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## In The News

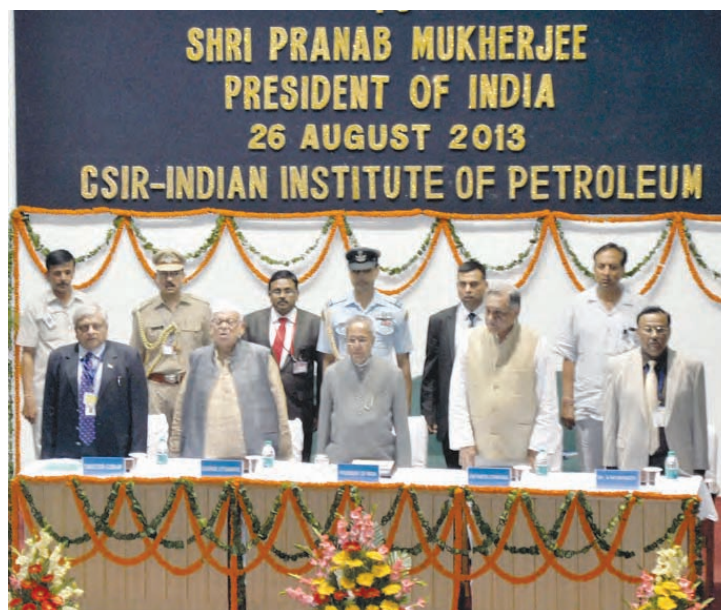
### President of India Inaugurates Advanced Crude Oil Research Centre at CSIR-IIP

THE President of India, Shri Pranab Mukherjee, inaugurated the state-of-the-art “Advanced Crude Oil Research Centre (ACRC)” at CSIR-Indian Institute of Petroleum (CSIR-IIP), Dehradun on 26 August 2013. Governor of Uttarakhand, Dr. Aziz Qureshi and Chief Minister Shri Vijay Bahuguna also graced the occasion.

Dr. M.O. Garg, Director, CSIR-IIP briefed the dignitaries about recent technologies

in the area of future fuels and petroleum products developed by the Institute. He also mentioned about the role and contribution of the CSIR family in providing relief during the recent disaster in the upper Himalayan territories of Uttarakhand.

Dr. Y. K. Sharma, Chief Scientist, talked about the importance, functioning and achievements of the newly inaugurated centre. The centre's role in successful



Shri Pranab Mukherjee, President of India, at CSIR-IIP to inaugurate the new research centre

formulation of an endothermic, high-density, very low freezing point and low aromatics strategic fuel is not only a testimony to the scientific excellence of those in the centre but also a feather in the cap of the entire CSIR family.

The centre studies the behaviour and properties of crude oils and provides extensive detailed hydrocarbon analysis data to the upstream and downstream oil sectors.

These data help in designing new refineries as well as in expansion and modification of existing projects. In line with the higher expectations of the industry, and in view of the fact that in times to come we have to process more sour, more heavier and complex (opportunity) crudes, this centre will fulfill the aspirations of the industry by



Shri Pranab Mukherjee inaugurating the centre

Shri Mukherjee appreciated the role of CSIR in the past seventy years in spearheading the development of scientific and industrial infrastructure in our country – from tractors and leather products to chemicals and petrochemicals, healthcare and energy to food, water and strategic sectors. CSIR has been fully forthcoming in its duty towards our nation.

providing R&D services and training of manpower in the area. The centre will act as a nodal centre in the country for diagnosing crudes and allied products while also exploring innovative ways for developing future fuels.

Speaking on the occasion, the President Shri Pranab Mukherjee said that great institutions make a great nation. Our visionary leaders laid the foundation of great institutions like the Indian Institutes of Technology, Indian Institutes of Management and a huge network of national laboratories including CSIR. It should be our endeavour, he said, to make these institutes world class.

The President also said that research institutions in the energy sector have a responsibility to develop cutting-edge technologies to make our industry globally competitive. We as a nation must achieve technology security.

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The President said that he was particularly pleased with the efforts of CSIR in assisting the people affected by the recent disaster in Uttarakhand. He thanked CSIR for taking the initiative to pool products, technologies, resources and knowledge of all its laboratories to provide basic amenities such as potable water, high energy foods, non leather footwear and temporary shelters to the distressed people.

Speaking on the occasion, the President said that S&T is duly recognized as the vehicle to take India into the front ranking nations of the world. He stated that we have to make the forces of science, technology and innovation partners in our progress. Our future development depends on our ability to devise efficient processes for the industrial sector and better solutions for governance, he added.

Shri Mukherjee also said that even though innovation has been a long-standing feature of our civilization and there is no dearth of ingenuity in our people, we today still lag behind the advanced nations in innovation activity. A new Science, Technology and Innovation Policy, adopted this year, seeks to mobilize all forces for India's transition to a knowledge powerhouse. He said that our innovations should aim at converting knowledge into economic wealth and social good. It is heartening to note that CSIR has started a mission called CSIR-800 to develop technologies, products and services for the benefit of the poor, he added.

The President said that in his recent Address to the Nation on the eve of the Independence Day this year, he had mentioned that the balance between man and nature must be maintained. The recent deluge in Uttarakhand is a wake-up call for all of us. We need energy to sustain growth but it has to be ecologically safe. It also has to be affordable for our countrymen. These are the defining parameters for developing future technologies, he said.

The President also planted a Rudraksh plant in the lawns of the Institute. The lawn has been named the *Pranab Vatika*.

## Former President Dr. A.P.J. Abdul Kalam visits CSIR-CECRI

Former President Dr. A.P.J. Abdul Kalam visited the CSIR-Central Electrochemical Research Institute (CECRI), Karaikudi on 6 May 2013. He was there to inaugurate the Centre for Innovation in Energy Research on the CECRI campus.

Speaking after the inauguration, Dr. Kalam said that the laboratories of the Council of Scientific and Industrial Research (CSIR) should extensively research burning of bio-diesel in internal combustion engines with high efficiency. He said bio-fuel was an important alternative to petroleum fuels. The country had immense potential to grow bio-fuel crop “Jatropha” on a large scale, almost 60 million tonnes annually.

He said Jatropha had several advantages. It had a long life span of about 50 years and could grow on wasteland. Each acre would produce about 2 tonnes of bio-diesel at about half a dollar per litre. Bio-diesel was carbon neutral and many valuable by-products could be produced from this agro-industry. Intense research was needed to burn bio-fuel in internal combustion engines with high efficiency, and this should be an urgent R&D programme.

The former President said the country must be determined to achieve energy



Dr. A.P.J. Abdul Kalam, former President, inspecting stalls set up by scientists at CECRI in Karaikudi.

independence by 2030. At present, the country had an installed capacity of about 199,000 MW of electricity. But by 2030, when our population might touch 1.4 billion, the demand from the power sector would increase to about 400,000 MW. The energy growth rate would 5 per cent per annum. Hence, all forms of power generation must be given equal priority to achieve the target.

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## ‘TechVills’ Launched by CSIR-NBRI & CSIR-CIMAP under CSIR-800 programme

As part of its CSIR-800 programme, CSIR recently launched an ambitious plan of transforming identified village clusters in some of the most backward districts in the country into technology-enabled villages, to be called TechVills.

In a recent development, CSIR-NBRI and CSIR-CIMAP launched two TechVills on 14 August 2013 at Dafedar ka Purva in district Barabanki and Daun in district Unnao of Uttar Pradesh, respectively, with the aim of enhancing the income and improving the livelihoods of the inhabitants of both the

villages by bringing to them rural technologies developed in CSIR laboratories.

