



# CSIR-CGCRI

## NEWS LETTER

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### FOCUS

#### Dr Goutam De becomes Fellow of Royal Society of Chemistry

Dr Goutam De, Chief Scientist and Head, Nanostructured Materials Division has been admitted as a Fellow of The Royal Society of Chemistry, London.

Dr De has also won the National Research Award in Nano Science and Technology for the year 2014 from Nano Mission, DST, Govt. of India. The award was conferred on him in the International Conference on Nano Science & Technology (ICONSAT-2014) during March 3-5, 2014 at the Institute of Nano Science and Technology (INST), Mohali, Chandigarh.



Dr G De second from left is seen with Prof C N R Rao extreme left and Dr T Ramasami, Secretary DST/DSIR and DG, CSIR and Prof Arun Kumar Grover, VC, Punjab University, Chandigarh on right after he received the National Research award in Nano Science & Technology for 2014

Earlier, Dr De had received the MRSI-ICSC Superconductivity & Materials Science Annual Prize for the year 2014 in the Annual General Meeting of Materials Research Society of India during February 12-14 at Bangalore. To top it all, Dr De has also been inducted as Associate Editor, Journal of Materials Chemistry A, which is a high impact journal of the Royal Society of Chemistry. Dr De has made outstanding contributions to the advancement of the science and technology of the functional nanocomposite coatings on the surfaces of plastics, metal and glass substrates.

### IMPORTANT MEETINGS

#### Visit of German Delegation

A 3-Member German delegation visited the Institute on March 20, 2014 for a Bilateral Meeting on Recent Development in S&T and Opportunities and Challenges for International Cooperation. The delegation was led by Mr



Meeting with German delegation at the Institute

Rainer Schmiedchen, Consulate General of Federal Republic of Germany (FRG) in Kolkata, Mr Maximilian Metzger, Deputy Director General for International Cooperation in Education and Research, Federal Ministry of Education and Research (BMBF) and Mr Michel Sodermann, Deputy Director, Division 215: Cooperation with Asia and Oceania of BMBF were the other members of the delegation. The delegation was introduced to the scientists of CSIR-CGCRI who had been either DAAD Fellows or had been invited researchers to German laboratories. Mr K Dasgupta, Acting Director, CSIR-CGCRI presented a talk on the recent highlights of Institute's S&T activities. The visitors appreciated the wide range of research programmes being pursued at CSIR-CGCRI.

Mr Maximilian Metzger narrated the objective behind the visit of the delegation. He explained that the cooperation between India and Germany at political level has generated good ideas in recent times and that Germany considers India a very important partner outside Europe. He said that the cooperation in the field of science & technology has been a major component of discussion between the two countries. He sought inputs as to how the funding patterns of BMBF can be improved. Mr Sodermann sought to learn about the role and structure of the parent body CSIR. Mr Dasgupta gave a short description of CSIR's organizational structure and the role played by CSIR in the functioning of the constituent laboratories. The visitors were also briefed about the role played by ISTAD at CSIR Head Quarters in facilitating CSIR's overseas collaborations with other countries.

Both sides exchanged views and realized that mutual marketing of students was the need of the times. The meeting ended with major outcomes being identified as follows: Need for mobility in the DAAD programme, expansion of scope for revisits by the researcher under DAAD fellowships and room for token funds in the project outlays approved under the BMBF collaboration so that workshops and conferences can be staged.



The German delegation was visiting Kolkata to engage in a Multi-city Road Show, at the behest of the German Government to attract professionals engaged in India's academics and research domains, especially the students, to promising career opportunities in Germany.

## ICG Steering Committee Meeting

The Meeting of the International Commission on Glass Steering Committee was held on December 3, 2013 at the Institute in collaboration with International Commission on Glass, All India Glass Manufacturers Federation and the Indian Ceramics Society. The delegates agreed that modeling of glass melting and glass forming processes needed research intervention. Industry members highlighted research on thin and light glass in view of health and environmental concerns. Industry also showed keenness to strengthen ties with the Commission.



