



CSIR-CGCRI

NEWSLETTER

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FOCUS

Prime Minister Inaugurates CSIR Platinum Jubilee Celebrations

Hon'ble Prime Minister of India and President, CSIR, Shri Narendra Modi, inaugurated the CSIR's Platinum Jubilee Function held on the occasion of its 75th Foundation Day on September 26, 2016, at Vigyan Bhavan, New Delhi. In his inaugural address the Prime Minister commented that CSIR is a reflection of India in its diversity and heterogeneity and has its indelible mark in every sphere of activities of the nation while playing a pivotal role in the development of modern India by its all-round approach to research and development. He had, ahead of his speech, dedicated some medicinal and aromatic plant varieties to the nation and took part in interactive discussions through video conference with farmers from five different locations across the country - Hyderabad, Cuddalore, Jammu, Jorhat and Palampur - who were provided with new plant varieties by CSIR laboratories. He also visited an exhibition showcasing several initiatives of different laboratories working under the council. CSIR-CGCRI made its presence greatly felt in the exhibition by presenting important products developed recently by



Dr K Muraleedharan, Director, CSIR-CGCRI explains to Hon'ble Prime Minister various strategic products developed by the Institute in presence of Mr YS Chowdary, Minister of State, Science & Technology and Earth Science and Dr Girish Sahni, DG, CSIR. ■ Image captured from NISCAIR video

the Institute, such as radiation shielding window (RSW) glass and borosilicate glass nodules for nuclear industries, erbium doped fiber amplifier (EDFA) for CATV application, etc. in the strategic sector panel. Dr K Muraleedharan, Director, CSIR-CGCRI explained to the Prime Minister the usefulness of these products in country's strategic sector.

Parliamentary Standing Committee (PSC) on Science & Technology, Environment and Forests visits CSIR-CGCRI, Kolkata

Members of Parliamentary Standing Committee (PSC) on Science & Technology, Environment and Forests, visited CSIR-CGCRI on October 21, 2016. Chairperson of the PSC, Smt Renuka Chowdhury was greeted by Dr K Muraleedharan, Director, CSIR-CGCRI and other committee members by the senior scientists and officials from administration. The programme started with a visit to three laboratories – Specialty Glass Production Lab, Non-Oxides Ceramics & Composites Lab and Fiber Optics & Photonics Lab – during which Dr Muraleedharan showed the Members of Parliament different products and processes recently developed by the Institute for meeting country's need in strategic, societal and industrial sectors. The members also interacted freely with



Dr Ranjan Sen, Chief Scientist & Head, Glass Division, explaining recent developments of the Institute to Smt Renuka Chowdhury, Chairperson, PSC ■ Photo by PD, CGCRI

the senior scientists and officers during the visit and appreciated the programmes initiated by the Institute for achieving different sustainable development goals (SDGs) set up by the Government. Later Dr Muraleedharan made presentation before the PSC members on various activities of CSIR-CGCRI and explained how the human resources are mobilized and technical capability maps are drawn to align the Institute's technical activities with different National Missions of the Government. Dr Muraleedharan clarified any queries of the committee members during the presentation. The members appreciated the progress made by the Institute. The Chairperson also spoke very highly of the Institute while making an inspiring comment in the Visitor's Book: 'A window to India's citizen to reach the sky. A great team of people who can do tremendous capacity building and hold India to be first amongst equals. JAI HIND.'

TECHNOLOGY NEWS

CSIR at 'IITF-2016'

On the occasion of its stepping into the Platinum Jubilee Year in 2016, CSIR organised 'CSIR Platinum Jubilee Technofest - 2016', as a part of the 36th India International Trade Fair, IITF-2016, at Pragati Maidan, New Delhi, during November 14-27, 2016, and showcased its knowledgebase and displayed its technologies and scientific prowess, that it has delivered to the nation during its journey of 75 years through the mega expo. In the Technofest held in Hall No.12A at Pragati Maidan, 14 theme-based information panels were held. The theme-area 'Mining, Mineral and Materials' was arranged on November 17, 2016, by a specialized team under the leadership of Dr K Muraleedharan, Director, CSIR-CGCRI and CSIR-NML to highlight the science and technology components of the concerned CSIR laboratories and to feature their informative exhibits including demonstrable models. Three different technical sessions, viz. Mining, Mineral Processing and Extraction Technologies and Advanced Materials and also signing the MOUs were the major events. Dr Muraleedharan chaired the Advanced Materials session in which Dr D Sanyal, Chief Scientist and Head, Non-Oxide Ceramics and Composites Division, CSIR-CGCRI spoke on 'High Temperature Materials.' Dr Bharat Bhargava, DG, ONGC Energy Centre



