MLA (Manipur) as Chief Guest, Shri Kaikholun Haokip, Additional Director, Director of Education (S) Hills, Govt. of Manipur as Guest of Honour and Dr. B. G. Unni, Scientist G and Area Coordinator (Director's Nominee)

NEIST, Jorhat, Assam as the President. The Welcome Address of the Function was given by Dr. C. M. Senthil Kumar, Scientist, NEIST, Sub-Station, Imphal who whole heartedly welcomed the dignitaries, co-ordinators from different schools and special invitees from different departments.

Dr. H.B. Singh (Principal Investigator), NEIST, Lamphalpat gave a brief profile of the DNA-clubs. He highlighted about aims and objectives of the DNA-club. He also spoke on different activities to be conducted in the schools and also the responsibility of the coordinators in implementing the programme. 21 Schools were selected from the hill districts such as Chandel, Ukhrul, Tamenglong, Senapati and Churchandpur of Manipur.

The Guest of Honour, Shri Kaikholun Haokip, Additional Director (Hills), Education Department (S), Govt. of Manipur said that implementing this

Programme at the selected schools will certainly prove useful for the students in particular. He also said that the major role on conservation can be played by respective coordinators and school students from respective schools for the implementation of this programme.

The Chief Guest of the Function, Dr. U. Deven Singh, Hon'ble MLA, Manipur stressed how to popularize science subject especially in hill districts of Manipur. He also requested the Head Master/Head Mistress and coordinators to give more emphasis on science subjects to make proper use of the DNA clubs facilities among the students of hilly districts.

The President of the Function, Dr. B.G. Unni, Scientist G, NEIST, Jorhat, and Area coordinator (Biotechnology/Biological Sciences) and Director's Nominee expressed his gratitude to the audience. He also gave credit to Shri H.B. Singh, Scientist in-charge, NEIST,



Substation for his effort for formulating this programme for Manipur. He highlighted that NEIST is used to organize student orientation programmes among the students of North East region every year and the CPYLS programme for the meritorious students of North Eastern States for exposing them to the recent developments in Science &

Technology and to attract the bright secondary level students towards science stream.

The Vote of Thanks was given by Dr. Alka Jain, Scientist, NEIST substation, Lamphelpat. DNA-clubs modalities was given by Dr. S. K. Sinha, PMU cell TERI, Guwahati, by briefing the different activities to be conducted

under this Programme and requested the coordinators for their full cooperation for the implementation. Dr. H. B. Singh concluded the programme by encouraging Head Master/ Head Mistress and coordinators to fully utilize the equipments and funds for the success of the DNA clubs activities.

51st NAL Foundation Day

Another successful year gone by, Dr. M. N. Satyanarayana, Jt. Head, KTMD, began by reminiscing the achievements of the past directors and colleagues who made a difference to NAL, on the occasion of the 51st NAL Foundation celebrated on 3 September 2010 at the S. R. Valluri auditorium. Dr. Sajeer Ahmed, Adviser M&A welcomed everyone and introduced the speakers, Dr. P. V. Acharya, Director C- Dot and Dr. V. Arun Kumar, Head, Propulsion Division who gave the 11th Technology lecture.

Dr. P.V. Acharya in his talk on *Broadband –Technology and its Impact on India* defined broadband in India and abroad. Broadband in India is connectivity at 256 kbps, a fundamental right according to Dr. Acharya, is essential for economic growth, as it offers infinite possibilities for a nation of billion people. With urban India developing at a fast pace, providing broadband access is one of the strategic objectives for the government. It is essential for the 70% rural Indian population. The way ahead is with the Government creating the National Broadband Network (NBN) through which e-governance will be delivered.

