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## In The News

### Dr. Harsh Vardhan Launches CSIR-CEERI Technology for Detection of Adulteration in Milk



Dr. Harsh Vardhan dedicating “Ksheer Scanner” technology for detection of adulteration and analysis of milk. Also seen in the photograph, to his right, Dr. Girish Sahni, DG-CSIR and to his left, Dr. R.K. Sinha, Director, CSIR-CEERI

**DR. HARSH VARDHAN**, Minister of Science & Technology and Earth Sciences and Vice President CSIR, recently launched “Ksheer Scanner”, a technology platform to detect adulterated milk. The technology has been developed by the CSIR-Central Electronics Engineering Research Institute (CEERI), Pilani.

Even though India ranks number one across the world for milk production, according to some estimates over 60% of the milk is contaminated due to malpractices in the milk supply chain which includes dilution with unsafe water. The milk is even being adulterated with dangerous contaminants such as urea, salt, detergent, liquid soap, boric

acid, caustic soda, soda and hydrogen peroxide which have hazardous health effects.

With even the NITI Aayog identifying the problem of detecting adulteration in milk as one of the Grand Challenge Areas under the Atal Innovation Mission, the low-cost and portable Ksheer Scanner is being considered a significant initiative. With a single-button operation, it enables detection of contaminants in just 40-45 seconds at the per sample cost of less than 50 paise. The minimum detection levels of major contaminants are: Urea: 1 gm/l; salt: 2 gm/l; detergent: 2 gm/l; soap: 1%; and soda: 1 gm/l.

Ksheer Scanner offers automated scanning of raw milk samples at milk collection points. It is safe to use and ideal for installation at milk collection centres of milk societies at village and tehsil levels. The system can also be useful for on-the-spot milk testing by food inspectors. The system has been successfully tested at various dairies located in Rajasthan, Uttar Pradesh, Goa, Gujarat, Punjab and Haryana.

Prof. R.K. Sinha, Director of the CSIR-CEERI, Pilani has informed that the technology has been transferred to Rajasthan Electronics & Instruments Ltd. (REIL) and Alpine Technologies, Surat, Gujarat, for commercialization.

Dr. Harsh Vardhan said that he would be reaching out to the Union Health Minister and the Health Ministers of all state governments to adopt and deploy this technology platform to address the problem of milk adulteration in the country. The Food Safety and Standards Authority of India (FSSAI) will also be asked to bring in the required regulatory intervention so as to ensure the delivery of quality milk, he added.

Meanwhile, the Central Food Technology Research Institute, Mysore, has also developed a portable instrument to detect a key micro-nutrient called beta carotene in milk. Expected to cost Rs 5,000, the instrument will allow farmers to alter the fodder they provide to cattle to increase the beta carotene content of milk.

## CSIR-NBRI Releases New Variety of Turmeric



Shri Ram Naik, Hon'ble Governor, Uttar Pradesh releasing the turmeric variety, Kesari

Turmeric (*Curcuma longa*) is native to Asia and India, and considered a boon in Ayurveda from ancient times. It has an important place in the Indian kitchen and is also considered very pious in religious programmes.

India is the largest producer, consumer and exporter of turmeric in the world accounting for about 80 per cent of world turmeric production and 60 per cent of world exports. Indian turmeric is considered to be the best in the world market because of its high curcumin content.



After ten years of research on different varieties of turmeric, the CSIR-National Botanical Research Institute, Lucknow has screened out a new variety “Kesari”, which is tolerant to low temperature and frost during winter. In comparison to other existing varieties, it exhibits less problem of yellowing and falling of leaves during winter, which extends the life period of this variety.

“Kesari” has a growth period of about 230 to 240 days, as compared to 160 to 180 days of other varieties, which directly reflects on its higher fresh rhizome yield of high quality. The fresh rhizome yield potential of “Kesari” is around 30-35 ton per hectare, as compared to 20-25 ton per hectare of other existing varieties. The total curcuminoid content of “Kesari” is around 1.16 %, which is also more than other existing cultivated varieties of north India.

“Kesari” has also shown promise in successfully growing in partial sodic soils having pH up to 9 and can also be cultivated under the shade of trees in orchards. This variety may prove as an income generation tool to provide supplementary income to the farmers of north India.

Shri Ram Naik, Hon’ble Governor, Uttar Pradesh in the company of Dr. C.S. Nautiyal, Director, CSIR-NBRI, released this promising variety of turmeric on 7<sup>th</sup> February 2016 during the Annual Rose and Gladiolus Show, held at the Central Lawns of CSIR-NBRI, Lucknow in the presence of the citizens of Lucknow. On the occasion, he congratulated the Director and the team of people led by Dr. S.K. Tewari for the new turmeric variety. He also hoped that the variety would be a boon for farmers of North India.



Kesari, promising variety of turmeric for North India

## S&T Minister Calls on CSIR-CRRI Scientists to Target Rural Areas

On a visit to the Central Road Research Institute (CSIR-CRRI), New Delhi, the Union Minister for Science, Technology and Earth Sciences, Dr. Harsh Vardhan called upon scientists and researchers to reach their researches to rural areas.

Dr. Harsh Vardhan enquired about technologies being developed in various laboratories which included Pavement Engineering Area, Flexible Pavement, Rigid Pavements, Geo Technical Engineering, Bridge Engineering and Traffic Engineering and Transportation Planning Area.

Interacting with the scientists and staff of the Institute, the Minister asked them to examine ways to quickly transfer the semi-automatic pothole repair machine and the associated technology developed in the Institute to all the panchayats of the country.

The Minister said that with about 18 km of roads being constructed every day

now, research institutions should identify any gaps and transfer the required technologies to the land. The Minister urged the scientists and technologists to promote their research outputs in terms of use of innovative technologies in road construction, measures for achieving savings in depleting aggregates through the use of waste materials in road construction and measures for enhancing road safety on Indian roads.

During the visit the Minister showed keen interest in the activities of CSIR-CRRI particularly the new technologies/specialized services developed by the Institute such as Soil Nailing Technique for quicker and safer construction of subways/underpass; Patch Fill-Pothole Repair solution for bituminous roads, and Vehicle Mounted Automatic controlled Mobile Bridge Inspection Device (MBIU).