Formally inaugurated by Dr. C.S. Nautiyal, Director, CSIR-CIMAP and CSIR-NBRI, the inaugural functions in both the villages were well attended by farmers, entrepreneurs, village pradhans and scientists from both the institutes. Dr. A.K. Diwedi of CSIR-NBRI and Dr. A.K. Singh of CSIR-CIMAP welcomed the gathering and the guests of honour Mr. Moienud-din at Dafedar ka Purva and Mr. J.P. Verma at Daun. They also elaborated the role of



Dr. C.S. Nautiyal inaugurating the TechVill at Dafedar ka Purva in district Barabanki and Daun in district Unnao

CSIR-NBRI and CSIR-CIMAP in the rural development sector.

Dr. C.S. Nautiyal, in his inaugural address, highlighted the CSIR-800 and TechVill concept to the farmers. He also handed over the starter-kit of bio-fertilizer (PSB—Phosphate Solublising Bacteria) to the representatives of the farmers in both the villages as a token of technology transfer for maximizing yields and minimizing the chemical inputs and also promised technological support to the villagers.

Dr. S.K. Tewari of CSIR-NBRI elaborated on the functioning of PSB and emphasized that its application in crops would

minimize the requirement of phosphatic chemical fertilizers and enhance crop productivity by more than 20%. Dr. H.S. Chauhan of CSIR-CIMAP talked about the integration of highly economical medicinal and aromatic plants viz. *Mentha*, vetiver and satavar with the existing cropping system in these villages.

On this occasion Dr C.S. Nautiyal, Director, CSIR-NBRI and CSIR-CIMAP also interacted with the farmers, entrepreneurs and other villagers including women. The farmers also showed keen interest in the technologies and expressed their willingness and whole hearted support to disseminate the same among fellow villagers.

Saplings of Rudraksha and Chandan were planted by Dr. C.S. Nautiyal on this occasion at both the TechVills as a symbol of reinforcing the faith in Indian traditions, traditional medicine system and cultural heritage.

An awareness programme on the cultivation and processing of aromatic and medicinal plants was also organized at TechVill Daun on this occasion. Dr. V.K.S. Tomar, Dr. H.P.



Dr. C.S. Nautiyal, handing over the starter-kit of Bio-fertilizer (PSB-Phosphate Solublising Bacteria) to the representatives of the farmers



Dr. S.K. Tewari and Dr. H.S. Chauhan addressing the farmers at Dafedar ka Purva and Daun TechVills, respectively



Awareness programme on the cultivation and processing of aromatic and medicinal plants in progress



Dr. C. S. Nautiyal planting the saplings



Floriculture at TechVill Dafedar Ka Purva

Singh, Dr. Kambod Singh, Dr. Ram Suresh, Dr. Sanjay Kumar, Dr. Jamil Ahmed and Dr. Manoj Semwal of CSIR-CIMAP talked about the economically important medicinal and aromatic plants for the benefit of farmers. Relevant pamphlets were also distributed among the farmers.

Since some of the villagers from neighboring villages of Dafedar Ka Purva used to cultivate highly economical ornamental flowers, it was thought worthwhile to introduce some of the medicinal and aromatic plants which would also provide higher economic returns even from marginal/under-utilized lands.

CSIR-CIMAP is developing TechVill Daun and Dafedar ka Purva as the nodal points for the production of quality planting material of high yielding cultivars of *Mentha arvensis* Kosi and Saryu besides planting materials of khus, lemongrass and palmarosa. CSIR-NBRI has also planted some economically viable floriculture crops for cultivation by the TechVill farmers.



*Mentha* cultivation at the TechVill



Processing unit established at the TechVill

## DG-CSIR inaugurates new Facilities at CSIR-SERC

Prof. Samir K. Brahmachari, Director General, CSIR visited CSIR-SERC, Chennai on 28 July 2013. The DG inaugurated various facilities in the campus. He addressed the staff and delivered a motivating lecture on “New CSIR for New India”.

During his lecture, DG-CSIR lauded the achievements of CSIR-SERC and called upon all young scientists to put in their best efforts as they were the torch bearers of developing science and technology in the country. He made specific mention of the technological innovation in building the mushroom-shaped water tank at CSIR-SERC and also the dome building at CSIR-CBRI. He reiterated that these are innovations in action. He called upon the scientists, especially the younger ones, to be persistent in their research till they achieve the results and narrated his own personal experience during his experiments related to DNA transformation.

The DG expressed happiness on the strategic transformation that has taken place in CSIR from 2008 to 2013. He emphasised that today’s new CSIR is nation-centric, knowledge intensive, innovation driven, is in partnership, globally benchmarked, inclusion focussed and is based on values and ethos. This was possible due to nurturing of young leadership, focussing on stakeholders, recruiting next generation human resource and talent, repositioning R&D for high Science & Technology, energising support systems, and emphasising on outreach. This has led to enhanced recognition of “Brand CSIR”.

Prof. Brahmachari explained through various examples of technologies developed and transferred that the direct value creation of CSIR technologies amounts to thousands of crores. The significance of the resultant impact of these technologies on the prices of many products was brought out by the DG through various live examples such as the vitrified tiles developed by CSIR-CGCRI and the Open Source Drug Discovery programme which helped to bring in cost

effective medicines. He underscored the need for the CSIR laboratories to take the technologies to the common man, especially people living in rural areas.

He then had interactions with the PGRPE and PhD Scholars of AcSIR, Young Scientist awardees and other achievers. He also had close interaction with the mentors of CSIR-SERC comprising the former Directors of CSIR-SERC and Chairman of the Research Council of CSIR-SERC. The following is a detailed description of the participation of the DG in the various activities during his visit.

**Innovation Complex:** DG-CSIR participated in the ground breaking ceremony of the CSIR Innovation Complex.

The DG was briefed on the activities related to the proposed CSIR Innovation complex at CSIR Campus in Chennai. The Complex is designed to provide high quality premises to facilitate promotion of translational research domain involving clean energy, bio-medical instrumentation, green infrastructure and innovative engineering. The objectives, based on both framework and translational domain, were explained during the presentation made in this connection to the DG. The design and planning criteria being adopted to achieve these objectives were highlighted. DG appreciated the unique characteristic of this Complex due to the direct participation of CSIR scientists from eight different research disciplines.

The progress made towards realising the Complex was also presented. He was



Ground breaking ceremony of Innovation Complex at Chennai

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informed that a high power committee had been constituted to oversee the progress being made and the statutory clearances obtained towards construction of the Complex. He was also informed that about 15 sophisticated equipments identified for the Innovation Complex were already installed and being used by Scientists for their research work. DG showed keen interest in allocation of the floor space identified for different facilities/purposes. The basis of the identification was also explained to him. He suggested that facilities be provided taking into cognizance the nature of research and the expected volume of interaction with other disciplines/business enterprises. It was informed that the construction of CSIR Innovation Complex has been entrusted to CPWD. The CPWD officials including the Chief Engineer participated in the ground breaking ceremony.

**Training and Development Complex:** DG-CSIR inaugurated the Training and Development Complex (TDC) building at CSIR-SERC during his visit. The DG was briefed on the unique features of the building, the facilities consisting of an academic segment and halls of residence. The DG was informed that the academic segment consisted of six seminar halls, three lecture halls, gym, recreation rooms, dining hall and also includes six service apartments both for the officials and other visiting faculties. He was shown around the two halls of residence which have 36 rooms of double

occupancy with 18 rooms for ladies and 18 rooms for gents.