Dr. Acharya enlightened the audience about the various International Broadband initiatives such as SWAN – State Wide Area Networks at Rs 3300 crores to connect State HQ's to Block HQ's through District HQ's, 2 Mbps intrastate network for rolling out various MMP's, Common Service Centre (CSC) 5700 crores, National Knowledge Network (NKN) @ 6800 crores and the Panchayat Network @ 1800 crores. Dr. V. Arun Kumar, Scientist, Propulsion Division in his lecture on, *Advanced*

Bearing Technologies – Magnetic & Foil Bearings educated the audience through the various types of bearings, their advantages and disadvantages, the future of the bearings, and NAL's pioneering work in this field.

Dr. A. R. Upadhyya, Director, NAL in his Presidential remarks embarked on the contribution of Late Dr. P. Neelakantan, the bearing technology to be inducted this month, the RTA program and expected the first flight to take off to the skies in 2016-17. He thanked Dr.





P V Acharya and Dr. Arun Kumar for the knowledge imparted to the August audience. The Annual Report and *Golden Memoirs* published on the occasion of NAL's Golden Jubilee

Celebrations were released on this occasion. Dr. Acharya distributed the NAL Foundation Awards to the employees and the children of NAL Employees who had excelled in studies

and extra-curricular activities for the year 2010. The awardees were given a certificate with a cash prize. Dr. Ranjan Moodithaya, Head ATF & KTMD presented the Vote of Thanks.

Golden Jubilee Lecture Series at NEIST, Jorhat

First Lecture Series

NEIST organized the first of the Golden Jubilee Lecture Series on 2 September 2010 at its Auditorium. The Function was presided over by Prof. Samir Bhattacharyya, INSA Fellow where Prof. Kasturi Datta, DBT Distinguished Biotechnology Professor, School of Environmental Science and Adjunct Professor, Special Center for Molecular Medicine, School of Environmental Sciences, Jawaharlal Nehru University, New Delhi delivered the Lecture



Seen on the dais (from left), Dr. P. G. Rao, Director, NEIST, Prof. Kasturi Datta, DBT distinguished Biotechnology professor, Prof Samir Bhattacharyya, INSA Fellow and Prof. Asis Datta, Professor of Eminence, NIPGR

before the August gathering of Scientists, Research Scholars, Project Assistants, etc. and invited guests.

Dr P. G. Rao, Director, NEIST while extending warm welcome to the gathering said that it was a great day for NEIST to have an ambience of such distinguished personalities whose presence has only added more meaning to the celebration of Golden Jubilee of the Institute. Dr Rao further gave a brief profile of the journey of NEIST where

he mentioned that the contributions made by former staff members over the past years have not only accelerated the annual turnover of the Institute but have also developed expertise in vast areas of research such as Natural Product Chemistry, Drug and Drug Intermediates, Paper and Paper Products, Crude Oil Transportation, Plant Science, Environment Protection, etc.

“Over the years, more than 100

technologies were developed starting with the smallest Chalk Pencil to the largest Vertical Shaft Kiln (VSK) for mini cement plants, out of which more than 60% have gone into commercial production,” said Dr. Rao. He expressed confidence that this lecture would immensely help the researchers in their work. Delivering the Inaugural Address, Prof. Asis Datta, Professor of Eminence, National Institute of Plant Genome Research (NIPGR), New Delhi, who

also graced the occasion as the Guest of Honor said that good guidance may be the right education and expressed hope that the lecture shall especially benefit the researchers. He further congratulated Dr. P. G. Rao, Director, NEIST for the initiatives he has taken to organize the various Golden Jubilee events.

Delivering a stimulating talk on, *Multi-faceted Regulation of Hyaluronan Binding Protein-1 on*



G. J. LECTURE SERIES

Cancer Progression and Cell Migration, Prof. Kasturi Datta spoke about the active role of a novel cell surface glycoprotein, Hyaluronic Acid Binding Protein 1 (HABP1) which interacts specifically with hyaluronan (HA) and regulates HA-mediated cellular events in different stages of carcinoma. She said that the expression profile of HABP1 was investigated from initiation to progression of epidermal carcinoma in mice. During tumor initiation, HABP1 accumulates in inflammatory sub-squamous tissue and with progression, the protein, was also seen to over express in papillomatic and acanthotic tissue.