Steering Committee meeting of the International Commission on Glass under progress

## 48<sup>th</sup> Research Council Meeting

The newly constituted Research Council of CSIR-CGCRI met under the Chairmanship of Dr Srikumar Banerjee Homi Bhabha Chair Professor on January 10, 2014 and went through various agendas and progress of projects. The members appreciated the progress especially in the areas of solid oxide fuel cell, nanostructured materials, bioceramic implants and fibre optics etc. The RC also provided vital advice on certain budgetary and financial issues.

## WORKSHOP & SEMINARS

### International

#### Asia Pacific Meeting of Glass and Allied Industries

CSIR-CGCRI along with the All India Glass Manufacturer's Federation (AIGMF) and the Indian Ceramic Society (InCers) joined hands with the ICG-International Commission on Glass to organize the Asia Pacific Meeting of Glass and Allied Industries during 2-3 December 2013. The objective of the event was to boost the glass and allied industries in the Asia-Pacific region so that new directions for research and policy guidelines may be evolved. Mr C K Somany, Chairman, Hindusthan National Glass and Industries Ltd was the Chief Guest. Dr S Kumar Former Director, CSIR-CGCRI was the Guest of Honour.

Prof Peng Shou, President, ICG; Dr Fabiano Nicoletti, Honorary President, ICG; Dr Sener Oktik, Şişecam A.Ş.; Dr Manoj Choudhary, Owens Corning, USA and Vice President, ICG; Dr Arup K Chattopadhyay, President, InCerS; Dr H S Maiti, Former Director, CSIR-CGCRI and Prof I Manna, Director, IIT, Kanpur and Former Director, CSIR-CGCRI were the major personalities at the event. Mr P Kherurka, Vice Chairman, Borosil Glass Works Ltd, India; Mr C V Chalam, Tech Advisor, Ceasan Glass; Mr Swapan Guha, MD, Hopewell Tableware; Mr Sudipta Saha, Vice President, H R Johnson India; Mr Mukul Somany, Vice Chairman and MD, HNGIL; and Shri Arun Kumar, President, AGI GLASPAC were the major dignitaries from the glass industry. Acting Director, Mr Kamal Dasgupta warmly welcomed all delegates. He expressed appreciation of the roles played by the ICG, InCerS, industry, academia and scientific peers abroad in meeting goals of mutual interest.

Prof Peng Shou in his pithy address reiterated that India has a large number of glass industries and that it was important for ICG. Dr. Fabiano Nicoletti expressed happiness and recalled that the ICG's connection with India dated back to the nineteen eighties. He was delighted to see that after a brief

lull, the tie has been re-established. Dr Nicoletti added that the global changes will have a marked influence on the future of glass.

Dr Arup K Chattopadhyay expressed concern over the crunch in the energy production as it can significantly affect the energy intensive glass industry. He said that green energy technology could minimize the present gap in future. Guest of Honour, Dr S Kumar said that the last few decades had seen sharp increase in industrial activities in Asia-Pacific countries especially in China, Japan, and Korea. He discussed the problems specific to the glass and allied industries. He was confident that CSIR-CGCRI could contribute to ICG functioning through effective regional cooperation.

Speaking on the occasion, Mr C K Somany outlined the history of glassworks in India. He said, glass is popular because of its versatile applications. Transparent glass is revolutionizing modern architecture as it is eco-friendly and provides excellent packaging medium for food and pharmaceutical products. Mr Somany said that the glass industry has to be future-ready to cope with the challenges and opportunities.

