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## In The News

### “CSIR-CDRI can Play Important Role in Development of Pharmaceutical Research Sector in Ethiopia”: Indian Ambassador to Ethiopia

**I**N keeping with the Prime Minister’s stress on stronger and long-term cooperation between African countries and India for mutual benefits, and also Director General, CSIR’s efforts for implementing twinning programme, the Ambassador of India to Ethiopia H.E. Mr Anurag Srivastava visited the CSIR-Central Drug Research Institute (CSIR-CDRI), Lucknow on 24 July 2017. The objective of the visit was to focus on the future prospects of bilateral collaboration between the two countries in terms of scientific

and industrial research, especially the Pharmaceutical Research Sector.

Director, Dr. Madhu Dikshit welcomed the honourable guest. Senior Principal Scientist, Dr. Saman Habib, presented an outline of activities and achievements of the Institute and also briefed about the ongoing international research programmes at CSIR-CDRI such as CSIR-TWAS fellowship, RTF-DCS fellowship, CV Raman International fellowship and JRD Tata Fellowship for developing countries. A panel of the research area coordinators



Dr. Saman Habib presenting the achievements and programmes of CSIR-CDRI

Director, CSIR-CDRI Dr. Madhu Dixit said that CSIR-CDRI can contribute in Human Resource Development for Pharmaceutical Research in Ethiopia through its bilateral fellowship programmes, skill development programmes and specialised training programmes.



Dr. Madhu Dixit with Indian ambassador to Ethiopia Mr Anurag Srivastava

and senior scientists discussed various possibilities of research collaborations.

Director, CSIR-CDRI Dr. Madhu Dixit said that CSIR-CDRI can contribute in Human Resource Development for Pharmaceutical Research in Ethiopia through its bilateral fellowship programmes, skill development programmes and specialised training programmes. The Institute can play a major role in setting up a Centre for Excellence at Ethiopia based on its expertise in drug research. In line with CDRI's mission to provide affordable healthcare for all, the Institute can also contribute to the exploration of Ethiopian flora & fauna and screening of their material for medicinal uses in

collaborative research mode and can also contribute to the upliftment of the pharma sector and drug development and research programmes of Ethiopia.

Mr Anurag Srivastava told the panel of scientists that Ethiopia has vast biodiversity and many traditional medicinal plants need to be tested scientifically. He further mentioned that in Ethiopia more than 35 public universities are running, and more than 200 Indian faculties are contributing to the upliftment of science and technical education. CSIR-CDRI can play an important role in the development of the Pharmaceutical Research Sector in Ethiopia, he added. Mentioning the MoU signed last month between

CSIR and Metal Industries Development Institute (MIDI) Ethiopia, he said that there are enormous possibilities for bilateral collaborations in drug discovery and development field also.

Further, he visited various labs and had discussion with the concerned scientists in the labs.



Panel of scientists with the Ambassador

## CSIR-NBRI Launches Alcohol-Free Herbal Hand Sanitizer on National Technology Day 2017

CSIR-National Botanical Research Institute (NBRI), Lucknow, celebrated the National Technology Day on 11 May 2017 with the release of an alcohol-free Herbal Hand Sanitizer.

Dr. Madhu Dikshit, Director, CSIR-CDRI, Lucknow, was the Chief Guest and delivered the Technology Day Lecture on “Phytochemical Drug Discovery and Development in India”.

Dr. Dikshit discussed the recently developed phytochemical drugs by the different CSIR Institutes. She highlighted some of the herbal drugs developed by CSIR-CDRI such as ‘Arteether’ for curing Malaria, ‘Gugulipid’ for arthritis, ‘Picroliv’ – a hepatoprotective drug, ‘Reunion’ – a drug for bone healing and drugs developed for enhancing memory and cognitive strengths from Bacopa plant (Brahmi). Dr. Dikshit also talked about chemical compounds isolated from plants for cardiovascular related

problems, on which further studies are being carried out at CSIR-CDRI. “Affordable Healthcare is a right for all,” she concluded.

On this occasion, an alcohol-free Herbal Hand Sanitizer developed by CSIR-NBRI was launched, and the know-how for the technology of Herbal Sindoor Stick was transferred to M/s Vedic Biocare Pvt. Ltd., Lucknow, by the Chief Guest in the presence of Director, CSIR-NBRI.

