



# CSIR-CGCRI

## NEWS LETTER

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### TECHNOLOGY NEWS

#### Sensors for Detection in Transformer Oil



*Two prototype meters with sensor being handed over to Nisha Engg. Corporation, Kolkata*

The Sensor & Actuator Division of CSIR-CGCRI has developed nanoporous thin film  $\gamma$ -alumina based capacitive sensors with adequate sensitivity over the moisture range from 5 to 20 ppm for detection of trace moisture in transformer oil. The developed sensor was calibrated by an electronic device for low range moisture measurement in hand held devices. The sensors were fabricated by sol-gel based dip coating technique as a part of a DST supported project. The sensitivity and characteristics to trace moisture have been evaluated. Few moisture meters have been transferred to M/s Nisha Engineering Corporation, Kolkata for field trials.

#### Mutual Confidentiality Agreement

CSIR-CGCRI signed a mutual confidentiality agreement with Industrial Associates (IA) on March 12, 2012 to explore possibilities of a working relationship and the exchange of information relating to the industrial scale preparation of CSIR-CGCRI developed low cost porous ceramic tube and its further developments in connection with separation technology for the removal of suspended particles from contaminated water. Under the agreement, both parties will explore the technical possibility of industrial scale preparation of CSIR-CGCRI developed low cost porous tubes.

#### Dissemination of Kiln Furniture Technology in Gujarat

CSIR-CGCRI's Outreach Centre at Naroda disseminated the technology of "Energy Saving Low Mass Kiln Furniture" to the small scale crockery industries in Ahmedabad region. This was an outcome of a DST sponsored project. The dissemination of technology has been made to the 22 crockery ware manufacturing units. The salient feature of the project is to use low cost locally available raw materials to make suitable kiln furniture with improved properties. The developed products attained higher life with low energy consumption and could benefit the large section of crockery industries in the state.

### PEER RECOGNITIONS

#### Triple Kudos for Dr Swapan Kumar Das



*Dr Swapan Kumar Das receiving the Vishwakarma Award-2012 from Mr B D Mundhra, Chairman & Managing Director, Simplex Infrastructure Ltd*

Dr Swapan Kumar Das, Chief Scientist & Head, Refractories Division, received triple appreciations in quick succession. He received the Commemorative Trophy of the 4<sup>th</sup> Construction Industry Development Council (CIDC) Vishwakarma Award-2012 in the category of Outstanding Scientist in the area of waste management and development of low cost novel building materials from industrial waste of Iron Ore Company, Kudremukh; ESSAR Steel, Gujarat.

Tata Steel, Jamshedpur and RINL, Visakhapatnam. The award was conferred upon him on March 10, 2012 at New Delhi in the presence of distinguished personalities from industry and government.

Prior to this notable development, Dr Das was awarded Refractory Technologist-2011 at the Platinum Jubilee Session of Indian Ceramic Society on December 20, 2011 at Agra.

Dr Das also received the distinction of being the Indian Team Leader to represent Bureau of Indian Standards in the ISO TC-33 Refractories meeting held at Kyoto, Japan during November 3 – 4, 2011. The Committee consisted of nominated members of different countries who are engaged in the preparation and standardization of the ISO Specifications for Refractory Raw Materials and Products. Dr H S Tripathi, Senior Scientist also accompanied him from CSIR-CGCRI.

### Deokaran Award

Dr R Sarkar, Dr M K Haldar, Mr S Mukherjee, Mr G Debnath and Dr A Ghosh received Deokaran Award - 2011 for contribution in the field of Refractories for their paper "Effect of Addition of Titania Doped Preformed Spinel in High Alumina Castables" from Indian Ceramic Society.

### Poster Awards

Mr Biswajit Roy, Dr G C Sahoo, Dr S N Roy and Dr S Bandyopadhyay received Best Poster Award (2nd Prize) for their poster paper "Studies on Colour Removal Rice Bran Oil-Hexane Miscella" in the International Conference on Innovations in Oils, Fats & Allied Products towards Sustainability & Lipids Expo-2011 (IOFATS – 2011) organized by Oil Technologists' Association of India (SZ) during November 18-19, 2011 at CSIR-Indian Institute of Chemical Technology, Hyderabad.

