



# CSIR - CGCRI

## NEWS LETTER



Volume 4 | No. 2

August – November, 2013

### TECHNOLOGY NEWS

#### Supercontinuum Light Source Inaugurated

India's first Supercontinuum light source designed and developed from an industry project under CSIR's New Millennium Indian Technology Leadership Initiatives jointly executed by CSIR-CGCRI, Kolkata and Vinvish Technologies, Thiruvananthapuram was inaugurated by Mr. S Jaipal Reddy, Hon'ble Minister for Science Technology and Earth Sciences on the occasion of the 71<sup>st</sup> CSIR Foundation Day Celebration on 26<sup>th</sup> September 2013 at the new campus of CSIR-IGIB at Mathura Road, New Delhi.



*Hon'ble Union Minister (Seated) releasing the product brochure along with other dignitaries*

CSIR-CGCRI has contributed the Photonic Crystal Fiber (PCF) medium for the development of commercial grade SC source by Vinvish Technologies. During Supercontinuum light generation, an intense laser pulse is passed through PCF medium that generates white light of stabilized high output power. The said Supercontinuum light source covers a broad wavelength range of 40 to 220nm and emits white light spectrum of 1.5W average power.

#### CSIR to set up Technology Facilitation Centre in West Bengal

CSIR is going to install a technology facilitation centre to revitalize the micro, small and medium enterprises in West Bengal. On September 16, 2013, the inaugural session of Synergy MSME-2013 witnessed exchange of a MoU on the subject. Prof Samir K Brahmachari, Director General, CSIR and Secretary, DSIR, Government of India who was felicitated on the occasion with a memento by Ms Mamata Banerjee, Hon'ble Chief Minister of West Bengal, exchanged documents of MoU with Mr Rajiva Sharma, IAS, Principal Secretary, Department of Micro and Small Scale Enterprises & Textiles (MSSE&T), Government of West Bengal.

Synergy MSME-2013 was organized by MSSE&T to invigorate the grass root industries in the state. Mr Kamal Dasgupta, Acting Director, CSIR-CGCRI accompanied DG, CSIR on the podium where a large number of dignitaries and officials were present.



*Prof S K Brahmachari exchanging MoU documents with Mr Rajiva Sinha in presence of Chief Minister Ms Mamata Banerjee, Finance Minister Dr Amit Mira and others*

A number of state government departments set up pavilions in a clinic mode to display their products and processes in the conclave. CSIR-CGCRI played the lead role in the setting up of the CSIR pavilion on behalf of a chain of CSIR laboratories. These laboratories were CSIR-CIMAP, CSIR-IHBT, CSIR-NBRI, CSIR-CRRI, CSIR-CEERI, CSIR-NML, CSIR-IICT, CSIR-NEERI, CSIR-CMERI, CSIR-CIMFR, CSIR-CLRI, CSIR-IMMT and CSIR-IICB which projected their low cost innovations. CSIR-CGCRI projected its terracotta, tiles, sanitaryware, crockery, water purification and affordable healthcare technologies with a view to attract industry from the rural sector.

### SEMINAR/CONFERENCE/WORKSHOPS

#### International

#### International Conference on Membranes and Applications(ICMA-2013; November 22-23, 2013)

Co-branded by the European Business and Technology Centre the Conference deliberated on how membrane-based technologies could lead to the clean energy and green environment for the future. The Chief Guest at the event was Hon'ble Shri Rachhpal Singh, IPS and Minister in Charge, Dept of Planning, Govt. of West Bengal. Dr Pushpito K Ghosh, Director CSIR- CSMCRI, Bhavnagar was the Guest of Honour.

Mr Kamal Dasgupta retraced the evolution of membrane research in the Institute and narrated the salient breakthroughs in his welcome address. The Chief Guest Mr Rachpal Singh hailed the efforts of CSIR-CGCRI in the societal context. Dr Pushpito K Ghosh, in his address, recollected the discovery of osmosis in 1758 by Jean-Antoine Nollet in France who used animal bladder to demonstrate the osmosis process. He also touched upon an Indian connection to the developments in the applications of the reverse



osmosis phenomenon and narrated that in the late fifties Srinivasa Sourirajan along with Samuel Yuster and Sidney Loeb had successfully made a functional synthetic reverse osmosis membrane from cellulose acetate polymer which could desalinate water. Dr Ghosh said that recently in Odisha, membrane technology juxtaposed with mobile van technology provided safe potable water in areas inundated by the deadly Phailin. Dr S N Roy, Co-chairman, ICMA 2013 hoped that ICMA would become a regular event of Institute because of enormous potential of ceramic membrane.