The DG was informed that the TDC building was designed by the scientists of CSIR-SERC and built with energy efficient materials having solar heating and solar lighting. The building also has energy saving electrical fittings, structural glazing with high UV radiation protection, high volume fly ash used in bricks for masonry walls and concrete for pavement and road works. It was mentioned that this was the first building constructed using green and eco-friendly technologies and also the first GRIHA proposed rated building among the CSIR labs. DG appreciated the architecture of the building for its natural lighting and the excellent facilities provided. He suggested a similar building at CSIR New Delhi be considered.

**Experimental Link Building:** The DG also inaugurated the Experimental Link Building built entirely using the in-house technology developed by CSIR-SERC. The working mechanism of the electro-dynamic shaker and force transfer from shaker to the building



Director General inaugurating the Training and Development Complex (TDC) at CSIR Campus, Chennai constructed using green & eco-friendly technologies and also the first proposed GRIHA rated building in CSIR



DG CSIR at Training and Development Complex after inauguration



along with scanning process of the Laser Vibrometer during excitation to simulate earthquake of the building was explained and demonstrated to the Director General, CSIR. The DG praised the technology used for the building, testing procedures and the capability of obtaining the vibration response

signatures. The DG pointed out that the technology had great potential for industries in solving vibration based problems. He appreciated the effort and advised extending the technology to potential areas such as automobile industries, railway and highway bridges, testing of wind turbines, etc. He also suggested that the technology be showcased to different industries through various workshops and seminars.

**Dining Hall:** The Dining hall of CSIR-SERC which can cater to about 400 persons at a time was inaugurated by the DG. This building has ground and first floor with helical stair case in the form of positive helix. This dining hall has a modern kitchen with all amenities including solar heating, energy saving electrical fittings and air conditioning systems.

**Administrative Wing:** Director General inaugurated the newly constructed CSIR Madras Complex administrative wing at CSIR-SERC which facilitates sharing resources and improving productivity.

**Knowledge Network Unit – Data Centre:**



Director, CSIR-SERC explaining the salient features of Experimental Link Building to DG, CSIR



DG at the New Administrative wing

Director General also visited the state-of-the-art data centre at the Knowledge Network Unit. The DG appreciated the facilities in the Data Centre, particularly the sensors for cooling/humidity developed by PGRPE (Renewable Energy) students.

**Interaction with AcSIR Students and**



DG opening the Dining Hall at CSIR-SERC



DG, CSIR in conversation with Director CSIR-SERC at the Data Centre

**young achievers:** DG, during his interaction with PGRPE, AcSIR scholars, and young scientists and achievers impressed upon them to dedicate themselves to nation building



Positive helix staircase at the Dining Hall



DG interacting with PGRPE, AcSIR, Young Scientists & Achievers

through Research & Development.

**Interaction with CSIR-SERC leaders:** DG, CSIR met the former Directors of CSIR-SERC Dr. M. Ramaiah, Dr. T.V.S.R. Appa Rao, Dr. N. Lakshmanan and Prof. N. Rajagopalan, Chairman-Research Council and commended their role in the nurturing of CSIR-SERC.

DG, CSIR with former director of CSIR-SERC and RC Chairman



## Restored Hansa-3 receives Certificate of Airworthiness from DGCA

Hansa-3 aircraft bearing Regn-VT-HNX was built by CSIR-NAL in 2003, and later sold to DGCA. This aircraft was allotted to Haryana Institute of Civil Aviation (HICA), Karnal, Haryana, by DGCA for flight training purposes. A total of 148:25 hrs were logged prior to its grounding and was last flown at HICA on 19/06/2007. Since then the aircraft was grounded and parked in the HICA hangar.

In the year 2011, Capt. Sohail Handa of Banasthali Vidyapith Gliding and Flying Club (BVGFC), Banasthali University, Rajasthan, who was looking for expansion of the club's fleet, contacted C-CADD, CSIR-NAL explaining his interest in retrieval of this aircraft. Accordingly a tap test based Non Destructive Evaluation was carried out in

accordance with DGCA certification document on HANSA-3. The NDT test was carried out using Woodpecker (WP-632) on HANSA-3 Aircraft (VT-HNX) from 22<sup>nd</sup> November 2012. The measurement and marking of the defect zones were done in real time. This procedure was adapted for the airframe and all the components of the aircraft.

Working tirelessly for three weeks at the customer's premises, the staff from CSIR-NAL restored the aircraft to flight worthy status and obtained a Certificate of Airworthiness from DGCA. The BVGFC was delighted with the way the job was executed and appreciated CSIR-NAL and C-CADD team for the job well done.

### R&D Highlights

## Benefits of *Kappaphycus* Seaweed

*Kappaphycus alvarezii* is a valuable tropical red seaweed cultivated commercially in a number of Indo-Pacific Ocean countries including the Philippines, Indonesia and Malaysia. The cell wall polysaccharide, kappa-carrageenan, extracted from this alga is used as an emulsifier, binder, thickener and gelling agent in diverse bulk products such as toothpaste, cosmetics, ice cream, pet foods, beverages, pharmaceuticals, and dairy industry and, thus, has considerable commercial value of over USD 500 million.

CSIR-CSMCRI obtained a few fragments of live *Kappaphycus alvarezii* seaweed from Japan observing necessary quarantine protocols and adapted the germplasm to Indian conditions, first in Gujarat and later in Tamil Nadu. The Institute subsequently developed and demonstrated viable cultivation technology for large-scale farming in coastal waters in Tamil Nadu. Licensing of the cultivation technology to M/s PepsiCo India Holdings Ltd. has eventually led to commercial cultivation of seaweed in our

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country and also steered the concept of cultivation by Self Help Groups (SHGs) with a buy-back guarantee.

Kappaphycus cultivation requires no land or irrigation water, fertilizer or pesticide. Moreover, because of the short duration of the crop life cycle, the income from sales gets accrued right away to cultivators. There are more than 1500 households at present actively engaged in farming of this seaweed in southern Tamil Nadu. The annual production of this alga has substantially increased in the country registering a production volume of 2000 tons (dry wt.) during 2011-12.

Recently, CSIR-CSMCRI licensed the knowhow to Gujarat Livelihood Promotion Co. (GLPC) Ltd. (a government of Gujarat undertaking), which is actively promoting the cultivation of this alga as part of livelihood improvement of people living in the coastal villages of Gujarat. CSIR-CSMCRI provides all technical assistance including capacity building in implementing this project.

Although the initial interest in the seaweed was for the thickening agent, kappa-carrageenan, CSIR-CSMCRI invented a unique process (US Patent No 6,893,479) of liquefying the fresh seaweed and deriving two products in an integrated manner – a

granular residue rich in kappa-carrageenan and a plant sap rich in potash and micronutrients (ca. 2% w/v) with proven efficacy.

The field trials of sap as a foliar spray in a variety of crops such as sugarcane, paddy, wheat, maize, potato, pulses and several fruits and vegetables has shown improved growth and yields of almost 15%-40%, in different geographical locations in the country. This technology, which was initially licensed to M/s PepsiCo, has now been commercialized by M/s AquAgri Processing Pvt. Ltd. and processing plants for sap and carrageenan established in Manamadurai (Sivaganga District). The sap is now being marketed under PARAS VITA brand in formulated form by M/s Tata Chemicals Ltd. M/s AquAgri is also marketing the sap both for export and domestic market. The carrageenan is being supplied to overseas pet food manufacturers and United Breweries for clarification of beer.

