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In The News

Dr. P. S. Ahuja takes over as Director-General, CSIR



Dr. Paramvir Singh Ahuja has taken over as the Director General of the Council of Scientific and Industrial Research (CSIR) from 8 May 2014.

Dr. Ahuja has been the Director of the CSIR-Institute of Himalayan Bioresource Technology (IHBT), Palampur since 1998. Acknowledged as an inspiring institution builder, Dr. Ahuja is credited with raising CSIR-IHBT from scratch to an institute of international reckoning.

Born on 19 December 1952, Dr. P.S. Ahuja has an exemplary record in administrative capacity as a leader in science and academics. He has an excellent academic record with B.Sc. and M.Sc. in Agriculture from the Punjab Agricultural University (PAU), Ludhiana and a Ph.D. from the University of Nottingham as a Commonwealth Scholar during 1983.

Dr. Ahuja's contribution to characterization of the Indian tea germplasm and his research on tea, rose and potato transgenics are landmark achievements that are globally acknowledged. His role in bioprospection of novel plants, genes from high altitudes and their validation and translation to adoption by the industry is noteworthy. He has played a pivotal role in introducing Stevia and several other medicinal plants as commercial crops.

He has been a national scholarship holder throughout. He was a Post-Doctoral NSERC (Natural Sciences and Engineering Research Council of Canada) Fellow at the McGill University in Montreal, Canada and has been a Visiting Scientist to the Ohio State University, Columbus, USA. During his Ph.D. he has also worked at the Plant Breeding Institute, Cambridge, UK and Nuclear Research Institute at Julich in Germany.

Dr. Ahuja started his career in agriculture as a Plant Breeder. Post M.Sc. he chose to work in ICAR where he studied the development of salt-tolerant varieties in wheat and *Sesbania aegyptica*, a leguminous crop. Later, working with Prof. E.C. Cocking, a renowned biochemist at Nottingham, U.K., Dr. Ahuja studied regeneration of cell suspension of leaf culture in monocots, which was considered at that time a very difficult task. During this period, he had an opportunity to work with Prof. Zimmerman, a pioneer on protoplasmic fusion. In Nottingham, along with Prof. Peter Mansfield, a pioneer in development of MRI, Dr. Ahuja developed a cell fusion machine.

Back in India, at the CSIR-Central Institute of Medicinal and Aromatic Plants (CIMAP), Lucknow, Dr. Ahuja for the first time successfully made protoplast fusion of *Hyoscyamus muticus* and *Atropa belladonna*. During this period, Prof. D.P.S. Verma from Montreal invited him to work in his lab giving him an opportunity to learn the latest molecular techniques.

After his return to India, based on the molecular techniques he had learnt, Dr. Ahuja set up a modern equipped lab at CSIR-CIMAP as a result of which in 1988, he was successful in developing a transgenic plant in India. Dr. Ahuja and his team developed hairy root cultures in *Valerina*, *Withania*, *Citronella*, etc. The work of *Citronella java* resulted in release of the first stable variety – CIMAP BIO-13. This variety has been successfully grown in many states of India such as Assam, Andhra, and Karnataka and is still being produced in the country.

At CSIR-CIMAP he rose to be the Head, Department of Plant Tissue Culture, transforming it into a Centre of Excellence. His work on reproductive biology and tissue culture of MAPS led to the development of a gene bank at CSIR-CIMAP.

During this period, he also worked in the All-India Coordinated Project on Endangered Species led by Dr. T.N. Khoshoo, in which Dr. Ahuja was successful in encapsulating somatic embryos using axillary buds and developing artificial seeds. Artificial seeds of several endangered species like *Picrorrhiza kurroa*, *Aconitum*, *Jatamansi*, *Dactylorrhiza* sp., etc. were successfully conserved through this technique.

Thereafter, he joined as Head, Plant Biotechnology and Biodiversity Conservation Division at the CSIR Complex, Palampur now known as the CSIR-Institute of Himalayan Bioresource Technology (IHBT). He took over as the Director of the Institute on 13 April 1998 and has been on this position since then.

After taking over as Director, CSIR-IHBT Dr. Ahuja developed a modernized tissue culture laboratory. He was also able to successfully transfer tissue culture raised tea plants to the field, which was a unique achievement. Development of a transgenic tea with chitinase gene and low caffeine tea were some other achievements.

Dr. Ahuja's contribution to characterization of the Indian tea germplasm and his research on tea, rose and potato transgenics are landmark achievements that are globally acknowledged. His role in bioprospection of novel plants, genes from high altitudes and their validation and translation to adoption by the industry is noteworthy. He has played a pivotal role in introducing Stevia and several other medicinal plants as commercial crops thereby promoting diversified agriculture in the country. He has also made significant contribution in extending rural technologies to the remotest tribal locations in the Himalayas.

During the year 2008-2009 he also had additional charge as Director, CSIR-CIMAP, Lucknow. He has also been a scientific mentor to CSIR-NBRI for some time. He has been a member of Research Councils/Scientific Advisory Committees/Management Councils of several prestigious institutions of the country. He has taken part as a member of Task Forces and has been on committees of the Govt. of India.

Dr. Ahuja has been a member of the Editorial Board of many national journals.

He is a Life Member of more than 15 professional bodies. He has guided 16 Ph.D. students and several M.Tech/M.Sc. studies. He has more than 200 Research Publications/Reviews and has delivered innumerable Academy invited lectures. He has edited two Lab Manuals and several books. Dr. Ahuja has over 20 patents and some of these are commercialized.

He is a Fellow of the National Academy of Agricultural Sciences (NAAS), National Academy of Sciences, India (NASI) and the Indian National Science Academy (FNA)

besides other professional bodies pertaining to his area of specialization. He has several prestigious national awards to his credit and has delivered reputed societal memorial lectures.

Dr. P.S. Ahuja was for some time Coordinating Director of CSIR, functioning from the office of the DG-CSIR, New Delhi and Chairman of the Recruitment and Assessment Board (RAB) of CSIR, before taking over as the Director General of the Council of Scientific and Industrial Research (CSIR).



CSIR-IIIM, Jammu signs pact with Sami Labs, Bangalore

CSIR-Indian Institute of Integrative Medicine (IIIM), Jammu, has signed a tripartite agreement with the Indian Council of Medical Research (ICMR), New Delhi and Sami Labs, Bangalore. As part of the agreement Sami Labs acquired two patents from CSIR-IIIM and ICMR.

The agreement was signed at CSIR-IIIM, Jammu by Dr. Ram A. Vishwakarma, Director, CSIR-IIIM, Jammu, Sadhana Srivastava, scientist ICMR, New Delhi and Dr. Muhammed Majeed, Founder and Managing Director, Sami Labs Ltd, Bangalore. Dr. R.K. Raina, consultant to IIIM and Sarang Bani, Director, Biological Science at Sami Labs and Abdul Rahim, Head PME were also present.

CSIR-IHBT Transfers Technology for Production of Multi-utility Enzyme

The technology for the production of a multi-utility enzyme, discovered by scientists of the CSIR-Institute of Himalayan Bioresource Technology (CSIR-IHBT), Palampur, was recently transferred to the Institute's industrial partner, Phyto Biotech, Kolkata.

Discovered during a survey at an altitude of over 10,000 feet in the Western Himalayan region from the *Potentilla astrosanguinea* plant growing under snow cover, the Super Oxide Dismutase (SOD) enzyme finds use in anti-ageing creams, extending shelf life of fruits and vegetables and during cryo-surgery and preservation of organelles. Owing to its high antioxidant properties and multiple uses, SOD is in heavy demand and hence commands a high price in the global market.

After years of hard work to isolate the SOD gene, a protocol was developed to clone the gene in *E. coli* and it was further engineered by mutation of a single amino acid to increase its consistency and thermo-stability. SOD is highly stable and functional in a wide range of temperatures from sub-zero to more than 40 degrees centigrade.