Earlier, Prof. S.K. Barik, Director, CSIR-NBRI in his welcome address said, “The National Technology day motivates us to convert our science to technology for the benefit and welfare of the society.”

On this day, various facilities, viz., Exposition, Herbarium, Library, Botanic Garden and R&D Laboratories of the Institute were open for students and the general public.



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## CSIR-CIMFR & Coal India Limited Release the World’s First Highwall Mining Book

Shri Sutirtha Bhattacharya, IAS, Chairman, Coal India Limited (CIL), formally released the first Highwall Mining Book in Kolkata at Coal Bhawan on 20 July 2017. Shri Sanjeev Chopra, Additional Chief Secretary, Government of West Bengal, also graced the occasion. The book *Highwall Mining: Applicability, Design & Safety*,

is authored by Dr. John P. Loui, Dr. Pijush Pal Roy of CSIR-CIMFR, Dr. Baotang Shen, CSIRO, Australia and Dr. Shivakumar Karekal, University of Wollongong, Australia.

Shri Bhattacharya and Shri Chopra both praised the authors for taking up such a challenging task and completing it with invaluable research inputs, various



Shri Sutirtha Bhattacharya, IAS, Chairman, CIL; Shri Sanjeev Chopra, Additional Chief Secretary, Government of West Bengal; Dr. and Mrs Pijush Pal Roy and other senior officials of CIL while releasing the book at Coal Bhawan, Kolkata

case examples and technical guidelines for the benefit of the mining industry in India and abroad.

When an opencast mine is excavated, a highwall remains after excavation, which, in most cases, is either abandoned or covered up. Highwall Mining is a relatively new technology that can extend the life of opencast mines without disturbing the surface dwellings, and maintaining economy and productivity. It is a remotely operated coal mining

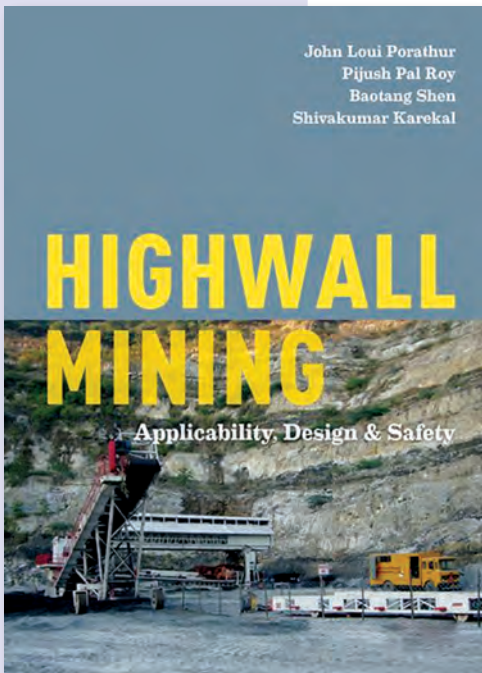
technology that comprises extraction of coal from a series of parallel entries driven in the coal seam from the face of the highwall. These entries are unmanned, unsupported and unventilated.

This technology uses highwall machines where a cutter is placed on the top of a continuous miner and taken through a conveyor inside the seam, which can be almost 500 m deep inside. The operation is carried out by remote control at the surface

where an operator sitting in a cabin uses onboard cameras to monitor and control the progress of the continuous miner.

Over the last few years, a joint research team involving scientists of the CSIR-Central Institute of Mining and Fuel Research (CSIR-CIMFR), Dhanbad, and the Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia, had put all their efforts in carrying out a joint R&D project funded by the Australia-India Strategic Research Fund (AISRF), which resulted in the formation of comprehensive guidelines for highwall mining.

CSIR-CIMFR has also carried out substantial work in the design and field implementation of highwall mining technology at sites in Singareni Collieries Company Limited, South Eastern Coalfields Limited and Tata Steel Limited. The knowledge and experience gained through this joint research project have already appeared in various quality publications. In addition, the Directorate General of Mines Safety (DGMS), India, issued Technical Circular No. 06 of 2013 (dated



22.08.2013), on norms and guidelines for highwall mining based on the studies conducted in India.

Taking stock of the need of the hour, the authors have documented their vast experience and knowledge in this new technological domain in the form of an important book which contains eight extensive chapters covering fundamental, analytical and practical aspects of highwall mining operations under varying geo-mining conditions.