There were four technical sessions in which 11 presentations were made by experts from industry and research. In addition there was a joint meeting in which ICG, AIGMF and the delegates interacted for increased regional cooperation. Besides these, there were business and plenary sessions also. In all, 108 participants attended the event. There were 22 participants from overseas. The overseas participants came from USA, Italy, Slovakia, Turkey, China, Japan, Indonesia, Thailand and Vietnam. The event received generous sponsorship from Henan Zhongyuan Special Refractory Co Ltd., China; Zhengzhou Huite Refractory Material Limited Company, China; Borosil Glass Works Ltd., Mumbai; H&R Johnson Ltd., Mumbai; La Opala RG Ltd., Kolkata; Hopewell Tableware Pvt. Ltd., Jaipur; Hindusthan National Glass and Industries Ltd., Kolkata; All India Glass Manufacturer's Federation, New Delhi and CSIR-CGCRI, Kolkata.

## UKIERI Sponsored Joint Research Projects

There were twin workshops staged with the financial assistance of United Kingdom India Education and Research Initiative (UKIERI).

### Structural Health Monitoring – Challenges and Solutions (March 3, 2014)

The collaborators of this project were Indian Institute of Technology-Bombay, Durham University and City University both from UK. Fibre optic sensors have been developed over three decades and are now increasingly being used by industry to monitor practical engineering structures.

This workshop outlined the challenges associated with the structural health monitoring of railway bridges in India followed by a couple of presentations showing how the UKIERI project has successfully addressed some of these challenges using fiber optic sensors. There were seven presentations by experts from India and UK. This included three experts from UK and two from India. The event concluded with a panel discussion.

### Radiation-Hard/Soft Optical Fiber Sensors for Nuclear and Medical Applications March 11, 2014)

This UKIERI funded project initiated in April 2013 is being led by CSIR-CGCRI and City University London. CSIR-CGCRI's emphasis is on the design and fabrication of specialty optical fibers and City University's emphasis lies in the utilization of expertise in creation of novel sensors.

The event dwelled primarily on the safety issues during continuous monitoring of temperature and other critical parameters in nuclear power



Professor Richard Scott of City University, UK, delivering his talk



plants and during monitoring of patients in radiation environment. The current status, specific requirements and possible enhancement of the radiation resistant sensors for harsh nuclear environment were also discussed. The event touched upon portable radiation dosimeters, essential aspects in ensuring safety to nuclear workers and the key challenges during monitoring of patients undergoing radiation therapy treatments.

There were eight presentations by experts from India and overseas. This included four experts from UK, the rest were from India. The event was concluded with a panel discussion.

### Internal

#### Information Security Education and Awareness (ISEA, March 24, 2014)

This was 1-Day workshop/training programme for the general staff of the Institute. The programme was conducted by NIELIT (formerly DOEAC), Jadavpur University campus, Jadavpur University, Kolkata. In all, 61 staff at the level of Technical and administrative ranks attended the programme.

### Institute Colloquium

CSIR-CGCRI initiated the Institute Colloquium Series from January 2014. The Colloquium is being held every month in which twin lectures follow: One lecture is delivered by a scientist at senior position and the other by a research entrant. The objective of the colloquium is to encourage the researchers especially those at the entrant levels. During the period, 3 twin lectures have been delivered by the staff. Many exciting results have been reported, shared and discussed during deliberations. The lectures delivered so far are as follows:

- Dr Manju Unnikrishnan, Senior Scientist, MCD – "Bringing scientific innovation to the society"
- Dr Shyamal K Bhadra, Chief Scientist – "Broadband supercontinuum light generation in non-linear microstructured fiber: Basic study, realisation of technology and commercialisation"
- Mr Jugal Kishore Das – "SAPO 34 zeolite membrane: A solution for clean energy production"
- Dr Somenath Roy, Senior Scientist – "Metal-oxide nanostructures for chemical sensors"
- Chirantan Dey, SRF – "Synthesis and characterization of luminescent ZnSe and CdS nanostructured glass-nanocomposites"
- Dr Arnab Mukherjee, Scientist – "Functionalized graphene: catalysis, drug delivery, CO<sub>2</sub> scrubbing and beyond"

### PEER RECOGNITION

#### MRSI Gold Medal

Dr Anoop Mukhopadhyay, Chief Scientist, Materials Characterization Section of Non-Oxide Ceramics Division received the MRSI Gold Medal for 2014 during the Annual General Meeting of MRSI held during February 12-14, 2014 in Bangalore.

