



CSIR - CGCRI

NEWS LETTER

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OBITUARY

Dr D Basu Passes Away



Dr. D Basu

Dr Debabrata Basu, Head, Bioceramics & Coating Division passed away on May 10, 2012. He was chief architect behind formation and growth of Bioceramics Division in CSIR-CGCRI. In his death, the Institute lost a scientist who despite ill health steered the various projects with relentless devotion and dedication. He pioneered the development of technology for bioceramic implants many of which could be successfully translated into products through health care industry. He will be remembered for vision, honesty and gentle disposition.

Prof Samir K Brahmachari, DG, CSIR and Secretary, DSIR in his message of condolence considered Dr Basu's death as a great loss to the CSIR. He is survived by his wife and daughter.

TECHNOLOGY NEWS

Agreement for Licensing of Knowhow for Manufacturing of Ceramic Coating for Heater Plugs

Glow plugs are used to heat the combustion chambers of various engines in cold conditions to help ignition at cold start. These are made of



Prof I Manna shaking hands with representative of Zenith Industries after signing of agreement

SS-303 material over which a heater coil is attached for quick heating using ~14-16 Amp electric current which causes oxidation of the base metal. In the absence of a coating, the heating may cause short circuit. Presently mica insulation is being used which is far from satisfactory.

To overcome the problem, CSIR-CGCRI has developed a suitable high temperature resistant impervious coating that prevents oxidation of base alloy and provides insulation to the coil. The Institute signed the agreement on May 11, 2012, the Technology Day of the nation with the Zenith Industries, Roorkee, Uttar Khand.

Technology Licence Agreement for Glass Beads

CSIR-CGCRI had signed a Non-Disclosure agreement with H R Johnson, Mumbai for utilizing the knowhow for manufacture and supply of glass beaded nodules to DAE for immobilization of nuclear wastes. The present agreement was signed with H R Johnson, Mumbai on May 11, 2012 as a follow up of the previous agreement.

Agreement for Licensing of Know-how for the Manufacture of Glass Lining Materials for Chemical Process Equipment/Reactor

CSIR-CGCRI has developed a suitable composition for glass lining coating material and a process of application of the same on metallic substrates. Glass lining is a corrosion resistant coating used in chemical and food processing reactors or equipment to enhance product quality and



Dr S Datta, Head, Bioceramics & Coating Division exchanging documents with his counterpart after signing of agreement

service life of the reactors by prevention of chemical corrosion. A special type of impervious glassy coating was developed for application on metallic reactors or equipment by conventional vitreous enameling technique. On June 29, 2012. The agreement was signed by CSIR-CGCRI with the Standard Glass Lined Equipments Pvt Ltd, Hyderabad.

Decorative Roofing Tiles for Murlu Cluster Bankura

CSIR-CGCRI has received a letter of acknowledgment from Secretary Murlu Clay Tiles Cluster Industrial Co-operative Society Ltd, Bankura for successful implementation of decorative roofing tiles technology. The suggested formulation of locally available clay blended with fly ash curtailed the fuel consumption by 10% in view of 40% reduction in the product weight. Proposals for Common Facility Centre at Murlu Tiles and Matigara Crockery Clusters have been submitted to the Ministry of Micro Small & Medium Enterprises, New Delhi through the Ministry of & Small Scale Enterprises, Govt of West Bengal wherein CSIR-CGCRI would act as a facilitator.

WORKSHOP & SEMINARS

International

3rd EICOON School on Science & Technology of Renewable & Clean Energy Sources (April 30 – May 1, 2012) and Workshop on Nano Materials in Solar Energy Applications (May 3-4, 2012)

The energy crisis over globe can be addressed effectively by international intervention. There is increased interest now in the sustainable renewable and clean energy sources. In the ambience of such realization, the twin events were held on an Indo-Euro Energy Forum at Hotel ITC Sonar in collaboration with the Satyendra Nath Bose National Centre for Basic Sciences, Kolkata. While the School was inaugurated by Chief Guest Prof K L Chopra, Former Director IIT, Kharagpur, Prof Ajoy K Roy, Vice-Chancellor, BESU, Shibpur inaugurated the workshop that followed close on heels. A large number of representatives from both India and overseas joined hands in the programme. The School in particular received excellent response and the issues discussed were: Material Synthesis and Component Development, Material Characterization Techniques, Device Fabrication and Testing, Application Prototype Development and System Integration