## Ayurvedic Anti-diabetic Drug Launched by CSIR-NBRI and CSIR-CIMAP

Two of CSIR's Lucknow-based laboratories recently released the country's first anti-diabetic Ayurvedic drug BGR-34. The drug designed for type 2 diabetes mellitus, which has been scientifically validated for its efficacy and safety, was developed jointly by the CSIR-National Botanical Research Institute (NBRI) and the CSIR-Central Institute of Medicinal and Aromatic Plants (CIMAP).

BGR-34 costs Rs 5 per tablet and works by controlling blood sugar and limiting the harmful effects of other

drugs. Scientists of NBRI and CIMAP joined hands to develop this effective, safe and patient-friendly solution towards management of type 2 diabetes mellitus after in-depth studies of over 500 renowned ancient herbs. The scientists finally identified the six best herbs listed in Ayurvedic ancient texts namely Daruharidra (*Berberis aristata*), Giloy (*Tinospora cordifolia*), Vijaysar (*Pterocarpus marsupium*), Gudmar (*Gymnema sylvestre*), Majeeth (*Rubia cordifolia*) and Methika (*Trigonella foenum-graecum*).



Senior scientists of the Council of Scientific and Industrial Research, the National Botanical Research Institute and the Central Institute of Medicinal and Aromatic Plants launch the anti-diabetic drug, BGR-34

Pre-clinical studies have revealed that the drug causes significant reduction in high blood sugar level in diabetes-induced experimental subjects, and also improved LFT, KFT and lipid profile

significantly.

Aimil Pharmaceuticals (I) Ltd has been transferred the rights and technical know-how to produce and market the new drug.

### R&D Highlights

## Novel Route to Synthesize Doped Graphene Reported by CSIR-CECRI

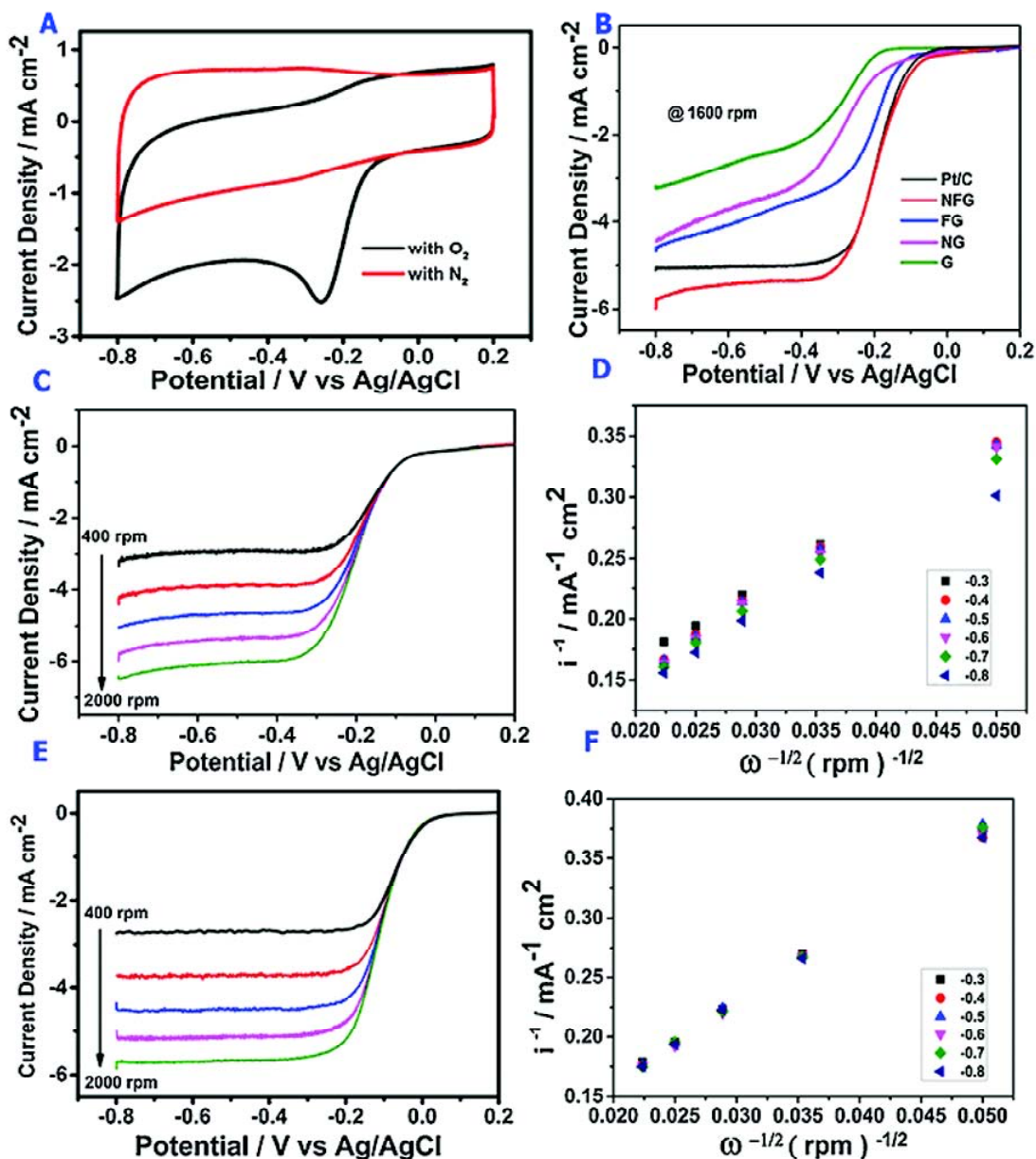
A collaborative effort between Indian researchers from the CSIR-Central Electrochemical Research Institute (Dr. Subbiah Alwarappan and Dr. Shailaja Krishnamoorthy) and TCIS-TIFR (Dr. T.N. Narayanan), Hyderabad has reported a multiple-element incorporated graphene system (nitrogen and fluorine co-doped graphene) as an effective electrocatalyst for oxygen reduction reaction (ORR).

A novel two-step wet chemical route to synthesize nitrogen and fluorine co-doped graphene in bulk was reported by the authors. Results evidenced that the electrocatalytic activity of nitrogen and fluorine co-doped graphene was superior

than the electrocatalytic activity of graphene doped with nitrogen, graphene doped with fluorine and the benchmarked catalyst Pt-C.

In order to further understand the exact synergistic role of the dopants, the researchers performed density functional theory calculations. The density functional theory calculations also helped to determine the role of electron spin density on the catalytic efficiency of doped graphene systems employed in the work.