Copies of agreement being exchanged between Mr. Arun Mohta of M/s Phyto Biotech and Dr. P.S. Ahuja, Director, CSIR-IHBT at CSIR-IHBT, Palampur

CSIR-NEIST organizes Multi-State Mock Exercise for Earthquake Preparedness

The great Assam Earthquake of 1987 of magnitude 8.7, highest in the region till date, killed 1,500 people and demolished almost all masonry structures within the Epicentral zone. If such an earthquake were to recur today, the loss and damage could be unprecedented due to increase in population density, rapid urbanization and industrialization and change in building typology in the region.

Under a programme sponsored by the National Disaster Management Authority, New Delhi, the CSIR-North-East Institute

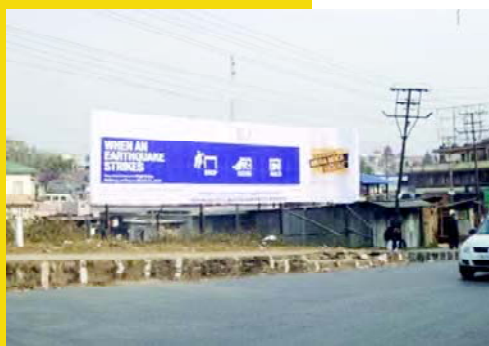
of Science and Technology (NEIST), Jorhat is currently engaged in understanding the direct and indirect consequences of a big earthquake, updating of response plans, undertaking capacity building exercises, facilitating inter-departmental and inter-state coordination to assess multi-state earthquake preparedness and identifying gaps.

Recently, a Multi-State Mock Exercise (MMEx) was performed during 10-13 March 2014 to create mass awareness, increase coordinated preparedness, mitigation and response for refinements of disaster management plans in the region.

During the exercise, the State and District Emergency Operation Centres (EOC) were fully activated for management and coordination with various stakeholders for flow of information with respect to activities associated with rescue and relief operations carried out as per the Incident Response System (IRS). Teams from the National Disaster Response Force (NDRF) and State Disaster Response Force (SDRF) were put into action for search and rescue operations in participation with the State Police, Paramilitary Force, Home Guard and Civil Defense, NCC cadets, Fire and Emergency Services, all line Departments, civil administration, various NGOs and community volunteers.

During the mock exercise, observations were made with regard to the response time, communication flow, coordination and skills of these emergency support functionaries to identify the gaps and mistakes for rectification of such loopholes in the future.

The first phase of the MMEx was organized at Guwahati and Jorhat (Assam),



Clock-wise from top right: Rescue operation in action; Open ground medical camp; Public rally; Awareness rally by school students in Meghalaya; Road sign for public awareness campaign; Awareness bike rally

Itanagar and Ziro (Arunachal Pradesh), Shillong and Tura (Meghalaya) and Gangtok and Mangan (Sikkim) on 10 March. The second phase was organized in Silchar (Assam), Dimapur and Kohima (Nagaland), Imphal and Thoubal (Manipur), Agartala and Ambassa (Tripura) and Aizawl and Serchhip (Mizoram) on 13 March 2014.

The MMEx drill was conducted in all the eight northeast states across 16 cities in over 80 locations to make the residents aware of earthquake

CSIR-NEIST Research Article Creates Impact

A CSIR-NEIST research paper entitled, “Low b-value prior to the Indo-Myanmar subduction zone earthquakes and precursory swarm before the May 1995 M 6.3 earthquake” authored by Sangeeta Sharma, Saurabh Baruah, Om Prakash Sahu, Pabon K. Bora and Ranju Duarah published in the *Journal of Asian Earth Sciences*, **73** (2013), pp. 176-183 has been downloaded or viewed 154 times since publication (measured through 31 January 2014), as reported by Elsevier.



Scientists from CSIR-National Chemical Laboratory (CSIR-NCL), Pune have recently synthesized spherical shaped nanoparticles from agricultural residue. These nanoparticles showed antimicrobial activity and can also be used for drug delivery. The uniqueness regarding this research is that obtained nanoparticles have spherical shapes and a very narrow size distribution (25-32 nm). These nanoparticles can prove to be a potent tool in nanotechnology.

R&D Highlights

Shape and Size Selective Functional Nanoparticles from Cellulose Synthesized by CSIR-NCL

Scientists from CSIR-National Chemical Laboratory (CSIR-NCL), Pune have recently synthesized spherical shaped nanoparticles from agricultural residue. These nanoparticles showed antimicrobial activity and can also be used for drug delivery. The uniqueness regarding this research is that obtained nanoparticles have spherical shapes and a very narrow size distribution (25-32 nm). These nanoparticles can prove to be a potent tool in nanotechnology.

Nanoparticles are very important in biology and medicine. They have various applications in biomedical sciences such as bioimaging and drug delivery. Cellulose is the most abundant, annually renewable, and extremely versatile polymer with various applications. Conversion of cellulose to nanocellulose has led to many new high-end applications.

The application of the nanoparticles can often be controlled by engineering their shape, size and surface functionality. The researchers from CSIR-NCL have successfully synthesized the nanoparticles having spherical shape, a very uniform range of size and with carboxy groups on the surface. Surface functionalization of

nanoparticles is an effective way to control the interface between nanoparticle surface and the biological systems they are designed to interact with.

Carboxycelluloses have been used in wound dressing gauzes, surgical materials, and several other related biomedical products for over 70 years. Hence, this area has attracted many researchers. Scientists from Germany also recently synthesized amino-functional cellulose nanoparticles in the size range of 80-200 nm.

The spherical shaped nanoparticles of carboxycelluloses can have significantly improved properties as compared to their currently available analogs. Hence, the CSIR-NCL team decided to investigate methods to prepare spherical nanoparticles of carboxycellulose. The scientists have illustrated for the first time a very simple method to obtain spherical-shaped polymer nanoparticles. Earlier, obtaining spherical-shaped nanoparticles was a complicated task requiring very specific conditions such as prolonged sonication in acidic condition, high temperature, mechanical stirring, centrifugation, extensive washing, etc. The method developed by CSIR-NCL researchers

requires only 15 minutes of ultrasonication to produce stable aqueous dispersion of nanoparticles with a high yield.

A team lead by Dr. A.J. Varma, Chief Scientist and Head, Polymer Science and Engineering Division has utilized easily available low molecular weight agricultural residue derived cellulose as well as higher molecular weight cotton cellulose to prepare 6-carboxycellulose nanoparticles (6-CCNP). This can also be one of the methods of agricultural residue management. It is after 15 years from the first report of longitudinal carboxy functional cellulose nanofibrils that CSIR-NCL scientists have reported spherical carboxy functional cellulose nanoparticles.

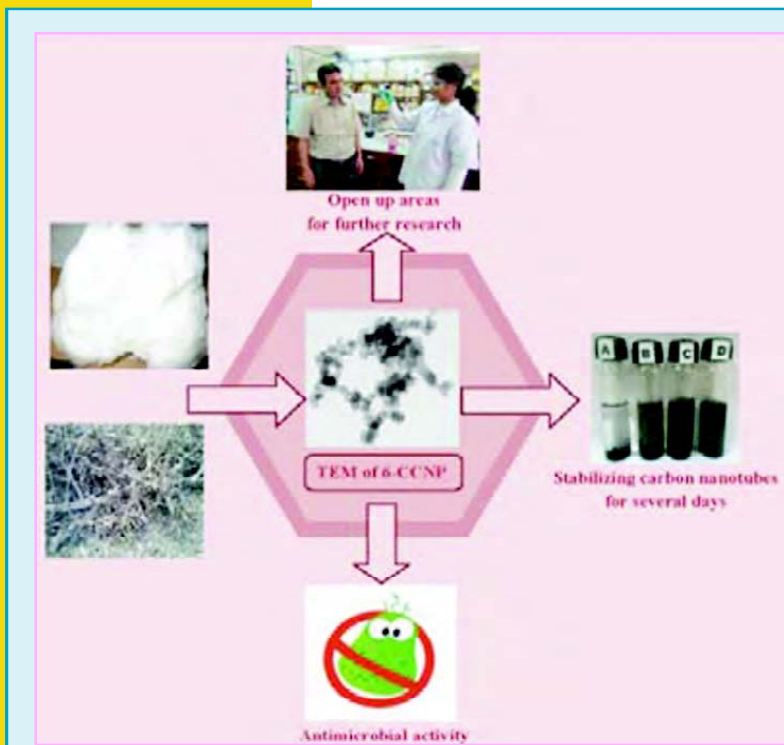
The nanoparticles synthesized by the research team are found to have enhanced antimicrobial activity against microorganisms such as *Escherichia coli*, *Bacillus subtilis*, *Staphylococcus aureus*, and *Mycobacterium tuberculosis*. This is the first time that this polymer has been shown to be effective against tuberculosis, which is most likely due to its spherical nanoparticle shape and small size of 25-35 nm. This has opened up a further research area for biomedical applications for 6-CC nanoparticles.