Along with many interesting and innovative case studies, it explains, quite lucidly, some promising areas with future prospects and scope for improvement.

It is also noteworthy to mention here that over 3.5 million tonnes of coal costing approximately US\$ 81 million has already been extracted using this technology from four sites in India successfully, safely and cleanly through the guidance of CSIR-CIMFR. Several coal mining companies are now showing interest in implementing this technology due to its high standard of safety, ease of extraction and good profitability.

The book will undoubtedly bridge the knowledge gap in respect of safe, efficient and cost-effective contemporary technology on highwall mining.



## CSIR-CEERI Inaugurates Innovation-cum-Incubation Hub at Jaipur

An Innovation-cum-Incubation Hub, Jaipur (IIH-Jaipur) of the CSIR-Central Electronics Engineering Research Institute (CSIR-CEERI), Pilani, has started functioning from SATCOM-DST, Jaipur (Indira Gandhi Panchayati Raj & Gramin Vikas Sansthan, Jaipur, Jawahar Lal Nehru Marg, Jaipur) from 17 July 2017. The office building has been allocated by the Department of Science and Technology, Govt. of Rajasthan which was announced by the honourable Minister of Science & Technology (Rajasthan) Mrs Kiran Maheshwari on 1 March 2017.

To commemorate the inaugural day, a one-day workshop on *Internet-of-Things and Renewable Energy Technologies* was organised. The aims of the workshop were to identify the technological gaps, skill gaps, and build alliances with industries, MSMEs, start-ups and entrepreneurs. It was also aimed at utilising the innovations, research



Acharya Satya Dev inaugurating IIH office premises at Jaipur

outcomes and expertise of CSIR-CEERI in the areas of IoT, renewable and smart energy systems. Fifty industrial representatives participated in the workshop.

During the event, CSIR-CEERI signed two MoUs with M/s Rajasthan



Prof. Santanu Chaudhury, Director CSIR-CEERI delivering the inaugural speech

Tools and Spares, Jaipur and JK Lakshmipat University, Jaipur.

Acharya Satya Dev, a contemporary and disciple of Pandit Shriram Acharya, inaugurated the office premises. Shri N.L. Meena, Commissioner, Department of Science & Technology, Govt. of Rajasthan inaugurated the workshop. Prof. Santanu Chaudhury, Director, CSIR-CEERI presided over the inaugural function.

In the inaugural speech, Prof. Santanu Chaudhury said that IIH has been set up with an aim to align with the Govt. of India programmes such as Make-in-India, Start-up India and Skill India. He further added that CSIR-CEERI would conduct high-quality and product oriented research at IIH, Jaipur,

to meet the specific requirements of the industry. CSIR-CEERI would also disseminate first-hand research results to MSMEs and Start-Ups for product innovation. State-of-the-art facilities would be created to support engineering design, product evaluation and test certification. The IIH would also have a co-working platform and provide opportunities for interaction with the investors and technology seekers. CSIR-CEERI would create a full environment for developing innovative electronic products in collaboration with MSMEs and Start-Ups, he added.

Shri N.L. Meena, Commissioner, Department of Science & Technology (DST), Govt. of Rajasthan said that he felt happy to learn that a prestigious



Shri N.L. Meena, Commissioner, DST, Govt. of Rajasthan addressing the participants

science laboratory of the country has been making efforts to connect with the common people in solving some of their genuine problems. The development of science spirit among the students, small scale industries and start-ups have been the key objectives of DST, Govt. of Rajasthan.

There were technical sessions related to Internet of Things (IoT) and its applications. During the first session, four talks were delivered — Dr. Kota Solomon Raju (Keynote speaker), Dr. Ajay Agarwal (Gas sensors and environmental applications), Dr. Anil Saini (Energy management in offices/buildings), and Mr Sai Krishna Vaddadi (RO plant monitoring & management for community water supply).

In the second session, the smart water grid concept & its implementation scheme useful for smart city Jaipur was presented by Dr. S.A. Akbar, Head, Project Management and Business Development (PMBD). The solar testing facility & its scheme at IIT, Jaipur, was presented by Mr Ajeet Kumar Dhakar.

In the third session, there were presentations on IoT-enabled solar inverter by Mr Brijender Verma; Photovoltaic thermal-hybrid-solar collectors and solar tree as IoT node by Dr. Bala Pesala.