Dr K Muraleedharan, Director, CSIR-CGCRI and CSIR-NML delivers welcome address in the Technical Sessions of the Theme Area 'Mining, Mineral & Materials' organised at CSIR Platinum Jubilee Technofest -2016
■ Image captured from NISCAIR video

(OEC) made a presentation about the activities of ONGC Energy Centre Trust (OECT). OECT signed a MOU with CSIR-CGCRI for R&D projects.

TECHNOLOGY AGREEMENT

Technology License Agreement for Low Melting High Sodium Glass Bead (Si B Na-23) to be used in Nuclear Waste Immobilization

On November 15, 2016 CSIR signed an agreement with H&R Johnson (India), Mumbai for the grant of license by CSIR-CGCRI to H&RJ to utilize the know-how for the manufacture of 'Low Melting High Sodium Glass Bead (Si B Na-23)' in India on non-exclusive basis and sell the product for a specified period. Under the agreement, CSIR-CGCRI will hand over the technology transfer documents (TTD) to H&RJ within two months from the date of signing and CSIR-CGCRI will, at the request of H&RJ, depute competent representatives to render assistance in know-how implementation. Under the agreement the scope of the transfer of technology (TOT) is extendable under certain conditions mutually beneficial to both the parties.

MOU for licensing know-how of manufacturing SiAlON based products

CSIR-CGCRI signed a MOU on July 6, 2016 with Dee Tech Ceramics Pvt Ltd, Mumbai, to grant license for utilization of know-how pertaining to manufacturing of SiAlON based non-oxide ceramic products in India for two years on exclusive basis. Under the MOU signed CSIR-CGCRI will undertake a know-how development project, transfer the developed know-how with handing over the TTD and demonstrate the know-how to the representatives of Dee Tech including arranging training for them for a specified period.

Mutual Confidentiality Agreement

CSIR-CGCRI signed a Mutual Confidentiality Agreement on August 3, 2016, with EATON Technologies Pvt Ltd, Pune, to establish or further business relationship between the parties necessitating disclosure to each other certain sensitive information relating to Additive Manufacturing for research and development.

SEMINAR

Workshop on Nano-scale Material Properties of Advanced Materials (NMPAM 2016)

The workshop was organised by CSIR-CGCRI jointly with Electron Microscope Society of India, Eastern India Chapter, and Hysitron Nanotechnology India Pvt. Ltd., on November 9, 2016, at the Institute. In the ever-increasing developmental activities in the field of materials characterisation and calibration, there is a need to re-visit the theories of nanoindentation with emphasis on basics and applications. Practical uses of in-situ nanoindentation technique during scanning and transmission electron microscopy are also gaining importance. Nanoindenter for its ability to be coupled with in-situ scanning probe microscope – the new 'Nanoguru' – has become recently very popular among the materials scientists and researchers. The workshop focused on all these issues. Dr K Muraleedharan, Director, CSIR-CGCRI inaugurated the workshop and delivered a very motivational speech to the delegates. There were two technical sessions in which eminent speakers from the academia and industries delivered lectures covering the theme topics of the workshop. There was also a special session on experimental demonstration of 'Nanoguru'.

Day of Photonics

CSIR-CGCRI celebrated the 'Day of Photonics' on October 24, 2016, at the Institute with an aim to giving an exposure to the developments in the area of photonics and exploring its importance. The programme was organised by the Fiber Optics and Photonics Division of the Institute, which arranged a workshop on this occasion. The workshop was inaugurated by Dr K Muraleedharan, Director, CSIR-CGCRI. He later delivered a talk highlighting the importance of celebration of this special day. This was followed by a presentation by Dr Ranjan Sen, Chief Scientist and Head, FOPD, on 'Optical Fiber Fabrication Technology and



Dr K Muraleedharan, Director, CSIR-CGCRI inaugurates Day of Photonics with Dr Ranjan Sen, Chief Scientist, FOPD, as Coordinator (top); student participants taking part at the Lab visit (bottom) ■ Photo by PD, CGCRI

Importance in our Daily Life'. Lab visits for showing photonic related activities through poster presentation and demonstration on fiber fabrication and optical characterisation, were some of the major events of the day's programme.