#### Best Industry Oriented Research Work

Dr Debdulal Saha and Amamath Sen, Sensors and Actuators Division have been awarded the First Prize for their paper entitled 'Fullerene derived nanoporous gamma-alumina thick film humidity sensors' through R.



Dr Debdulal Saha receiving the First Prize

Chandrashekhar Memorial Foundation at the 18<sup>th</sup> National Seminar on Physics and Technology of Sensors organized by Department of Physics & Electronic Science held during March 6-8, 2014 at Tuljaram Chaturchand College, Baramati, Pune

#### IEI Young Engineers Award 2013-2014

Mr Mitun Das, Bioceramics & Coatings Division received the award in the Metallurgical and Materials Engineering discipline at the Inaugural Session of the 27<sup>th</sup> National Convention of Metallurgical and Materials Engineers held on February 6, 2014 at The Institution of Engineers (India), Karnataka State Centre, Bangalore.



Mr Mitun Das receiving the award

#### Best Poster Award

Jony Saha and Goutam De received the award for their poster entitled "Highly ordered cubic mesoporous SiO<sub>2</sub> nanofibers by the electrospinning technique" in International Union of Materials Research Societies-International Conference in Asia-2013 (IUMRS-ICA-2013) held during December 16-20, 2013 at Indian Institute of Science, Bangalore.

#### RSC-Nanoscale Poster Award

Anuradha Mitra, Jony Saha and Goutam De received the award for their poster entitled "3D Mesoporous Alumina-Ceria Films with Tuned Pore Architectures" in International Conference on Nano Science and Technology 2014 (CONSAT-2014) organized by INST Mohali, during March 2-5, 2014 at Punjab University in Chandigarh, India.

#### Global Star

Dr L K Sharma, Head, CSIR-CGCRI, Khurja Outreach, received the prestigious award from the American Ceramic Society on January 26, 2014 at its International Conference on Advanced Ceramics & Composites in recognition and appreciation of his contributions to regional cooperation.



Dr L K Sharma, Head, CSIR-CGCRI, Khurja Outreach, receiving the prestigious award from the American Ceramic Society

### Technology News

#### Technology Agreements

##### Agreement for License for Know-how for the Manufacture of Low Sodium Content Glass Beads (SiBNa-9.5)

On February 17, 2014 CSIR-CGCRI signed an agreement with HR Johnson (India), Mumbai, to license the knowhow for the Manufacture of SiBNa-9.5.



Under this agreement, the Institute will place an order for supply of 3 tonnes of the product as demonstration production to HRJ within a period of sixty days of the signing of the agreement. The Institute will also hand over the documents of technology transfer to HR Johnson (India).

## Agreement on Grant of Permission for Manufacturing of Glass Beads/ Nodules

CSIR-CGCRI has signed an agreement on February 27, 2014 with IFGL Refractories Ltd, Sundargarh, Odisha to grant permission for manufacturing of glass beads/ nodules for encapsulation of nuclear wastes. The permission has been granted to make the product on the basis of CSIR-CGCRI knowhow for a period of three years on non-exclusive basis from the date of the signing of agreement subject to successful completion of initial trials.

## Agreement for Technology Marketing

CSIR-CGCRI has signed an agreement with CSIR Tech Pvt Limited (CTPL), Pune, on January 7, 2014 for transfer of inventions, formulations, knowhow/processes developed by the Institute which can be transferred to industry for utilization. Under this agreement, CSIR-CGCRI shall provide CTPL access to technology capabilities and intellectual property available with Institute so that CTPL can assess and evaluate the same for suitability for marketing. CTPL shall survey and mine the technology of CSIR-CGCRI with a view to identifying those that can be translated into products and services of value. At the behest of CSIR-CGCRI, CTPL will pursue discussions with potential clients/licensee.