The present study is the need of the hour and offers a suitable strategy to select efficient electrocatalysts and thereby a new and efficient energy



(A) Cyclic Voltammetry of NFG in 0.1 M KOH (B) Linear Sweep Voltammetry of various catalysts in 0.1 M KOH @ 1600 RPM (C) Linear Sweep Voltammetry of NFG at different RPM (D) K-L Plot for NFG (E) Linear Sweep Voltammetry Pt/C at different rpm (F) K-L plot for Pt/C (Scan rate 10 mV/s).

technology by the ‘mix and match’ of metal-free hetero atoms. The proposed electrocatalyst in this work is very cost-effective than the expensive and scarce Pt catalysts, says Dr. Subbiah Alwarappan one of the researchers.

#### Reference:

T.V. Vineesh et al, Synergistic effect of dopants on the spin density of catalytic active centers of N-doped fluorinated graphene for oxygen reduction reaction. *Applied Materials Today* (2015) 1, 74-79.

# Penning Plasma Discharge (PPD) based VUV-Spectrometer Detector System by CSIR-CEERI

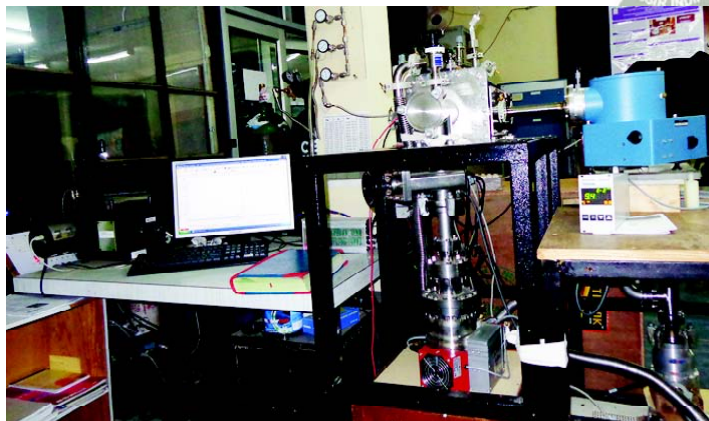


At present a key issue for VUV spectrometer-detector system is to find out an easy and acceptable calibration technique to meet the long-term requirement of sensitivity curve for larger wavelength points in the VUV region, and prepare it to use in tokamak plasma machines. The calibration process for the visible spectrometer is a normal process. However, in the vacuum ultraviolet (VUV) spectra, where most of the emissions from impurities in hot plasma are found, the absolute intensity calibration is quite a tedious task.

Commonly people use “branching ratio method” for the absolute intensity calibration of a spectrometer in the VUV region. For tokamak operation and identification of suitable line pairs of known branching ratio of two transitions, which originate from the same upper level (one in visible and the other in ultraviolet), is important. This method is frequently used in UV range but for VUV it is difficult as suitable line pairs are rarely available.

A laboratory-based large volume penning plasma discharge (LVPPD) source was developed in three-anode configurations at the CSIR-CEERI, Pilani. The source has simultaneous diagnostics facility using Langmuir probe and optical emission spectroscopy (OES). The three-anode configurations, namely single ring, double ring and rectangular configurations were studied and compared for optimum use of the geometry for efficient light emissions and recording.

The double ring penning plasma discharge configuration was optimised as an efficient emission source, which was able to produce strong visible (400



LVPPD source for VUV spectrometer detector system calibration



LVPPD source delivered to IPR

nm - 750 nm) and VUV (20 nm-150 nm) lights simultaneously. The approach with double anode ring was a unique arrangement and was a conciliation between optical confinement and anode transparency for effective spectroscopic and Langmuir probe measurements inside the large volume penning plasma source. The plasma was produced using helium gas and admixture of three noble gases including helium, neon and argon.

The optimized source was capable of producing eight identified spectral lines for pure helium in the VUV range from 20 nm to 60 nm and total 24 spectral

lines covering the wavelength range from 20 - 106 nm for the admixture of gases. The absolute intensity curve in the VUV range for helium gas was achieved using a novel numerical method based on collisional-radiative model, atomic data and analysis structure (ADAS) database, singular value decomposition technique and chi-square minimisation that ultimately leads to a number of calibration factors for the observed VUV spectral lines.

In fact, the proposed methodology provides an opportunity to infer a large number of plasma parameters simultaneously for the first time from the absolute measurements of the visible spectra. The electron density, electron temperature, ground-state atom density, ground-state ion density and the triplet metastable state ( $2\ 3S$ )

density were the simultaneously estimated parameters.

The derived plasma parameters were then used to obtain the absolute intensities of the lines observed in the VUV region, which were compared with observed VUV spectrometer-detector system to obtain calibration factors. It was demonstrated that using this source, a VUV-spectrometer-detector system can be calibrated from 23 nm to 106 nm.

The developed source can be used for worldwide fusion plasma machines and laboratory plasma systems for VUV-spectrometer-detector-system calibration. It is a low-cost laboratory source. The developed source was delivered to the Institute for Plasma Research (IPR), Gandhiangar under national fusion programme.

### MoUs

## CSIR-CIMAP and APJ Abdul Kalam Technical University Sign MoU



CSIR-Central Institute of Medicinal and Aromatic Plants (CSIR-CIMAP), Lucknow and APJ Abdul Kalam Technical University, UP have entered into an MoU to share the facilities and expertise available in each other's institution.

The MoU was signed by AKTU vice-chancellor Prof. Vinay Kumar Pathak and director CSIR-CIMAP Prof. Anil Kumar Tripathi. The MoU will enable AKTU students, researchers and faculty to take short-term training at CSIR-CIMAP in their areas of specialization. The research students/scientists working at

CSIR-CIMAP would also be able to register for PhD programme at AKTU. And, PhD students working in AKTU would be able to carry out a part of their work at CSIR-CIMAP.

Under the MoU, AKTU and CIMAP would be able to apply for collaborative projects jointly to national and international funding agencies. The scientists/faculty members of AKTU and CSIR-CIMAP would be included as resource persons for invited lectures/workshop on specialized topics in different academic/ scientific programmes.

## CSIR-NIIST Enters into Project Agreement with M/s Bipha Pharmaceuticals



CSIR-National Institute for Interdisciplinary Science and Technology (NIIST), Trivandrum entered into a project agreement with M/s Bipha Pharmaceuticals, Pallipurathukavu Jn., Kottayam, Kerala on 21<sup>st</sup> December 2015 for executing the project involving “Phyto Chemical Analysis and Biological Activity of Selected Herbs and Formulations”.

