CSIR-CGCRI

NEWSLETTER

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REMEMBRANCE

Dr APJ Abdul Kalam Passes Away

Our beloved former President Bharat Ratna Dr A P J Kalam passed away on July 27, 2015 while delivering a lecture at the Indian Institute of Management, Shillong. His sudden demise came as a great shock to all. CSIR-CGCRI recollects fond memories of its association with Dr Kalam when he was the Chairman of its first Research Council from 1988 to 93. As Chairman, he guided CSIR-CGCRI through some of the most difficult phases of budget constraints. In a bid to attract external sponsorships, his direction led to increase in cash flows from the country's strategic sector particularly the space and defense establishments. Dr Kalam chaired many sessions of Research Council and also moved to interact with the bench level workers of the Institute. His vision helped CSIR-CGCRI grow to its present stature. The Institute thankfully acknowledges Dr Kalam for his farsightedness, support and guidance at a critical juncture.

Flashback 1988: Dr A P J Abdul Kalam chairing the first Research Council Meeting at CSIR-CGCRI; Photo source: Institutional archive

Dr Kalam revisited CSIR-CGCRI on August 26, 2012 as the Chief Guest to preside over the closing day function of the Institute's Diamond Jubilee Celebration. He went round the pavilions in the exhibition hall and also addressed the staff in the auditorium among many dignitaries. In his address, Dr Kalam stressed on the necessity to integrate Bio, Nano and Information technologies to sustain future needs. A pamphlet was brought out on this occasion to recollect Dr Kalam's association with the Institute.

He met his old colleagues and expressed satisfaction at the transformation the Institute has gone through. Dr Kalam remarked that "I am glad to learn that CSIR-CGCRI technologies have benefitted about 64 industries in Naroda area of Gujarat by indenizing their input and thereby giving them additional revenue of an average of Rs 3.6 Crores per year".

August 26, 2012: Dr Kalam being presented with a memento

The Institute will remember him for his openness, simplicity, sincerity, vision and leadership. In his passing away, the country's scientific community has lost a great teacher, visionary and patriot.

August 26, 2012: Dignitaries and organizers with Dr Kalam at tea

TECHNOLOGY NEWS

Agreement for Transfer of Knowhow for Technology on Manufacture of Bioactive Ceramic Scaffolds/ Granules and Integrated Orbital Implant

On May 11, 2015, in view of India's Technology Day, CSIR–CGCRI transferred the technology to mark the auspicious day. The Institute signed a knowhow agreement with the General Surgical Company (India) Private Limited (GESCO), Chennai. The knowhow which relates to the production of hydroxyapatitite and biphasic calcium phosphate based scaffold, granules and integrated orbital implants is suitable for production of integrated

implants at the rate of 10000 pieces per annum. Under the agreement, CSIR-CGCRI will demonstrate the knowhow to the GESCO personnel within 12 months of the effective date of technology transfer. CSIR-CGCRI will transfer the knowhow documents and GESCO will work the knowhow and sell the product within 18 months of the knowhow transfer. The Institute has granted the license on non-exclusive basis to GESCO for a period of three years from the date of signing the agreement.

Exchange of document with GESCO officials

Agreement for Transfer of Process Knowhow of Ceramic Membrane Based Removal of Arsenic for Technology (Including the Process for Media Preparation) and Iron from Ground Water

On April 24, 2015, CSIR-CGCRI signed this agreement with Porel Dass Water & Effluent Control Private Limited. Howrah, West Bengal. Under the agreement, CSIR-CGCRI has granted the license to the said party to utilize the process knowhow on non-exclusive basis up to a capacity of 20000 LPD in India to use and sell the product. The party will work on the process knowhow and commercialize the product after demonstration and or an agreement for commercialization is signed.

