



# CSIR - CGCRI

## NEWS LETTER



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Diamond Jubilee Year, April - July 2011

### Peer Recognition

#### Dr R N Basu enrolled as Member of National Academy of Sciences, Allahabad



Dr R N Basu, Chief Scientist & Head, Fuel Cell & Battery Division has been elected as a Member of National Academy of Sciences, Allahabad. The membership will entitle him to write MNASc after his name. He has also been appointed as Director in the Board of Directors of United Nano Tech Products limited, Kolkata.

Dr Basu is basically a physicist and has carried out extensive research on electro-ceramic materials. His present research interest is focussed on Solid Oxide Fuel Cell (SOFC), Li-ion Batteries and Mixed Ionic & Electronic Conductor (MIEC)-based membranes for gas separation. Dr Basu is a Fellow of the West Bengal Academy of Science & Technology (WAST).

### Technology Transfers

#### Agreement signed for technology transfer of SiAlON based products manufacture

The modern generation production requires accelerated metal finishing with much faster machining speed. The cutting ability of SiAlON tools are much higher (in the range of ~3000 m/min) compared to the conventional carbide tools (~150-300 m/min) for metallic applications. An agreement for transfer of technology for manufacture of the SiAlON based products was signed between CSIR-CGCRI and Double Dee Technology Pvt Ltd, Mumbai on April 1, 2011. Under the agreement, CSIR-CGCRI has given the grant of license to Double Dee (DD) to utilize the said know-how by transferring the know-how documents within 3 months of the effective date of signing and also demonstrating and training the DD personnel on its implementation. The license has been granted to DD on exclusive basis for a period of 2 years from the date of the receipt of the technology transfer fees and on non-exclusive basis thereafter for a period of another 5 years.

### Technology Day: Technology for High capacity modules transferred

On the 14th National Technology Day on May 11, 2011, CSIR-CGCRI transferred the technology of ceramic membrane based high capacity modules for pretreatment of turbid water and removal of iron and arsenic contamination from water using micro-filtration technique to M/s Porel Dass Water & Effluent Control Pvt. Ltd, Howrah, West Bengal.

This deal will facilitate commercial exploitation and large scale implementation of the membrane based water purification technology developed by CSIR-CGCRI to ensure large scale community level benefits (> 10 M<sup>3</sup>/hour capacity of purified water supply module) in rural/urban areas. The high capacity modules technology transferred to this Howrah based company has been developed by the Ceramic Membrane Division of CSIR-CGCRI.

### Diamond Jubilee Seminar and Conferences

#### International

#### Biomaterials and Implant: Prospects and Possibilities in the New Millennium( BIO 2011; July 21 - 23, 2011)

Healthcare is every individual's right. The awareness for this right is being promoted by CSIR and many of its laboratories through appropriate healthcare technologies. Over last one decade, CSIR-CGCRI has done considerable work on the development of low cost healthcare technologies for bone and bone related ailments. Necessary implants of novel designs are available and in some special cases, the designs are new. But most of the state-of-the-art implants and devices in view of exorbitant prices, are out of reach of poor masses. Add to this hurdle, the imported counterparts do not always suite our purpose due to the anatomical diversity between the patients and the difference in lifestyle. To preempt the problem, proper healthcare strategies are required. With this backdrop, CSIR- Central Glass & Ceramic Research Institute, Kolkata organized this conference. The aim of the conference was to offer a platform for exchange of knowledge and skills on present practices and catalyze future initiatives required to develop novel synthetic biomaterials and implants in India.

The programme started with a welcome address by Prof Manna, Chairman, BIO-2011 and Director, CSIR-CGCRI who extended warm greetings to all the delegates and briefed the history of Institute. He highlighted the past and present R & D activities of the Institute and hoped that BIO-2011 would prove to be a health care booster for the country.

The conference was inaugurated by Chief Guest Prof R Chidambaram Principal Scientific Adviser to Government of India. Dr Srikumar Banerjee, Secretary, DAE and Chairman, AEC, and Prof S K Brahmachari, DG, CSIR and Secretary, DSIR were invited as Guests of Honour. Dr. Banerjee had to withdraw at the last moment because of unavoidable circumstances. The Chief Guest highlighted the need for altruistic collaborative innovation and stressed on the application of e-technologies for speedy healthcare solution.