Priyanka Sharma, co-author of the research programme, said that the spherical

shape of the particles is expected to prove to be a very effective tool in drug delivery and many new applications. The spherical shape provides greater surface area and spherical nanoparticles are more stable in aqueous suspension than nanofibers. As cellulose is a rigid backbone polymer, so far only longitudinal nanofibrils could be prepared.

The CSIR-NCL team has also for the first time demonstrated that the functionalized nanoparticles are extremely efficient in the stabilization of carbon nanotubes with minimal ultrasonication, hence saving energy. Carbon nanotubes are cylindrical nanostructures of carbon which are very valuable in nanotechnology, electronics and optics. It is very difficult to stabilize the aqueous solution of the carbon nanotubes for reaction purposes. However, with the help of synthesized 6-CCNP, researchers could achieve highly stable dispersions of both single-walled and multi-walled carbon nanotubes for several days. Fluorescent 6-CCNP can potentially be used in bioimaging.

Cellulose nanomaterial substrates have also been investigated for use in the fabrication of recyclable organic solar cells. Further development in this field by use of



Cellulose

- 1838: Structure of cellulose found
- 1949: the first longitudinal nanofibre reported
- 2007: the first quasi-spherical nanoparticle of cellulose (that too of over 100 nm size)

Carboxy functionalized cellulose (Biomedically important polymer)

- 1883 : first synthesized
- 1940s : first commercialized
- 1998 : first **longitudinal nanofibre** reported
- 2013 : CSIR-NCL reports **spherical** nanoparticle

6-CCNP can lead to their increasing use in energy production technologies.

The synthesis of such kind of functional nanoparticles has opened up various areas for research and its applications. These include biomedical applications, photoswitchable titanium dioxide nanocellulose aerogels, flexible magnetic nanopaper for electronic applications, and so on.

CSIR-NCL has already taken provisional patents on synthesis as well as some novel applications for this compound. Work on applications development and eventual commercialization in collaboration with Indian industries is being explored.

Further reading:

- Functional nanoparticles from cellulose: engineering the shape and size of 6-

carboxycellulose, Priyanka R. Sharma and Anjani J. Varma, *Chem. Commun.*, 2013, **49**, 8818-8820.

- Functionalized celluloses and their nanoparticles: morphology, thermal properties, and solubility studies P.R.Sharma and A.J. Varma, *Carbohydrate Polymers*, **104**, 135-142 (2014).
- Antimicrobial activity of nano-sized carboxy celluloses, A.J. Varma and P.R. Sharma, 2758 DEL.2013
- Synthesis of nanostructured carboxycelluloses from non-wood cellulose, A.J. Varma and P.R. Sharma, 1658 DEL.2013

For further information, please contact
Dr. A.J. Varma, CSIR-NCL
(This Feature has appeared in the January 2014
issue of *Nano Digest*)

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Development of Pervious Concrete at CSIR-CBRI

Pervious concrete is concrete with high porosity and permeability. It is made using water, cement, coarse aggregate and admixtures. It has little or no fine aggregate. Cement paste should be sufficient enough to coat aggregate surface and should not fill the voids in the concrete. Pervious concrete allows water from precipitation and other sources to pass through it and reduces runoff from paved areas, thus recharging ground

water locally. Other applications include walls for two-storey houses, load-bearing walls for high-rise buildings (up to ten stories), in-fill panels for high-rise buildings, sea groins, roads, and parking lots.

In this area, work started long back (in 18th century) but then stopped. After World War II, a large number of constructions in Europe required optimum material utilization which again prompted the builders

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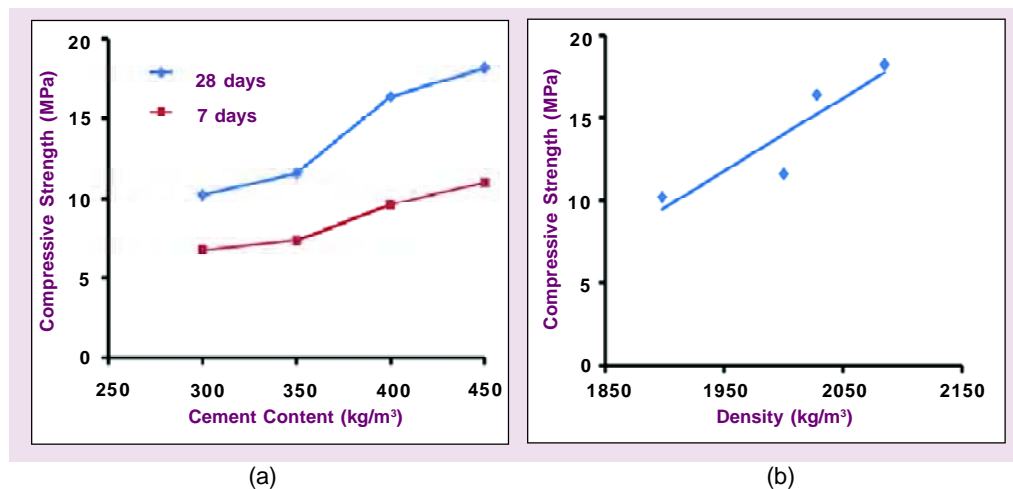


Fig. 1. Cube test results (a) compressive strength vs. cement content
(b) compressive strength vs. cement density

to use pervious concrete in a big way. The importance of pervious concrete in urban India, where the water table is going down by the day, is yet to be recognized.

Since labour wages are low in India, pervious concrete can be prepared manually. It minimizes use of sand in construction, which is sometimes not available in nearby localities, and its low density provides an opportunity to produce concrete blocks in regions where good soil is not available for making bricks. It can also be used as an alternate building material for bricks thus protecting fertile precious soil layer. Further, the use of fly ash helps in improving the environment.

Cost effective, environment-friendly pervious concrete is going to be a very popular construction material in India very soon and a comprehensive study of the design and performance of the same will prove to be very helpful for infrastructure building of the nation.

At CSIR-CBRI, scientists are trying to develop pervious concrete of porosity 10–25% with corresponding strength of 25–10 MPa with locally available materials. The proposed work includes development of mix proportions to achieve desired porosity and strength, durability studies in aggressive environment, and field performance studies of pervious concrete in parking lots,

pathways and low-height retaining walls.

Pervious concrete cubes and cylinders were prepared with aggregate content of 1540 kg/m³ and water-cement ratio 0.3. Cement used was ordinary Portland cement and cement content varied from 300 to 450 kg/m³. Aggregate size used was 20 mm and characterization of aggregate was carried out. No fine aggregate was used. Compaction of cubes and cylinder was done manually with tamping rod. Since slump values have no relevance in case of pervious concrete, it was not measured.