Exchange of document with Porel officials

WORKSHOP

National

Indian Innovations in Materials Research: New Materials & Processes (IIMR-15; June 25-27, 2015)

Notwithstanding the western inventions from the age of microscopy to nanotechnology, India has a rich heritage of innovations in metal and glass workings. The Workshop was a part of a pilot project approved by the NSTMIS Division of the Department of Science and Technology, New Delhi, that has been awarded to the Indian Association for Productivity, Quality and Reliability(IAPQR), Kolkata to critically evaluate the extent to which developments in science and technology of materials have progressed in the country.

Being an Institute online, CSIR-CGCRI joined hands with IAPQR to stage the event within its premises. Dr RN Basu Chairman,IIMR-15 Organizing Commiittee in the inaugural address narrated the warm response the event could attract. In his welcome address, Acting Director Mr Kamal Dasgupta touched upon the DehraDun Declaration signed by CSIR Directors at the recent CSIR 's Director Conference to accelerate innovation in CSIR Labs in mission specific mode. Dr B Das, President IAPQR narrated the activities of IAPQR while Dr A K Ray,Convener proposed the Vote of Thanks.

In all there were 5 plenary lectures, 28 invited talks and 15 contributory talks spread over 11 technical sessions. The plenary speakers were: Prof K L Chopra, Former Director, IIT, Kharagpur; Prof S P Mukherjee, Mentor, IAPQR; Prof Indranil Manna, Directior, IIT, Kanpur; Dr A B Mandal, Former Director, CSIR-CLRI, Chennai and Dr S Srikanth, Director, CSIR-NML, Jasmshedpur. Among the invited speakers there were six scientists: Dr S K Bhadra, Dr R N Basu, Dr Goutam De, Dr D Sanyal, Dr Vamsi Krihna Balla and Mr Sitendu Mandal from CSIR-CGCRI.

Dr R N Basu, addressing during inaugural session

The Chief Guest, Dr Srikumar Banerjee, Homi Bhabha Chair Professor, Department of Atomic Energy, Govt of India in his Keynote lecture highlighted the role of innovations in India in different sectors in first five decades after independence. He narrated several successes of country's innovation in key sectors such as nuclear energy, defence and space technologies. However, with increased socio-industrial complexities in every decade, he said the problems of energy, environment, climate change, food, water, education, affordable healthcare have confronted man with new challenges. These are perennial issues and would require sustainable solution through technological interventions. So the role of innovation is important to country's other sectors also.

Invited speaker Dr Ashis Lele, Outstanding Scientist, CSIR-NCL being greeted with memento by session chairman Prof B S Murtthy after his talk on PEM fuel cell

From Left: Panelists Dr A B Mandal, Dr K Mauraleedharan, Prof S P Mukherjee, Dr Srikumar Banerjee, Prof K L Chopra and Prof B S Murthy during panel discussion

Dr Srikumar Banerjee also Chaired the Panel discussion on a Topic: The Role of Innovations in Make in India. Besides Professor KL Chopra, Prof S P Mukherjee and Dr A B Mandal, Dr K Muraleedharan, Director (Materials), DRDO, New Delhi and Prof B S Murty, IIT-Madras, Chennai were the other panelists. Prof Chopra said innovation and entrepreneurship should go together and Indian universities should teach the art of entrepreneurship. Dr Muraleedharan said skillsets of manufacturing demand doctrines different from lab scale production. He narrated the example of warship grade steel which used to be imported is now produced indigenously because of proper synergy between research and industry synergy. Prof Mukherjee said that

the word design in manufacturing assemblies should be interpreted with broader outlook Prof Murthy focused on role of enabling technologies for effectively educating the innovators. Prof Mandal dilated on support and encouragement needed for creative people at all levels. The panelists agreed that Make in India was an opportunity for innovators and should be effectively pursued.

A technical session was organized to showcase products by manufacturers. Six companies participated in the exhibition. A separate session was organized for presentation by manufacturers.

In order to cultivate the practice of innovation among students, an Interactive Session with the research students was also organized.

A total of 24 papers were presented by students in four oral sessions entitled: Innovations in Young Minds. A poster session was also organized for the students in which 40 posters were displayed. The top three oral presentations and two top posters were awarded prizes after evaluation by judges.