The carrageenan which is extracted from the residue has also been used as an ingredient for developing biodegradable films (US Patent No 7,067,568). This film can be used for preparing soft and hard capsules, slow-release formulations in the pharmaceutical industry as well as in

packaging applications. Therefore, this seaweed polysaccharide based film may be used as a substitute for animal gelatin or carboxy methyl celluloses.

Kappaphycus seaweed is not only a source of kappa-carrageenan but also contains copious amounts of KCl. It has the propensity to accumulate remarkably higher amounts of KCl selectively from the seawater and it naturally gets extruded partly (5-7% on dry wt basis) especially while drying of the fresh seaweed. The residual salt obtained from thrashing of the dry seaweed is essentially muriate of potash (MOP). The MOP was utilized by us in the formulation of low sodium salt of plant origin (US Patent No. 7,208,189). This salt is called “Saloni K” and is currently



Seaweed raft floating in the sea. Inset picture shows coastal women busy in preparing raft.

being marketed by a local licensee in Bhavnagar.

In another invention, granules obtained as by-product of sap preparation are a rich source of polysaccharides and used as a feedstock for bioethanol production (US Patent Application 20130005009). As a proof of concept, it has been possible to produce ethanol from the seaweed granules at laboratory scale but much needs to be accomplished before seaweeds can become an abundant source of ethanol. There is also a scope for utilising the granules as direct feedstock for thermal combustion in gasifier for generating energy and the charred residue as a rich source of potash for soil application in agriculture.

In the most recent development, the sap produced from liquefaction has been processed to make a nutritious, tasty and

affordable drink (US Patent No. 8,252,359) very similar to coconut water in taste. The initial trials of sap by our licensee in a commercial poultry demonstrated that the juice reduces mortality in chicks. These studies also indicated low toxicity of the product. The initial analysis of sap has also shown that the presence of important organic constituents, reported in literature to have positive impact on foetal brain development, was unaffected by the refining process.

In order to realize the above mentioned products at commercial scale, there is a need for regular supply of large volumes of biomass through cultivation in both coastal and offshore regions. Seaweed cultivation certainly holds considerable potential and plays a crucial role in the socio-economic development of the country.



## MoUs

### CSIR-CRRI signs MoU with FINER

CSIR-Central Road Research Institute (CRRI), New Delhi signed an MoU with FINER (Federation of Industries & commerce of North Eastern Region) at Guwahati on 16 August 2013. The purpose of the MoU is to create a framework for collaboration between CSIR-CRRI and FINER with the following objectives:

- To establish a working relationship between CSIR-CRRI and FINER in areas of road and transportation industry and skill development of involved manpower so as to achieve overall productivity improvement for the industry.
- To relate the requirements of the industry with the need of research and technological solutions.
- To support and promote industry particularly micro, small and medium enterprises (MSME) through Events, Exhibitions, Training, Research and Workshops, etc.
- To conduct short-term courses including training programmes for manpower skill development in technical and managerial domains of common interest.
- To come out with a white paper on Construction and Maintenance Industry in the North Eastern region.
- To explore opportunities for collaborative projects for development of the North Eastern region.



## MoU Signed with Nagoya Institute of Technology, Japan

CSIR-Institute of Minerals & Materials Technology (IMMT), Bhubaneswar and Advanced Ceramics Research Center (ACRC), Nagoya Institute of Technology, Tajimi, Japan signed a memorandum of understanding for Academic Exchange and R&D cooperation in advanced materials research on 11 August 2013.



Dr. Baradakanta Mishra, Director, CSIR-IMMT, Bhubaneswar (second from left), and Mr. Fuji Masayoshi, Director, Advanced Ceramics Research Centre and Nagoya Institute of Technology, Japan (second from right) sign MoU for exchange of research activities in Bhubaneswar

Energy and environment are the most pressing issues for the 21<sup>st</sup> century. ACRC (NIT), Tajimi has been involved actively in developing advanced materials for energy and environment. CSIR-IMMT has also been actively engaged in the area of advanced materials related to energy and environment. The mutual partnership of CSIR-IMMT, India and ACRC (NIT), Japan intends to identify and design alternative and commercially viable environmentally benign energy materials to meet the ever increasing and thriving demand for energy in the coming years.

The Memorandum covers exchange of professors/scientists, research scholars and staff, to foster joint research activities of mutual interest, exchange of scientific materials, joint publications, and information, cross-linking of websites, and other activities under agreement of the two institutions.

The Nagoya Institute of Technology is one of the leading institutes for industrial and engineering research in the world. Strategically located near major heavy industries such as Toyota Motor Company, which is a big player in the automobile industry, it has already collaborated with institutes in US, Europe and Korea.

### Conferences

## International Conference on Computational and Data Intensive Science

A function to mark the inauguration of the International Conference on Computational and Data Intensive Science and the Silver Jubilee Foundation Day of CSIR-Centre for Mathematical Modeling and Computational Sciences (C-MMACS), now renamed the CSIR-Fourth Paradigm Institute, was held on 26 August 2013 at the CSIR-NAL Valluri Auditorium. The function was graced by the former President of India, Dr. A.P.J. Abdul Kalam and Prof. N. Balakrishnan, Associate

Director, IISc, Bangalore.

Prof. Seshu, Head, CSIR-Fourth Paradigm Institute welcomed the gathering. Prof. Balakrishnan spoke on the *Big Data Application to Engineering R&D in India – An Overview*. He explained how the size of stored data is growing exponentially all over the world. This is happening through social media and through scientific experiments such as in particle physics, astronomy and genomics. He also explained how science

applications involve both big data and intensive computation. His lecture outlined the Indian capabilities and how India is engaged in all Big Data applications in Health care, Design, Manufacturing, Governance, Climate, Internet of Things, Smart Grids, Critical Infrastructure, Financial Services, Telecom, Transportation networks, Civil and Information Security, Social Media Analytics, Open Source and Crowd sourcing based developments. He explained how unstructured data needs to be processed to extract structured information and insights. Two examples of common interests he mentioned are democratization of public opinion generation and predicting cascades such as self-organizing flash mobs. He concluded his talk by summarizing India's supercomputing initiatives during the 12<sup>th</sup> Plan period.

Dr. A.P.J. Abdul Kalam spoke on *Fourth paradigm – Tool for new knowledge?* He said that during his presidency and to this date, he had been witnessing the dominance of the Fourth Paradigm. The world of science started with experimental, theoretical and then computational techniques in its quest to answer the questions and mature science and technology and hence these are called the three paradigms in S&T. Today's world is a data-driven world.

He spoke at length about Data Intensive Computing and said that knowledge discovery was the key for the 4<sup>th</sup> Paradigm. He talked about the data challenges in science, high energy physics, climate change, combustion, biology and genomics, light sources, neutron science, and exascale computing.