Participants of 3rd EICOON School with the speakers

and CSIR-MNRE Projects under TAPSUN Initiatives. The Workshop deliberated on Solar photovoltaic: Theory and Fundamentals, Material development and Device Fabrication, Organic Solar Cell/Dye-Sensitized Solar Cells, Solar Thermal Green Buildings and Solar Thermal and PV Plant Design themes. Both the events were concluded with Panel Discussions in which eminent speakers deliberated on the issues of alternative energy that are efficiently convertible to other energy forms and can be stored in devices.

National

Technology Vision-2035 (July 26, 2012)

The 1-Day workshop was held in collaboration with Technology Information, Forecasting & Assessment Council (TIFAC), an autonomous

body under DST, New Delhi. Glass & Ceramics have been identified as constituent materials for Materials & Manufacturing Technologies, one of the thematic areas identified by TIFAC for preparation of a roadmap document to provide R&D direction for next 25 years in the country. The Workshop was inaugurated by Prof Srikumar Banerjee, Homi Bhabha Professor, DAE. Different speakers placed variant perspectives on directions needed in the concerned area. However, raw materials identification received top priority.



Chief Guest Prof Srikumar Banerjee addressing during inaugural session

The technology revival for bauxite and dolomite refractories was also urged and research on the cost effective ceramic membranes, nanopowders in membrane fabrication and membrane reactors for hydrogen separation was emphasized. A panel discussion highlighted the need for structured presentation of the ideas delivered by the participants and felt that this could be comprehended if the participants were given questionnaires to formally express their views which will act as inputs for preparation of vision document. Dr G Goswami, Director, TIFAC-DST as one of the panelists agreed to implement the suggestion.



Panel discussion under progress

Inhouse

Annual Workshop of Research Students (July 18, 2012)

In a maiden attempt, the Institute organized an inhouse Workshop to project the research work of students engaged in various R & D projects. The topics were divided into four thematic areas of glass & ceramics and each participant was allotted 10 minutes stint to project work. A team of 4 judges from outside academic and research Institutions judged 76 presentations



A research student making presentation

which comprised of 33 orals and 43 posters of high quality research carried out by students. The students who had completed 2 years tenure were categorized for orals while the others were placed to make poster presentations. In a splendid show, the students could finish in scheduled time a long slew of 76 presentations which proved the motivation and discipline of young researchers.



Prof Manoj Mitra at a stall as one of the judges during poster session

PEER RECOGNITION

Professional Awards

Prof Indranil Manna, Director, CSIR-CGCRI selected for J.C. Bose Fellowship towards his outstanding performance and contribution to Science.

Prof Amit Bandyopadhyay, Scientist H (STIO), CSIR-CGCRI and Professor, School of Mechanical and Materials Engineering, Washington State University, Pullman, USA elected FELLOW of ASM International.

Invited Talk

Dr Jui Chakraborty, Scientist, Bioceramics & Coating Division delivered an invited lecture entitled *"The new age glass and ceramic materials in health: Our new hopes"* at National Conference on Materials Science: Application on Energy and Environment held during March 2-3, 2012 at Department of Physics and Chemistry, DAV College, Jalandhar, Punjab

Poster Award

Somoshree Sengupta, Jui Chakraborty, Manjusha Chakraborty, Renu Kapoor, S Pavana Gouri, Gopal Pande, Swapankumar Ghosh, Debabrata Basu and Someswar Datta received the second best poster award for the poster entitled 'Gradient multifunctional coating of phosphate-free bioactive glass on SS316L biomedical implant materials for rapid regeneration of bone-tissue' at National Conference on Materials Science: Application in Energy and Environment held during March 2-3, 2012 at DAV College, Jalandhar, Punjab.