Awareness & Demonstration Workshop on the Potential of Biomass Gasifier Technology and its Use in Pottery & Ceramic Industries of Uttar Pradesh (April 9, 2015)

The event was staged at Khurja Outreach of CSIR-CGCRI and was jointly organized with TERI, OM Energy, NSIC, MSME-DI, Agra, DI, Kanpur, KPMA & CDGRI, Firozabad.

The Seminar was inaugurated by Mr. Amit Kumar, Senior Fellow, TERI, New Delhi. During the Seminar, several presentations were delivered by the invited speakers on the Biomass Gassifier Technology and who shared their views and advantages. There was an interactive session where the audience posed several questions on the gasifier technology, biomass availability and supply, after sales service, customization of technology for different applications and the energy requirements that can be met by the gasifier system.

A live demonstration of biomass gasifier technology was conducted by M/s Om Energy. A Biomass Gasifier system was showcased in open firing mode. It showcased the ability of the biomass gasifier to deliver process heat requirement for different applications. It also brought out the adaptability and efficiency of the gasifier for varied operations.


Live demonstration of Bio-gassifier

The workshop was attended by over 100 participants including stakeholders from Khurja Pottery Manufacturing Association, MSME-DI, District Industries Center and UNIDO etc. who gained a firsthand understanding of the technology and its potential for use in MSMEs. The technical session, live demonstration and various speaker presentations helped in clarifying doubts of the end-users and in understanding the potential use of the technology in their operations.

NEW PROJECTS

Overseas Collaborations

Indo-Slovenian

(i) Title: Electron Microscopy study of the degradation kinetics of porous bioactive glass based novel drug eluting implants (coating/3D scaffolds) as a function of hard tissue regeneration for treatment of osteoporotic fractures in elderly patients
PI: Dr Jui Chakraborty, Scientist, Bioceramics and Coating Division
Contract Value: Rs 16.245 Lakhs; Duration: 3 years
Sponsor: DST, New Delhi

(ii) Title: Study of cost-efficient integration system for extrinsic Fabry-Perot sensor using dispersion modified optical fibers
PI: Dr Tarun Gangopadhyay, Principal Scientist, Fiber Optics and Photonics Division
Contract Value: Rs 17.796 Lakhs; Duration: 3 Years
Sponsor: DST, New Delhi

(iii) Title: A robust fiber optic sensor to detect low level of ammonia for early detection of disease
PI: Dr Anirban Dhar, Scientist, Fiber Optics and Photonics Division
Contract Value: Rs 18.87 Lakhs; Duration: 3 Years
Sponsor: DST, New Delhi

Indo-Russian

(iv) Title: Development of large size polycrystalline CVD daimond material for optical windows and support rods in high power microwave tubes
PI: Dr Vamsi Krishna Balla, Sr Principal Scientist, Bioceramic & Coating Division
Conract Value: Rs 50.488 Lakhs; Duration: 3 years
Sponsor: DST, New Delhi

Govt & PSUs Sector

(i) Title: Development of Reaction Bonded Silicon Nitride Ceramic Radomes
PI: Dr P K Das, Chief Scientist, Non-Oxide Ceramic Division
Contract Value: Rs 1130.00 Lakhs; Duration: 3½ Years
Sponsor: DRDO-RCI, Hyderabad

(ii) Title: Development of speciality refractory castable composition for application in CBFC boiler
PI: Dr Arup Ghosh, Chief Scientist, Refractory Division
Contract Value: Rs 10.10 Lakhs; Duration: 9 months
Sponsor: BHEL, Bangalore

(iii) Title: Supply and installation of 43 Nos of iron & arsenic removal plants at border out posts in Nadia district, West Bengal
PI: Mr Swachchha Majumdar, Principal Scientist, Ceramic Menbrane Division
Contract Value: Rs 264.266 Lakhs; Duration: 3 Years
Sponsor: PHE, Govt of West Bengal

(iv) Title: Gamma radiation source replacement and providing radiation exposure services for RISUG making
PI: Dr Biswanath Kundu, Scientist, Bioceramics & Coating Division
Contract Value: Rs 27.30 Lakhs; Duration : 2 Years
Sponsor: IIT, Kharagpur