In the concluding session, it was informed that CSIR-CEERI has been actively involved in the R&D activities related to IoT and modern solar technologies:

- CSIR-CEERI has designed and developed 500 W and 1kW solar trees optimised for various geographic locations using actual solar insolation data. The technology has been transferred to Central Electronics Limited (CEL), Sahibabad. CSIR-CEERI is also working on integrating the lighting, Wi-Fi connected sensors (for pollution and environment



Exchanging of MoU documents between CSIR-CEERI and M/s Rajasthan Tools and Spares, Jaipur



Exchanging of MoU documents between CSIR-CEERI and JK LakshmiPat University, Jaipur

monitoring) and smart camera systems for security and surveillance. Scaling-up of the technology to 3 kW and 5 kW is in progress. The technologies can be easily deployed in the cities (alongside the roads and highways), in decentralised power generation applications, in agriculture lands and at borders for security.

- CSIR-CEERI has designed and fabricated 100 W prototype of simultaneous electrical and thermal energy source using a single solar system, which is a low-cost scheme and substantially saves roof space. Scaling-up of the technology to 1

kW and 10 kW is in progress.

- High contrast grating based smart power windows have also been developed for generating power, providing natural light and to reduce air conditioning load of a building. Smart power window based on nanophotonic structure showed power generation potential of 20-40 W/m<sup>2</sup>. Fabrication and scaling-up of the technology are currently in progress.
- CSIR-CEERI has developed 5 HP solar pump inverter. Scaling it up to 10 kW and the grid-tie option is being added while the pump is not in use.
- Recently, 1 kW Grid-tied solar inverter has also been developed, which maintains the THD less than 5 % over 50 % to 100 % of the power range. Presently, scaling it to 3 kW with battery charging feature and seamless transition between grid-tie to stand alone mode is being pursued.

Towards the end of the workshop, Dr. Ram Prakash, Head, CSIR-CEERI-IIH, Jaipur proposed the vote of thanks.

### MoUs

## CSIR-CDRI Signs Agreement for Discovery & Development of Potential Anti-Obesity Drugs with DRL & DRILS, Hyderabad



An agreement was signed on 23 June 2017 between the Department of Science and Technology (DST), Dr. Reddy's Laboratories Ltd (DRL), CSIR-

Central Drug Research Institute (CSIR-CDRI) and Dr. Reddy's Institute of Life Sciences (DRILS) to initiate DST & DRL funded project on "Novel Small

Molecules as selective and Positive Allosteric Modulators (PAM) of 5-HT<sub>2c</sub> receptor: Discovery and Development of potential Anti-obesity Agents". The project has received funding from both DST (~100 lakhs) under the Drug and Pharmaceuticals Research Programme (DPRP) and DRL (~45 lakhs) as the industry partner. The grant amount (Rupees 145 lakhs) will be shared by CSIR-CDRI and DRILS almost equally.

The project is focused on the discovery and development of anti-obesity drugs because obesity is a global epidemic health problem as over 2.1 billion people worldwide are above their ideal weight. Hence, the approach that is being proposed here is the design and development of a small synthetic molecule with a new mechanism of action of 5-HT<sub>2c</sub> agonism coupled with

PAM (Positive Allosteric Modulator) activity for the potential treatment of obesity with better efficacy and safety profile than the only existing drug in the market for this target.

The agreement was signed in the presence of Dr. Sobhana Bhaskaran (Scientist-E, Technology Development and Transfer Division, DST), Dr. A. Venkateswarlu (Director, DRILS) Mr M.V. Narasimham (Senior Vice-President, Finance, DRL), Mr Naseem Ahmed Siddiqui (Scientist, Business Development & Intellectual Property Unit, CSIR-CDRI), Dr. Uday Saxena (Professor, Translational Research and Mentor in Residence, DRILS), Prof Parimal Misra (Dean of Academic Affairs-Biology) and Prof Manojit Pal (Principal Investigator, Dean of Academic Affairs-Chemistry, DRILS).



## MoU Signed Between CSIR-SERC and SAIL-DSP

CSIR-Structural Engineering Research Centre (CSIR-SERC), Chennai, has signed a Memorandum of Understanding (MoU) with Durgapur Steel Plant (DSP) of Steel Authority of India Ltd. (SAIL), a PSU Maharatna under the Ministry of Steel, Govt. of India, on 22 June 2017, for condition assessment of concrete and steel structures of different shops and installations in SAIL-DSP situated at Durgapur, West Bengal.

