



CSIR-CGCRI

NEWSLETTER

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FOCUS

Commercial Agreement on Design and Fabrication of all Fiber Supercontinuum Light Source with Application Demonstration on Confocal Microscopy

On April 23, 2014, CSIR-CGCRI has signed an agreement with Vinvish Technologies Pvt Limited, Thiruvananthapuram to grant exclusive license to utilize the knowhow of Non linear photonics Crystal Fiber(NPCF) for Design and Fabrication of all Fiber Supercontinuum Light Source with application demonstration on Confocal Microscopy and sell the product on agreed terms and conditions. Under the agreement, both parties will jointly prepare a complete knowhow document. CSIR-CGCRI will also supply NPCF to Vinvish Technologies at mutually agreed price. CSIR-CGCRI has completed a NMITLI project in this regard with industrial partner Vinvish Technologies. The present agreement is a follow up of the earlier agreement signed on March 28, 2012 under CSIR's NMITLI scheme.



Demonstration of the working of Microscope before the Members of Monitoring Committee of NMITLI project on April 23, 2014 in the lab of Vinvish Technologies Pvt Ltd, (inset) A schematic of the Confocal Microscope

AGREEMENT SIGNED

Agreement for Joint Collaborative Research

CSIR-CGCRI has agreed in principle to enter in a MoU with CDE Asia Limited, Kolkata to carry out joint collaborative research work in the areas of innovative use of different solid waste by-products for developing value added ceramic products. The other areas in the agreement are: Testing and Characterization of minerals, Mineral up-gradation through different

benefaction technique and Clay benefaction and Value additions. The agreement was signed on May 9, 2014.



Exchange of documents after signing

WORKSHOP & MEETINGS

International

International Workshop Near Net Shape Manufacturing of Precision Engineering Components (NNSMW 2014) (June 5-6, 2014)

The workshop was organized to mark the successful completion of an India EU FP7 project SIMUGLASS in which a process chain for near net shape manufacturing of precision glass optics has been developed by CSIR-CGCRI. The event was staged to fulfill one of the mandates for dissemination of the results achieved under the project. Sponsored by the Department of Science & Technology, the Institute executed the project in



Inaugural session of NNSMW 2014

collaboration with IIT-Delhi and IIT-Madras. Modelling & Characterization of viscoelastic material behaviour of glass at temperatures above the glass transition played the central role in the development of this unique process chain. The technology can be extended to other challenging applications in optics and thin film voltaics.

Prof Jyoti Majumder, University of Michigan, USA acted as the Chief Guest in the inaugural session because Prof Amitabha Ghosh, Honorary Distinguished Professor, IEST (formerly BESU, Shibpur) could not turn up due to unavoidable circumstances. Dr B K Mishra, Director, CSIR-IMMT acted as the Guest of Honour. The event divided over five Technical Session & was executed by a Panel Discussion. The Workshop encompassed a wide range of net shaping technologies in metals, alloys, ceramics and composites also. In all there were 14 presentations by distinguished researchers in the field.

Twentyfive participants from various reputed organizations involved in the research and industry of India registered for the workshop while an equal number of representations followed from the students and project fellows of CSIR-CGCRI and outside research institutes. There were five experts from Singapore, USA and Germany while rest was from India.

Internal

Workshop cum Demonstration programme on Biomass Gasifiers for the Benefit of Glass, Ceramics and Pottery Industries in Gujarat (June 27, 2014)

The workshop was organized at the Naroda Outreach to highlight the importance of Non-conventional energy such as biomass generated from agricultural waste, wood etc which could utilise the latest technology of gasification in the downdraft process to generate clean fuel at an affordable price. The programme recommended that Non-conventional renewable energy technologies such as wind power, solar power, biomassgasifiers etc. could be an alternate solution for glass and ceramic enterprises. The decentralized approach to energy problem in form of biomass based gasification technology was viewed by experts as an excellent alternative to meet the energy challenges faced by these industries.

The major interventions identified were: (i) Identification of biomass sources, (ii) Suitable gasifiers with tailor made consumption wise kiln designs and (iii) Gasifiers and gasification technology for the ultimate energy production. The likely beneficiary of such interventions would be : Pottery & Rural industries where temperature requirement lies below 1000°C.

The workshop was supported by Swedish Agency for Development & Co-operation. CSIR-CGCRI, Naroda Outreach played lead role in organizing the workshop with support from a host of partners such as The Energy Research Institute (TERI), Gujarat Matikam Kalakari Rural Technology Institute (GMK-RTI), Gujarat Cleaner Production Centre (GCP), Gujarat Energy Development Authority (GEDA) and Industry Associations of Naroda and Thangarh. The event also included a demo program on biomass gasifier



Demonstration of biomass gasifier during workshop

technology at the Naroda Outreach.