The duration of the project will be for a period of six months. During the tenure of the project, CSIR-NIIST will evaluate certain raw materials and formulations developed at Bipha, for its phytochemical characterisation in terms of TPC, TFC, Terpenoids and Alkaloids. The anti-diabetic and anti-cancer activity of these assays will also be studied during the course of the project.



The project is expected to open up new opportunities for collaborative research in the areas of Nutraceuticals and Functional Food Development through private partnerships.

## CSIR-CSIO and TBRL Ink Pact on Strategic Research

The Central Scientific Instruments Organisation (CSIO), Chandigarh and the Terminal Ballistics Research Laboratory (TBRL) have signed a memorandum of understanding for joint research in ballistics, explosives and other high-technology areas associated with atomic energy and biotechnology.

Instrumentation and systems for ballistics research, blast measurement, structural health monitoring, motion detection and measurement, explosive and bio-agent detection, detonics studies, off-route mines and explosive materials are among areas identified for joint work.



Director, CSIO, Prof. R.K. Sinha (left) and TBRL Director Dr. Manjit Singh exchanging the MoU in Chandigarh

Workshops/Symposia**CSIR-IICB Organizes India-EMBO Partnership Symposium**

A week-long symposium held in eight different research institutes in India was organized as part of a Government of India and the European Molecular Biology Organisation (EMBO) partnership to induct India as a member state of the EMBC and EMBO.

CSIR-Indian Institute of Chemical Biology (IICB), Kolkata was one of the venues of this programme. Dr. Suwendra Bhattacharyya was the convenor of this event in CSIR-IICB. Dr. Gerlind Wallon and Dr. Luis Valente represented EMBO in this event.

As part of the agreement, Indian scientists will be able to participate in the same EMBO programmes as researchers from all other member states. The launch of this partnership was accompanied by a series of events across India. At each event, scientists from Europe and India as well as EMBO representatives talked about science and the opportunities afforded by the partnership.

A half-day symposium, on 5<sup>th</sup> February, was organized as part of this series in CSIR-IICB. In the inaugural session, Dr. Syamal Roy, Dr. Dipyaman Ganguly and Dr. Suwendra Bhattacharyya introduced the past and present research going on in the host institute.

Prof. Jan Löwe from MRC Laboratory of Molecular Biology, Cambridge, United Kingdom; Prof. Dominique Soldati-Favre from Department of Microbiology and Molecular Medicine, Faculty of Medicine, University of Geneva, Switzerland and Prof. Sophie Martin from Dept. of Fundamental Microbiology, Biophore, University of Lausanne Switzerland were the speakers in the scientific session of this symposium which was followed by an interactive session where PhD students and scholars of CSIR-IICB had a chance to interact with the speakers to discuss the possibilities and prospects available with EMBO programme.



Glimpses of the programme

## **One Day Training-cum-Workshop on ‘Patent and Project Management’ Organised at CSIR-AMPRI**



A one-day Training-cum-Workshop on ‘Patent and Project Management’ was organized at CSIR-AMPRI, Bhopal on 27<sup>th</sup> October 2015. The workshop was organized jointly by CSIR-AMPRI, Bhopal, Indian Institute of Metals, Bhopal Chapter and Indian Science Congress Association.

The programme was attended by around 40 participants from various academic institutes, government organizations and industries like IIT Indore, SATI Vidisha, MANIT Bhopal, Barkatullah University Bhopal, CPCB Bhopal, MPCST Bhopal, Daulat Ram Engineering Services Pvt. Ltd., LNCT Bhopal, BPCL Bhopal, HEG Limited Mandideep, ISM Dhanbad and CSIR-AMPRI, Bhopal.

The training and course was inaugurated by Dr. S. Das, Director, CSIR-AMPRI. He welcomed all the participants and highlighted the importance of patent and project management pertaining to R&D activities.

The first session was conducted by Dr. Navin Chand and Dr. O.P. Modi (Chief Scientists CSIR-AMPRI) and the second session was conducted by Dr. Rupa Dasgupta and Dr. S.A.R. Hashmi (Sr. Principal Scientists CSIR-AMPRI).

Dr. R. R. Hirwani, Head URDIP in his speech emphasized the need for patinformatics in research. He focused on various patent tools that are used to understand the present global scenario, harnessing the need of the industry and benefits out of well-carved research. He



Dr. S. Das welcoming Dr. Hirwani



Dr. S. Das, Director, CSIR-AMPRI distributing certificates to participants

also specified the patent prosecutions in detail.

After Dr. Hirwani’s valuable articulation on the subject, Shri P. D.

Ekbote (Chief Scientist, CSIR-AMPRI) delivered the Keynote Lecture on R&D management through generations. He highlighted the improvement of the linkages between the production sector and R&D institutions. He also mentioned the key factors for accessing new technologies through stories of CSIR-AMPRI.

Dr. Ghayur Alam of NLIU Bhopal elucidated the importance and essentialities of patents. He talked briefly about the various rules and laws pertaining to patents. Continuing the session Dr. N.K. Chaubey, MPCST Bhopal provided information on Intellectual Property Rights and said that Intellectual Property Rights are statutory rights which once granted allow the creator(s) or owner(s) of the intellectual property to exclude others from exploiting the same commercially for a given period of time.

Mr. Yogesh Dhoble (Principal Scientist IPU, CSIR, Hqrs New Delhi) in his address gave an exposure to the

cost of IP filing in India and abroad. He suggested several strategies by which the cost of IP can be managed. He also conducted special interactive sessions with all AMPRI scientists the next day to resolve their queries in understanding the IP aspects related to their research area.

After his valuable presentation, Dr. Manish Mishra (IIFM Bhopal) delivered a lecture on “Project Management in Research and Development: A Case of Urban Solid Waste Management” and emphasized the importance of modern applications that include implementing a new IT system, research and development for pharmaceuticals, the management of strategic organizational change, new product, service and software development.

While Dr. Mohd. Akram Khan, Principal Scientist, CSIR-AMPRI, Bhopal conducted the programme, Dr. J.P. Chaurasia, organizing secretary of the programme concluded the workshop by proposing a vote of thanks.



Participants with Dr. S. Das, Director, CSIR AMPRI, Bhopal

## Field Trials of Pheromone Application Technology (PAT) Conducted by CSIR-IICT



Pheromone application technology is well suited in providing eco-friendly & environmentally safe agro-practices. It is the only practice control for internal feeders like borers and miners.