The MoU, for two years with a provision of extension for another two years, was signed by Prof.

Santosh Kapuria, Director, CSIR-SERC, Chennai, and Shri Nabarun Roy, General Manager (Safety & Fire Services), Durgapur Steel Plant, Durgapur.

SAIL-DSP, a key steel plant of SAIL has the capacity of producing 2.3 million tonnes hot metal per year and is the only plant that supplies wheels to the Indian Railways. It is a fully integrated steel plant and has a vast network of conveyor belts, hoppers, gas line network and other steel structures and buildings for facilitating the operation of integrated



Prof. Santosh Kapuria, Director, CSIR-SERC, and Shri Nabarun Roy, General Manager, SAIL-DSP, exchanging the signed MoU

iron and steel making.

During the signing of MoU, Shri Roy mentioned that SAIL-DSP is the first SAIL plant that is proactively taking up condition assessment of its structures. He also mentioned that many structures in SAIL-DSP are 50-60 years old and the condition assessment of its structures by CSIR-SERC will greatly help them in their safe functioning and productivity.

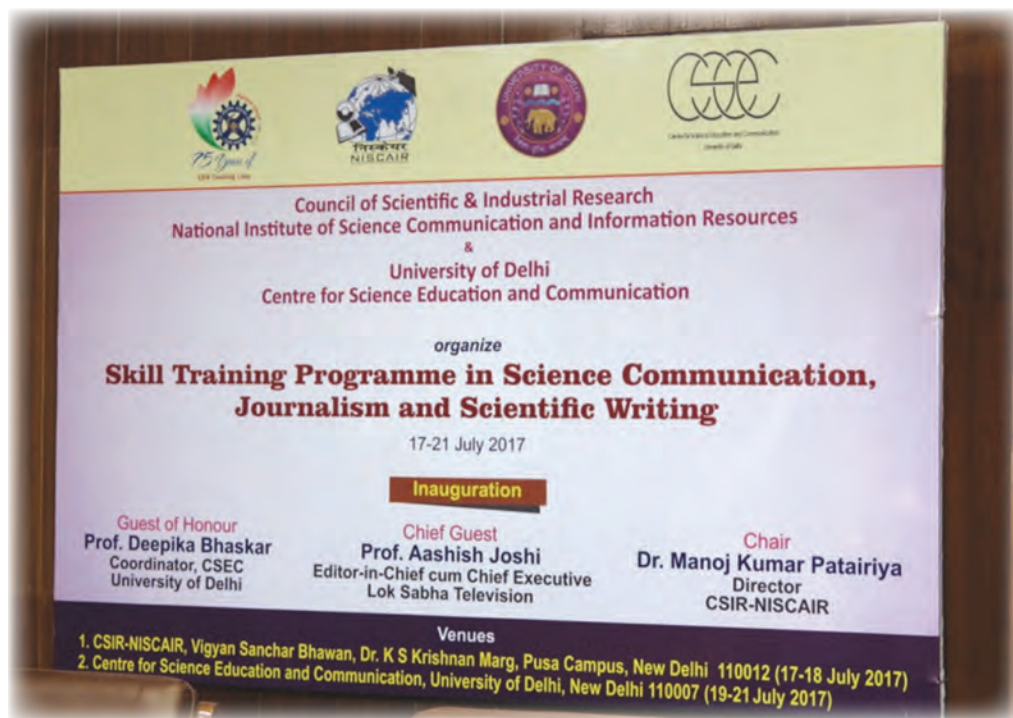
Condition assessment of concrete and steel buildings and structures is an important requirement to provide recommendations for suitable repair and remedial measures for restoration and rehabilitation of affected structures, which in turn will ensure the structural integrity and adequacy of such structures. CSIR-SERC has vast

expertise and world class state-of-the-art facilities for carrying out testing, research and consultancy services in the areas of condition assessment of civil structures for industries and utilities as per national and international standards.

Citing the long association of CSIR-SERC with National Thermal Power Corporation (NTPC) for condition assessment of its plants, Prof. Kapuria, Director, CSIR-SERC, mentioned that with this MoU, CSIR-SERC is extending its services to the steel sector for the first time. He also pointed out the significance of condition assessment of structures by CSIR-SERC in key sectors such as thermal power, steel, etc., which in turn ensures their safe and uninterrupted functioning.