Dr A K Mukhopadhyay, Dr M K Sinha, Dr D Basu and Dr Arjun Dey received Metallurgy and Materials Engineering Division Prize of The Institution of Engineers (India) for their paper "Characterization of Plasma Sprayed Porous Hydroxyapatite Coating" published in Journal of the Institute of Engineers during 2010-11 in the Inaugural Ceremony of 26th Indian Engineering Congress on December 16, 2011 at Bangalore.

### Other Accolades

Mr Avijit Ghosh, Senior Superintending Engineer qualified to be a Green Rating for Integrated Habitat Assessment (GRIHA) Evaluator through a National Level Examination conducted by The Energy and Resources Institute (TERI) and Ministry of New and Renewable Energy (MNRE) on November 30, 2011 at Bangalore.

Ms Suparna Banerjee received Prof Gurdip Singh Best Thesis Award 2012 from Indian Thermal Analysis Society, BARC, Mumbai on January 31, 2012 for her thesis entitled "Processing and Characterization of Oxide Ion Conducting Materials with Fluorite Structure" under the supervision of Dr P Sujatha Devi, Principal Scientist, Nanostructured Materials Division.

## SEMINARS /WORKSHOPS/ CONFERENCES

### International

#### Seminar on Flow Control Products and Changing Requirements for Cleaner Steel in Steel Mills (December 2, 2011)

The One-Day seminar was organized as an unfinished task of the 74<sup>th</sup> Annual Session of Ceramic Society wherein CSIR-CGCRI and TRL Krosaki Refractories also joined hands. There were three technical

sessions of prolonged duration in which three Japanese experts from Krosaki Harima Corporation, Japan placed their perspectives on flow control system. They also delivered lectures on development and applications of slide gate refractories and AG tubes for continuous casting in steel mills. The seminar was attended by about 100 participants from industry and academia. A team of Japanese delegates also attended the day long seminar.

#### Indo-Japan Workshop on Specialty Optical Fibre, Nanophotonics and Devices (January 6-7, 2012)



Inaugural Session: Mr Mitsuo Kawaguchi (2nd from Left), Hon'ble Consulate General of Japan, Kolkata graced as the Guest of Honour

The event focused on the field of plasmonics, fibre lasers, hollow core photonic crystal fibre etc with a view to promote futuristic research on photonic metamaterials. Broadly the topics covered were specialty optical fibre for laser, amplifier and supercontinuum generation, photonic bandgap and hollow core photonic crystal fibre, silicon photonics, non-linear optics nano photonics and plasmonic materials. There were distinguished speakers from India and Japan. About 50 participants consisting mostly of students, researchers and junior scientists participated. Mr Mitsuo Kawaguchi, Hon'ble Consulate General of Japan, Kolkata graced the inaugural function as the Guest of Honour. The programme was financed by Department of Science & Technology, Govt of India and Japan Science & Technology.

#### Conference on Invention, Innovation and Technology (ICIIT-2012; January 19-21, 2012)

CSIR-CGCRI is engaged in many innovative product developments and in their translation process to society. The Institute joined hands with an NGO, Indian Association for Productivity, Quality and Reliability (IAPQR) in the city to disseminate its success stories of innovation in health, water and other sectors across audience of varied background and perspectives.

A couple of plenary lectures by Prof K L Chopra, Former Director, IIT-Kharagpur, on "Nurturing Innovations in Academic Institutions" and Prof V K Gupta, Executive Vice-Chairman, National Innovation Foundation on "Innovations in Indian Industry" greatly enhanced the inaugural function. Speaking on higher education, Prof Chopra cited Einstein's  $E = mc^2$  equation and interpreted E as efficiency, m as number of active works but highlighted connectivity c as the most important factor in the knowledge management. He said knowledge is power but one must resolve where it





Plenary Speakers: Prof K L Chopra and Prof V K Gupta

needs to be connected, midway or highway? Prof V K Gupta cited examples of innovation carried out by rural people in India to simplify their daily lives as increments over age old practices. He said poor people often leverage a resource in which they are rich. He said empathy triggers innovation and therefore aesthetics must play a big role in science. Several other speakers also made valuable presentations. About 120 participants took part in the three-day programme.