*Clockwise: Inaugural function of BIO 2011, Prof R Chidambaram delivering his lecture, Prof S K Brahmachari delivering his plenary talk and Prof Marc Madou answering audience after his plenary lecture*

In the plenary session, Prof Brahmachari delivered a fascinating lecture entitled **'Fourth Paradigm: Data Intensive Scientific Discovery'**. In his lecture, DG, CSIR retraced the historical path of computing. He advocated that fourth paradigm should enable healthcare and indicated that this paradigm could bring revolution in healthcare. In order to achieve this change, digitization of information is a prerequisite, he added. This can be done on a distributed way with the help of high capacity fast computers. DG lauded bone as the nature's strongest product and said there were infinite possibilities for biomaterials.

In the Special lecture, Dr. D. Basu, Chief Scientist and Head, Bio-ceramics & Coating Division spoke on Recent Innovations on Bio-ceramic Implants and Prosthesis at CSIR-CGCRI. He narrated how the Department grew over the time from its embryonic phase in the early years of the present century to the present status and contributed to health care. He admitted that there was still a long way to travel and presented the fledgling but important results his group achieved in nascent and fascinating areas like biomimetically inspired coatings, drug delivery systems, lens guided functionally graded implants etc. In the last lecture of the plenary session, Prof Marc Madou, University of California, Irvine, USA spoke on Biosensors and Drug Delivery Systems which was highly exciting.

The Conference was divided into ten different technical sessions two of which ran in parallel modes. These sessions touched upon topics: Synthetic biology and tissue engineering, Bio-sensors, imaging, diagnostics, Joints and case studies, Biomaterials, Rapid prototyping and novel processes, Special biomaterials, Nano-biotechnology and Special devices and case studies.

In all there were 38 invited lectures, 17 contributory lectures, 94 poster papers and 4 abstracts for essay-cum-poster competition. There were 17 overseas participants from USA, South Korea, Australia, Slovenia, China, Japan and Portugal. Several participants especially from the IITs, IISc, AIIMS, NIT, CSIR labs, ICMR lab, universities, hospitals and industries in the country participated. Renowned orthopedic surgeon Dr. K.H. Sancheti, Director, Sancheti Institute for Orthopaedics & Rehabilitation, Pune, who recently tried all ceramic hip joint prosthesis developed at CSIR-CGCRI demonstrated the highly encouraging post operative results and highlighted quick improvement of the patients gate as

a function of post operative time. The other speakers from the CSIR family in the event were Prof Siddhartha Roy, Director, CSIR-IICB, Dr. Gopal Pande, Scientist, CSIR-CCMB, Dr Arvind Sinha, Scientist, CSIR-NML, Dr Sanjeev Saxena, Scientist, CSIR-AMPRI, Dr Subrata Kundu, CSIR-CECRI, Dr B D Malhotra, CSIR-NPL and Dr D Sanyal, Scientist, CSIR-CGCRI. Among the delegates from overseas, few notable scientists of Indian origin were Prof Amit Bandopadhyay, Prof Rajarshi Banerjee, Prof Shubhra Ganguly, Prof N B Dahotre, Prof Kajal Mullick, Prof Sushmita Bose, Prof Animesh Jha, Prof Himangshu Jain, Dr N Suraj Hussain and Dr Ahmed Imran. About 250 participants from India and abroad participated in the event.

The BIO 2011 successfully helped in generating awareness about the activities of CSIR labs in healthcare research, especially the activities of the host, CSIR-CGCRI to the international experts. It could also provide a much needed international exposure to the Indian healthcare industry. Few prospective areas where CSIR could fore tie-ups were resolved. These are: Wound healing and tissue engineering with porous bio-glass mats (CSIR-CGCRI & Lehigh University, USA), Effect of laser texturing on cell growth behaviour on metals. (University of Tennessee, USA) and LDH based drug delivery system (University of Korea). All in all, the conference proved to be a grand success.