Dr. Kalam shared some of the identified research areas in data

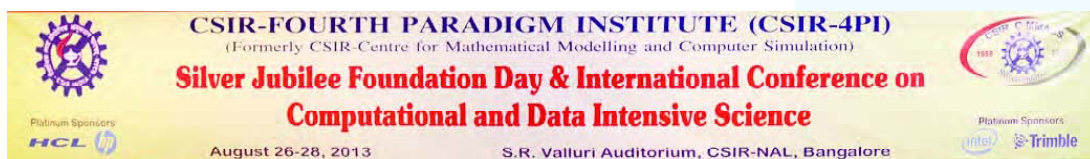
intensive computational science – discovering algorithms for real-time processing and analysis of raw data from high throughput scientific instruments, approaches to parallel programming to address the parallel processing of data on data-intensive systems, etc. His conclusion was that everything in the world – the energy at home, refrigerators, parts of the car, the apparel, the medical monitoring devices on our body – all have become part of the network. Then, the Google revolution for searching everything and the GPS and map assisted navigation to guide us while we drive, all started to come together to create what is now known as storage or data revolution. Just a few days before Jim Gray of Microsoft was lost in the sea off the California Coast in 2007, he coined the phrase “the fourth paradigm” to emphasize that computing was fundamentally transforming the practice of science.

The Fourth Paradigm has initiated several new research frontiers in data intensive computing and analytics and he said he was happy that CSIR has realized its importance and had started a new institute in time for the Fourth Paradigm.

The function concluded with a vote of thanks proposed by Ms M.K. Sharada.



The Fourth Paradigm has initiated several new research frontiers in data intensive computing and analytics and he said he was happy that CSIR has realized its importance and had started a new institute in time for the Fourth Paradigm.



Foundation Day

## 64<sup>th</sup> Foundation Day of CSIR-CGCRI and 10<sup>th</sup> Atmaram Memorial Lecture



Dignitaries on the dais

The 64<sup>th</sup> Foundation Day of CSIR Central Glass and Ceramic Research Institute (CGCRI), Kolkata was celebrated on 26 August 2013. CSIR-CGCRI marks its Foundation Day with a Lecture series named after Dr Atma Ram, Founder Director of CSIR-CGCRI and CSIR's fourth Director General.

The 10<sup>th</sup> Atma Ram Memorial lecture, entitled *Science and Inclusive Growth*, was delivered by CSIR-CGCRI's Research

Council Chairman Dr. Srikumar Banerjee, Homi Bhabha Chair Professor, BARC, Mumbai, who was also the Chairman on the occasion. Prof. Indranil Manna, Director IIT-Kanpur and Former Director CSIR-CGCRI was the Guest of Honour. Prof. Souvik Bhattacharya, VC, JU, Kolkata and other dignitaries, staff members, media

personnel, and research scholars also attended the programme.

Mr Kamal Dasgupta, Acting Director CSIR-CGCRI delivered a warm Welcome Address, presenting an overview of CSIR-CGCRI's achievements in the past year and told the audience about the late Dr. Atma Ram.

Prof. Indranil Manna, presiding over the session, highlighted the contribution of Dr. Atma Ram in the areas of coloured and optical glasses, which proved to be a priceless boon for the railways and the defence sector of the country. He also said that CSIR-CGCRI should leverage its advantages. He said in recent years the Institute had recruited many brilliant young scholars who could contribute innovatively. He appreciated the strict criteria governing entry into the Institute that had been employed in the selection of scientists in recent times. Prof. Manna advised the seniors to play a complementary role in CSIR-CGCRI's continued growth by mentoring the fresh talents.

Dr. Srikumar Banerjee in his presentation



Mr Kamal Dasgupta  
addressing the  
gathering

spoke about inclusivity and its various aspects. He said that anything inclusive will create economic opportunities along with ensuring equal access to all and that it has a long term perspective. He said that good governance, education, rapid and sustainable development of infrastructure, energy, health, food and water, livelihood and distributed enterprise must percolate to all sections of the society. He drew from his rich experience to give instances of the impact of S&T interventions against the backdrop of India's long march after Independence.

Dr. Banerjee spoke about the discovery-innovation deployment cycle in science and engineering and also on the changing contexts of social challenges of India. According to him some of the social challenges seeking science-derived solutions are in the areas of Energy, Environment, Climate change, Water and Affordable Healthcare. However, the challenges faced by India's S&T and Innovation system have often revolved around the competition between in-house development and technology imports. That is, societal absorption of global solutions has always been an issue. Examples of success stories in India about S&T interventions that have led to social inclusivity include the visible outcome of the *White Revolution* and the rejuvenation of the *Milk Industry*. The IT sector was galvanized by the research carried out by the Space Department and in turn this led to a quantum jump in the field of communication. Almost everyone now uses a mobile phone!

He said that technology these days reaches the people by means of different types of linkages. For example, Farmer's federations, *Kisan melas*, STRAND (Stimulation of Tribal and Rural Neighbourhood Development), State Agricultural Universities and Inter Departmental involvement.

Dr. Banerjee then focussed on the many success stories of S&T interventions that have flowed from BARC's laboratories. Prominent among the examples he mentioned were Trombay pulses grown in rice fallows, radiation processing of food, spices and fruit, hygienization of sludge, recharging of springs, and nuclear desalination. He mentioned that the telemedicine machine developed by BARC was a technology that had been transferred for commercial production. He described the Bhabhatron II – an indigenous advanced telecobalt machine for the treatment of cancer. There are 23 in operation and many more in the pipeline. He was enthusiastic about the potential of the ceramic bio-implants developed at CSIR-CGCRI. However, he tempered the good news with an extremely pertinent query, "If technology is not picked up, how will it percolate?"

Dr. Banerjee said that education is important for socio-economic transformation. Society has to be made aware of values of education. The market has to be made responsive. The National Knowledge Network and creation of virtual classrooms have a role to play in ensuring the spread of education. Already the e-science infrastructure in India is looking up. He quoted Mahatma Gandhi, Rabindranath Tagore, Albert Einstein and William Shakespeare to stress on the need for the ethical role of Science and Technology in an industrially complex modern world. Dr. Banerjee's lucid presentation was greatly appreciated by the audience.

Mr Kamal Dasgupta along with Prof Manna honoured the speaker with a plaque.

The winners of the 2<sup>nd</sup> Annual Workshop on Research Scholars' Day 2013 held on August 20 this year were also awarded on this occasion. The judges of the workshop were also presented with mementos.



Dr. Srikumar Banerjee in his presentation spoke about inclusivity and its various aspects. He said that anything inclusive will create economic opportunities along with ensuring equal access to all and that it has a long term perspective. He said that good governance, education, rapid and sustainable development of infrastructure, energy, health, food and water, livelihood and distributed enterprise must percolate to all sections of the society.

## Lectures

## Diamond Jubilee lectures at CSIR-NBRI

In the series of Diamond Jubilee lectures being organized by the CSIR-National Botanical Research Institute (NBRI), three lectures were held recently. The lectures were attended by eminent scientists of the city and research scholars and scientists of the Institute.

## 30 July 2013

Dr. P. S Ahuja, Director, CSIR-Institute of Himalayan Bioresource Technology (IHBT), Palampur, delivered the lecture, entitled *My Journey through Plant Sciences*.



Dr. P.S. Ahuja delivering the lecture

Narrating the fascinating journey of his scientific career which was mixed with discoveries and serendipity, Dr. Ahuja said that he started his career in agriculture as a Plant Breeder. He started his research work in M.Sc. dissertation work on biometrical analysis of leaf rust resistance genes, involving two locus genetic systems of wheat. 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. Elaborating his work carried out with Prof. E.C. Cocking, a renowned biochemist at Nottingham, U.K. Dr. Ahuja worked on 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 CIMAP, Lucknow, Dr. Ahuja for the first time successfully made protoplast fusion of *Hyoscyamus muticus* and *Atropa belladonna*. Similarly, the resultant hybrid developed by protoplast fusion of *Hyoscyamus albus* and *H. muticus* was not only intraspecific but had six-fold increase in Scopalamine alkaloid contents, which was achieved by other workers in Japan. During this period, Prof. D.P.S. Verma from Montreal invited him to work in his lab. This gave him an opportunity to learn the latest molecular techniques.