Use of pheromones in Integrated Pest Management (IPM) maximises crop production with minimum input costs. At present PAT is still under infancy stage in India and requires intensive popularization to gain the confidence of the farming community.

CSIR-Indian Institute of Chemical Technology (IICT), Hyderabad with its strong background in synthetic organic chemistry and state-of-the-art facilities has developed synthetic methodologies for the pheromone components of economically important crop pests.

In this endeavour, with encouragement from the farming community at Shivareddy guda village of Pochampally Mandal, Nalgonda District, Telangana, CSIR-IICT conducted a field trial demonstration for

the usability of PAT application in 150 acres of rice crop. Yellow stem borer of rice, *Scirpophaga incertulas* is a major obnoxious pest causing yield loss upto 40%.

The Shivareddy guda farming community has assured all the support for such an eco-friendly and green agricultural practice for the management of the rice pest. CSIR-IICT hopes to successfully lay the foundations in a much bigger way for the welfare of the entire rice farming community in India.

Those who participated in the field trials on 1 February 2016 at Pochampally Mandal, Nalgonda District, Telangana include Shri Venkat Reddy, Sarpanch; farmers of Shivareddy Guda Village; Dr. B.V. Subba Reddy, HoD, Semiochemicals Division; Dr. K.N. Jyothi, Sr. Principal Scientist, Shri Surender Reddy, and Shri Pratap Reddy of the Semiochemicals Division, CSIR-IICT, and Shri Linga Swamy, Research Scholar, OBC Division, CSIR-IICT.



Dr. B.V. Subba Reddy, Chief Scientist, Semiochemicals Division, CSIR-IICT, training and demonstrating the Pheromone Application Technology in Rice Fields at Sivareddy Guda, Pochampally, Nalgonda District to the farming community

Lectures**Prof. V. Ramgopal Rao Delivers the CSIR-NCL Foundation Day Lecture**

CSIR-National Chemical Laboratory (CSIR-NCL), Pune celebrated its 66<sup>th</sup> Foundation Day on 7 January 2016 with Prof. Ramgopal Rao, P. K. Kelkar Chair Professor, Department of Electrical Engineering, IIT Powai, Mumbai delivering the CSIR-NCL Foundation

many such current innovations were displayed.

Prof. Rao discussed both Top-Down and Bottom-Up methods used in Microelectronics and Nanoelectronics. He explained the Top-Down methodology used in industries where the devices are made out of other devices by patterning the smallest level possible using the concept of Lithography. He also discussed the revolution that has taken place in the field of electronics bringing the size of chips to 17 nanometers.

Prof. Rao illustrated several problems that could be resolved by applying the two crucial methods in various technologies. He talked about the CMOS, a complementary semiconductor technology used in laptops, computers and other electric appliances. He discussed how chemists can use the Bottom-Up approaches to pattern the things. A controlled monolayered formation is needed for defect-free production. He said, "CMOS industry doesn't like the wet processes."

Prof. Rao mentioned about the goals for the Bottom-Up kind of approaches and the formation of SAM's on a variety of surfaces where the central atom can be changed. He also discussed process integration and its characterization with the protocols. He talked about different technologies used for the synthesis of organic transistors and covalent organic frameworks. The helpful techniques for sensing applications for Soil Moisture, Nitrites, Phosphates and Potash (NPK) levels were explained. Detection of soil moisture can make the farmers more alert to overcoming the critical situations of drought.



Prof. Ramgopal Rao delivering the talk

Day Lecture titled "Bridging Chemistry with Nanoelectronics – A Roadmap for Future Smart Electronic Systems".

Prof. Ramgopal Rao initiated his talk saying, "Sensors are going to be the big thing in the coming days. Everybody is talking about the Trillion Sensors Vision" The problems are open ended and there is huge scope for doing things differently and better in this field. It is predicted that there will be one trillion sensors in the next decade that will cover all the life activities. Prof. Rao gave an example of a Consumer Electronic Show that took place at Las Vegas where a Smart Refrigerator that places orders on its own and a Shoe with changing colors and

Earlier, Dr. Vijayamohan Pillai, Director, CSIR-NCL said that the Foundation Day of any organization has very crucial importance in the path of its journey. He motivated the staff saying, “This is the moment when we have to introspect ourselves to understand the objectives, dreams and responsibilities in order to contribute for the future.”

On the occasion, the NCL Research Foundation (RF) awards were also distributed to the staff from the Lab at the hands of Prof. Rao. NCL RF Scientist of the Year Award was given to Dr. H. V. Thulasiram for his multidisciplinary research contributions towards natural products. Dr. Rahul Banerjee won the NCL RF Scientist of the Year Award for his insightful research in structural chemistry. NCL RF Technology of the Year Award was given to Dr. Ulhas K. Kharul and Mr. V. V. Borkar for development and licensing of high flux hollow fibre

membrane technology for water disinfection. Other awards such as NCL RF Award for “New Initiative taken by R&D Support System”, NCL RF Director’s Commendation Award and NCL RF Individual Merit Award were also presented to deserving staff members.



Dr. Vijayamohan Pillai felicitating Prof. Rao

## Visits

### Dr. Harsh Vardhan Visits CSIR-CGCRI

Honorable Minister for Science & Technology and Earth Sciences, and Vice President CSIR, Dr. Harsh Vardhan visited the Central Glass and Ceramic Research Institute (CSIR-CGCRI), Kolkata on 8 February 2016.

Director, CSIR-CGCRI welcomed the Minister and informed him about the research activities of the Institute. Dr. Harsh Vardhan also visited Bio Ceramic & Coating Division, Fiber Optics & Photonics Division and Glass Division and enquired about the services rendered and the different activities.