Samples were cured in water pond. Cubes were tested for 7 days and 28 days compressive strength. Density of cubes was calculated by dividing the weight of cube in surface dry condition by volume of the cube mold.

It can be observed from Figure 1 that 10 to 18 MPa strength was achieved at 28 days and the strength increased with increase in cement content. It can also be observed that strength was directly related to density of the concrete. Failure pattern of cubes and cylinders of pervious concrete in compression is shown in Figure 2. It was observed that cracks ran from top to bottom.

**Rajesh Deoliya and
Subhash C. Bose Gurram
from CSIR-CBRI**

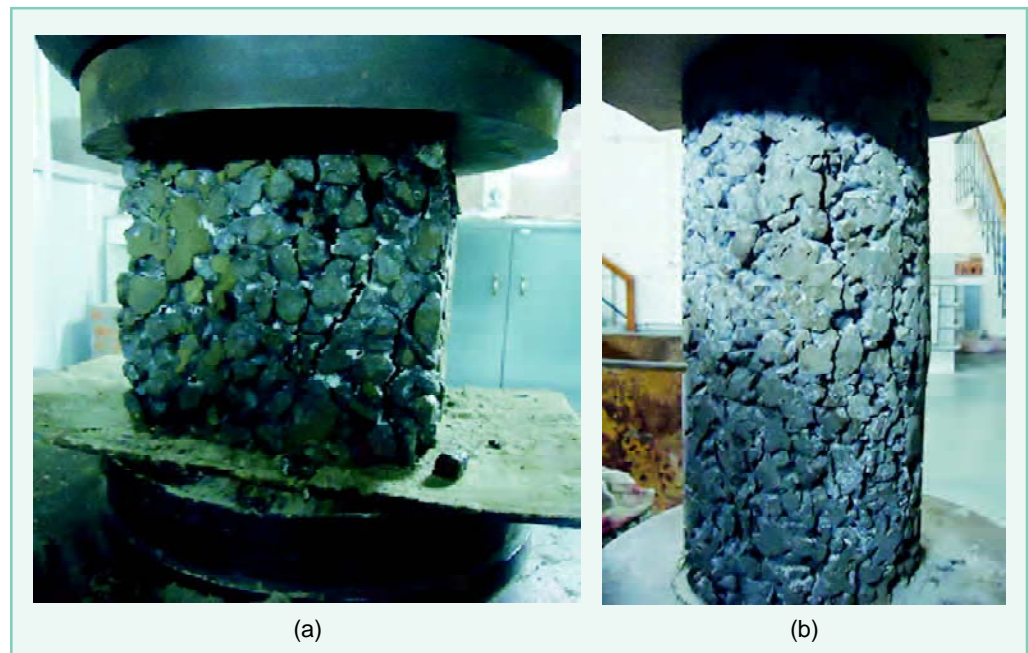


Fig. 2. Failure pattern of pervious concrete (a) cube (b) cylinder

Green Retrofit Strategies for Office Buildings by CSIR-CBRI



As part of performance evaluation of the existing buildings at CSIR-CBRI, the analysis energy audit of the main building reveals that energy efficiency was not a concern when the building was constructed with burnt clay brick masonry walls of 230 mm and 345 mm thickness, and reinforced cement concrete roofs and floors of 100 to 120mm thickness without any roof treatment for thermal protection except mud *phuska* and lime terracing. The windows are single glazed with 4 mm thick clear (plain) glass. Energy inefficient compact fluorescent tube lights, fans and window or split air-conditioners have been used.

The study also reveals that the maximum heat transfer takes place from the 100 mm thick RCC roof having no insulation and no other roof treatments, on the two-storied administration and accounts departments and in the second floor of the building having RCC roof of 115mm thickness.

To monitor day lighting, light level (in lux) measurements were taken using Lux Meter for the windows without venetians and with venetians in closed and open vertical position. Based on the sizes of different office rooms used for reading and writing activity, room indices were estimated and illuminance measurement grid points were selected. The research study reveals that the rooms of the reference building do not have a depth more than 7.0 m. The windows provided in the rooms fulfill the requirements of daylight and facilitate natural ventilation indoors.

To study the 'night ventilation effectiveness', temperature measurements were taken by ventilating the rooms during the night hours in the reference building during March-October months. The data reveals that there is a reduction of the

maximum indoor temperature by approximately 2-3 °C as nights are cooler in composite climate, thus contributing to increased indoor comfort during daytime and reduced cooling load of about one hour from 9:00–10:00 am. As the building has 345 mm thick brick masonry walls, night ventilation removes the heat stored in the building's thermal mass and re-cools the building and starts its diurnal cycle at a lower temperature.

Computation of solar heat gain coefficients for different types of alternative building materials & technologies is under progress. The construction of two experimental models has been started at the rural technology park for demonstrating the green retrofit methodologies (Figure 1).

**Ashok Kumar, Rajesh Deoliya,
Rajni Lakhani, B.M.Suman, Neeraj
Jain & Team from CSIR-CBRI**



Fig. 1. Experimental models – Construction under progress

Symposia/Seminars

Seminar on *Indian Library and Information Science Journals: Problems and Prospects* Organised at CSIR-NISCAIR



Inauguration of the Seminar

To commemorate 100 years of Indian library and information science journals and 60 years of *Annals of Library and Information Studies* published by CSIR-National Institute of Science Communication and Information Resources (CSIR-NISCAIR), a seminar on *Indian Library and Information Science Journals: Problem & Prospects* was organised by CSIR-NISCAIR on 23 April 2014.



Ms Deeksha Bist, Acting Director, CSIR-NISCAIR, addressing the audience at the inauguration of the Seminar

Annals of Library and Information Studies, which completed 60 years of publication in 2013, is the oldest surviving English language primary library and information science journal published from India. The journal was launched in 1954 by the erstwhile Indian National Scientific Documentation Centre

(INSDOC) as *Annals of Library Science* with the Father of Indian Library Science, Dr. S.R. Ranganathan as its Founder-Editor. In ten years as Editor, he wrote as many as 87 research articles for the journal.

In 1964, the journal was renamed as *Annals of Library Science and Documentation* and in 2001, it was given its current name, *Annals of Library and Information Studies*.

Speaking at the inaugural session of the seminar, Ms. Deeksha Bist, Acting Director, CSIR-NISCAIR mentioned that despite the 100 years history of Indian LIS journals, it needs to be introspected as to why no Indian LIS journal is covered in the *Journal Citation Reports* of Web of Knowledge and consequently do not have an impact factor. She said that the journal editors should focus on enhancing the quality and visibility of the LIS journals.

Noted library and information science author and editor, Prof. B.K. Sen, the Chief Guest of the inaugural function launched the *Annals of Library and Information Studies* archives in the open access domain. With the launch, all the issues of the journal going back to 1954, Volume 1, Issue 1 are now available online.

In his inaugural address, Prof. B.K. Sen gave a brief history of Indian LIS journals giving decade-wise statistical details about the journals. He mentioned that several library and information science journals had



Dr. B.K. Sen addressing the audience

ceased to exist and most of the Indian LIS journals presently being published fall behind their publishing schedules. Prof. Sen expressed concerns on the mushrooming of open access LIS journals in recent years as many of the journals lacked even the basic quality standards.

The seminar was attended by 57 delegates who included editors, authors and researchers.

The Editors Speak session was chaired by Prof. C.P. Vashisth, Editor, *Library Herald*. Dr. Ashok Kumar, Associate Editor-in-Chief, *DESIDOC Journal of Library and Information Technology*, Prof. S.M. Shafi, Editor, *Trends in Information Management*, Dr. P.K. Bhattacharya, Editor, *World Digital Libraries*, Dr. Sujit Bhattacharya, Editor-in-Chief, *Journal of Scientometric Research*, Prof. Pijushkanti Panigrahi, Associate Editor, *LASLIC Bulletin*, Dr. M. Madhusudhan, *Journal of Library and Information Studies* and Dr. G. Mahesh, Editor, *Annals of Library and Information Studies* spoke during the session.