In India, based on the molecular techniques learnt, he could set up a modern equipped lab at 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 *Valeriana*, *Withania*, *Citronella*, etc. The work of *Citronella java* resulted in release of the first stable variety viz. CIMAP BIO-13. This variety has been successfully grown in many states of India such as Assam, Andhra, Karnataka and is still being produced in the country. 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.

Elaborating his work at IHBT Palampur as Director, he said that he was able to develop a modernized tissue culture lab, with the moderate infrastructure facilities available at that time. He was also able to successfully

transfer the tissue culture raised tea plants to the field, which was considered very difficult. Development of a transgenic tea with chitinase gene and low caffeine tea were some other achievements.

After 10 years of hard work, Dr. Singh and his co-workers successfully released a tea variety 'Him Sphurti', which has shown 25% increase in productivity. This is now

ready to be evaluated in other tea-growing areas of India. Scientists at IHBT have also developed a technology that can achieve a 93.7% yield of the steviol glycosides. Moreover, IHBT has maximum genetic stock of Stevia. Dr. Ahuja concluding his lecture conveyed his gratitude to mentors and all fellow workers who had helped him in shaping his career.



### 1 August 2013

Prof. Ram Rajasekharan, Director, CSIR-Central Food Technological Research Institute (CFTRI), Mysore, delivered a lecture entitled, *Discovery of Soluble Fatty oil Biosynthetic Pathway in Plants and Yeasts*.

Prof. Ram Rajasekharan said that his Institute has been focussing on biosynthesis of triacylglycerols (fats and oils). Seeds that store triacylglycerols (TAG) are the commercial source of plant oils for food. Despite their economic importance, biosynthesis of TAG has not been fully understood. TAG, the major storage lipid, is synthesized by the sequential acylation of glycerol-3-phosphate and it is reported to occur in microsomal membranes of eukaryotes. He said they had discovered a new soluble TAG biosynthetic machinery in oilseeds that involves monoacylglycerol as an intermediate in the pathway. Monoacylglycerol is sequentially acylated by their respective acyltransferases to form TAG. The genes involved in the pathway have been identified and over expressed. These genes are considered as the potential

targets for genetic manipulation for providing improved quantity of oils.

Similar soluble TAG biosynthetic machinery was also established for the first time in oleaginous yeast and *Saccharomyces cerevisiae*. He also informed that knowledge obtained through basic research is being used to develop new biotechnological products and informed that by December his laboratory would be launching a product developed from oleosin, which will be a low calorie, low fat and high protein substitute for butter.



Dr. Ram Rajasekharan delivering the Diamond Jubilee lecture

### 19 August 2013

Prof. Anil K. Gupta, Professor, Indian Institute of Management, Ahmedabad and Coordinator, Society for Research and Initiatives for Sustainable Technologies and Institutions (SRISTI) and Founder, Honey Bee Network and Executive Vice Chair, National Innovation Foundation (NIF) delivered his lecture entitled, *Conserving Diversity of Nature, Culture, and Institutions*. On this occasion, Prof. D.K. Gupta, Vice Chancellor, K.G.M.U. was the Guest of Honour. Dr. C.S. Nautiyal, Director, CSIR-

NBRI, welcomed the dignitaries and the audience.

Prof. Gupta talked about the origin and spirit of the Honey Bee Network which was established in 1988. He informed that the Honey Bee Network stands for people-to-people networking in local language and assurance to providers of knowledge that they would not be impoverished through sharing of knowledge, just as flowers do not complain when the pollen is taken away by honey bees. He said that we cannot rely entirely on the R&D institutions and should

also search elsewhere for knowledge.

Speaking about biodiversity-based knowledge systems and grassroots innovations, Prof. Gupta said that one of the major reasons for persistent poverty, social strife and despondency among local tribal and other communities living in and around forest regions is lack of *in-situ* value addition in various biodiversity-based materials. A lot

of genetic diversity is lost and it is important that we should focus on *in situ* conservation, he said. Though several steps have been taken in the past; a complete value chain remains to be established. Plotting the loss of agrobiodiversity, although painstaking, can often lead to discovery of varieties with interesting and useful properties.

He said that NIF wishes to partner with NBRI and other related institutions for validation and value addition in at least 5000 distinctive claims of local communities per year. Value addition of forest produce will generate entrepreneur opportunities for the youth. Thus, NBRI can act as a bridge between formal and informal science, technology and innovation systems. He also invited NBRI to take a lead in building up sites of long-term monitoring of ecosystem.

He further commented that in the 12<sup>th</sup> Five Year Plan, one should have aimed at 50% reduction in the trade of raw materials unless valorized locally, which will require development of post-harvest processing machinery, fractional distillation apparatus for generating library of phytochemicals and herbal extracts, electronic catalogues and a vigorous partnership with private sector to generate value-added supply chain.

Prof. Gupta concluded his lecture by saying that Creativity counts, Knowledge matters, Innovations transform, Incentives inspire and appealed for joining the Honey Bee Network to help creative knowledge make rich economically poor people and learn from each other.

Prof. D.K. Gupta appreciated the efforts of Prof. Anil Gupta in reaching the tribal people and students and benefitting the society and country by their knowledge.



Dr. C.S. Nautiyal welcoming the guests



Dr. Anil K. Gupta delivering the lecture

#### 4 September 2013

Dr. D.J. Bagyaraj, NASI Sr. Scientist & Chairman, Center for Natural Biological Resources and Community Development delivered the Diamond Jubilee lecture entitled, *Arbuscular Mycorrhizal Fungi for Sustainable Agriculture*.

Dr. Bagyaraj said that the common mycorrhizal association in most of the plants was the arbuscular type, occurring in the

majority of agricultural crops, most shrubs, most tropical tree species and some temperate tree species. *Arbuscular mycorrhizae* (AM) are formed by non-septate Glomeromycetous fungi. The commonly occurring genera of *Arbuscular mycorrhizae* fungi are *Glomus*, *Gigaspora*, *Scutellospora*, *Acaulospora* and *Entrophospora*. These fungi are obligate symbionts and have not been cultured on nutrient media. Several investigations

indicated that even in unsterile soil, plants respond to inoculation with efficient strains of *Arbuscular mycorrhizae*, he elaborated.

The mechanism of improved plant growth caused by mycorrhizal inoculation has been investigated by many workers. Greater soil exploration by mycorrhizal roots as a means of increasing phosphate uptake is well established. They also improve the uptake of other diffusion-limited elements like Zn, Cu, etc. The other beneficial effects are their role in the biological control of root pathogens, biological nitrogen fixation, hormone production and greater ability to withstand water stress.

Co-inoculation of AM fungi with other beneficial soil microorganisms is more useful in improving plant growth thus suggesting the development of suitable “microbial consortia” for inoculating different crop plants. Currently, the emphasis is on sustainable agriculture, which uses less of

chemical inputs that have adverse effects on soil health and environment. Thus microbial inoculants play an important role in sustainable agriculture, he said.



Dr. D.J. Bagyaraj delivering the lecture

## Events

### Brain Awareness Day Celebrated at CSIR-CDRI

The Brain Awareness Campaign is a countrywide celebration for recognizing impact of neuroscience research and its dissemination across the community that brings together scientists, teachers and students. It also aims to increase community awareness on the potential for improving the long-term health of the brain through lifestyle changes and risk-reduction strategies.