While addressing the scientific community in the Institute’s Meghnad Saha Auditorium, Dr. Harsh Vardhan



Dr. Harsh Vardhan, Minister of Science and Technology and Earth Sciences, addressing the staff members at CSIR-CGCRI

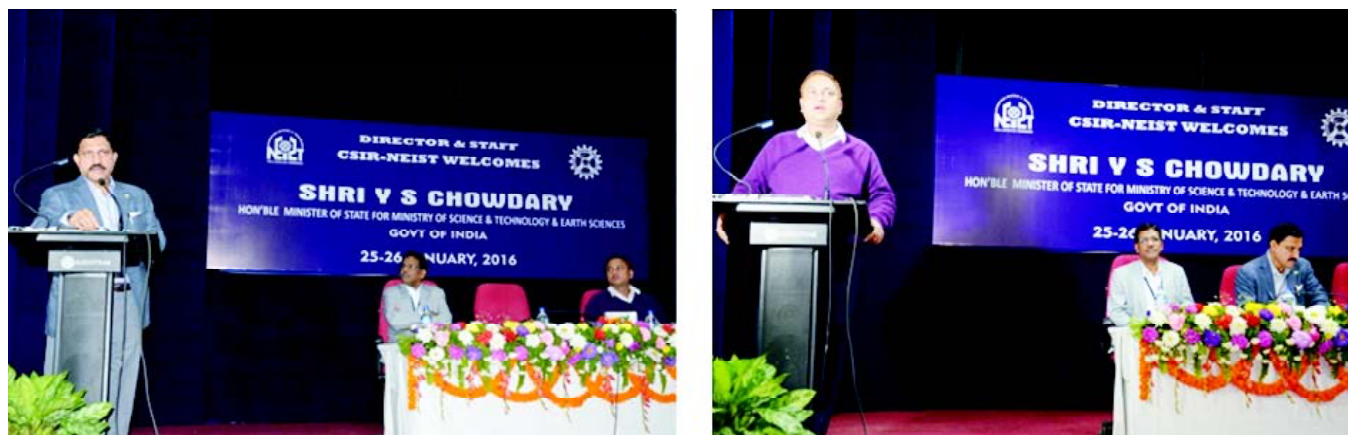
expressed desire that the technologies and products being developed at the Institute must be at par with global standards so that India is once again established as the Viswa Guru on

the global map. He requested senior scientists to consult the junior scientists in their endeavour so that new innovations can be made a reality through research.



Glimpses of the Minister's visit

# Shri Y.S. Chowdary, Minister of State, Ministry of Science & Technology and Earth Sciences, Visits CSIR-NEIST



Left: Hon'ble Minister, Sh. Y S Chowdary, addressing the gathering in the interactive program with beneficiaries & entrepreneurs. Right: Sh. Kamakhya P Tasa, Hon'ble Member of Parliament, Jorhat delivering his address in the program

Shri Y.S. Chowdary, Honorable Minister of State in the Ministry of Science & Technology and Earth Sciences, Government of India, visited CSIR-NEIST during 25-26 January, 2016.

An exhibition of CSIR-NEIST technologies was organized on 25 January 2016. The Hon'ble Minister accompanied by Shri Kamakhya Prasad Tasa, Hon'ble Member of Parliament, Jorhat constituency and Director, CSIR-NEIST, visited the exhibition stalls and interacted with the beneficiaries and entrepreneurs of CSIR-NEIST technologies. He showed keen interest and satisfaction in the dissemination of small-scale technologies like Mushroom cultivation & Banana fibre extraction and also medium-scale technologies like TP-16 Biofertilizer. The Hon'ble Minister also showed keenness on the impact of the Common Facility Centre set up by CSIR-NEIST (supported by DST, Govt. of India) in Mariani (Assam) for the local weavers to boost their skills and products with appropriate S&T intervention.

Thereafter, a formal interactive program was held at the Dr. J N Baruah Auditorium. Dr. D. Ramaiah, Director, CSIR-NEIST delivered the welcome address and gave an overview of the Institute and its activities.

Addressing the gathering, Shri Y.S. Chowdary, emphasized on a lab-to-land approach while mentioning the importance of commercialization and marketing aspects of technologies and products developed by the Institute. He urged all the scientists and everyone in general to contribute in addressing the problems of the country and work towards its growth & development. He appreciated the work carried out by the Institute during the last more than five decades and encouraged the staff to identify the gaps still present and take immediate remedial steps.

Shri Kamakhya P. Tasa, Hon'ble Member of Parliament, in his address spoke about the potentiality of the region in terms of its rich biodiversity and natural resources and urged the scientists

and stakeholders to further explore and reach out to more people.

Later, during the open interaction, the Hon'ble Minister addressed the queries and issues raised by the beneficiaries and entrepreneurs such as fund for more cluster-wise projects for societal development, facilities for solar power systems for rural entrepreneurs, etc. He extended an open invitation to them to come to New Delhi and propose such projects for funding by the Government under suitable schemes/programmes.

It is also worthwhile to mention here that on the occasion, Mr Mustafa Ahmed, a class 8<sup>th</sup> student of Cinnamara Higher Secondary School, Jorhat was felicitated by the Hon'ble Minister in appreciation of his work on 'Scientific Seed Storage Device' for which he was honoured as the only child scientist from Assam at the National Children's Science Congress held in December 2015.

The interactive programme was followed by a Press Meet held in the Director's Conference Room with the Hon'ble Minister and Hon'ble Member of Parliament.

On the second day, the 67<sup>th</sup> Republic Day of our country was celebrated with much zeal and enthusiasm at CSIR-NEIST. The Hon'ble Minister graced the occasion as Chief Guest. He inspected the Guard of Honour and unfurled the National Flag followed by the National Anthem sung by CSIR-NEIST family members.

Addressing the gathering, the Hon'ble Minister, Shri Y.S. Chowdary, extended his greetings to all and spoke about the importance of the day. He urged everyone to review their responsibilities as citizens of the country and to follow the constitution in the right spirit with utmost respect and patronage for the country.



Hon'ble Minister, Shri Y. S. Chowdary, visiting the exhibition stalls along with Shri Kamakhya P. Tasa, Hon'ble Member of Parliament, Jorhat, Dr. D. Ramaiah, Director, CSIR-NEIST and other guests & officials.



To mark the celebration, a short cultural programme was held at the Dr J N Baruah Auditorium where students from Kendriya Vidyalaya, NEIST enthralled the audience with various song and dance performances. Shri Kamakhya P. Tasa, Hon'ble Member of Parliament, also graced the programme.

The Hon'ble Minister in his address extended his gratitude to the Institute and the school for organizing various programmes to commemorate his visit. "I see a huge potential in the region and in the young people to progress and excel in various spheres of life," he said. He further mentioned that the Institute in collaboration with the Ministry may fund exposure trips for the students and young researchers to visit other Institutes and organisations in the country to broaden their horizon.

The program concluded with a vote of thanks proposed by Dr. N.C. Barua, Chief Scientist, CSIR-NEIST.