A snap after lighting of lamp ceremony, Chief Guest is seen 3<sup>rd</sup> from Left

During technical sessions, Dr Hannes Richter, Fraunhofer Institute for Ceramic Technologies and Systems, Germany gave the Keynote address on Ceramic membranes for separation at molecular level. His colleague, Dr Richter referred to developments in ceramic nano-filtration membrane suitable for textile effluents treatment. Dr Giuseppe Barbieri, Institute of Membrane Technology, Italy delivered the Plenary lecture and said that the new opportunities offered by membrane reactors in pure hydrogen production have improved hydrogen production cycles which could be utilized by the chemical and petro-chemical industries.

There were 14 Invited lectures by Indian and overseas participants. Besides host CSIR-CGCRI, scientists from CSIR-ICT and CSIR-NIIST also gave invited talks. There were overseas delegates from Belgium, Germany, Italy, Sweden, USA and Tunisia.

## National

### Advances in Refractory Raw Materials and Monolithics (ARMM-2013; November 12-13, 2013)

The Two-Day Seminar was jointly organized with Kerneos Aluminate Technologies (formerly Lafarge Aluminates), a world leader in Calcium Aluminate Technologies. The importance of the Seminar stemmed from the demand for refractories which depend greatly upon the growth of metallurgy sector. About 70% of the refractory produced in India is consumed by steel and iron industries followed by the non-ferrous sector. However, scanty availability of suitable quality raw materials in the country compels, the refractory makers to import pure quality raw materials. On the face of it, the gainful utilization of indigenous refractory leads to serious problems. There were five technical sessions out of which two focussed on raw materials problems for refractory industry and three dealt on the refractory castables. Renowned delegates from both research and industry projected the critical issues and the remedial results.

Mr Kamal Dasgupta extended a warm welcome address to the delegates. Dr P K Mohapatra, Director (Projects) of Vizag Steel Plant inaugurated the seminar as the Chief Guest while Dr Arup K Chattopadhyaya, MD, TRL Krosaki Refractories Limited and Mr Segi P Idicula, MD, Kerneos delivered their addresses at the inaugural function. The key note address was delivered by Mr Christop Woehrmeyer, Technical Director Refractories of Kerneos SA, France in the inaugural session.

In all 17 technical talks and five posters were presented. About 128 participants took part in the programme. The climax of the event was a panel discussion. The panelists recommended that major Indian refractory raw materials such as magnesite and bauxite needed upgradation to curtail imports. Development of newer aggregates like  $ZrO_2$ -SiC and  $ZrB_2$  were also necessary for advanced applications, panelists concluded. Besides support from the collaborators, the programme received financial assistance from several business houses in publicity modes.



Chief Guest Dr P K Mohapatra (2<sup>nd</sup> from left) displaying ARMM Brochure along with other dignitaries

## Internal

### The Research Scholars Day: II<sup>nd</sup> Annual Workshop (August 20, 2012)

The Chief Guest at inaugural Session of the workshop was Dr Siddhartha Roy, Director CSIR-Institute of Chemical Biology, Kolkata. Unlike last year, the posters were categorized not in terms of Divisional nomenclature but in terms of functional areas like Advanced and Functional Glasses and Coatings, Advanced and Functional Ceramics, Advanced Engineering Structural Ceramics respectively, as there was a large number of new entrants. A total of 120 participants took part in the programme. Out of these 16 students who had completed 3 years of research tenure were allowed to make oral presentations while 32 students who had completed just one year presented posters. The rest only participated in the workshop.