Private Sector

(i) Title: Development of granular ceramic material with engineered pore pattern for application in cigarette filter
PI: Dr Arup Ghosh, Chief Scientist, Refractory Division
Contract Value: Rs 15.682; Duration: 2 months
Sponsor: ITC Life Sciences & Technology Centre, Bangalore

(ii) Title: Development of online temperature monitoring system for moulds in billet caster using Fibre Bragg Grating (FBG) sensor
PI: Dr Somnath Bandyopadhyay, Principal Scientist, Fiber Optics and Photonics Division
Contract Value: Rs 15.0000; Duration: 1½ Years
Sponsors: Tata Steel, Jamshedpur

PEER RECOGNITIONS

Memberships

- Dr Goutam De, Chief Scientist & Head of Nanostructured Materials Division has been inducted as Editorial Board Member for Journal of Chemical Sciences since July 2015
- Dr L K Sharma, Scientist-in-Charge, CSIR-CGCRI Outreach Khurja received the appointment of a new member in American Ceramic Society(AcerS) Corporate Environmental Achievement Award Committee. The appointment is for three years duration for 2015-18. Dr Sharma will chair the committee in third year: 2017-18 as per the roles and responsibilities of the committee members and Chair as given in ACerS constitution
- Dr R N Basu, Chief Scientist and Head, Fuel Cell and Battery Division has been elected as the Chairman of Materials Research Society of India (MRSI) Kolkata Chapter. Being a Chapter Chairman, he will also be the Ex-officio member of the MRSI parent body
- Dr P Sujatha Devi, Principal Scientist, Nanostructured Materials Division has been elected as the 'Secretary of DNA Society of India', Kolkata. She has also been re-elected as the Secretary of the Materials Research Society of India, Kolkata Chapter.

Invited Talks

- Dr Arup Ghosh, Chief Scientist and Head, Refractories Division delivered invited talk on"Refractory Raw Materials: Present Scenario and Future Challenges Ahead"as invited as Keynote Speaker in the 2nd Iranian Refractory Symposium & Expo 2015 during May 19-20 at Tehran, Iran
- Dr Sujatha Devi, Principal Scientist, Nanostructured Materials Division, delivered invited talk on"Interaction of Nanomaterials with DNA"at the International Congress on Friedreich's Ataxia and DNA Structure in Health & Disease held at All India Institute of Medical Sciences, New Delhi, 11-13th April 2015

Fellowship

Ms Niloromi Biswas, Project Fellow, Advanced Mechanical & Materials Characterization Division was awarded Department of Science & Technology's Women Scientist Fellowship for her project entitled "Synthesis of a calcium based endodontic sealer"
Contract Value: Rs 18.150 Lakhs

Awards

Following awards were won by researchers in the oral and postal categories in the Students' Session of the National Workshop on Indian Innovations in Materials Research: New Materials and Processes (IIMR-15) held at CSIR CGCRI during June 25-27, 2015.

Oral Awards

- Debaleena Bhattacharjee, Kaustab Mandal, Subrata Dasgupta, Ceramic Membrane Division received the Best oral presentation award (Joint Winners) for their paper entitled "Bimetallic Nanocatalysts for Room Temperature Hydrogen Generation"
- Quazi Arif Islam, Mir Wasim Raja, Rajendra N Basu, Fuel Cell and Battery Division received the Second Best oral presentation award for their paper entitled "Cross-linked interconnected powder morphology obtained by filter paper templating method for application as oxygen separation ceramic membrane"
- Koyel Banerjee, Jayanta Mukhopadhyay, Rajendra N Basu of Fuel Cell and Battery Division received the Third Best oral presentation award(Joint Winners) for their paper entitled" Studied on 'A'-site nonstoichiometry in Sr-doped lanthanum ferrite and its effectivity with cobaltite-based composite cathode: Application of intermediate bi-layer for SOFC stability"
- Indranee Das, M K Mishra, S K Medda and G De of Nanostructured Materials Division received the Third best oral presentation award (Joint Winners) for their paper entitled "Trimethysilyl Functionalized Durable Superhydrophobic ZnO-SiO_2 Films on Glass