“The onset of metastasis, HABP1 over-expression was confined to metastatic islands, while it disappeared gradually from the surrounding mass and

such expression profiles in metastasized tissue were supported by decreased levels of HABP1, both at protein and transcript levels. These observations taken together suggest that the changes in HABP1 level coincide with specific stages of tumor progression, that lead to disruption of its interaction with HA, implying a role in the regulation of tumor metastasis,” said Prof. Kasturi Datta. She also described the mechanism of regulation of HABP1 on cancer progression and cell migration by different anti-cancer drugs in animal model systems.

The lecture was followed by a lively discussion on the theme and few queries



Prof. Kasturi Datta, delivering the lecture

from the audience were also answered by Prof. Kasturi Datta. The meeting ended with Vote of Thanks offered by Dr. P. R. Bhattacharyya, Scientist F, NEIST, Jorhat.

Second Lecture Series

The second lecture of the NEIST Golden Jubilee lecture in its series was delivered by Prof Alcides Lopes Leao, Professor of Sao Paulo State University, Brazil, on 21 September, 2010, before the distinguished gathering of NEIST fraternity and others. Delivering a lecture on ‘*Agri-waste for New Materials and Energy*’, Prof Leao gave a serious insight on different types of natural fibres and its importance. He particularly stressed upon the nano cellulose fibres extracted from natural fibres, its unique properties, composition



Prof. Alcides Lopes Leao, addressing the audience (sitting on the dais from left are, Dr. R. C. Boruah, Sc H & Scientist-in-charge, NEIST and Dr. B. G. Unni, Sc G)

and its diverse applications in Bio-medical sector for artificial implants in orthopedic, dental and cardiovascular and surgical equipments, textile industry,

packaging industry, cosmetic industry, etc.

Prof. Leao further outlaid the potential future work in the area for identification of new quality products, their performance and consumer perception. Addressing the gathering on the day, Dr R. C. Boruah, Scientist H & Scientist-in-charge, NEIST said that NEIST also has some research activities in the area of natural fibres and expressed that NEIST would be happy to collaborate with the University so that there will be proper exchange of intellect, infrastructure and expertise. The



speaker also replied to a few queries received from the audience. The

programme concluded with the Vote of Thanks by Dr Dipul Kalita, Scientist,

Cellulose, Pulp & Paper Division, NEIST.

Third Lecture Series

Prof Paramesh Banerjee, an eminent scientist from the Earth Observatory of Singapore, Nanyang Technological University, Singapore delivered the 3rd of the NEIST Golden Jubilee Lecture series on 28 September, 2010. The Function was presided over by Dr B. G. Unni, Scientist G & Scientist-in-charge, NEIST which was attended by members of NEIST fraternity and others.

Delivering an elaborative and interesting lecture on the topic *The Tectonics of the Indian Plate from GPS Based Space Geodetic Studies*, Prof Banerjee explained about plate tectonics and the vast utility of Global Positioning System (GPS) in studying the various changes that occur in the Earth's crust after an earthquake has taken place. Prof Banerjee made special reference to the North Eastern part of India in this context while indicating the vulnerability of the region,

so far earthquake is concerned. Prof Banerjee also mentioned about the major earthquakes that happened in the Earth's history such as the Assam earthquake (1950), Latur earthquake (1993) and Sumatra earthquake (2004) and gave an interesting note on this while saying that the probability of next earthquake is estimated by the amount of strain that accumulates after its prior earthquake.

"The various aspects of crustal deformation provides important information in the state of seismic cycle," he said. Prof Banerjee presented an extensive collection of data generated during his research on earthquakes in India and other parts of the world. Dr Unni while addressing the gathering



Prof Paramesh Banerjee, delivering the lecture

recalled the dedicated service of NEIST in its journey of 50 years in the field of Science & Technology. He also mentioned the various national and international collaborations NEIST has undertaken with various Institutes and organization for its research activities. The Function concluded with Vote of Thanks offered by Dr Saurabh Baruah, Scientist, Geo-Science Division, NEIST.