The workshop concluded after Panel Discussion and Vote of Thanks. Four eminent academicians from in and around the city were invited to judge the work of students. The judges expressed their satisfaction over research carried out by students in various high-tech R&D areas. The winners were awarded in both poster and oral categories on CSIR-CGCRI Foundation Day. The abstracts of presentations were published in a book of abstracts



Chief Guest Dr Siddhartha Roy releasing the Abstract Book

## 10<sup>TH</sup> ATMA RAM MEMORIAL LECTURE

This prestigious lecture was delivered at the 64<sup>th</sup> CSIR-CGCRI Foundation Day on August 26, 2013 by Dr Srikumar Banerjee, currently Homi Bhabha Professor, DAE and Chairman, Research Council of CSIR-CGCRI. The title of his lecture was 'Science and Inclusive Development'. Prof Indranil Manna, Former Director, CSIR-CGCRI and presently Director, IIT-Kanpur chaired the lecture session. The speaker hailed India's success stories in agriculture, dairy & its products and strategic sectors which earned the country respect and honour. He reiterated that although a lot of good work has been done by scientists in the industrial sector but time has now come when scientists should work hard to address the daily concerns of the common man. The world has become increasingly complex. The visibility of research should not be merely judged by measures of publications and laurels. He repeatedly quoted reformers like Tagore, Gandhi, Einstein and Shakespeare to impress upon the ethical dimensions of science & technology. Dr Banerjee's brilliant lecture was well received by the audience. Mr Kamal Dasgupta spoke on life and work of Dr Atmaram while Prof Indranil Manna encouraged the young researchers to draw inspiration from the patriotic spirit of Dr Atmaram's personality who led CSIR-CGCRI from its infancy to world class stature.



Mr Kamal Dasgupta presenting a plaque to the speaker, Prof I Manna is seen on the right

## PEER RECOGNITION

### Professional Awards

- 1) Dr R N Basu, Chief Scientist and Head Fuel Cell Battery Division:
  - (i) Inducted as one of the Associate Editors of the Editorial Board of Bulletin of Materials Science, Bangalore
  - (ii) Elected as Fellow of the Institution of Engineers with effect from October 31, 2013
  - (iii) Acted as one of the judges of an esteemed panel of a maiden inter-school Science Project Competition for the senior students organized in Kolkata by Times Newspapers in Education (NIE) in association with the University of Engineering and Management, Jaipur and Institute of Engineering and Management, Kolkata on September 30, 2013 at South City International School Auditorium
- 2) Dr P Sujatha Devi, Principal Scientist, Nanostructured Materials Division, elected as Member of the 2<sup>nd</sup> Executive Council of Society for Materials Chemistry, BARC, Mumbai from 2013-16
- 3) Dr Anoop Mukhopadhyay, Chief Scientist, Materials Characterization Section of Non-Oxide Ceramics Division selected to receive Materials Research Society of India (MRSI) Medal for 2014. The Medal will be presented during the Annual General Meeting of MRSI to be held during February 12-14, 2014 in Bangalore.
- 4) Dr Goutam De, Chief Scientist & Head, Nano-Structured Materials Division
  - (i) Nominated for the National Research Award in Nano Science and Technology for the year 2014. The award ceremony will be held during March 3-5, 2014 in the International Conference on Nano Science & Technology (ICONSAT) 2014 at the Institute of Nano Science and Technology (INST), Mohali.
  - (ii) Selected for the 'MRSI-ICSC Superconductivity & Materials Science Annual Prize' for the year 2014. The award will be presented during February 12-14, 2014 at the Annual General Meeting of MRSI to be held at Bangalore.

### Poster Awards

- 1) Sourav Ghosh and Milan Kanti Naskar awarded the First position for best poster entitled 'A novel sol-gel synthesis of mesoporous alumina nanorods and nanofibres' at the 3<sup>rd</sup> International Conference on High-Tech Aluminas and Unfolding their Business Prospects (Aluminas-2013) held during March 7-9, 2013
- 2) M Bhattacharya, A Dey, R Chakraborty, A K Mandal, S Bysakh, and A K Mukhopadhyay were awarded second position for their poster entitled 'Grain and grain boundary nanohardness of alumina' at the 3<sup>rd</sup> International Conference on High-Tech Aluminas and Unfolding their Business Prospects (Aluminas-2013) held during March 7-9, 2013
- 3) A Ghosh & H S Tripathi were awarded best poster paper entitled 'Densification and properties of Almora magnesite in presence of additive' at the National Seminar on 'Advances in Refractory Raw Materials and Monolithics' held during 12-13 November, 2013

- 4) Priyankari Bhattacharya, Subhendu Sarkar, Sourja Ghosh, Swachchha Majumdar were awarded 3<sup>rd</sup> prize for poster entitled 'Sequestration of Carbon Dioxide through Micro-Algal route utilizing Domestic Wastewater: Ceramic Membrane based Approach' at the ICMA held during November 22-23, 2013.