Poster Awards

- Ankita Bose and Nandini Das of Ceramic Membrane Division won the Best prize for their poster entitled "Performance of DDR Zeolite Membrane for Clean Energy Application"
- Sourav Ghosh, Somjyoti Basak and Milan Kanti Naskar of Sol-Gel Division won Second Best prize (Joint Winners) for their poster entitled "Mesoporous Copper Oxide: Textural Engineering Point of View"

COLLOQUIUM

Internal

The Colloquium was continued during months of April to July in a twin lecture mode : One by a scientist at senior position and the other by a research entrant. The slew of lectures held is as follows:

1. Dr Milan Kanti Naskar, Principal Scientist, Sol-Gel Division "Morphology tuning of Nanoporous Materials, A Mechanistic Understanding"
2. Ms Dabarati Ghosh, Project Fellow, Glass Division "Effective Utilization of Solar Spectrum for Si-PV Application"
3. Dr Debdulal Saha, Scientist, Sensor & Actuator Division "Thin Film Nano Porous γ-Alumina Sensor for Industrial & Medical Applications"
4. Ms Saswati Sarkar, JRF, Sol-Gel Division, "Ordered Surface Texturing of Sol-Gel Thin Films : A Soft Lithographic Approach"
5. Dr Biswanath Kundu, Scientist, Bioceramic & Coating Division, "Potential Bioscaffold in Bone Tissue Engineering"
6. Ms Shreyasi Chattopadhyay, JRF, Nanostructured Materials Division "Ordered Mesoporous Antase TiO_2 Fiber: A Potential Photocatalyst"
7. Dr Jiten Ghosh, Scientist, Advanced Mechanical and Materials Charaterization Division "Influence of Crystallographic Phase Transitions on the Dielectric Behaviour in $BaTiO_3$ perovskite at nano scale"
8. Mr Arindam Haldar, SRF, Fiber Optics and Photonics Division "Rare Earth Doped Optical Fibers: Nanophase separated core glass as efficient luminescent Source"

Lecture

July 22, 2015: Prof Omkar Nath Mohanty, Director, Technology & Academic Initiative, RSB Metaltech and Former Professor, IIT, Kharagpur delivered a lecture entitled "Residual Stress and its Measurement" at CSIR-CGCRI, Kolkata.

Prof O N Mohanty delivering lecture at CSIR-CGCRI

Human Resource Development

Overseas Student

Mr Oluwaseun Adedokun, a PhD student and an Assistant Lecturer from the Department of Pure and Applied Physics, Ladoke Akintola University of Technology, Ogbomoso, Nigeria who had joined CSIR-CGCRI on 2nd of June, 2014 under the CSIR-Third World Academy of Sciences (TWAS) Sandwich Postgraduate Fellowship Programme worked under the supervision of Dr P Sujatha Devi, Principal Scientist, Nanostructured Materials Division on the "Study of Natural Dye Sensitizer: Synthesis, Characterization and Application in Dye Sensitized Solar Cells" for a tenure of one year.

Forthcoming Events

- **August 26, 2015**: 12th Atma Ram Memorial Lecture at CSIR-CGCRI, Kolkata
- **September 15, 2015:** Hindi Fortnight: Concluding Ceremony at CSIR-CGCRI, Kolkata
- **September 18, 2015:** 4th Research Scholars' Day at CSIR-CGCRI, Kolkata
- **September 26, 2015:** 73rd CSIR Foundation Day at CSIR-CGCRI, Kolkata
- **December 7-12, 2015:** International Workshop on Emerging Areas in Photonics and Future Applications (IWPFA-2015) at CSIR-CGCRI, Kolkata
- **December 16-18, 2015:** 2nd International Conference on Membranes and Applications (ICMA 2015) at CSIR-CGCRI, Kolkata

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