## National

### Information and Knowledge Dissemination: Present Status and Future Direction [IKD-2011; May 6-7, 2011]

This two-day seminar was held at CSIR - CGCRI, Kolkata. The objective of the seminar was to provide a platform for exchange of knowledge and skills on present practices relevant to information professionals in India with a global perspective. The seminar also provided an opportunity to discuss the trends of knowledge dissemination, their drivers and the impact on society.

Dr Sabyasachi Sengupta, Vice Chancellor, West Bengal University of Technology graced the occasion as Chief Guest while Dr Gangan Prathap, Director, CSIR-NISCAIR, New Delhi and Dr Raj Hirwani, Head, CSIR-URDIP, Pune were the Guest of Honour and Distinguished Guest respectively.

In his welcome address, Prof Indranil Manna, Director, CSIR-CGCRI, Kolkata extended warm greetings to all the guest and delegates. The keynote address was delivered by Dr Gangan Prathap, on the topic "Educate the Masses". The plenary lecture was delivered on the topic "Community Knowledge Management in Knowledge Society" by Prof A Neelameghan, Former Professor, Indian Statistical Institute, Bangalore. In addition, four invited talks were delivered by eminent information professionals.

The Seminar was divided into five technical sessions and these were (i) Knowledge Dissemination Mechanism and Practices in Knowledge Resource Centre, (ii) Right to Information Act; Information User and Knowledge Dissemination in Digital Era; Issues involved in Indigenous Knowledge Dissemination; IPR and Knowledge Dissemination (iii) E-Resource Sharing, (iv) Knowledge Processing; Content Organization; Resource Description Framework (RDF); Digital Library/Repository; Role of Web 2.0 in Information Dissemination: Blog, Wiki and (v) Open Access and Knowledge Dissemination; Scholarly Communication; Grey Literature etc; Institutional Repositories: Case Studies. In all, seventy one contributory papers were presented and four invited talks were delivered by the eminent information scientists.





IKD Delegates - 2011

The valedictory speech was delivered by Prof P N Ghosh, Vice Chancellor, Jadavpur University, Kolkata. In his speech, Prof Ghosh highlighted evolution of library and information science and stated that this multidisciplinary domain has gained momentum and included information technology in its territory.

### Rabindranath Tagore: Tradition and Modernity (May 10-11, 2011)

In a world wrecked by violence and war, Gurudev continues to be the moorings of life's sustenance for millions. Tagore - *The Humanist*, lives like an anchor through his work. On the occasion of the 150<sup>th</sup> Birth Anniversary of Gurudev, CSIR-CGCRI organized this National Seminar jointly with Mahatma Gandhi International Hindi University, Wardha. The medium of communication was primarily Hindi. Dr D K Bhattacharya, Advisor Technology Management, Chief Scientist and Head, Analytical Facility Division, CSIR-CGCRI gave the welcome address. The Foundation Lecture on this occasion was delivered by Mrs Jaya Mitra, noted Bengali writer cum social activist who spoke on a vibrant topic entitled "Tagore and Our Times". Famous novelist and Vice Chancellor of Mahatma Gandhi International Hindi University, Wardha, Mr Vibhuti Narayan Rai presided over the inaugural function. Several scholars & researchers addressed on the relevance of Tagore's work in the contemporary world. The major speakers were Prof Indranath Choudhury, Mr Nabarun Bhattacharya, Prof Swapan Majumdar, Prof Gangaprasad Vimal, Prof Ranjit Saha, Prof Shambhunath. Some of the lectures were made in Bengali for convenience of the local audience. The concluding session was presided over by Prof Indranil Manna, Director, CSIR-CGCRI.



Ms. Jaya Mitra being greeted

## New Facility

### Laser Engineered Net Shaping (LENS)

A Model: LENS MR-7 from M/s Optomec, USA has been installed in the Bioceramics & Coating Division. The LENS process is a laser-assisted, direct metal manufacturing process, a kind of Rapid Prototyping technique. Specifically for medical implants, the LENS offers (i) Customized complex shaped functional implants with functional gradations in porosity, composition & properties; (ii) Demand based manufacturing that hugely cut cost and inventory and (iii) Superior properties compared to traditionally manufactured counter parts. The direct implant manufacturing using LENS™ could open up novel route for manufacturing bone implants in India.