Overseas Nomination

Dr R N Basu, Chief Scientist & Head, Fuel Cell & Battery Division delivered an Invited Talk entitled 'Processing of SOFC Components' and chaired a Technical Session in the 4th International Ceramic Congress (ICC4) held during July 15-19, 2012 at Chicago, USA.

OVERSEAS PROJECTS

Advancing Biogas Utilization through Fuel Flexible SOFC

This is also a new collaborative project between CSIR-CGCRI and Jjs Irvine University of St. Andrews, UK taken up through DST, New Delhi (Contract Value: Rs 114 Lakhs and Duration: 3 years)

Development of Apatite and Clay based Ceramic Membranes over Low Cost Clay-Alumina for Drinking and Wastewater Treatment

This is another new collaborative project between CSIR-CGCRI and Faculty Science of Sfax, Lab of Materials Sciences and Environment, University of Sfax, Tunasia taken up through DST, New Delhi (Contract Value: Rs 6.99 Lakhs and Duration: 3 years)

Structure of Gradient Nanocomposites: Interaction of Bioactive Glasses with Nanoparticles and Polymers (MoreBAGS)

This is another new collaborative project between CSIR-CGCRI and Biomaterials Research Program, University of Turku, Finland taken up under DST, New Delhi and Academy of Finland Joint programme (Contract Value: Rs 41.23 Lakhs and Duration: 3 years)

VISITORS

26.5.12 : Dr C Ganguly, Former Director, CSIR-CGCRI and currently President, CAMEO India, Hyderabad delivered a talk on *"Challenges of Ceramic Nuclear Fuel Cycle to Meet Fuel Demand of Expanding Nuclear Power Program in India"*

28.6.12 : Dr. Dipankar Mandal, Asst Prof. of Physics, Jadavpur University, Kolkata, *"Polyvinylidene Fluoride: A Promising Materials to Use as Energy Harvesting Device and Non-volatile Memory"*

25.7.12: Prof Vikram Jayaram, Department of Materials Engineering, IISc, Bangalore delivered a talk on *"Probing Mechanical Properties in Nitride Hard Coatings at Small Length Scales and Reactive Processing of ZrC based Ceramics"*

29.7.12 : Dr J Mukherjee, Director, Jawaharlal Nehru Advanced Research Design & Development Centre, Nagpur delivered a talk on *"Conversion of Aluminum Industry Wastes into Value Added Products"*

30.7.12: Prof M M Sharma, FRS, interacted with the scientists of CSIR-CGCRI and briefly touched upon the philosophy, role and objectives of scientists in CSIR

NEWS FROM OUTREACHES

T&D Programmes at CSIR-CGCRI, Khurja

- Glass Beaded Jewelry Making conducted at Village Karpuran, Sasaram, Bihar from 14.04.12 to 14.05.12.; 14 female participants attended the programme (Sponsor National Backward Classes Finance and Development, New Delhi)
- Glass Beaded Jewelry Making conducted at Village Sheikpura, Bihar from 07.05.12 to 1.07.12 (Sponsor: DST, New Delhi)
- Awareness Seminar on Healthy Air Quality Requirement for an Industrial Area at Khurja on 26.7.12

T&D Programme at CSIR-CGCRI, Naroda

- Skill Upgradation of Artisans Making Terracotta Pottery in Villages in Gujarat from 23.7.12 to 1.8.12 (Sponsor: Gujarat Matikam Kalakari & Rural Technology Institute, Gandhi Nagar). Twelve artisans participated

MAJOR FACILITIES

SOFC Stack Testing Facility

Prof M M Sharma, FRS & Chairman, CSIR NMITLI project on SOFC inaugurated on July 31, 2012 the facility in presence of Dr Shivram, CSIR Bhatnagar Fellow and Members of Monitoring Committee on NMITLI project. The major features of the SOFC are: Open Circuit Voltage of 10.17 V, 9 –Cell SOFC Stack, Max Power of 227W achieved and a Power Density of 0.317 W/cm² observed.