Advancement in Refractory Technology: Current Trends (ART-2016)

CSIR-CGCRI organised this national seminar at the Institute on September 9, 2016. With the steel industry growing at a substantial rate, the demands in the refractory industry are also increasing. In order to meet the challenges pertaining to the high demands in the refractory

industrial sector, the recent trends of the manufacturing and application technologies of the refractories need to be examined. The day-long national seminar was held for this purpose. The seminar had three technical sessions in which eminent speakers from academia and industries spoke on the theme topics.

IMPORTANT EVENTS

13th Atma Ram Memorial Lecture

Dr Kamanio Chattopadhyay, FNA, FASc, FNAE and INAE distinguished Professor, Interdisciplinary Centre for Energy Research, Department of Materials Engineering, Indian Institute of Science, Bangalore, delivered the 13th Atma Ram Memorial Lecture on September 7, 2016 at CSIR-CGCRI. The title of the lecture was "A view of the evolving energy landscapes through an academicians perception." He spoke on the access to energy for Indian people with emphasis on different related issues like current energy supply-demand gap, impact of energy need on environment, want of power for sustaining the welfare of an over-increasing population etc. He discussed the dynamics of energy availability highlighting the need for development of innovative technologies for harnessing energy from nature and affordability and reach of such technologies to people. Technological innovation, although a continuous process, sometimes lead to a paradigm shift and



Prof Kamanio Chattopadhyay delivering 13th Atma Ram Memorial Lecture ■ Photo by PD, CGCRI

the possibility of such a shift in near future and the futuristic energy landscape were analyzed by him. He talked about the recent activities of ICER, IISc, Bangalore initiated in this direction. He also held discussions with senior scientists on the energy sector projects currently under progress at the Institute. He was presented with a silver plaque after the lecture by Dr K Muraleedharan, Director, CSIR-CGCRI.

67th CSIR-CGCRI Foundation Day

CSIR-CGCRI observed its 67th Foundation Day on August 26, 2016. Dr K Muraleedharan, Director, CSIR-CGCRI greeted all the staff members on this special day and delivered the Foundation Day Address.

Hindi Fortnight

With a view to create interest towards Hindi and to encourage the officers and employees to do official work in Hindi, HINDI FORTNIGHT was organised at the Institute from September 1 - 15, 2016. Shri Rahul Dev, an Eminent Journalist and former Executive Editor, Jansatta, delivered the 5th Diamond Jubilee Lecture entitled 'Bhasha Aur Navachar' in the official language on September 15, 2016, while the noted litterateur and critic Prof Swapan Chakraborty presided over the function. Prizes were also given to the successful candidates of different cultural competitions and the song competition organised in Hindi.



Hindi Fortnight concluding function organised at CSIR-CGCRI on September 15, 2016 ■ Photo by PD, CGCRI

Teachers' Day Celebrated

Teachers' Day was celebrated at the Institute on September 5, 2016. Dr K Muraleedharan greeted all the students on this auspicious occasion and delivered the teachers' day address.



Dr K Muraleedharan, Director, CSIR-CGCRI (top) delivering Teachers' Day address to the students (bottom) ■ Photo by PD, CGCRI

Dr P Sujatha Devi, Principal Scientist and Students' Counselor, narrated the importance of the Day to the students, while Dr RN Basu, Head, HRD, delivered his message on this occasion. Around eighty students attended the function.