In this context, to educate and excite pupils about the progress and benefits of brain research, the CSIR-Central Drug Research Institute (CDRI), Lucknow organized a “Brain Awareness Day” on 14 August 2013 from 9.00 AM to 5.00 PM at CSIR-CDRI Campus at Jankipuram Extension, Sitapur Road in collaboration with the National Brain Research Centre, Manesar. A one day interactive Seminar on “Recent Advances in CNS Disorder Research” and a Quiz competition on “Brain functions and its Diseases” were organized. About 100 Inter-mediate students of science stream



Dr Rakesh Shukla addressing the seminar

from nine Lucknow-based schools/colleges participated in this programme and interacted with leading neuro-science researchers/scientists.

The seminar started with a welcome address by Dr. T.K. Chakraborty, Director, CSIR-CDRI. Dr. Rakesh Shukla from KGMU, Lucknow, talked about brain function and its

disorders. He said, about 1.5 million people are affected by various brain disorders in India. He also discussed methods to keep our brain young and efficient in spite of ageing and stress. He suggested that appropriate exercises and proper food habits can keep the brain active.

Dr. U.K. Mishra from SGPGIMS, Lucknow, in his impressive lecture, discussed

about memory and learning. He said memory is all about learning of facts and events. Due to technological development in electronic instruments such as calculators, mobile phones, laptops and palmtops, people are losing the habit of learning which may result in poor memory.



Dr. U.K. Mishra addressing the seminar



Dr Pankaj Seth addressing the seminar



Director Dr. T. K. Chakraborty with the 1st runners of quiz competition



Another speaker, Dr. Pankaj Seth from the National Brain Research Centre, Manesar, discussed about recent development in understanding the healthy and diseased brain. He discussed about neurobiology of AIDS and use of stem cells in neurobiology.

The seminar was chaired by Dr. P.K. Seth, Dr. Ram Raghbir and Dr. Gautam Palit and concluded with the concluding remarks of Dr. B.N. Dhawan, former Director, CSIR-CDRI.

After the interactive seminar, a Quiz competition was organized for school children. Among the nine participating schools, the team of City Montessori School, Aliganj was the winner. The team of La Martiniere Girls' College, Lucknow got the second prize and the team of Kendriya Vidyalaya, Aliganj got the third place. DPS Jankipuram Vistar got the fourth consolation prize. All participants were given certificates of participation.

The programme concluded with the vote of thanks by Dr. P.N. Yadav, Senior Scientist and Organizing Secretary, Brain Awareness Day celebration.

## Honours & Awards

# CSIR-NCL Scientist Selected for Vasvik Research Award



Dr. Darbha Srinivas, Chief Scientist from CSIR-National Chemical Laboratory (NCL), Pune has been selected for Vasvik Research Award 2011 in the category of Chemical Sciences & Technology. Dr. Srinivas will receive this award jointly with Prof. A.K. Shukla, IISc, Bangalore. The award will be conferred on him at a public function at Mumbai by this year end.

Dr. Srinivas has made significant contributions to the area of catalysts and catalysis in biofuels production. He has developed highly efficient and reusable solid catalysts for the production of biodiesel and biolubricants in a continuous process. This novel, solid catalyst-based process called ENSEL™ has been successfully demonstrated in two pilot plants – one at Matsuyama, Japan (2 tons per day) and another at Eulees, USA (1 ton per day). Sud-Chemie India Ltd. is manufacturing CSIR-NCL's solid catalyst and supplying it to commercial plants.

The ENSEL™ process for the production of biofuels uses cheaper feedstock such as non-edible oils and animal fats and has several advantages over the

conventional processes: (1) it uses a solid-catalyst instead of a homogeneous catalyst thereby eliminating neutralization, separation etc. processing steps, (2) unlike the conventional, it is a water-free process, (3) flexible feedstock processing – a range of cheaper feedstock non-edible oils and animal fats can be transformed into biodiesel, (4) continuous fixed-bed process, (5) high quality glycerine suitable for pharmaceutical applications is co-generated, (6) yield of biodiesel is 2–3% higher than the conventional process, and (7) highly stable and reusable catalyst.

Dr. Srinivas is a Member of the Editorial Board of prestigious international and national journals in the area of Catalysis. He has to his credit about 60 foreign patents granted/filed, about 25 Indian patents filed/granted, and has published about 135 research articles in international peer-reviewed journals. Dr. Srinivas is with CSIR-NCL for the last 15 years after working for 10 years at the CSIR-Central Salt & Marine Chemicals Research Institute, Bhavnagar.



## CSIR-NGRI Scientist awarded “Raman Research Fellowship” 2013-2014

Dr. P.V. Sunder Raju, Principal Scientist, CSIR-National Geophysical Research Institute (NGRI), Hyderabad, working in the Geochronology division (EPMA-LA-MCICPMS) was awarded the prestigious “Raman Research Fellowship” for the year 2013-2014 for his significant contribution in understanding the genesis of Platinum and Nickel mineralization in mafic-ultramafic complexes.

He will be carrying out advanced research at PCGIR, University of British Columbia, Canada under this prestigious fellowship. At present, Dr. Raju is working

on Rare Earth Elements (REE) in alkaline and carbonatite complexes under the 12<sup>th</sup> five year plan.

Dr. Raju is also a recipient of BOYSCAST, NSERC, SITRA, Indo-Australian fellowships from prestigious International funding bodies. He is a fellow of the Society of Economic Geologists, USA and Geological Society of London. To his credit, he was also awarded the Prof. C. Mahadevan Mineral Science award.



## CSIR-NGRI Scientist receives Bharat Jyoti Award

Dr. Kalachand Sain, Senior Principal Scientist and Head of Gas-hydrates group at CSIR-National Geophysical Research Institute (NGRI), Hyderabad received the 'Bharat Jyoti Award' and Certificate of Excellence from



General (Retd.) J.J. Singh, Former Chief of Army Staff & Former Governor of Arunachal Pradesh, and 'Glory of India Gold Medal' from Dr. Bishma Narain Singh, Former Governor of Tamil Nadu & Assam in

recognition of his 'Meritorious Services' and 'Outstanding Contribution to the progress of the Nation & World'. He was awarded during a seminar on "Economic Growth & National Integration" held at India International Center, New Delhi on 24 August 2013, organized by the India International Friendship Society.

Dr. Sain has developed several pioneering methods for the (i) delineation

and assessment of gas-hydrates, (ii) imaging sub-volcanic sediments, and (iii) understanding geo-tectonics of Indian landmass.

He has published more than 80 scientific papers in peer-reviewed journals and 60 non-SCI articles. He has been recognized by a number of awards, fellowships and honours such as Fellow of National Academy of Sciences, India, Fellow of AP Akademy of Sciences, National Mineral Award by Min. of Mines, Krishnan Gold Medal by Indian Geophysical Union, Young Scientist Award of CSIR, and Prem Bahadur Memorial Lecture of Indian Geological Congress. He is a member of the Indian National Gas Hydrates Program, Vice President of Society of Petroleum Geophysicists, and member of many other scientific bodies. He is a member of Editorial Board of International Journals like the *Episodes*, *Journal of Geological Society of India*, *International Journal of Earth Sciences & Engineering*, etc. He is also a Guest Editor for a special issue on gas-hydrates, *Marine & Petroleum Geology*, 2011 by Elsevier and the 2nd Edition of *Encyclopedia for Solid Earth Geophysics*, 2011 by Springer.