Each Editor gave a brief account about the journal that they edited and highlighted the issues faced by them. The Editors were concerned about the lack of quality in the articles being submitted to the journals. The prevailing peer review process including the paid versus free peer review process, coverage of journals in abstracting and indexing databases and the impact factor were discussed.

The Authors Speak session was chaired by Dr. K.C. Garg, Former Chief Scientist, CSIR-NISTADS. In his opening remarks, the Chairman said that the LIS research process

has come a long way in the last many decades. Specifically highlighting scientometric research, he said that many of the current papers merely tabulated readily available data from citation databases without proper interpretation of the data.

Other authors who spoke at the session were Prof. Jaideep Sharma, Professor, DLIS, IGNOU, Dr. S.M. Pujar, Deputy Librarian, IGIDR, Mumbai, Dr. V.K. Jeevan, Deputy Librarian, IGNOU and Dr. Rabisankar Giri, IG Delhi Technological University for Women.

The authors narrated their experiences of submitting and getting articles published in Indian and foreign journals. The emergence and growth of open access journals based on a case study of DOAJ indexed journals was discussed. Authors felt that large majority of the Indian LIS journals were broad-based and that it is about time to have quality journals in focussed areas.

The seminar ended with a panel discussion on *The Rise of Indian LIS journals: Quantity vs Quality*. Prof. B.K. Sen chaired the panel discussion and the panellists were Prof. Jagtar Singh, Professor and Head, Punjabi University, Patiala, Prof. Dinesh K. Gupta, Professor, VM Open University, Kota and Dr. Sanjaya Mishra, Director, Commonwealth Education Media Centre for Asia (CEMCA).



Authors narrating their experiences at the Seminar



Editors of Library Science journals presenting their viewpoints at the Seminar

The panel was concerned about the quality of the Indian LIS journals and agreed that one of the major problems was a basic one which has to do with the LIS research in India in general. The panel felt that there was a need to focus on teaching how to

conceptualise research problems and how to write research papers.

The roles of the editorial boards in furthering the quality of journals were also discussed based on the comparison of editorial boards of Indian and foreign LIS journals. Panelists felt that open review of manuscripts and more coordination among editors should enable enhancing the quality of journals. The engaging discussions had several delegates probing the panelists on many issues.

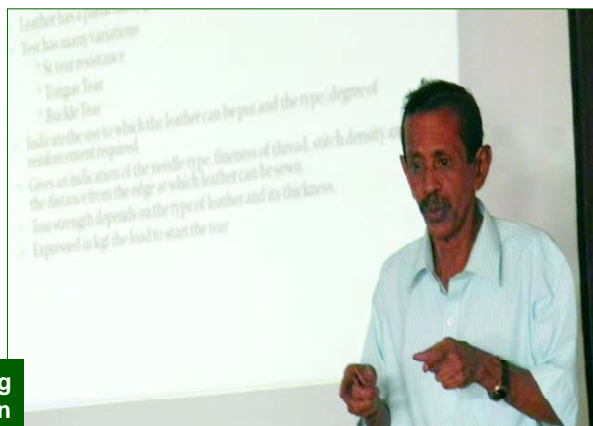


A view of the Panel Discussion

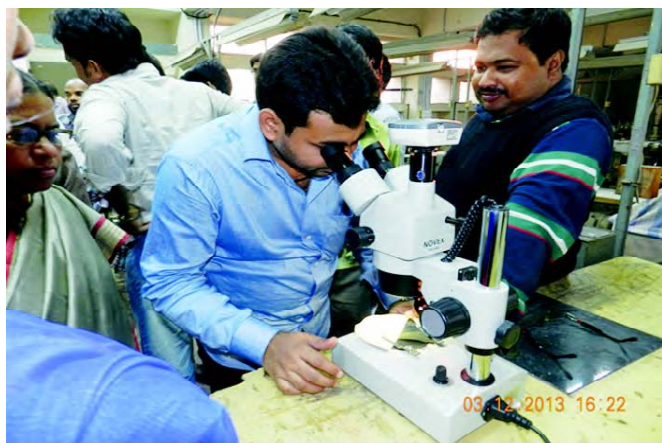
Training Programmes

Two-day Skill-development Programme Organised at RCED (CSIR-CLRI), Kolkata

The Regional Centre for Extension and Development (RCED) of CSIR-Central Leather Research Institute (CLRI), Kolkata conducted a two-day skill development programme for people working in Topsia leather products cluster during 3-18 December 2013. A training programme titled



Shri Partha Krishna Majumdar giving an overview of leather evaluation



Dr. Sandipan Chatterjee, Scientist assisting the trainees in identifying animal species using microscope

The programme was conducted in four batches (88 persons) including both men and women from the industry/trade. Entrepreneurship Development Institute of India (EDII), Ahmedabad implemented this programme with support from DCMSME, Govt. of India.

The knowledge gained will be translated into better manufacturing and quality control decisions which in turn will result in increased sales, bigger margins and reduced

‘Appreciation, Evaluation, Care and Restoration of Leather and Leather Products’ was designed for this purpose.

The training course covered areas like identification, assessment, selection and grading of leather and offered the participants an opportunity to acquire basic knowledge and expertise needed for better appreciation, care and maintenance of leather and leather products. The programme comprised both lecture and practical demonstration sessions that enhanced the skill of the participants to a considerable extent and gave them the confidence to identify and select the right kind of leather for intended products, utilize the material in proper manner for fabrication of articles, and store and handle the articles with necessary care.

quality complaints, returns and remediation costs.



Shri Keshab Ch. Mandal, Principal Technical Officer demonstrating techniques for identifying animal species



Dr. Dipankar Chaudhuri, Scientist and Head of RCED (CSIR-CLRI), Kolkata interacting with the participants



A view of the trainees

Training Course on Preventing Microbial Damage to Leather and Leather Products organized by CSIR-CLRI

The Regional Centre for Extension and Development (RCED) of CSIR-Central Leather Research Institute (CLRI), Kolkata conducted a one-day training programme titled Preventing Microbial Damage to Leather and Leather Products on 25 March 2014. Twenty-one participants from fifteen Kolkata-based manufacturing units attended the programme.

There were six presentations – two from the institute and four from the supply houses. The industry resource persons who are engaged in providing chemical products, equipment and services for arresting microbial damage to leather and leather products at various stages of manufacture shared their specialised knowledge and experience in this area with the trainees.

The welcome address by Dr. A. Muthukrishnan, Senior Controller of Administration, CSIR-CLRI, Chennai was followed by a presentation titled *Leather Preservation Fundamentals* by Dr. Dipankar Chaudhuri, Scientist and Head, RCED (CSIR-CLRI), Kolkata. He covered issues ranging from microbial degradation to hides, skins and leather inflicted by bacteria and fungi, though greater emphasis was laid on bacterial infection.

This was followed by three presentations from supply houses. These presentations covered the application of fungicides in different stages of leather making and installation of drying and dehumidifying systems in packing section to reduce the moisture level in air to the desired level,



Mr. Arijit Mukherjee, Senior Sales Manager, Bry-Air (Asia) Pvt. Ltd. elaborating on their dehumidifying systems for leather sector

The programme focused on microbial infection, understanding its cause and prevention of leather damage resulting from such infection. It covered the effects of mildew growth on leather and leather products, susceptibility of leather-based products to microbial attack at various stages of manufacture and transportation, early indications of infection, and possible measures that can be taken to protect leather and leather articles.

The course also provided details of microbial resistance evaluation and scientific approaches available for damage control and prevention. Remediation of the infected material and eliminating its possible return were also included in the course.



Dr. Sandipan Chatterjee, Scientist, RCED (CSIR-CLRI), Kolkata explaining the microbiological tests conducted for leather and fungicides

especially during the summer and monsoon seasons.