IISF-2016: A Curtain Raiser

The India International Science Festival (IISF) has its aims to create a scientific movement by reaching out to common people for improvement of scientific understanding, temper and appreciation of various aspects of Science and Technology by showcasing country's achievements in this area. This year's India International Science Festival (IISF-2016), with the focal theme 'Science for the Masses' will be organised at the CSIR-National Physical Laboratory Campus at New Delhi during December 7-11, 2016, by Vijnana Bharati together with Ministry of Science and Technology, Ministry of Earth Sciences and CSIR. As a forerunner to the forthcoming mega event, the 'India International Science Festival-2016: A Curtain Raiser' was organised at the institute on November 18, 2016. The purpose was to help develop scientific acumen amongst the students and provide inspiration and support for innovative research activities. Around 300 participants, mostly senior students studying science at the major schools, colleges and universities of the city, including a galaxy of eminent scientists attended the function. The welcome address was delivered by Dr K Muraleedharan, Director, CSIR-CGCRI. Prof Santanu Bhattacharya, Director, IACS, delivered a motivational speech as the Chief Guest and Dr Anil S Manekar, Director General, NCSM and Prof Samit Kumar Ray, Director, SNBNCBS, gave special addresses as the Guests of Honour. Talks were also given by Dr Suvendra Nath Bhattacharyya, a Shanti Swarup Bhatnagar Awardee and Head, Molecular and Human Genetics Division, CSIR-IICB and by Prof Dhrubajyoti Chattopadhyay, Vice-Chancellor, Amity University. An Interactive Session on 'Science in the New Millennium: Emerging Horizons' was also held with Prof Sudhendu



Students participating in the Interactive Session organised on the occasion of IISF-2016: A Curtain Raiser Photo by PD, CGCRI

Mandal of Visva Bharati University and Former Director, National Library, Dr Maitree Bhattacharyya, Director, JBNSTS, Sk Emdadul Islam, Director, BITM, Mr Atishkumar Chattopadhyay, Secretary, Faculty of Science, JU and Shri Kamal Dasgupta, Former Chief Scientist and Head, FOPD, CSIR-CGCRI, as the panelists. The session was coordinated by Dr RN Basu, Chief Scientist and Head, FCBD, CSIR-CGCRI while Dr SK Bhadra, Former Chief Scientist, CSIR-CGCRI functioned as its Moderator. Dr R Sen, Chief Scientist and Head, Glass Division and FOPD, CSIR-CGCRI also spoke on 'CGCRI's contribution in Science and Technology.' Participating students performed visit to different laboratories of CSIR-CGCRI and they were presented certificates of participation.

Training and Demonstration Programme arranged

A five day Training and Demonstration (T&D) programme on 'Physico-chemical analysis of ceramic raw materials' was organised by CSIR-CGCRI Naroda Centre, Ahmedabad during November 21 - 25, 2016, in which participants came all over India were given training through interactive lectures, discussions as well as hands-on practice in different testing methods needed for evaluation of properties of ceramic raw materials. Dr SN Misra, Scientist-in-Charge, CSIR-CGCRI Naroda centre, inaugurated the programme and delivered the welcome address and Mr Rajiv Kishor Jha, Scientist F and Head, Bureau of Indian Standard (BIS), Ahmedabad presided over the valedictory function as the Chief Guest. During the programme, an industrial visit of the participants to M/s Shiv Shakti Ceramic Industries, Naroda, Ahmedabad, was also arranged.

SPECIAL EVENT

CSIR-CGCRI begins journey as Nodal Agency of TOLIC paying homage to Dr APJ Abdul Kalam

The journey of CSIR-CGCRI as the Nodal Agency in the area of Educational/Research organizations of the Town Official Language Implementation Committee (TOLIC), Kolkata-II started with a lecture at the Institute on September 28, 2016 by an eminent scientist, writer and formerly Project Director, DRDO, Prof Arun Tiwari, on Dr APJ Abdul Kalam, the People's President of India who created his own axiom of 'Let my brain remove your pain'. The title of Prof Tiwari's lecture was 'What I learnt from Dr APJ Abdul Kalam'. Introducing the speaker Dr K Muraleedharan, Director, CSIR-CGCRI, mentioned about Prof Tiwari's long acquaintance with his mentor for a good period of thirty years. In his



Prof Arun Tiwari speaking on his mentor Dr APJ Abdul Kalam in the lecture marking the beginning of journey of CSIR-CGCRI as the Nodal agency of TOLIC ■ Photo by PD, CGCRI

talk Prof Tiwari unfolded his pleasant and inspiring experience of association with Dr Kalam – an experience of seeing his mentor's translation from a subordinate scientist developing missile systems to a technology manager developing civilian spin off of defence technologies. Prof Tiwari remarked that he has been blessed to work in the shadow of a peerless icon of modern India. Prof Tiwari paid tribute to his mentor by saying that compassion has been his supreme virtue and helping the needy his greatest duty.