## Technology Orientation

### First Orientation Programme on Technology for General Managers, Directors and Joint Directors of District Industries Centres

The MSME Technology Facilitation Centre at CSIR-CGCRI organized the first orientation programme on technology for General Managers, Directors and Joint Directors of the District Industries Centres at the Atma Ram Committee Room on March 12, 2014. The day-long programme was intended to orient the officers on the MSME Technology Facilitation Centre initiative and to make them conversant with CSIR and its technologies.

Dr Sudeep Kumar, the Head of Planning at CSIR Headquarters appeared over video to address the participants. Dr Kumar elaborated on CSIR's portfolio of technologies that were available for use by the MSMEs of West Bengal. The participants were also briefed about the overall structure of the upcoming portal of the Technology Facilitation Centre. The theoretical sessions were followed by technology demonstration through visits to identified laboratories. Technologies on water, traditional ceramics and refractories were demonstrated.

## Lectures

### Science Day

Every year February 28 is celebrated as National Science Day in India to commemorate the discovery of the Raman Effect by the Indian physicist, Sir C V Raman. On this occasion, Prof Dipankar Chakraborty, INSA Professor, delivered a lecture entitled "Nanotechnology: Gateway to New Materials



Prof Dipankar Chakraborty delivering his lecture

Development" in CSIR-CGCRI. The speaker spanned the gamut from the historical perspectives of nanocrystalline materials to modern breakthroughs. He highlighted significant results obtained by his group in the areas of nanointerfaces in glass-metal nanocomposites, graphene PVS nanocomposites, lithia-silica nano glass grown within metal oxide rods, composite of Fe-containing nanosilica glass and mesoporous silica etc.

## Women's Day

International Women's Day was celebrated on March 10, 2014. Dr Sanghamitra Bandyopadhyay, Professor of Computer Science, Indian Statistical Institute, Kolkata, delivered a talk entitled "Change Tomorrow's History: Empower Women Today" in the APC Roy Seminar Hall on this occasion.



Dr Sanghamitra Bandyopadhyay delivering Women's Day lecture

## Others

**December 13, 2013:** Dr D Ramaiah, Director, CSIR-North East Institute of Science and Technology, Jorhat delivered a lecture on "Functional organic systems as molecular probes and PDT agents" at CSIR-CGCRI.



Dr D Ramaiah, Director, CSIR-NEIST, Jorhat delivering lecture

**March 21, 2014:** Mr Anubhav Jain, Director, Samics Research Materials Pvt. Ltd, UP delivered a lecture on "Ultra-high purity grade ceramic powders: Issues in production and applications" at CSIR-CGCRI

**January 29, 2014:** Prof Philip Earis, Managing Editor, RSC, Thomas Graham House, Science Park, Cambridge, UK, delivered a lecture on "RSC Publishing and India: Editor's advice on writing high-impact papers" at CSIR-CGCRI.

**February 20, 2014:** Dr Shikhar Jha, University of Colorado, USA, delivered a lecture on "Flash Sintering" at CSIR-CGCRI.

## Forthcoming Events

- Training Programme on Physico- Chemical Analysis of Ceramic Raw Materials from April 21-25, 2014 (Two & Half days for Training on Chemical Analysis/Testing and Two & Half days for Physical Analysis/Testing) CSIR-CGCRI, Naroda, Gujarat.
- Summer Internship Programme for Engineering (3<sup>rd</sup>/4<sup>th</sup> year BE/BTech, 1<sup>st</sup>/2<sup>nd</sup> year ME/MTech and 2<sup>nd</sup> Year MSc) students from May 15- July 14, 2014. (Dates tentative)
- International Workshop on Near Net Shape Manufacturing of Precision Engineering Components (NNMSW 2014); June 5-6 2014 at CSIR-CGCRI