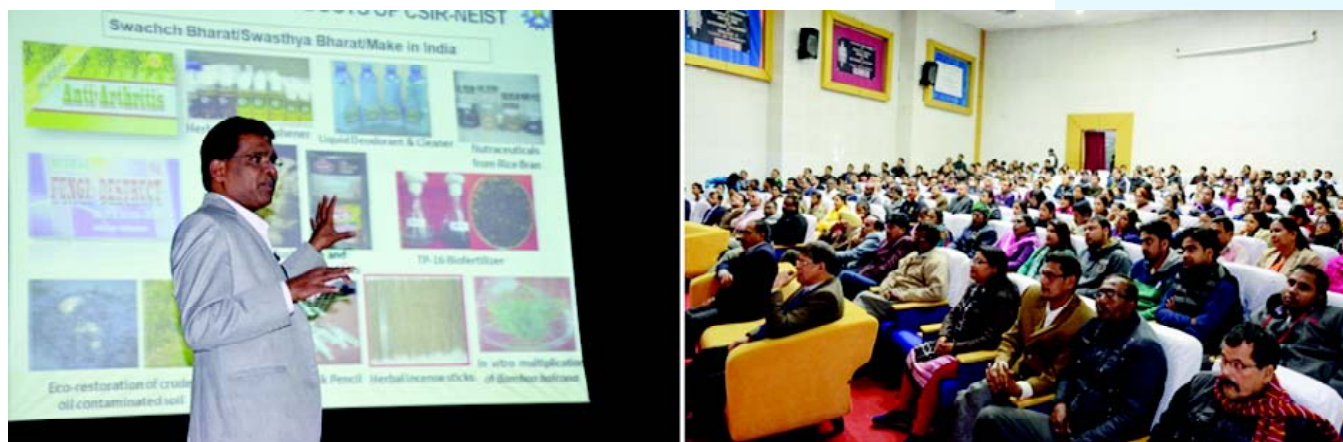
Later, the Hon'ble Minister inaugurated an Essential Oil Distillation Plant (300 L/Day) and then had a look around the Experimental Farm area. To mark the visit, Hon'ble Minister and Hon'ble Member of Parliament also planted saplings of *Mesua ferrea* L. (Family: Clusiaceae, Common name: Iron

wood tree) in the Experimental Farm.

As a part of Republic Day celebrations, a Sports Event was organized at the CSIR-NEIST playground. The Hon'ble Minister hoisted the CSIR-NEIST Staff Club Flag and addressed the gathering during the inauguration of the Event.

Further, he laid the Foundation Stone for an Experimental Animal House in the Chemical Sciences Block and visited various divisions like Chemical Sciences & Technology Division (CSTD), Geosciences & Technology Division (GSTD), Biological Sciences & Technology Division (BSTD) and Herbal Drug Processing Unit (HDPU) and interacted with the staff members. He was apprised about the activities of each division during the visit.

He showed keen interest and discussed about the Microzonation study and Earthquake Risk Assessment for Cities undertaken by the Geosciences Division and asked them to submit projects under the Smart Cities Mission programme. He lauded the work carried out by the Institute in bioremediation of crude oil contaminated land in Assam and encouraged them to submit more such projects for funding from the Ministry to reclaim other contaminated sites.



Left: Dr. D. Ramaiah, Director, CSIR-NEIST presenting an overview about the Institute and its activities in the interactive program. Right: Audience in the program

**Flower Show**

**Annual Rose & Gladiolus Show at CSIR-NBRI**

CSIR-NBRI has been organizing the Annual Rose & Gladiolus Show regularly since the last 50 years for popularizing Rose and Gladiolus in the north Indian

plains and to educate plant lovers about various varieties of Roses and Gladiolus.

This year's Rose and Gladiolus Show was held on February 6<sup>th</sup> and 7<sup>th</sup>, 2016 at the Central Lawn of the CSIR-NBRI, Lucknow. There were 19 classes, 125 sections including 26 running challenge cups/shields/trophies for the exhibitors. Government, Semi-Government Departments, Autonomous Bodies, nurserymen, individual growers, gardeners and ladies took part in the Show. This year, the show attracted a total of 601 entries belonging to 56 exhibitors from Lucknow and outstation.

On this occasion, CSIR-NBRI showcased its R&D activities in a special pavilion. The Institute displayed the choicest collection of Gladiolus, Roses and Gerbera varieties. Technical information on commercial cultivation of Gladiolus, Gerbera and Rose was also provided to interested people. The citizens also had an opportunity to see assorted collections of Bougainvillea, Ferns, Medicinal Plants, Cactus and Succulents, RET species, etc. A stall of



The judges examining the entries during the Rose and Gladiolus show



Shri Ram Naik, Honourable Governor, Uttar Pradesh along with Dr. C.S. Nautiyal, Director, CSIR-NBRI giving away the prize

Environmental Information System (ENVIS) was also setup for creating awareness among the children and people in general.

Shri Ram Naik, Hon'ble Governor, Uttar Pradesh was the Chief Guest at the function on 7 February 2016, where he also distributed prizes to the winners.



Prize winners along with Shri Ram Naik, Honourable Governor, Uttar Pradesh and Dr. C.S. Nautiyal, Director, CSIR-NBRI at the Rose and Gladiolus show.

### Honours & Awards

## **CSIR-NGRI Scientists selected for National Geoscience Award - 2014**

**Dr. Sandeep Gupta** received M. Tech. degree in Applied Geophysics in 1997 with University Medal from the University of Roorkee, Roorkee and Ph.D. degree from Osmania University, Hyderabad. His Ph.D. thesis was adjudged as the best thesis in Geophysics (2004) by ONGC-AEG. He is currently heading the Seismic Tomography Group of CSIR-NGRI. Dr. Gupta has contributed immensely to the understanding of the seismotectonics and geodynamics of

various tectonic regimes using earthquake and seismic noise data. He was one of the key researchers in India-Australia Strategic Research Fund (IASRF) project for exploring the gold potential in Dharwar Craton. He is a recipient of BOYSCAST fellowship and Raman Research Fellowship. He is Fellow of Geological Society of India, Fellow of Society of Earth Scientists, and Associate Fellow of Andhra Pradesh Akademi of Sciences.