### National

#### Workshop on Technopreneurship Programme (TePP, 21.2.2012)

Prof Indranil Manna, Director, CSIR-CGCRI welcomed the participants and said in his address that the TePP Outreach Centres in the eastern region should play proactive role in promoting entrepreneurship among people. Guest of honour Dr H S Maiti, who is also the Chairman, Screening Committee of TePP explained that TePP is a scheme for informal minds. Any citizen can apply for funds to pursue his/her activity but the proposal must contain innovative element. Chief Guest Prof P N Ghosh said that a fear psychosis persists in the minds of people in eastern region and this mindset should change.

Dr Ramanuj Banerjee, Scientist, TePP, DSIR, New Delhi spoke on "Fostering Innovation" through TePP and Mr S Mukhopadhyay, Asst. Director, Development Institute, Ministry of Micro, Small and Medium Enterprises (MSME) spoke on "Role of MSME on Entrepreneurship Development".

Dr Banerjee informed the participants that innovation has assumed great importance as President of India has declared 2010-20 to be decade of innovation. He discussed about the entrepreneurship grant limits during different phases of innovation. Mr S Mukhopadhyay drew the basic difference between TePP and MSME and said that the MSME promoted proposals of entrepreneurs only.

Dr Sankar Ghatak, Adviser, Coordinator, TePP Outreach Centre at CSIR-CGCRI requested the participants to utilize the TKDL-Traditional Knowledge Digital Library of CSIR for idea generation.

A panel discussion was the climax of the event in which Prof Indranil Manna presided. Among the panelists, Prof Samir Saha, Mechanical Engineering Department, Jadavpur University said that technology angel was not an examiner but plays the role of facilitator. He, along with Prof K K Mukherjee of Bose Institute emphasized that proposals must ensure the basic principle of science. The basics should not be violated. Prof B B Paira, Director, Heritage Institute of Technology, Kolkata said that the teachers must encourage students to innovate.



Address by Prof P N Ghosh

Prof Indranil Manna requested all the assembled faculties to generate interest in their Institutions for entrepreneurship and TePP related activities. Dr H S Maiti in his remarks advocated a more professional approach to manage the TePP activities.

The Workshop was attended by 80 participants and received financial grants from DSIR, New Delhi.

### NEW PROJECTS FROM OVERSEAS

#### Particle size dependence on magneto electric effect in nano scale (5-100 nm) BiFeO<sub>3</sub>

The project has been initiated by CSIR-CGCRI in collaboration with Tyndal National Institute and University College Cork, Ireland, under Indo-Ireland joint programme. The Indian and Irish collaborators in the project are Dr Dipten Bhattacharya and Dr Saibal Roy from India and Prof Roger W Whatmore and Prof M E Preamble from Tyndal National Institute and University College Cork, Ireland.

#### Rare earth doped fibers for high power laser applications

CSIR-CGCRI has initiated a project with the Institute of Photonic Technology, Jena under International Bureau (IB) of the Federal Ministry (BMBF) Education and Research, Germany. The Indian and German collaborators in the project are Dr Ranjan Sen and Dr Jens Kobelke.

### EVENTS

#### Diamond Jubilee Lecture

##### Nobel laureate Prof H W Krotoschiner delivers talk

Prof Harold Walter Krotoschiner, co-winner of the 1996 Nobel Prize in Chemistry for discovery of fullerene, delivered a special lecture on February 3, 2012 entitled "Carbon in Nano and Outer Space" in the Meghnad Saha Auditorium of the Institute. The C<sub>60</sub> Fullerene has now become iconic logo for nanotechnology. In his lecture, he spoke of his childhood ambitions, fullerene chemistry and related novel nanoscale structures, and natural philosophy. He explained carbon nanotubes in detail and anticipated application of fullerene in plastic solar cells. He said molecular electronics will enable us to pack super computers into our wrist watch in future. Prof Indranil Manna, Director, CSIR-CGCRI felicitated the Nobel laureate with a silver plaque after the lecture.