Fourth Lecture Series

The Fourth Golden Jubilee lecture series, as part of the Golden Jubilee celebration of NEIST, Jorhat was held on 22 October 2010. The guest speaker, Dr. U. S. N. Murthy, Scientist G & Head Biology Division, Indian Institute of Chemical Technology (IICT), Hyderabad delivered a lecture on the title, *Information System in Integrated Vector Management – A Cardinal*

Restorer for Cut-throat Diseases of North-East India. The Function was chaired by Dr. R. C. Baruah Scientist H & Scientist In-charge, NEIST, Jorhat who delivered the Welcome Address. Dr. B. G. Unni, Scientist G & Area Coordinator (Biotechnology/Biological Sciences) & Technical Programme coordinator GJC gave a brief introduction about Dr. U.S.N. Murthy

and his scientific contribution especially in NE region. Prior to this, Dr. Unni described in brief the dedicated service of NEIST, Jorhat for the 50 years in the North-East region in the field of science & technology.

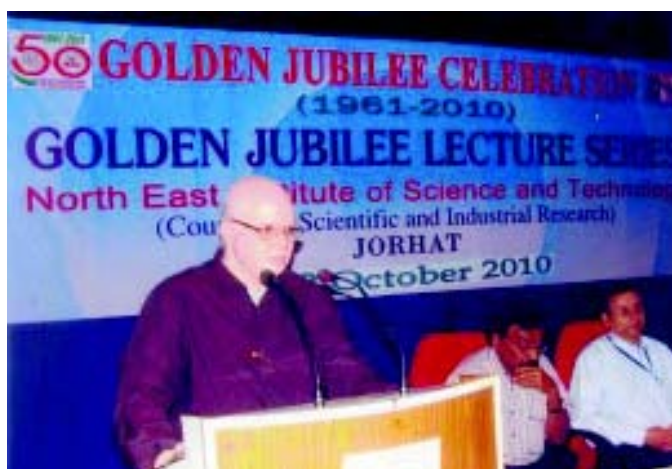
Dr. Murthy in his lecture said that mosquitoes are omnipresent with 3500 species, of which nearly three-quarters are native to the humid tropics and



subtropics of India causing intermittent outbreaks of mosquito-borne diseases, which affect thousands of people every year. Among fatal mosquito-borne diseases, the JE (Japanese Encephalitis), Dengue and Malaria are the most dreadful and pose a serious public health problem. JE has become an appended threat to North Eastern region of India evidenced by swarming cases in the recent months from Assam and Manipur. All North Eastern States are prone to dengue.

The traditional control measures have failed in mitigating the problem due to several reasons like operational failure, lack of vital information on time, poor community participation etc. Hence, an effective application of innovative information technology towards integrated vector management is required in North East India.

Prioritization of control parameters is the first and foremost methodology, which complied for the control of malaria in Arunachal Pradesh and Manipur



Dr. U.S.N. Murty delivering the lecture

through cluster analysis. Reversing the mapping of emergent and resurgent vector-borne diseases is a major challenge. Vaccines, being available for only a few diseases (yellow fever, Japanese encephalitis, dengue), have not been dispensed widely yet. In the next decade, therefore, vector control will be the option to rule out the transmission of most emergent and resurgent vector-borne diseases. Since communication is so powerful and networking is also well established in NE states, useful IT tools in real time environment are needed to bring down the mortality rate.

Information on the disease spectrum, reasons for outbreak, measures to minimize the morbidity and mortality utter paramount importance.

Dr. Murthy also said that a dedicated ENVIS (Environmental Information System) centre (www.iictenvis.nic.in) has been accorded by MoEF, Govt. India to Biology Division IICT, Hyderabad to disseminate the information on vectors and vector-borne diseases

and to reassert awareness among the community. India is strong in high-end computing like Super computer PARAM 10000, PARAM PADMA, and GARUDA network, which can be utilized for sharing the epidemiological information from remote to mainland thus enabling high-time crucial actions for control of these cut-throat diseases.