Workshop on Refractory Castables (January 15, 2014)

An International workshop on refractory castables was held at CSIR-CGCRI on 15th January 2014. It was organized jointly by CSIR-CGCRI and Indian Refractory Makers' Association. A total of 60 participants from India and foreign countries attended the event. Speakers included Prof. Harold Harmuth, Montan University, Austria and prominent refractory technologists. Detailed deliberations were held on modern technology for refractory raw materials processing and castables.



Delegates from India and overseas

First meeting of the Advisory Board of Tepp Outreach cum Cluster Innovation Centre, Kolkata

The First Meeting of the Advisory Board of Tepp Outreach cum Cluster Innovation Centre (TOCIC) was convened at the Institute on July 8 2014. TOCIC has been set up to facilitate Promoting Innovations in Individuals, Startups and MSMEs (PRISM) which is a scheme launched by the Department of Scientific and Industrial Research (DSIR) with the aim to scout innovators in the country.

The scheme connects innovative minds to market which encompasses product/process development and facilitate their entry into customer market. The beta version of the TOCIC website was unveiled and it was agreed that the full version website would be launched soon with innovator friendly features that will expedite innovation. The TOCIC coordinators will also facilitate the innovators in the formulation of proposals. DSIR has awarded a project to the CSIR-CGCRI under its PRISM scheme.



TOCIC Meeting under progress

R&D NEWS

Bone cement based nanohybrid as a super biomaterial for bone healing

The researchers at CSIR-CGCRI have collaborated with the researchers of Indian Institute of Technology—Banaras Hindu University and Indian Institute of Technology, Roorkee to develop a bone cement-based nanohybrid using nanoclay prepared at the nano clay lab of the Advanced Clay and Traditional Ceramics Division of CSIR-CGCRI. The nanohybrid acts as a superbiomaterial for bone healing. The findings of research suggest that with an addition of only 1wt% of the nanoclay, complete healing of the fractured bone was achieved in 30 days that was one-third of the time

required for the natural healings. A 4mm diameter hole as shown by arrow in the left image was drilled on right rabbit tibias and treated with bone cement. Post-surgery radiographs of rabbit tibias on day 1 and day 30 showed that healing took place only in 30 days. Bone cement alone takes 90 days to heal. The unique nanoclay with iron ions at octahedral sites in gibbsite layer improved several bone grafting parameters of bone cement, such as mechanical properties, cell adhesion, cell viability, osteoconductivity and bone regeneration. The work is set to come out in the print in a recent issue of a high impact journal.

Authors: Govinda Kapusetti, Nira Misra, Vakil Singh, Swati Srivastava, Partha Roy, **Kausik Dana** and Pralay Maiti, J. Mater. Chem. B, 2014, 25,3984-3997 (DOI: 10.1039/c4tb00501e). The red colour indicates author from CSIR-CGCRI.



Radiographic images of bone healing

PEER RECOGNITION

Honour



Mr Swapan Kumar Saha, Senior Superintending Engineer, Engineering Services Division has been elected as a Fellow of the Institution of Engineers (India) on the 31st Day of May, 2014. He has also been authorised to use the style and title of Chartered Engineers (India) by the Institution of Engineers (India).

TECHNOLOGY DAY

The National Technology Day was celebrated at the Institute on May 9, 2014 a couple of days ahead of the scheduled date in view of non-working days. To mark the occasion, CSIR-CGCRI, Kolkata, signed an agreement with CDE Asia Limited and invited two speakers to make presentations. Dr A Bandyopadhyay, President (Technology & Business Development), CDE Asia Limited presented the first lecture entitled: 'Infrastructure Development in India & Role of Minerals Technology' and Dr I N Chakraborty, President R&D and QPC, Calderys India Refractories Limited delivered the second lecture on 'Collaborative Work between Calderys India and CSIR-CGCRI'.



(L) Dr A Bandyopadhyay and (R) Dr I N Chakraborty delivering lectures

NEWS FROM OUTREACH

Extramural HRD at Naroda

Five days T&D Program on Physico-Chemical Analysis of Ceramic Raw Materials

In continuance of human resources development and quality improvement for ceramic industries, a 5-day T&D programme on physico-chemical analysis of ceramic raw materials was organized from April 21-25, 2014 at CSIR-CGCRI, Naroda Outreach. Organized in a concept to delivery mode, a total of 10 participants from various fields of ceramics participated in the programme. The participants were given training through interactive lectures sessions as well as hands on exercise of different physical and chemical testings required to evaluate the properties of ceramic raw materials. The first two days were devoted to chemical testing while the subsequent two days were slotted for physical testing. The programme also included a visit to Shiv Shakti Ceramic Industries, Ahmedabad on the last day. The participants witnessed the conversion of simple raw materials into value added products in a real life ambience.