Shri Partha Krishna Mazumder, an industry expert, talked about the use of silica gel and antifungal tape in the packages to keep the incidence of fungal infection to a minimum.

The final presentation on fungal infection of leather was made by Dr. Sandipan Chatterjee, Scientist, RCED

(CSIR-CLRI), Kolkata to cover the tests usually carried out for assessing the performance of leather and microbicides.

It is expected that this training course will significantly enhance the competence of the participants and give them the confidence to handle a great majority of the problems related to microbial damage to hide and leather.



Annual/Foundation Day

CSIR-CIMAP Celebrates Annual Day

CSIR-Central Institute of Medicinal and Aromatic Plants (CSIR-CIMAP) celebrated its Annual Day on 26 March, 2014. Padma Shri Prof. Vinod K. Singh, FNA, Director, Indian Institute of Science Education and Research, Bhopal, MP was the Chief Guest. On this occasion, the herbal garden of medicinal plants (Manav Upavan) was opened for the general public by planting a Rudraksha sapling by the Chief Guest.

In his welcome address, Prof. Anil Kumar Tripathi, Director, CSIR-CIMAP presented R&D highlights of CSIR-CIMAP during the year 2013-14. Prof. Tripathi said that the efforts made by CIMAP scientists in developing of high yielding varieties and technologies have empowered farmers and improved their quality of life.

Prof. Tripathi also talked about the efforts of the Institute in rural development through extension of medicinal and aromatic plant based technologies. He stressed the need for extending technologies of CSIR-CIMAP to new areas. He also stressed on the need of R&D in other crops such as Ashwagandha, Sarpagandha, Kalmegh, Satavar, Senna and *Artemisia annua*.

Chief Guest, Prof. Vinod Kumar Singh delivered the annual day lecture on the topic of expanding horizons of higher education. Prof. Singh lamented about the quality of education and research and underlined the need for its improvement in the country. He said that policies for education and research system should be formed in such a manner that researchers could freely work on their research projects. He also stressed on the need to curb bureaucracy in research and education system. Prof. Singh emphasized on the need to improve the education system in colleges and universities.

On this occasion, the CSIR-CIMAP Annual Report for the year 2012-13 and a special bulletin on *Manav*, the Garden of the Health Plants, were released.

Scientists were felicitated by the Chief Guest for their research publications in high impact journals. The winners of a photography competition on “Know your medicinal and aromatic plants” were given away the prize.



Opening of Manav Upvan for general public



Planting of Rudraksha sapling



Release of CSIR-CIMAP Annual Report 2012-13

CSIR-NEIST celebrates its 53rd Foundation Day

CSIR-North East Institute of Science and Technology (NEIST), Jorhat celebrated its 53rd Foundation Day on 18 March 2014. The function held at Dr. J.N. Baruah auditorium was presided over by Dr. D. Ramaiah, Director, CSIR-NEIST. Dr. Ch. Mohan Rao, Director, CSIR-Centre for Cellular and Molecular Biology, Hyderabad, graced the occasion as the Chief Guest.

The function was largely attended by scientists, engineers, distinguished guests, eminent personalities, besides CSIR-NEIST

fraternity both retired and existing.

Dr. R.C. Boruah, Outstanding Scientist, CSIR-NEIST delivered the welcome address wherein he briefly talked about the activities and achievements of the Institute.

Delivering the Foundation Day lecture, Dr. Mohan Rao spoke about the origin of life on earth and DNA (Deoxyribonucleic Acid) Biology. Various theories and studies done by scientists on evolution of life and DNA Biology were elucidated in the lecture. Speaking about DNA and its biology, Dr. Rao said that DNA sequencing has become a very important tool in studying the molecular and biological characteristics of any living organism, which decides and determines how different protein molecules function in our body.

Dr. Rao demonstrated some early works done by Fritz Miescher, Phoebus Levene, Allam Maxam and Walter Gilbert and Sanger on DNA and DNA sequencing. Dr. Rao appealed to all to keep innovating to meet the demands of the future and also to nourish the innovation ecosystem of India.

On the occasion, *CSIR-NEIST Highlights 2013-14* was released by the Chief Guest. Commemorating the Foundation Day, the members of staff, researchers, etc. who delivered exemplary performance in various R&D fields, Management, Administration works etc. in the year 2013-14 were felicitated by awarding Certificates of Appreciation. The Day was also observed by felicitating the retired members of staff, who retired during March 2013 to February 2014 with mementoes as a token of appreciation for the services rendered to the Institute in particular and the CSIR in general.

In his Presidential address, Dr. Ramaiah appealed to all to inculcate the spirit of working together for the Institute and bring many more laurels to the Institute.

As a part of the programme, the Institute declared an 'Open Day' for the visit of students and general public from 1.30 pm to 4.00 pm wherein a large number of students, teachers and general public visited the Institute.



Dr Ch. Mohan Rao, Director, CSIR-CCMB, Hyderabad delivering Foundation Day lecture



Release of CSIR-NEIST Highlights 2013-14 by the Chief Guest in presence of Dr. D. Ramaiah (centre), Director, CSIR-NEIST and Dr. R.C. Boruah (extreme left), Outstanding Scientist

Lectures

Prof. Henry F. Schaefer delivers Prof. J.W. McBain Memorial Lecture at CSIR-NCL



CSIR-National Chemical Laboratory, Pune organized the eleventh Prof. J.W. McBain memorial lecture on 3 February 2014 under the auspices of the NCL Research Foundation. The lecture was rendered by Prof. Henry F. Schaefer from the University of Georgia, USA.

Prof. Henry F. Schaefer spoke on *The Reactions of Halogens with Water and the Water Dimer*. Specifically, he discussed the simulation of the chemical reactions of fluorine and hydrogen, with emphasis on the transition states. Prof. Schaefer stated that fluorine and hydrogen reaction is the touchstone of modern chemical kinetics. The barrier of the reaction is much lower than anticipated. He proved his predictions right, after controversy had erupted with a research group in USA.

Prof. Schaefer said that the fluorine atom-water system has the potential to become one of the best understood chemical reactions. Currently, one of the most popular DFT methods like B3LYP finds an entrance complex which is strongly bound and a transition state that is 10.0 kcal/mole below the separated fluorine and water species. Stationary points for the fluorine and water potential energy surface were located with the "Gold Standard" method using Dunning basis sets through quintuple zeta. He pointed out that the barrier height is predicted to be less than previous estimates. Most DFT methods applied to fluorine and water predict no barrier at all. The eight DFT methods that do predict a barrier show exothermicities that are significantly too small. He said that the comparison with the valence isoelectronic chlorine reaction shows large qualitative differences between the two potential energy hypersurfaces.

Prof. Schaefer explained the reactions



Dr. Sourav Pal welcoming Prof. Schaefer

of bromine, chlorine and iodine atoms with water, with emphasis on the barriers in the reactions. After that, he moved on to the diatomic halogens. The bimolecular barrier was found to be higher. He discussed the theoretical predictions of the relative energies for the stationary points and the imaginary vibrational frequencies for the transition states of the reactions at various levels of theory. He explained the experiments with the energy profile diagrams for the understanding of the audience.

Earlier, Dr. Sourav Pal, Director, CSIR-NCL in his welcome address recalled the contributions of Prof. J.W. McBain and mentioned some anecdotes about NCL's first Director. He then formally introduced the speaker, Dr. Henry Schaefer, as the most productive quantum computational chemist. Prof. McBain provided guidance and vision to CSIR-NCL for doing basic science and connected it to the industries. The motto of the organization was also coined by him.