## Workshops/Training Programmes

# Skill Enhancement Initiative in Science Communication, Journalism and Writing at CSIR-NISCAIR



The past few years have become a cause for concern due to the declining quality and effectiveness of S&T coverage. Hence, there is a need to effectively communicate the research work done in labs and their outcomes to the public. It is important to train Indians to communicate science effectively to enhance the appreciation of science beyond the boundaries.

With this objective in mind, the CSIR-National Institute of Science Communication and Information Resources (CSIR-NISCAIR) in association with the University of Delhi, Centre for Science Education and Communication (CSEC) organised a “Skill Training Programme in Science Communication, Journalism and Scientific Writing” during 17-21 July 2017.

The workshop was held at CSIR-NISCAIR, Pusa Campus, New Delhi,



Dr. Manoj Kumar Patariya welcoming Mr Aashish Joshi, the chief guest

for two-days and CSEC, Delhi University for three-days. The workshop, which was attended by participants from different fields, sought to facilitate their interaction with some of the experienced and established subject experts. Some of the key members who initiated and realised the one-of-a-kind science workshop were Dr. Manoj Kumar Patariya, Director, CSIR-NISCAIR; Prof. Deepika Bhaskar, Coordinator, CSEC, University of Delhi; Mr Hasan Jawaid Khan, Chief Scientist, CSIR-NISCAIR; and Mr Mukesh Pund, Sr. Principal Scientist, CSIR-NISCAIR.

Prof. Aashish Joshi who was the Chief Guest of the program is Editor-in-chief cum Chief Executive in Lok Sabha Television. He said that the researches being carried out in laboratories are needed to be conveyed to the society to benefit them and also to develop the scientific temperament in common people, and for this, it is important that the science should reach them in a language that they can easily understand.

Addressing the gathering further, Dr. Joshi said, “Science journalism is a very interesting subject as it combines

science and journalism together. The motive of science is welfare the society and so we should analyze the impact of every invention and experiment that we do.”

Talking about the skill development in science writing, the Chief Guest emphasized on the language of communication. He said that a science journalist should have the ability to explain scientific ideas to the common people in a language that they can understand and feel connected with.

Prof. Deepika Bhaskar, Guest of Honour, said that the programme has been extremely encouraging for CEC to further bring it into its present shape and structure. Each component of the program is an area in itself. She said, science communication, science journalism and scientific writing are all areas that barely see employment today but will become forefront in the next few years.

She said that science communication is being done these days through social media like Facebook, Twitter, Google etc. – science communication is spreading its wings. It needs to be seen how people with PhDs can contribute



Mr Aashish Joshi addressing the participants



Prof. Dipika Bhaskar addressing the participants

to science communication and how their analytical skills can help to analyse data and research into a more popular scientific way.

Dr. Manoj Kumar Patairiya, Director, CSIR-NISCAIR while addressing the participants advised them to take advantage of this workshop training from experts to enhance their skills as well as knowledge to be a better science communicator, science journalist and scientific writer. Dr. Patairiya said that a combination of the right scientific knowledge and scientific temperament can lead to solutions for many problems of mankind. He said that if one has the ability to sense the science in the news or any information, he or she can be a better science communicator and writer.

Earlier, Mr. Mukesh Pund, Scientist at CSIR-NISCAIR in his welcome address, welcomed all the dignitaries and participants and said that CSIR-NISCAIR has been in the forefront of science communication in the country with its scholarly peer reviewed research journals, well circulated popular science magazines, encyclopedic publications, popular science books, information resources and services.

The main session for day one flagged off with the Editor, *Science Reporter* magazine, Mr Hasan Jawaid

Khan taking centre stage. Mr Khan convincingly explained the area of growth and opportunity in the field of popular science writing. Being an editor of India's oldest science monthlies — *Science Reporter* – he shared the nuances and fundamentals of scientific writing. He also discussed the ethics and styles of writing for publication, journal and a magazine.

After a heavy lunch, the session became rather light when participants were given a few editions of the *Science Reporter* magazine as well as other creative assignments of science writing. For some, it was a first time experience which gave them a general idea of how to start writing. However, even those who were well-versed had a lot to grasp from the expert in popular science writing. The audience



Mr Hasan Jawaid Khan, Editor, Science Reporter, delivering his lecture on popular science writing



were inspired to begin their journey as writers, and contribute in the field of science communication.