## NMITLI Project

CSIR-CGCRI has been awarded a project entitled 'Development and Demonstration of 500W SOFC Stack with hydrogen as fuel and testing of short stack with synthetic gas' under CSIR's New Millennium Indian Technology Leadership Initiatives. CSIR-CGCRI is the lead Institute with CSIR-NCL, Pune and IIT, Kharagpur as the participating laboratory and Gas Authority of India Ltd, New Delhi as the industry partner. The duration of the project is of two years. The project succeeds the previous NMITLI project in which the objective was to develop and demonstrate a working SOFC stack based planar anode-supported SOFC design. In the present project, phase wise development and demonstration of an indigenous SOFC power pack of 500W capacity with hydrogen as fuel and the testing of internally reformed short stack with synthetic gas will be taken up.

## Overseas Projects

### Fibre gratings and active fibre based refractometric sensors for detection of biological and chemical species

This collaborative project between CSIR-CGCRI and Porto University, Porto Portugal has been taken up under the Indo-Portuguese Programme of Cooperation in Science & Technology. The major objectives of this project are (i) Development of new high sensitivity optical fiber sensors for detection of biological and chemical species and (ii) Enhancement of the architecture using varying geometrical profiles of the fiber gratings. The project envisages use of sol-gel derived coatings for deposition of thin overlays.

### In-fibre long period grating based hydrogen sensing using thin palladium film

This collaborative project between CSIR-CGCRI and Department of Physics, School of Engineering & Physical Sciences, Heriot Watt University, Edinburgh, Scotland has been taken up under CSIR-Royal Society Joint Research Scheme. The aim of this project is to develop an all-optical hydrogen sensor to facilitate safe use and distribution of hydrogen as a future energy storage medium.

## ERP Promotion

An enterprise resource planning system (ERP) is a management tool that connects the data and processes of multiple decision units of an organization into a unified system. It is designed to knit closely a variety of cross functional jobs such as human resources, stores, accounts & finance etc and simultaneously respond to the demands of customers and suppliers.

Guided by a host of multiple components of computer software and hardware, the ERP system in general utilizes the unified database to store data for the various system modules.

As per directives received from CSIR HQ, a two-tier lab level team has been set up in the CSIR-CGCRI. One tier is a task force while the other is a lab level team for ERP's implementation.

## Divisional Merger and Nominations

The Analytical Facility and the new born Central Material Characterization Facility, two units of CSIR-CGCRI have been amalgamated into Material Characterization Division headed by Mr Ashim Kumar Chakraborty, Chief Scientist.

Dr S Ghatak, Chief Scientist and Head, Advanced Clay & Traditional Ceramics Division was named as Head of Testing & Characterization Cell (TCC) in addition to his present assignment. The TCC is a testing facility that caters to the needs of academia and industry on a single window mode.

Dr Amarnath Sen, Chief Scientist and Head, Sensor & Actuator Division of CSIR-CGCRI has been nominated as the Hub Administrator of Sensor Hub located within CSIR-CGCRI. The Hub has been set up with the financial assistance of Department of Science & Technology (DST) and CSIR, New Delhi and has three other partner namely, Bengal Engineering & Science University (BESU), Sibpur, Calcutta University, Jadavpur University and Centre for Development of Advanced Computation.

## Deputation

Prof Indranil Manna, Director, CSIR-CGCRI, Kolkata visited Finland during 13-17 June, 2011. He delivered a plenary lecture in the EU-India EICOON Workshop and Summer School on "Nanomaterials Issues in Electrochemical Energy Conversion: Fuel Cells, Batteries, Super capacitors" on 13-14 June, 2011. He attended the EICOON core group on-going project meeting during 15-17 June, 2011 and also visited the laboratories on Fuel Cells and Batteries.