## Students Day Awards

### Group-I: Advanced and Functional Glasses and Coatings:

- 1) Shri Mrinmay Garai, Glass Division (Poster and Oral) at 2<sup>nd</sup> Annual Workshop on Research Scholars Day 2013

### Group-II: Advanced and Functional Ceramics

- 2) Shri Sourav Ghosh, Sol-Gel Division (Poster) at 2<sup>nd</sup> Annual Workshop on Research Scholars Day 2013
- 3) Shri Kaushik Bhowmik, Nano-Structured Materials Division (Poster) at 2<sup>nd</sup> Annual Workshop on Research Scholars Day 2013

### Group-III: Advanced Engineering and Structural Ceramics

- 4) Ms Manjima Bhattacharya, Materials Characterization Division (Poster) at 2<sup>nd</sup> Annual Workshop on Research Scholars Day 2013

### Group-IV: Advanced and Functional Glasses and Coatings

- 5) Ms Maitreyee Saha, Fibre Optics and Photonics Division (Oral) at 2<sup>nd</sup> Annual Workshop on Research Scholars Day 2013

### Group-V: Advanced and Functional Ceramics

- 6) Ms Sudipta Goswami, Nano-Structured Materials Division (Oral) at 2<sup>nd</sup> Annual Workshop on Research Scholars Day 2013

### Group-VI: Advanced Engineering and Structural Ceramics

- 7) Ms Riya Chakraborty, Materials Characterization Division (Oral) at 2<sup>nd</sup> Annual Workshop on Research Scholars Day 2013

## Innovation Awards

### 1 Best Paper

- (a) Glass/Ceramics:
 

Kartick P Dey, Debtoosh Kundu, Minati Chatterjee and Milan K Naskar, 'Preparation of NaA Zeolite Membrane Using Poly (Ethyleneimine) as Buffer Layer, and Study of their Permeation Behaviour', J. Am. Ceram. Soc., 96 (2013), 68-72.
- (b) Materials Science and others:
  - (i) Jugal Kishore Das, Nandini Das and Sibdas Bandopadhyay, 'Highly oriented improved SAPO 34 membrane on low cost support for hydrogen gas separation', J. Mater. Chem. A, 1 (2013) 4966-4973.
  - (ii) Tuhin Maity, Sudipta Goswami, Dipten Bhattacharya and Saibal Roy, 'Superspin Glass Mediated Giant Spontaneous Exchange Bias in a Nanocomposite of BiFeO<sub>3</sub>-Bi<sub>2</sub>Fe<sub>4</sub>O<sub>9</sub>', Phys. Rev. Lett. 110 (10), 107201 (2013).

### 2 Best Technology: Joint winners

- (i) "Manufacture of Glass Lining Material Technology" transferred to
  - (a) Standard Glass, Hyderabad, (b) Advanced Expertise Technology, Mumbai, (c) Anticorrosive Equipments, Mumbai
- (ii) "Manufacture of Glass Beads" transferred to H. R. Johnson

### 3 Best Project

'Novel nano Plant Nutrition Supplement', sponsored by Nagarjuna Fertilizers

### 4 Best supporting section: Joint winners

Electrical section and Vigilance section

### 5 Best Employee

Bodhiswatta Dhar, Purchase Section

## CSIR FOUNDATION DAY CELEBRATED

### 71<sup>st</sup> CSIR Foundation Day

The 71<sup>st</sup> CSIR Foundation Day was celebrated at CSIR-CGCRI on September 26, 2013. The Chief Guest was Mr Sekhar Basu, Director, BARC, Mumbai, Dr H S Maiti, Former Director, CSIR-CGCRI was Guest of Honour. Acting Director, Mr K Dasgupta welcomed the guests. Dr D K Srivastava, Director, VECC also addressed the audience. Dr Maiti recalled



his tenure as Director and the programmes and initiatives which were taken up by him to realign the Institute with national priorities.