Mr Surjit Singh, CSIR-NISCAIR, shared a vast and vivid experience in the field of short film production, scientific documentaries, science videos, etc. The talk was quite interactive as well as interesting and included simple techniques to make science videos, for example using a smartphone, which almost everyone has these days. The participants were also shown some of the videos which were liked by all. However, perhaps the best activity of the day for the audience was when they were given an opportunity to face the camera. The experience of being in a studio and seeing the advanced technical equipment was exciting.

Ms Neeru Sharma from CSIR-NISCAIR, effectively showed how to blend graphic arts with science communication and make it more lively. She emphasised the importance of visual effects and appearance particularly in articles related to science, a field that is conventionally perceived to be relatively dull in terms of content as well as reader's interest. According to her, images and visuals can add significant value even to an already informative text

and sometimes also bring life to a feeble article.

Mr Pankaj Gupta, CSIR-NISCAIR, informed the participants about the different processes involved in the production of scientific publications. He also talked about the basics of printing from the quality of print material required to the adequate size of the magazine. Next was a visit to the state-of-the-art printing press in NISCAIR where the associated staff introduced the trainees to the printing press in action and also explained the interesting colour blending techniques used by them.

Day three onwards, the workshop was conducted at Delhi University, Centre for Science Communication and Education. The day began with a highly intellectual science communicator taking the mike, a Biotechnologist by profession, Dr. Sarita Ahlawat. Her lecture focused on the relation between science and government. "The repercussions of not communicating well can be grave," she expressed her concern. Having lived and worked in the United States, she shared how the lack of awareness in public and the role of media in communication impacted the health of the American



Group photo of the participants

society during the MMR vaccine controversy.

On the final day of the training, Mr Pallav Bagla from NDTV addressed the audience. He inspired the attendees to venture into the field of science reporting in the mass media. He put the spotlight on the evolving scientific trends in India over the decades, from the perspective of science journalists.

To make it more interesting, Mr Nimish Kapoor from Vigyan Prasar showed some fun-filled and knowledgeable videos which left the audience mesmerised. He explained how simple and easy it is to create a professional science video with the help of some online tools and applications which are available free for all.

The penultimate round of the last day was all about presenting and sharing what the trainees had learned during the

workshop. All members had to give a small presentation on any general topic related to science, and the presentations were no less than a spectacle.

The workshop aimed to contribute towards a meaningful involvement of science with the society. Science communication, research communication, popular science writing, scientific publications, science journalism, print, digital data and data journalism were some of the key areas covered during the training programme.

The valedictory session was held in the presence of Dr. Chander Mohan from NCSTC, DST. The training concluded with the members receiving participation certificates and a vote of thanks by Prof. Deepika Bhaskar from Delhi University.

*Contributed by Prashant Raghav & Kirti Bansal, CSIR-NISCAIR*



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## Training Programme on Concrete Mix Design and Sustainable Construction Technologies

A two-week training programme on “Concrete Mix Design and Sustainable Construction Technologies” was organised during 22 May to 2 June 2017 at CSIR-Structural Engineering Research Centre (SERC), Chennai. Eighteen participants from various engineering colleges, institutions and universities attended the programme.

Dr. K. Balaji Rao, Chief Scientist and Advisor (M), CSIR-SERC, inaugurated the programme on 22 May 2017 and delivered the inaugural address. Thirty-four hours of lectures on topics related to advances in the field of concrete technology, including sustainable

construction technologies were covered during the programme. The topics included, concrete materials, mix design methods, advanced concrete composites, self-compacting concrete, introduction to nondestructive testing methods, sustainable concrete, prefabricated construction, fracture mechanics, the design of concrete members, recycled aggregate, high strength concrete, fibre reinforced concrete, pre-engineered building, etc. The sessions were handled mainly by the senior scientists of CSIR-SERC and three resource persons from industry and academia were also invited to deliver lectures.



Kendriya Vidyalaya Sangathan (KVS) has initiated a wide-ranging Scientist-Students Connect programme named JIGYASA through its laboratories nationwide. The programme is designed to connect 1151 Kendriya Vidyalaya with 38 National Laboratories of CSIR across the country targeting 100,000 students and nearly 1000 teachers annually.