Dr. Mrs. Neelima Saikia, Scientist, Biotechnology division delivered the Vote of Thanks especially to the learned speaker for his thought-provoking lecture and all the scientists and guests present at the Function.

Fifth Lecture Series

NEIST organized the Fifth Golden Jubilee Lecture as a part of its Golden Jubilee year celebration on 13 December 2010 at its auditorium. Prof. Hans Peter Klenk, Head of Microbiology, DSMZ German Collection of Microorganisms and Cell Cultures, Braunschweig, Germany delivered the lecture on, *Encyclopedia of Bacteria and Archaea: Recent Status Report*

and Extension to Microbial Earth and Earth Microbiome Projects. Dr. P. G. Rao, Director, NEIST, Jorhat presided over the Function, which was largely attended by a galaxy of distinguished audience comprising of faculty, scientists, students from different research institutions, colleges, universities, invited guests and members of press and media besides the scientific

community of NEIST.

Welcoming the audience, Dr. Rao gave a brief overview of NEIST and its research activities during its journey of 50 years. He said that NEIST is the only multi-disciplinary laboratory located in the NE region and its Research & Development work is focused on utilizing the immense natural resources of the region for economic benefit of the



country in general and the region in particular. He further mentioned that the lecture topic chosen by Prof. Klenk is the most appropriate for the occasion and very much relevant to the Institute.

Earlier, Dr. J. C. S. Kataky, Scientist G gave the opening remarks and Dr. T. C. Bora, Scientist F & Head, Biotechnology Division gave a brief introduction of the speaker. Delivering the lecture, Prof.

Klenk said that the DSMZ (Deutsche Sammlung von Mikro-organismen und Zellkulturen GmbH), German Collection of Microorganisms and Cell Cultures, is an independent, non-profit organization and the most comprehensive Biological Resource Centre in Europe which has demonstrated its obligation to serve science for decades.

Prof. Klenck further said that DSMZ participates in several national and international projects like the GEBA-Project (Genomic Encyclopedia of Bacteria and Archaea) together with Joint Genome Institute and the DNA Bank Network project, which is currently funded by the German Science Foundation (DFG).

Prof. Klenck also said that the research activities at the DSMZ are focussed on: (i) taxonomy, (ii) evolution, (iii) bioinformatics, and (iv) diversity of the new microorganisms. The other services rendered by the Institute includes identification and characterization, long term preservation, training courses for microbiological methods, and as a free service a full list



A view of the dais during the Fifth Golden Jubilee Lecture Series

of all validly published names of prokaryotes, he informed.

“The field of microbial metagenomics addresses the exploration of microbial diversity at the molecular level which has vast applications in agriculture, energy and the environment to human health, biotechnology and deeper understanding of biosphere,” Prof Klenck said. He also said that the DSMZ is a member of several associations viz., WFCC (World Federation for Culture Collections), CABRI (Common Access to Biological Resources and Information), and ECCO (European Culture Collections’ Organization) and its microbial collections contain over 20,000 cultures representing some 6,900 species and 1,400 genera (Archaea, Bacteria, plasmids, phages, yeasts, fungi) and about 1000 new strains are deposited in the public collection every year. He said that DSMZ has further expanded the phage collection and welcomes new phage donations (Phage Call Project).

Prof. Klenck particularly spoke

about the GEBA project i.e. the Earth Microbiome Project, which he said is aimed at systematically filling in the gaps in sequencing the microbial life on earth. Till date 1271 bacterial and 95 archaeal genome sequencing has been completed in the project, he informed. “The DSMZ has also contributed in the DNA Bank network, which is accessible through a central web portal and the GGDC (Genome-to-

Genome Distance Calculator) is a web service that offers state-of-the-art methods for inferring whole-genome distances for genome-based species delineation,” he further said. “So far, the pragmatic species concept for Bacteria and Archaea is ultimately based on DNA-DNA hybridization (DDH), which enables the taxonomist, in principle, to obtain an estimate of the overall similarity between the genomes of two strains but the technique is tedious and cannot be used to incrementally build up a comparative database”, he opined.