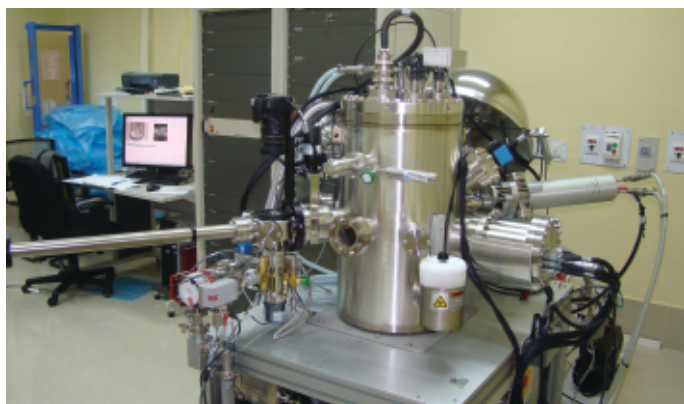
Prof M M Sharma inaugurating the SOFC stack testing facility



Members of Monitoring Committee watching operation of SOFC

Photoelectron Spectroscopy

Photoelectron Spectrometer PHI 5000 Versaprobe-II manufactured by Physical Electronics, USA has been installed at Materials Characterization Division. The instrument is equipped with a monochromatic x-ray source



Photoelectron spectroscopy facility at CSIR-CGCRI

providing Al K α radiation, dual x-ray source providing Mg K α and Al K α radiations, helium discharge lamp providing ultra-violet radiations, argon ion gun for sputtering and an electron gun providing the charge neutralization. The above experimental sources enable one to perform large and micro area (from 10 microns to 200 microns) spectroscopy along with secondary electron and chemical state imaging in a temperature range of -120 to 500 °C. The machine will be extensively used for investigating the core levels as well as the valence bands leading to the understanding of the electronic structure of various systems of interest both in the bulk and nano regime.

SUMMER INTERNSHIP-2012

Orientation Programme for Summer Interns

The Institute organized the a Summer Internship Programme from 14.5.12 to 13.7.12 to attract bright Engineering as well as Science students to participate in result oriented research projects and thereby offer exposure to real life R & D domain. Twenty nine candidates were selected through a

rigorous screening and short-listing process. Nearly 60% of students represented the IITs and NITs and rest were from government and private engineering colleges.



Summer Interns with Director, CSIR-CGCRI and other officials

RC MEETING

The Institute conducted its 46th Research Council Meeting on August 18, 2012. The members appreciated the various developments. The Chairman Dr SriKumar Banerjee, Homi Bhabha Professor, DAE emphasized on a concerted approach to the 12th Five year plan projects.

DG, CSIR has approved inclusion Dr B K Mishra, Director, CSIR-IMMT, Bhubhaneshwar in place of Dr A K Gupta, Former Director, CSIR-AMPRI, Bhopal as Cluster Director and Dr S K Choudhury, Director, DRDO-RCI, Hyderabad in place of Mr S Ray, Former Director of the same institute as Agency Representative till the end of the tenure of present Research Council.



46th RC Meeting in progress

FORTHCOMING EVENTS

- August 4, 2012: India Science & Environment Meet in collaboration with Millennium Institute of Energy & Environment Management, Kolkata and Rotary Club of Calcutta South East at CSIR-CGCRI, Kolkata
- August 21-25, 2012: DST-CSIR Sensor Hub Workshop at CSIR-CGCRI, Kolkata
- August 25, 2012: CSIR – Industry Meet 1 at Oberoi Grand, Kolkata in collaboration with CSIR-IICB, Kolkata
- August 26, 2012: 63rd CGCRI Foundation Day and Closing of Diamond Jubilee Celebration at CSIR-CGCRI, Kolkata
- August 26, 2012: 9th Atma Ram Memorial Lecture at CSIR-CGCRI, Kolkata
- September 12-18, 2012: Hindi Week at CSIR-CGCRI, Kolkata
- September 25, 2012: 70th CSIR Foundation Day at CSIR-CGCRI, Kolkata
- September 25, 2012: Workshop on Surface Engineering and Characterization for Advanced Technological Applications