16th PrIEST Lecture on 'Global Raw Material Availability and Emerging Opportunities' organized by CSIR-CLRI



On the dais (from left) Shri Susanta Mallick, Hon. General Secretary, ILTA, Shri Arnab Jha, President, ILTA, Dr. Giriappa Kollannavar, Principal Technical Officer and Head, Economics Research Division, CSIR-CLRI, Chennai and Dr. Dipankar Chaudhuri, Scientist and Head, RCED(CSIR-CLRI), Kolkata

The 16th lecture under the Programme for Implementing Emerging and Sustainable Technologies (PrIEST), which CSIR-CLRI has been organizing jointly with ILTA, CLCTA and ILPA, was held at the ILPA Freya design studio auditorium in Calcutta Leather Complex on 27 February 2014. The lecture was attended by fifty-nine

people from various sections of trade and industry.

In his welcome address, ILTA President Shri Arnab Kumar Jha mentioned the lack of data base on raw hides and skins available across the globe and stressed the need for developing such a resource for realizing the true potential of leather industry in this country.

Dr. Dipankar Chaudhuri, Scientist and Head, RCED (CSIR-CLRI), Kolkata drew the attention of the participants to the sustainability related issues and observed that the PrIEST lectures had focused on them as they were crucial for the survival of the industry. He cited the proposed pilot biogas plant of CLCTA as an example of the outcome of the PrIEST and emphasised that it was a step forward towards implementation of cleaner technology in CLC.

Dr. K. Giriappa gave an overview of global livestock population and production of various types of hides and skins in different countries across the globe. Presenting the annual growth rate for various species, he cited a growth rate of 1.84% for



Dr. Giriappa Kollannavar delivering the 16th PrIEST lecture titled 'Global Raw Material Availability and Emerging Opportunity'

goat, which is the highest among the animals which are of interest to the leather industry. On the availability of hides/skins for leather industry in 2013, he quoted a figure of 325 million pieces for bovine hides, and 457 and 551 million pieces for goat and sheep skin respectively.

Dr. K. Giriappa talked about the global trade in leather and leather products. Citing a figure of US \$ 159.89 for global import of hides and skins for 2011, which is growing at the rate of 4.94%, he put the Indian share at 3.05%. Describing the rising labour cost as one of the major reasons for relocation, he envisaged further relocation of industry to low cost countries as a strong possibility. He felt that India, Bangladesh, Sri Lanka and a few African countries would emerge as the major global players in future. Analyzing the dynamics of global trade, he emphasized on four key areas, namely cost

competitiveness, environmental and social compliance, exploration for development of new source and establishment of market and information network for success in this industry.

Under WTO regime, Indian leather sector has to maximize its competitive strength while at the same time strengthening the decentralized sector. Analyzing the potential of Indian leather sector as an emerging player at global level, Dr. Giriappa supported the export target of US\$ 14 by the year 2016-17 and opined in favour of augmenting its domestic raw material supply from an external source apart from effective utilization of its own supply as a possible measure to achieve the above target. He felt that the great abundance of raw hides and skins available in Ethiopia could be tapped to supplement India's raw material base.



National Science Day Lecture-2014 at CSIR-NGRI

The National Science Day Lecture-2014 was delivered by Mr. M. Rajagopala Rao, Executive Director (retired), ONGC on 28 February 2014 at the CSIR-National Geophysical Research Institute (NGRI). The talk was preceded by a welcome address by Dr. Y.J. Bhaskar Rao, Acting Director and introduction of the speaker by Dr. Nimisha Vedanti, scientist, NGRI.

In his talk, Mr. Rao presented an amazing picture of an exploration and production company vis-a-vis endeavor for success in a professional's/geoscientist's life. An in-depth detail of spatial occurrence, innovative exploration methods and exploitation/production technologies for hydrocarbons was a crucial and informative feature of his talk. Taking the audience through the genesis of the Earth, petroleum and human evolution, he grouped various E & P industry players as resource holders, operators and service providers.

Taking four key characteristics viz. capital intensity, technical complexity, risk and depleting assets into consideration, the speaker presented a roadmap for optimum



Mr. M. Rajagopala Rao,
Chief Guest of the function

utilization of the available critical energy resources keeping in view of the geological, technical, economic and political uncertainties involved. The presentation concluded with an apt quote of Mahatma Gandhiji: "There is enough on this earth to meet every man's needs, but not enough to meet even one man's greed."

The talk ended with a vote of thanks by Dr. Kalachand Sain.

Visits

The Chief Minister of Assam visits CSIR-NEIST, Jorhat

On the last day of 2013, Chief Minister of Assam Shri Tarun Gogoi visited CSIR-North East Institute of Science & Technology (CSIR-NEIST), Jorhat. Dr. D. Ramaiah,

Director, CSIR-NEIST gave a brief presentation apprising the Chief Minister about research and societal activities and achievements in various areas.



Dr. D. Ramaiah, Director, CSIR-NEIST (right) briefing the activities of the Institute to Shri Tarun Gogoi, Chief Minister of Assam

Addressing the scientists, Shri Gogoi stressed that special importance should be given to R&D and conservation of the medicinal and aromatic plants available in Assam for effective utilisation for the benefit of the people. He expressed extreme happiness over the development as well as production of two herbal-based ointments namely 'Anti-arthritis' and 'Fungi-destruct' within the institute made available to the public at a low cost. He further said that the institute should in future think about industrial development in Assam by way of utilising the naturally available resources. This would benefit the unemployed mass of the state.

The Chief Minister also visited different research laboratories of the institute and expressed happiness over the current R&D and societal activities of the institute.



The Chief Minister at the Cellulose, Pulp & Paper Division during his visit round the Institute led by the Director, CSIR-NEIST

Visit of Minister of Science & Technology of Republic of Argentina to CSIR-CCMB

A Five-Member Scientific delegation from the Republic of Argentina headed by Dr. Lino Barañao, National Minister of Science, Technology and Productive Innovation visited CSIR-Centre for Cellular and Molecular Biology (CCMB) on 19 February 2014.

The visit was mainly to explore possible

scientific collaborations between CCMB and scientific institutes of Argentina. The other Members of the delegation were H.E. Mr Raul Guastavino, Ambassador of the Argentine Republic and Ms Agueda Menvielle, National Director of International Relationships of the Ministry of Science & Technology and Engineering, along with

Secretaries of Argentine and Indian Embassies.

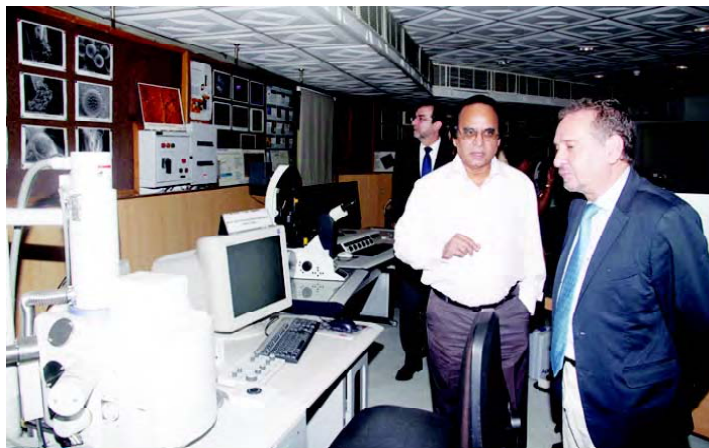
Argentina, like India, has very asymmetric resource distribution with some people being rich and able to afford modern technology while a large number of people do not have access to this. Technological innovations to help middle income and poor families are the priority of the Argentinean Science & Technology Ministry.

The Argentinean team visited all the facilities of CCMB and also learnt about the major scientific activities being conducted at CCMB. The Minister proposed that he would like to have collaborative relationships with CCMB, more specifically *to establish a virtual collaborative centre* in which scientists from CCMB and Argentina solve problems of local importance.

To start with, use of Information and Computer Technology in biological data analysis would be initiated. Ms Agueda Menvielle said that she would communicate

to CCMB the list of potential areas and scientists for establishing future links.

Dr. Ch. Mohan Rao, Director, CCMB stated that scientific cooperation between the two countries would foster scientific research and he and his team were very enthusiastic to initiate such collaborative efforts.