The recent technological progress in the area of genome sequencing calls for bioinformatics methods to replace the wet-lab DDH by *in-silico* genome-to-genome comparison, said Prof Klenck. The research output will deliver new methods for strain and DNA preservation, novel techniques for identifying species and high throughput screening for natural products. The Function concluded with Vote of Thanks offered by Dr. S. B. Wann, Scientist, Biotechnology Division.



HONOURS & AWARDS/ANNOUNCEMENTS

Prof. Gautam Biswas, Director, CMERI Honoured

Prof. Gautam Biswas, currently Director, Central Mechanical Engineering Research Institute (CMERI), Durgapur has been awarded the prestigious J. C. Bose National Fellowship by the Department of Science and Technology, New Delhi.

Before taking over the Directorship of CMERI, Prof. Biswas was the occupant of the position of GD and VM Mehta Endowed Chair Professor of Mechanical Engineering at the Indian Institute of Technology (IIT), Kanpur. Prof. Biswas was the Dean of Academic Affairs at IIT Kanpur for three years since January 2003, and was also the coordinator of the NPTEL (National Programme on Technology

Enhanced Learning) project (Phase-I) in the same Institute.

Prof. Biswas has several prestigious Fellowships to his credit. He was a Humboldt Fellow in Germany in 1987-88 and JSPS invited fellow in Japan 1994. He is a Fellow of the American Society of Mechanical Engineers (ASME). Besides, he is also a Fellow of the National Academy of Sciences and Institution of Engineers (India), the Indian Academy of Sciences (Bangalore) and Indian National Academy of Engineering.



Among other honours, Prof. Biswas has served a full term as the Associate Editor of the Journal of Heat Transfer (Trans ASME), and has delivered the prestigious Prof. C. N. R. Rao Lecture in 2010. He is also an Indian Representative at the International Union of Theoretical Applied Mechanics (IUTAM).

Prof. Biswas's areas of excellence are *Computational Fluid Dynamics* and *Heat Transfer*. He has been involved in numerical modelling of convective transport and conjugate problems in complex geometries. He has also developed methodologies for handling free surface flows, bubble formation in film boiling and turbulent transport.

Nominations Invited for Shanti Swarup Bhatnagar Prizes in Science and Technology - 2011

The Council of Scientific and Industrial Research (CSIR) invites nominations for the Shanti Swarup Bhatnagar (SSB) Prizes in Science and Technology for the year 2011. The SSB Prizes are to be given for research contributions made primarily in India during the past five years. The age of the nominee for the 2011 SSB Prize **should not be more than 45 years as on 31.12.2010**.

The SSB Prizes are awarded for notable and outstanding research, applied or fundamental, in the following disciplines: (1) Biological Sciences, (2) Chemical Sciences, (3) Earth, Atmosphere, Ocean and Planetary Sciences, (4) Engineering Sciences, (5) Mathematical Sciences, (6) Medical Sciences, and (7) Physical Sciences. The SSB Prize carries with it a citation, a cash award of Rs.5,00,000/- (Rupees five lakh only) and a plaque for each scientist selected for the Award.

Nominations addressed to **Scientist I/C - SSB YSA Unit, Human Resource Development Group, CSIR Complex, Library Avenue, Pusa, New Delhi 110012** should be sent as per the prescribed pro-forma (Original + 14 copies) along with one set of reprints of significant publications of the last 5 years period on or before **31 March 2011**.

The details of the SSB Prize and the prescribed proforma for nomination may be obtained from the above address or may also be downloaded from our website: <http://csirhrdg.res.in>.



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