**Dr. Simanchal Padhy** received Masters in Electronics and later in Applied Geophysics from Indian School of Mines, Dhanbad. At CSIR-NGRI, he is pursuing research work on theoretical seismology to better understand Earth's structure. The results have a large impact on seismic hazard assessment of India including Northeast India and surrounding Himalayan regions and for site characterization and micro-zonation of major cities. Dr. Padhy is a recipient of CSIR Young Scientist Award - 2008 in Earth Sciences, and DAAD (Germany) and JSPS (Japan) Fellowships. He was also member of 20<sup>th</sup> Indian Antarctica Expedition in 2000.



## CSIR-IICB Scientist Selected Associate Editor of Royal Society of Chemistry Journal

Dr. Surajit Ghosh, Principal Scientist, CSIR-Indian Institute of Chemical Biology, Kolkata, has been selected as Associate Editor in the prestigious Royal Society of Chemistry Journal *RSC Advances*.

After completing his MSc in Organic Chemistry in 2000, Dr. Ghosh moved to Syngene International Pvt. Ltd (Biocon Group) and worked as a Scientist till July 2004. Subsequently, he moved to the Indian Institute of Technology, Kanpur in 2004 for his doctoral studies in the area of Peptide Self-assembly and on completion of his PhD thesis work in 2008, he joined as postdoctoral fellow at the European Molecular Biology Laboratory, Heidelberg, Germany with Dr. Thomas Surrey, where he worked on organization of microtubule and molecular motor proteins till December 2010.

Dr. Ghosh joined CSIR-IICB in 2011 in the Department of Organic and Medicinal Chemistry. At CSIR-IICB, his group is working in the interface of chemistry and biology with a focus on developing small molecule and peptide based anti-Alzheimer's and anti-cancer therapeutics. Dr. Ghosh and his group have already developed a few peptides

which show significant neuroprotection and currently they are trying to develop more potential molecules in this field. His group has made some advances in developing small molecule and peptide based anticancer therapeutics and trying to develop various platforms using surface modification techniques for studying protein-protein interactions, mechanism of intracellular cargo transport and targeted drug delivery.

He is a recipient of BASF and DBT Wellcome Trust Travel grant award, BIOCON Tribute award, EMBL Postdoctoral Fellowship, Alexander von Humboldt Fellowship and Ramanujan Fellowship.

He has a number of recent publications in high esteemed international journals like *Chemical Communication*, *ACS Chemical Neuroscience*, *Dalton Transactions*, *Soft Matter*, *Macromol Biosci.*, *RSC Adv.*, *ChemBioChem* etc. and among them five works have been highlighted on the cover of the journals. His contribution at CSIR-IICB in the last four and half years has been recognized by various national and international scientific communities and received invitations for delivering talks at various national and international conferences.



## Appointments

# Dr. D.K. Aswal Joins as Director, CSIR-NPL

Dr. D.K. Aswal has joined as the Director, CSIR-National Physical Laboratory, New Delhi, on 15<sup>th</sup> December 2015.

Dr. D.K. Aswal has served as the Secretary of Atomic Energy Education Society, Mumbai and as Head, Thin Films Devices Section, Technical Physics Division, Bhabha Atomic Research Center (BARC), Mumbai. He joined BARC through the training school batch of the year 1986 (i.e. 30<sup>th</sup> batch) after completing M.Sc. in Physics (Gold medalist) from Garhwal University in 1985. He obtained Ph.D. in Physics from Mumbai University for his work on “Thin films of high temperature superconductors”, and subsequently carried out post-doctoral research work at Research Institute of Electronics, Hamamatsu, Japan. His current area of research interests includes physics of organic films and their applications for solar cells, conducting polymer films for flexible electronics, thermoelectric power generators and gas sensors & electronic nose.

Dr. Aswal has edited three books, contributed 16 book chapters and published over 200 peer reviewed journal papers. He had visiting Professor/Scientist positions at several international institutes/universities viz. Institut d’Electronique de Microelectronique et de Nanotechnologie (France), Sizuoka University (Japan), Commissariat à l’énergie atomique (France), Weizmann Institute of Science (Israel), University of Yamanashi (Japan), University of Paris VI (France), Karlsruhe institute of Technology (Germany), University of South Florida (USA), etc.

Dr. Aswal is recipient of several national and international awards/fellowships including Distinguished Faculty Award of Homi Bhabha National Institute (HBNI), Materials Research Society of India (MRSI) Medal, Homi Bhabha Science and Technology Award, DAE-SRC Outstanding Research Investigator Award, Paraj: Excellence in science award, JSPS fellowship (Japan), BMBF-fellowship (Germany), and EGIDE-fellowship (France).



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## CSIR-NGRI Scientist appointed as Director of ESSO-NCESS

Dr. V. M. Tiwari, a scientist from the National Geophysical Research Institute (NGRI), Hyderabad, has been appointed as the Director of ESSO-National Centre for Earth Science Studies (NCESS), Ministry of Earth Sciences, Government of India, Thiruvananthapuram.

At CSIR-NGRI, Hyderabad, Dr. Tiwari carried out research on deciphering subsurface mass distribution and mass transport relevant to a wide range of scientific and societal applications. His work also focussed on elucidating structure and dynamics of different geological

settings in Indian lithosphere, variation in water storage over Indian subcontinent and mapping of sub-basaltic sediments. Besides well cited research papers in leading journals; he has also contributed significantly to the projects of Oil and Mineral Industries. He is a recipient of the ONGC-AEG Best Thesis Award; Young Scientist Awards from INSA, CSIR, UP Science & Technology; Krishnan Gold Medal by IGU, National Mineral Award by the Ministry of Mines, Government of India and Fellowship of National Academy of Sciences, India.



## Shanti Swarup Bhatnagar Prize for Science and Technology – 2016

The Council of Scientific and Industrial Research (CSIR) invites nominations for the Shanti Swarup Bhatnagar (SSB) Prizes in Science and Technology for the year 2016. 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 2016 SSB Prize **should not be more than 45 years as on 31.12.2015**.

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 Incharge - SSB YSA Unit, Human Resource Development Group, CSIR Complex, Library Avenue, Pusa, New Delhi 110 012** should be sent as per the prescribed pro-forma (Original + 2 copies) along with reprints of significant publications of the last 5 year's period on or before **31 March 2016**.

Soft copy (in PDF format) of duly filled proforma and significant publications of the nominee is also required in a CD/DVD/USB flash drive. The details of the SSB Prize and the prescribed pro-forma for nomination may be obtained from the above address or may also be downloaded from the website: [www.csirhrdg.res.in](http://www.csirhrdg.res.in)

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