## CSIR-IICT Researcher Honoured for Biodiesel Byproduct Innovation

National Biodiesel Board and the American Cleaning Institute has honoured Dr. B.L.A. Prabhavathi Devi from the Centre for Lipid Research at CSIR-Indian Institute of Chemical Technology (IICT), Hyderabad, with the 2013 Glycerine Innovation Award Annual Honor for using glycerol-based catalysts to replace more traditional sulfuric acid and alkali catalysts.

The ACI/NBB Glycerine Innovation Award recognizes outstanding achievement for research into new applications for glycerine, with particular emphasis on commercial viability. Dr. Prabhavathi and her group have been researching how glycerol

can be utilized for the development of novel value-added products. Her group has developed glycerol-based catalysts, including waste from the fat-splitting industry, to replace chemicals more traditionally used in manufacturing processes, like sulfuric acid and alkali catalysts. The use of such glycerine-based products can enhance the economies of the oleochemical and biodiesel industries.

The award includes a plaque and a \$5,000 honorarium. It was presented at the AOCS Industrial Oil Products Division luncheon during the 2013 AOCS Annual Meeting in Montreal, Canada.

## MoES National Award to Former Director of CSIR-NGRI



Prof. V.P. Dimri, CSIR-Distinguished Scientist and former Director of the CSIR-National Geophysical Research Institute (NGRI), Hyderabad has been presented the National Award for his outstanding contribution in the field of Geoscience & Technology by the Ministry of Earth Sciences (MoES), Govt. of India. The award ceremony was held on 27 July 2013 on the Earth Sciences Foundation Day. The Award was presented by Jaipal Reddy, Union Minister of Earth Sciences & Science and Technology, Govt. of India.

Earlier, Dr. Dimri was awarded Padmashri in the discipline of Science & Engineering. He was the first Asian to get Lorenz Award of the American Geophysical Union in the field of non-linear geophysics in December 2007. Dr. Dimri also received the G.P. Chatterjee Award of the Indian Science Congress Association in 2007. He is Fellow, Third World Academy of Sciences, Italy and Fellow of INSA, New Delhi and NASI, Allahabad.



Prof. V.P. Dimri former Director NGRI (*standing second from left*) receiving the award from Mr. Jaipal Reddy, Minister of Science and Technology and Earth Sciences, Govt. of India, in New Delhi on 27 July 2013

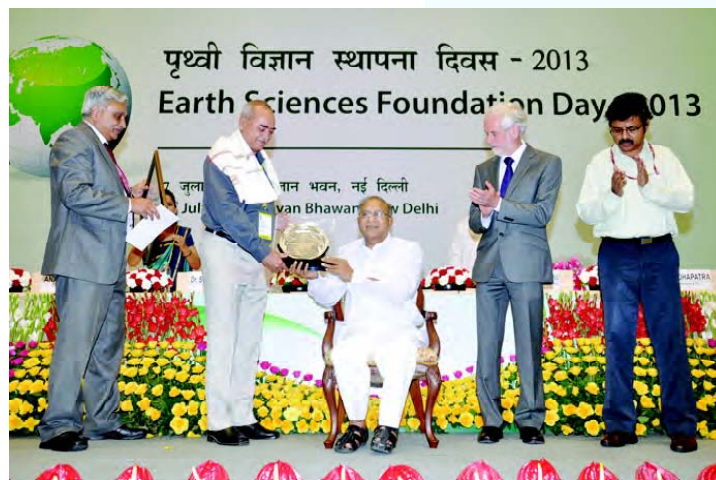
## MoES National Award for Director, CSIR-NIO

Dr. S.W.A. Naqvi, Director of CSIR-National Institute of Oceanography (CSIR-NIO) has been selected for the National Award for his outstanding contributions in Ocean Science and Technology for the year 2013 by the Ministry of Earth Sciences (MoES), Govt. of India. He received the award on 27 July 2013 at Vigyan Bhawan in New Delhi during the MoES Foundation Day celebrations.

Dr. Naqvi received a memento, a cash prize of Rs. 1.00 lakh and a citation at the hands of Mr. S. Jaipal Reddy, Union Minister of Earth Sciences & Science and Technology, New Delhi.

MoES aims to create a framework for understanding the complex interactions among key elements of the Earth System, namely ocean, atmosphere and solid earth, by encompassing national programmes in ocean science, meteorology, climate, environment and seismology.

Dr. Naqvi joined CSIR-NIO in 1974 and contributed significantly to the biogeochemical aspects of the Northern Indian Ocean. He has, since then, received a large number of honours and awards for his contributions. He has about 150 publications in national and international books and journals to his credit. He took over as the Director of the institute in the recent past.



Dr. S.W.A. Naqvi, Director of NIO (*standing second from left*) receiving the award from Mr. Jaipal Reddy, Minister of Science and Technology and Earth Sciences, Govt. of India, in New Delhi on 27 July 2013

**Appointments**

**Dr. Pijush Pal Roy assumes charge as Acting Director of CSIR-CIMFR**

Dr. Pijush Pal, Scientist-‘H’/ Outstanding Scientist of CSIR-CIMFR, Dhanbad has taken over the charge of Acting Director, CSIR-CMERI with effect from 29 August 2013.



worked in more than 250 mines and quarries and around 15 prestigious hydroelectric projects of the country.

He is the author of three books published in India and abroad and nearly 109 scientific papers published in International

Dr. Pijush Pal Roy (born on 12 November 1957) is presently Scientist-‘H’/Outstanding Scientist of CSIR and is the senior-most Scientist of the CSIR-Central Institute of Mining and Fuel Research, Dhanbad, India. He did his M.Sc. from the Calcutta University and M.Phil., Ph.D. in Applied Sciences from the Indian School of Mines, Dhanbad. Presently he is the Head of the Blasting Department besides being the Coordinating Scientist of the Respiratory Protection Laboratory, Mine Stowing, Slope Stability, Hydrology and Ventilation Departments of the Institute.

and National Journals and Seminar/Symposia Proceedings. There are extensive references of Dr. Pal Roy’s work in standard textbooks written by world-renowned scientists of India and abroad.

Before joining CIMFR, he was in the teaching profession for nearly five years and in CIMFR, he has 28+ years of R&D experience as a Blasting Scientist and has

He is the recipient of the National Mineral Award-2005, Young Scientist Award of CSIR-1989, CSIR-Golden Jubilee First CMRI-Whittaker Award-1993, Hindustan Zinc Limited Medal of the Institution of Engineers (India)-1997 & 2012 and CSIR Technology Award-2011. He has also worked in many S&T projects funded by the Ministry of Coal, Ministry of Mines, Ministry of Environment and Forests and Ministry of Water Resources, Government of India.

**Forthcoming Events**

- **3rd-Indian Antarctic Expedition – 30 Years Celebrations on 3 December 2013.** It is proposed to celebrate 30 years of the 3rd Indian Expedition to Antarctica jointly by the National Institute of Oceanography, Dona Paula and the National Centre for Antarctic and Ocean Research, Headland Sada-Vasco. Please confirm your participation on e-mail to Dr. A.K. Saran, NIO (saran001@gmail.com).
- **INCCOM 12 – ISAMPE National Conference on Composites, 12-13 December 2013.** Organized by Indian Society for Advancement of Materials and Process Engineering (Bangalore Chapter) in association with CSIR-National Aerospace Laboratories, Bangalore.

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