AWARDS & HONOURS

CSIR-CGCRI Bags Awards for Themes Organised at CSIR Platinum Jubilee Technofest 2016

In the recently held CSIR Platinum Jubilee Technofest-2016 as a part of the India International Trade Fair (IITF), at Pragati Maidan, New Delhi, during November 14-27, 2016, Platinum Award was won jointly by CSIR-CGCRI and CSIR-NAL for the theme: "Aerospace and Strategic Sector" coordinated by Directors, CSIR-CGCRI and CSIR-NAL and Bronze Award was bagged by CSIR-CGCRI for the theme: "Materials, Minerals and Mining", coordinated by Director, CSIR-CGCRI.

GPA Maintenance Unit, CSIR-CGCRI Bags ENCON Award 2016

A team led by Mr Avijit Ghosh, Principal Technical Officer and Head, GPA Maintenance Unit, CSIR-CGCRI carried out this award winning effort and received the CII-Energy Conservation Award, ENCON Award-2016, for making systematic, commendable and serious attempts for efficient utilization of energy and significant improvement in conservation of energy.

Oral Awards

☞ **Lata Ramrakhiani**, DST Women Scientist, Ceramic Membrane Division, received the Incon SWM 2016 excellent paper award in the International Conference on Solid Waste Management, 6th Icon SWM 2016, held at Jadavpur University, Kolkata, during November 24-26, 2016, for the paper entitled "Toxic metal removal using biosorption process and inertization of gemrated hazardous metal laden biosorbent" authored by Lata Ramrakhiani, Avik Halder, Ashis Kumar Mandal, Swachchha Majumdar and Sourja Ghosh.

☞ **Dr Sourja Ghosh**, Senior Scientist, Ceramic Membrane Division, received the Incon SWM 2016 excellent paper award in the International Conference of Solid Waste Management, 6th Icon SWM 2016, held at Jadavpur University, Kolkata, during November 24-26, 2016, for the paper entitled "Grey water treatment using waste biomass derived biosorbent for recycling in agricultural applications" authored by Priyankari Bhattacharya, Sourja Ghosh and Swachchha Majumdar.

☞ **Dr Debdulal Saha**, Senior Scientist, Sensor & Actuator Division, received the best oral presentation award in International Conference on Advances in Nanomaterials and Nanotechnology (ICANN-2016), held at Jamia Millia Islamia University, New Delhi, during November 4-5, 2016, for the paper entitled "Online monitoring of breakdown voltage of transformer oil using thin film nanoporous ceramic sensor" authored by Debdulal Saha and Sagnik Das.

☞ **Mr Quazi Arif Islam**, SRF, Fuel Cell and Battery Division, received the best oral presentation award at the MRSI Young Scientists' Colloquium-2016 held at SN Bose National Centre for Basic Science, Kolkata on September 16, 2016 for his paper "Synthesis of nanotubes from bio-waste Eichhornia crassipes: A novel approach to develop oxygen separation membrane."

☞ **Ms Indranee Das**, SRF, Nano-structured Materials Division, received the best oral presentation award at the MRSI Young Scientists' Colloquium-2016 held at SN Bose National Centre for Basic Science, Kolkata on September 16, 2016, for her paper "Extremely robust zirconia based super hydrophobic coating on cotton fabrics for diverse applications."

Poster Presentation Awards

☞ **Soumita Mukhopadhyay**, SRF, Sensor & Actuator Division received the poster award at the MRSI Young Scientists' Colloquium-2016, held at SN Bose National Centre for Basic Science, Kolkata on September 16, 2016, for her paper entitled "Photo-voltaic and catalytic performance of anatase TiO₂ nanotubes with co-exposed {110} and {001} facets."

LECTURES

Platinum Jubilee Institute Colloquium

The regular monthly colloquium of the Institute is converted to a special event "Platinum Jubilee Institute Colloquium" to mark the Platinum Jubilee Celebrations of CSIR. The first Platinum Jubilee Institute Colloquium is held on November 28, 2016, with the lecture of Dr Swastik Mondal, Principal Scientist, Advanced Materials and Characterisation Unit, on "The Mysterious Boron Carbide".