Earlier in the day, Prof Kroto held discussions with senior scientists of CSIR-CGCRI and went round major laboratories in the Institute. He had a special meeting with the students and scholars. In his complimentary message in the visitors' book he penned down the following remarks:



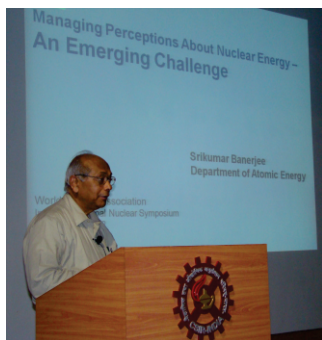
Prof I Manna felicitating the Nobel Laureate

*"It is great honour to follow in the footsteps of C V Raman and Linus Pauling and see the fascinating work being carried out here which is at the cutting edge of modern technology. I hope that the young people will find a humanitarian use for our  $C_{60}$  molecule"*

Prof Krotoschiner became the third Nobel laureate to visit CSIR-CGCRI in its history. Earlier, Noble Laureates Prof Linus Pauling and Prof C V Raman visited the Institute in the formative years.

### Special Lecture

#### Managing Perceptions about Nuclear Energy: An Emerging Challenge



Dr Srikumar Banerjee delivering Special lecture

Dr Srikumar Banerjee, Secretary, Department of Atomic Energy and Chairman, Atomic Energy Commission, Government of India delivered the special lecture on March 23, 2012 in the Meghnad Saha Auditorium. Dr Banerjee cleared the negative perceptions about managing nuclear energy. He quoted global statistics to discern that the disasters from nuclear energy among all forms of energy had been the least. He later met the

media. The event received important media attention. The leading national dailies covered the programme.

### National Science Day Celebrated

Dr R K Bhandari, Director, Variable Energy Cyclotron Centre, Kolkata delivered a lecture on "Charged Particle Accelerators and their Applications in Basic Research, Medicine and Industry" on February 29, 2012 on the occasion of National Science Day.

### Inspection Meeting on Official Language Implementation: Feb 9, 2012

The Second Sub-committee of the Committee of the Parliament on Official

Language, Govt of India came on February 9, 2012 for an Inspection meeting to review the status of implementation of Hindi in the Institute. The committee comprised of Shri K V Patel and Dr Botcha Jhansi Laxmi both Members of Parliament and few officials.

Prof Manna presented the status of implementation of Rajbhasa at ITC Sonar, Kolkata. The inspecting team highly appreciated the R&D work being carried out at CSIR-CGCRI. The members also expressed general satisfaction with the implementation process of Rajbhasa and provided few suggestive measures on the presentation of facts in the questionnaires.



Members of Parliament watching CSIR-CGCRI products at a stall and Prof I Manna presenting the status of implementation of official language

### MAJOR FACILITIES

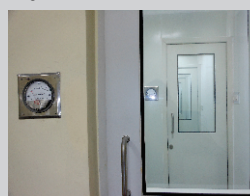
A number of state-of-the-art facilities have been installed in the Institute. The blog below shows pictures of such facilities.



High Resolution Diffractometer



X Ray Micro CT Machine



In Vitro Cell Culture Lab



Knee Joint Simulator

### Forthcoming Events

- April 30 to May 1, 2012: 3rd EICOON School on "Science and Technology of Renewable and Clean Energy Sources" at ITC Sonar, Kolkata. To be jointly organised with SNBNCBS, Kolkata.
- May 3 to 4, 2012: 3rd EICOON Workshop on "Nano Materials in Solar Energy Applications" at ITC Sonar, Kolkata. To be jointly organised with SNBNCBS, Kolkata.