Participants on industrial exposure



A participant being awarded with certificate

New Project

The Department of Cottage & Industry, Govt of Gujarat under a joint collaboration with Gujarat Matikam Kalakari Rural Technology Institute, Gandhi Nagar has funded a mega project entitled "Implementation of Integrated Pottery Development Project for Development of Gujarat States Pottery Sector" to the Naroda Outreach of CSIR-CGCRI for a duration of 5 years. The sanctioned outlay of the project is Rs 3.675 crores.

Blue Pottery

The Khurja Outreach has successfully developed and implemented usage of lead free glaze to manufacture Jaipur Blue pottery under the sponsorship from Rural Non Farm Development Agency, Govt. of Rajasthan (RUDA), Jaipur. The Jaipur Blue Pottery is traditionally fired in wood fired periodic kilns. The Khurja Outreach's intervention enabled the artisans to develop blue pottery articles free of the toxic lead. The articles were then placed in both wood and LPG fired furnaces for non-hazardous firing that led finally to exotic products. Artisans from Kotejwar, Mehla, Mohana, Sanganer, Jamdoli

and Neota villages around Jaipur have been trained at the Khurja Outreach on development of frits / glazes. Further work on the modification of the firing technology is being planned.



Exotic Blue pottery products developed by trainees

49th RC MEETING

July 28, 2014: The 49th Research Council Meeting was held July 28, 2014. Chairman Dr Srikumar Banerjee reviewed the progress of the 12 FYP projects and other developments. The members emphasized on the project leaders to connect their good results to industry and complete the technology cycle. They also emphasized on project leaders of some areas to open up and publish high impact publications where technological breakthrough was not immediately possible.



Mr K Dasgupta presenting Institute's progress during RC Meeting

LECTURES

Internal

The Colloquium initiated in January 2014, was continued and a series of lectures were delivered by staff. These lectures are as follows:

1. Ms Nilormi Biswas, JRF, Materials Characterization Division "Natural nanocomposites: How Do They Behave?"
2. Dr Vamsi Krishna Balla, Senior Principal Scientist & Head, Bioceramics & Coating Division, "Materials and Manufacturing Innovations for Better Orthopaedic Implants"
3. Dr Chandrabas Bharti, CSIR-Nehru Postdoctoral Fellow, Sensor & Actuator Division, "The Wacky World of Perovskites?"
4. Dr Atul Vishnupant Maldhure, Scientist, Refractory Division, "Application of Nanomaterials in Carbon Containing Refractories"
5. Mr Jony Saha, CSIR-SRF, Nano-Structured Materials Division, "Au NPs Incorporated Ordered Mesoporous SiO₂ Nanofibers by Electrospinning Technique: An Efficient Catalyst for p-Nitrophenol Reduction"
6. Dr Pradyot Datta, Senior Scientist, Fuel Cell & Battery Division, "Solid Oxide Electrolysis Cells for H₂ Production: Present Status and Future Challenges"

7. Mr Qazi Arif Islam, SRF, Fuel Cell & Battery Division, "Development of Gas Separation Membrane: The Engineered Materials"
8. Dr Anirban Dhar, Scientist, Fiber Optics and Photonics Division, "Specialty Optical Fibers: Materials and Fabrication Challenges"

Outside

1. April 3, 2014: Dr Ajoy K Saha, Department of Chemistry, Bengal Engineering and Science University, Shibpur delivered a lecture on "Quantum dots for bioimaging and solar cells" at CSIR-CGCRI

NEW INITIATIVE

Solar Plants at SIRSA

Grid Connected Solar Voltaic Power Plants(GCSPV) have been installed on the Rooftop of Scientific & Industrial Research Resident Apartments at 59 Lake Road, Kolkata at the initiative of GPA Maintenance Department of the Institute. Initiated in February 2014 the major gains of this development till the June, 2014 have been the achievement of excellent monetary and carbon credits at the behest of green energy and remarkable reduction in the demand for water. The plant costs Rs. 110/- per Watt-peak with the maximum life of the plant estimated to be 25 years. The installation cost would be offset in next few years.



Solar panels fixed on one of the high rise buildings in SIRSA

Forthcoming Events

- August, 20, 2014: Third Research Students Day – An Internal Seminar of CSIR-CGCRI's Research Interns
- August 26, 2014: 12th Atmaram Memorial Lecture
- September 26, 2014: 72nd CSIR Foundation Day at CSIR-CGCRI
- December 4-6, 2014: International Conference on Emerging Materials; Characterization and Applications (EMCA-2014) at CSIR-CGCRI in collaboration with National Institute of Technology, Durgapur, West Bengal