Other Lectures delivered

August 19, 2016: Dr Anish Upadhyaya, Professor and Head, Department of Materials Science and Engineering, Indian Institute of Technology, Kanpur delivered a talk on "New paradigms in sintering particulate materials."

September 9, 2016: Prof ES Rajagopal, Department of Physics, Indian Institute of Science, Bangalore and Former Director, National Physical Laboratory, New Delhi delivered a lecture on "Global warming: A scientist looks at the reality and myths."

September 27, 2016: Dr S Karunanidhi, Scientist H, Director, Control Systems Laboratory, RCI, Hyderabad delivered a lecture on "VIDYA: The science of happiness."

October 28, 2016: Two speakers namely Mr Evgeny Zavedeer, Researcher, and Mr Alexy Propovich, Senior Engineer, of AM Prokhorov General Physics, Institute of Russian Academy of Sciences (GPI RAS) delivered the lectures entitled "Ultrashort pulse laser microstructuring of diamond-like-nano composite films" and "Thermal conductivity of CVD-diamond and diamond composites" respectively.

November 22, 2016: Dr Yoichi Okimoto from Department of Chemistry, Tokyo Institute of Technology, Japan delivered a talk entitled "Femtosecond spectroscopy of ultrafast dynamics in spin crossover cobalt perovskites."

NEW PROJECTS

Faster Track Translational Projects

Following the road map identified by the Research Council (RC) CSIR-CGCRI proposed twelve Fast Track Translational (FTT) projects under a special initiative launched by CSIR with defined objectives and time frames. So far seven FTT projects formulated by CSIR-CGCRI have been approved by DG, CSIR.

SADBHAVNA DIWAS

Sadbhavna Diwas was observed on August 19, 2016 at the Institute to promote national integration and harmony among the people of all religions in this region. Dr K Muraleedharan, Director, CSIR-CGCRI

administered the Sadbhavna Diwas pledge to all the employees/officials.

SPORTS

CSIR-CGCRI hosts 48th SSBMT

CSIR-CGCRI organised the 48th Shanti Swarup Bhatnagar Memorial Tournament (Indoor Zonal III) during November 25-27, 2016. In the inaugural ceremony the flag of CSIR-CGCRI Staff Club was hoisted by Dr K Muraleedharan, Director, CSIR-CGCRI and President, CGCRI Staff Club, while the flag of the CSIR Sports Promotion Board (SPB) was hoisted by Shri Jo Paul Ancheri, Technical Director, Mohun Bagan Athletic Club and AIFF Player of the Year for 1994 & 2001, as the Chief



Table Tennis match being played during 48th SSBMT hosted by CSIR-CGCRI ■ Photo by PD, CGCRI

Guest. Around one hundred sixty contestants from nine CSIR laboratories participated in the tournament. In his welcome address Dr Muraleedharan emphasized the need of fostering the spirit of sportsmanship and strengthening the culture of team work in CSIR laboratories while maintaining high standards of scientific research and technology development activities. The tournament arranged indoor games of different categories like bridge, chess, carom, table tennis and badminton. A new table tennis court was inaugurated by Chief Guest who played table tennis with the contestants on this occasion. Chess competition was inaugurated by Grandmaster Shri Surya Sekhar Ganguly, the Asian chess champion of 2009 and six-time national champion.

FORTHCOMING EVENTS

✉ December 12, 2016:

One day Workshop on Advanced Ceramic Processing and Fabrication by ARCI, Hyderabad and the Indian Ceramic Society, Hyderabad, at ARCI, Hyderabad.

✉ December 13-15, 2016:

International Conference on Ceramics, Glass and Refractories – Emerging Innovations (CGREI – 2016) along with 80th Annual Session of the Indian Ceramic Society, 68th Annual Session of All India Pottery Manufacturers' Association and 42nd Annual Session of Indian Institute of Ceramics at ARCI, Hyderabad.

✉ January 23-25, 2017:

International Conference on Advances in Glass Science and Technology (ICAGST-2017) by CSIR-CGCRI in collaboration with International Commission on Glass (ICG) at CSIR-CGCRI, Kolkata, preceded by CGCRI-ICG Tutorial during January 19-21, 2017.

✉ February 15-17, 2017:

2nd International Conference on Alumina and other Functional Ceramics (AOFC – 2017) by Indian Ceramic Society and CSIR-CGCRI, Kolkata.