Dr. Ch. Mohan Rao with Argentine S&T Minister at the Advance Spectroscopy and Imaging Facility

Flower Show

Annual Rose and Gladiolus Show at CSIR-NBRI

The CSIR-National Botanical Research Institute (NBRI), Lucknow organized the two-day Annual Rose and Gladiolus Show during 18-19 January 2014 in the Central Lawn of the Botanic Garden. On the concluding day, 25 running challenge cups, shields and trophies, besides a number of other prizes were awarded to the winners by Shri B.L. Joshi, Governor, U.P. and Shri Rajeev Kapoor, Principal Secretary to the Governor.

The show attracted a total of 711 entries belonging to 65 exhibitors from Lucknow and outstation. This year, a total number of 25 running cups/shields/trophies along with 289 prizes (First 104, Second 90 and Commendation 95) were given to the winners.

Visitors were seen all over the show ground and its various enclosures admiring the beauty of colours of the flowers. It was splendid and delightful sight in the lush green lawns at NBRI, Lucknow where thousands of roses and gladiolus in different colours were spreading fragrance and providing a



Shri B.L. Joshi visiting the Jurassic Gallery

message of peace, enthusiasm, harmony and unity.

This year HAL Accessories Division, Faizabad Road, Lucknow stood First by winning 7 Cups/Shields/Trophies followed by Executive Engineer, Sinchai Nirman

Khand I, Lucknow who bagged 3 cups/ trophies.

Among the total 289 prizes, HAL Accessories Division, Lucknow captured the maximum of 41 prizes (21 first, 13 second and 7 commendations) and stood first. Tata Motors, Chinhat, Lucknow secured the second position by winning 30 prizes (4 first, 8 second and 18 commendation) and Executive Engineer, Sinchai Nirman Khand I, Lucknow and Director, CSIR- CIMAP, Lucknow secured the third position by winning 21 prizes each. Besides, special commendation certificates were awarded to Executive Engineer, Sinchai Nirman Khand I, Lucknow and Tata Motors Ltd. Chinhat, Lucknow.

Earlier, Shri B.L. Joshi, Governor, U.P. inaugurated the Jurassic Gallery in the Botanic Garden. Here plant species belonging to gymnosperms, pteridophytes, mosses, lichens and algae have been showcased in an informal layout along with models of

Dinosaurs and Pentoxylon to recreate the Jurassic period for making people aware about the dominant flora and fauna of that period, besides educating about the evolution and extinction process of biological species.

Shri B.L. Joshi commended the efforts of NBRI in research and development in the field of floriculture under the leadership of Dr. C.S. Nautiyal. He especially eulogized the training given by CSIR-NBRI to physically challenged children in preparing greeting cards from dehydrated parts of plants.

He also released *NBRI Heerak*, a Gladiolus variety developed by CSIR-NBRI which has exceptionally large floret size with attractive colour combination.

Dr. C.S. Nautiyal, Director, CSIR-NBRI, while welcoming the Chief Guest and Guest of Honour said that NBRI has been instrumental in helping the farmers and the commercial growers in self-sustaining their livelihood.



'NBRI-Heerak', a gladiolus variety being released by Shri B.L. Joshi



Shri B.L. Joshi giving prize to one of the winners



Prize winners along with chief guest

Honours & Awards

CSIR-NBRI Director Nautiyal conferred FNA

Fellowship of the prestigious Indian National Science Academy (FNA), New Delhi has been conferred on Dr. Chandra Shekhar Nautiyal, Director of CSIR-National Botanical Research Institute (CSIR-NBRI), Lucknow for his eminence and contributions in the field of biotechnology for enhancing the yield of plants that maximises the economic, environmental and societal benefits to our farmers.

Dr. Nautiyal joined NBRI in February 1994, after spending about 10 years in Canada and USA working on various positions ranging from Post Doctoral Fellow to Production Manager in a Biotechnology Company in USA. His research interests include area of fundamental and applied aspects of Plant-Microbe Interactions and relate to elucidation of relationships between microbial populations and environmental stresses, working out the intricacies of relationship between microbes and plants, and utilizing the knowledge base thus developed for enhancing the yield of plants through transfer of commercially exploitable technologies for its further dissemination among farmers, for the

development of sustainable management of soil fertility and crop production that so desperately need to be protected.

Major spin-offs of his contributions have been several patents, publications and utilization of these technologies by several biotechnology companies nationally and internationally.

Dr. Nautiyal has received several prestigious awards such as CSIR Award for S&T Innovations for Rural Development; Vigyan Gaurav Samman, Council of Science & Technology, UP; Life Time Achievement Award, The Biotech Research Society of India (BRSI); TATA Innovation Fellowship, Department of Biotechnology (DBT); Industrial Medal Award, BRSI; The Biotech Product and Process Development and Commercialization Award, DBT; All India Biotech Association (AIBA) Award, and Vigyan Bharati Rashtriya Puraskar.

Dr. Nautiyal is a Fellow of the Indian National Science Academy, New Delhi; the National Academy of Sciences, Allahabad, and National Academy of Agricultural Sciences, New Delhi.



Dr. C.S. Nautiyal

CSIR-NAL wins the Indian Electronics & Semiconductor Association (IESA) Technovation Award 2013 for “Drishti Transmissometer”

DRISHTI has been declared as the “Most Innovative Product of the year 2013” by the Indian Electronics & Semiconductor Association (IESA). IESA is the premier trade body committed towards building global awareness for the Indian Electronic System Design & Manufacturing (ESDM) industry and supporting its growth through focused initiatives. IESA has more than 200 Companies registered as members from different areas like Telecom, Aerospace, Electronics, Automotive, Medical, Bio technology Industries along with many Educational Institutes. The award under “Industry category” was given to CSIR-NAL on 3 February 2014 at their IESA Vision Summit 2014 held in Sheraton, Bangalore.



CSIR-NGRI Scientist Selected for *K.K. Menon Award*

Dr. S. Masood Ahmad, Chief Scientist at CSIR-National Geophysical Research Institute, Hyderabad, has been selected for the *K.K. Menon Award* for the year 2013 by the Geological Society of India for his significant contributions in Sedimentary Geology.

Dr. Ahmad has carried out extensive studies on marine sediment cores from the Bay of Bengal and Arabian Sea to infer paleoclimatic evolution of these basins. Dr. Ahmad is well known for his paleoclimatic reconstruction

studies in the Indian Ocean and Indian sub-continent using marine and terrestrial sediments (corals, foraminifera, speleothems, lacustrine deposits etc).

He was awarded the National Geoscience Award in Geo-environmental sciences for the year 2009 from the Ministry of Mines and Geology, Government of India. Dr. Ahmad is Indian leader of the International Geoscience Program (IGCP) #581 on 'Evolution of Asian River Systems' and a member of Editorial Board of *Palaeo-3* (Elsevier). He has published more than 50 research papers in highly reputed national and international journals and also serves on several national and international committees.



CSIR-NGRI Scientist selected for *K.R. Gupta Award*

Dr. N. Satyavani, Scientist at CSIR-National Geophysical Research Institute, Hyderabad was awarded the *K.R. Gupta Memorial Gold Medal* by the Geological Society of India, for the year 2013 for her contributions to research in the field of seismic exploration and gas hydrates.

She has been an active source seismologist and her research expertise has been in delineation of fine scale crustal and shallow structures, both onshore and offshore using various seismic datasets. Currently, she is working on the aspects of identification and quantification of gas hydrates using advanced data processing techniques and actively pursuing research in the field of multi-component seismics. She was actively involved in the data acquisition for gas hydrates and participated in the marine field work as a co-chief scientist onboard the seismic vessel that acquired data in Mahanadi and Krishna-Godavari basins of Eastern India.

She has so far published 19 research articles in National/International journals.



Dr. Satyavani, receiving K. R. Gupta Memorial Gold medal from Prof. Harsh K. Gupta

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