## Orientation Programme for Summer Interns

The summer internship to the students pursuing engineering and M.Sc. courses was inaugurated at the Institute on June 27, 2011. A total of 32 bright students



Summer Interns with Prof. Manna

from the prestigious IITs, NITs and many other Institutions and Universities participated in the internship Summer programme. On the inaugural day of programme, Prof Manna, Director, CSIR-CGCRI

welcomed the students and presented an outline of the activities of the Institute. The Head of Divisions of the Institute also made presentations on their Divisional activities to apprise the interns of various R&D programme under progress. The students were later taken a round various labs in the Institute.

The students worked under the supervision of various scientists on problems related to R&D projects being pursued with the financial assistance of industries and government departments to the Institute for a period of two months. CSIR-CGCRI thus helped transcendent practical knowledge into youngsters by making them "do things" themselves, which is the variant concept propounded by the new born Academy of CSIR (AcSIR). The interns joined the programme as a part of the requirement of their engineering curriculum.

## ATM Facility Opened

A State Bank of India (SBI) ATM facility has been thrown open to the public domain Prof. Indranil Manna, Director, CSIR-CGCRI inaugurated the facility in the presence of the officials of both CSIR-CGCRI and SBI, on July 1, 2011 in the CSIR-CGCRI Campus. The single entrance and exit of the facility is embarked on Raja S C Mullick Road opposite to Jadavpur Police Station.



Prof. Manna inaugurating the ATM facility

## News@csir-cgcric

**April 6, 2011:** Ms Pooja Midha, Coordinator-A New Passage to India and Mr Apoorv Mahendra, Head, Operations and Marketing, German Academic Exchange Service (DAAD), Statesman Building, Barakhamba Road, New Delhi delivered a lecture on "To conduct Info-session which include presentation on detailed DAAD programmes and scholarship for study and research in Germany followed by Q&A".

**April 29, 2011:** Ms S Vidhya, M Tech student, Anna University of Technology, Coimbatore, Tamilnadu delivered a lecture on "Facile synthesis of Pd@Au nanoparticles and their applications in catalysis".

**May 2, 2011:** Dr Chris Emslie, CEO, Fibercore delivered a lecture on "Activities of fibercore and future programmes".

**June 10, 2011:** Dr Madangopal Krishnan, SO (H), Materials Science Division, BARC, Mumbai delivered a lecture on "Crystallography of Ni-Ti shape memory alloys".

**June 29, 2011:** Dr Suresh Das, Director, National Institute of Interdisciplinary Science and Technology, Thiruvananthapuram delivered a lecture on "Photoresponsive soft materials".

**July 4, 2011:** Dr Bart Bollen from M/s.IMCE, Belgium delivered a lecture on "Impulse excitation technique and its applications in evaluating elastic properties and internal defects in materials".

## CORRIGENDUM

*The National Seminar on Traditional Ceramics (NSTC -2011) was erroneously reported to have been held during February 24-25, 2011 in last page of the Issue 3, Vol 1 of CSIR-CGCRI News Letter. The month should be corrected as March instead of February. The error is regretted.*

- Publication Committee

## Forthcoming Events

### August 4-6, 2011

International Conference on Specialty Glass and Optical Fiber: Materials, Technology and Devices (ICGF-2011) at CSIR-CGCRI, Kolkata

### August 18-19, 2011

National Workshop on CSIR 800 Programme & CGCRI Technologies for Drinking Water and Sanitation at CSIR-CGCRI, Kolkata

### August 26, 2

CSIR-CGCRI Foundation Day: 8<sup>th</sup> Atma Ram Memorial Lecture at CSIR-CGCRI, Kolkata

### September 5, 2011

Recent Challenges and Innovations in Castable Refractory Technology (ICRT-2011) jointly conducted by CSIR-CGCRI and Kerneos Alluminate Technologies at CSIR-CGCRI, Kolkata

### September 26, 2011

69<sup>th</sup> CSIR Foundation Day at CSIR-CGCRI, Kolkata

### September 29, 2011

Golden Jubilee Celebration of CSIR-CGCRI Co-operative Credit Society Ltd at CSIR-CGCRI, Kolkata