Mr Sekhar Basu delivered the Foundation Day Lecture entitled "Non-power Applications of Nuclear Energy". Mr Basu informed that although BARC provided R&D support to the Indian Nuclear Power programme it was also actively involved in the use of nuclear energy in non-strategic sectors such as crop improvement, food preservation, diagnostics and therapy, water, environmental issues, radiography, radiotracer and nucleonic gauge, electricity, and fluid fuel substitute. He proudly spoke about the Bhabhatron: India's indigenous telecobalt machine and expressed satisfaction that VECC, Thakurpukur (Kolkata) has medical cyclotron facility.

He explained how Scandium 46 radiotracers were used at Kolkata Port for sediment transport investigations which led to identification of dredged sediments disposal sites. He added that an environment-friendly biogas plant has been set up in Tihar jail, New Delhi to convert kitchen waste to methane. He also spoke about BARC's contributions to the Large Hadron Collider and the search for the God particle. The lecture was informative and he concluded with the hope that the BARC-CSIR-CGCRI partnership would continue to flourish.

The Chief Guest along with Dr Maiti and Mr Dasgupta also distributed the prizes and mementoes to 27 retirees and 12 staff members who completed 25 years of service. Prizes were also given to the wards of staff members who emerged winners in cultural events. Cash awards were given to a couple of wards for excellence in sports and academics.



Chief Guest Mr Sekhar Basu being greeted by Mr Kamal Dasgupta.  
Guest of Honour Dr H S Maiti is seen on left

## IMPORTANT MEETING

### Kickoff Meeting

The Kickoff meeting of AGATHA-Advanced Grating for Thin Films Solar Cell, a collaborative project between Department of Science & Technology New Delhi and European Union, Brussels under FP7 Collaborative Programme was held during September 19-20, 2013 at the Institute. Dr Etienne Quesnel, CEA LITEN, France is the co-ordinator of the project from European side while Dr D Sanyal, Chief Scientist, CSIR-CGCRI is the Indian counterpart.



European team with Indian counterparts

## SOCIETAL SERVICES

### Common Facility Centre

A Common Facility Centre has been established under technical guidance of Khurja Outreach to minimize dependence of poor and dependent potters on independent potters in Khurja region under a consultancy project sponsored by the Ministry of Micro Small Medium Enterprises, New Delhi and the Ministry of Industry, Govt of UP. The facility was inaugurated by Mr B S Gangwar, Hon'ble Minister for Small Scale Industry and Export Promotion, Govt of UP on 30<sup>th</sup> September, 2013.

### Handing over of Water Purification Plant

Residents of Puratan Bazar in the Hasnabad locality under Taki Municipality of the North 24 Parganas district of West Bengal can now look forward to safe potable as a water purification plant of 30000 LPD capacity implemented jointly by the CSIR-CGCRI and CSIR-CS&MRI, has been handed over to the office of Municipal Councilor of Taki on August 27, 2013 by Director, CSIR-CGCRI after it successfully ran for six consecutive months.

Besides local bodies of Taki Municipality, the other player in the collaboration was the Public Health Engineering Department, Hasnabad Subdivision, Govt of West Bengal. The work demonstrated the utility of the combination of CSIR-CGCRI's ceramic MF membrane and CSIR-CS&MRI's polymeric RO membrane based systems without chemical treatment. This was the novelty of the implementation.



Hon'ble Minister Mr. B B Gangwar (in the middle) at the Common Facility Centre

## FACILITY

### Revamped Power Station

Prof Samir K Brahmachari, Director General, CSIR inaugurated the renovated 11KV Electrical Sub-station at CSIR-CGCRI on September 14, 2013. The system is being managed by Electrical Section of the Engineering Division of the Institute.



Prof S K Brahmachari inaugurating Electrical Sub station

## FORTHCOMING EVENT

Asia-Pacific Meeting of Glass and Allied Industries & ICG  
Steering Committee Meeting, December 2-3, 2013