The participants also visited various state-of-art facilities at CSIR-SERC, such as Advanced Seismic Testing and Research Facility, Wind Engineering Laboratory, Fatigue and Fracture Laboratory, Advanced Materials Laboratory, Tower Testing & Research Station and Advanced Concrete Testing & Evaluation Laboratory.

During the practical sessions, three concrete mix proportioning was prepared for M35 grade concrete with cement, fly ash and superplasticiser. The compressive strength of cubes was tested for three days and seven days in the laboratory. A geopolymers

concrete mix with a target strength of 35 MPa was also demonstrated to the participants. Demo sessions were also organised for nondestructive testing and precast elements.

The valedictory programme was organised on 2 June 2017. Prof. Santosh Kapuria, Director, CSIR-SERC, delivered the valedictory address and distributed the certificates to the participants. The training programme was coordinated by Shri V. Srinivasan, Sr. Scientist, Shri S. Sundar Kumar, Scientist and Dr. B.H. Bharatkumar, Sr. Principal Scientist, of the Advanced Materials Laboratory, CSIR-SERC.

## CSIR-IICB Organises 'JIGYASA' – Interactive Training Camp for KV Students

CSIR in collaboration with Kendriya Vidyalaya Sangathan (KVS) has initiated a wide-ranging Scientist-Students Connect programme named JIGYASA through its laboratories nationwide. The programme is designed to connect 1151 Kendriya Vidyalaya with 38 National Laboratories of CSIR across the country

targeting 100,000 students and nearly 1000 teachers annually. The objective of this programme is to connect school students to scientists for extending students' classroom knowledge with that of a very well planned research laboratory based hands-on learning.

As a part of this initiative of CSIR,



a group of 30 students of class XII and 5 teachers from Kendriya Vidyalaya, Ballygunge, Kolkata, took part in the first training camp, Jigyasa–2017, organised by CSIR-Indian Institute of Chemical Biology (CSIR-IICB), Kolkata, in its Jadavpur and Saltlake campus during 3-7 July 2017.

Dr. S. Bose, Assistant Commissioner, Kendriya Vidyalaya Sangathan, Kolkata, was present as Guest of Honour and Dr. K. Muraleedharan, Director, CSIR-CGCRI, was present as Chief Guest in the inaugural programme on 3 July 2017. Dr. G. Suresh Kumar, Chairman, Organising Committee, Jigyasa-2017 in his welcome address said that CSIR-IICB is glad to arrange this student outreach programme to provide school students with first-hand research experience. “We strongly believe that such a programme will instigate scientific motivation to the students, ignite young minds about scientific research, and inculcate the spirit of scientific thoughts in them,” he added.

CSIR-IICB, Director, Dr. Samit Chattopadhyay said that the idea of this interactive programme is to encourage the students in asking (Jigyasa), exercise their curiosity in nature, life and science. This kind of programme will attract fresh minds in scientific research which will facilitate them to choose a career in

research and development, he added.

In the inaugural address, Dr. S. Bose described the background and structure of KVS and expressed his hope that continuing the programme will certainly lead to immense improvement in our education system and it will empower the students in building a scientific career.

Dr. K. Muraleedharan in his brief address described the students’ role as most important in achieving benefits of knowledge from the teachers. The inquisitive minds of students keep the teachers active and updated in scientific information, and thus the teacher-student interactions are beneficial to both of them, he added.

The week-long programme consisted of basic lab experiments, popular science lectures, science quiz, demonstrations, laboratory visits and one-to-one interactions with scientists and PhD scholars. The students were enlightened about biosafety and chemical safety, trained on useful software like Microsoft PowerPoint, Microsoft Excel, Adobe Photoshop, Dream Weaver, etc.

During the programme, different topics on conceptual understanding of scientific perceptions along with their practical demonstrations were covered. The students visited laboratories where exciting areas of research in biology,

Dr. K. Muraleedharan in his brief address described the students’ role as most important in achieving benefits of knowledge from the teachers. The inquisitive minds of students keep the teachers active and updated in scientific information, and thus the teacher-student interactions are beneficial to both of them, he added.

## Workshops/Training Programmes



chemistry and chemical biology were going on. They got first-hand experience about the modern aspects of R&D including instrumental techniques used to facilitate high-end research.

On the concluding day, popular talks were given by the scientists on biology, natural products to cope with gastric disorders, common health problems and societal impacts of green chemistry. Students also participated in a science

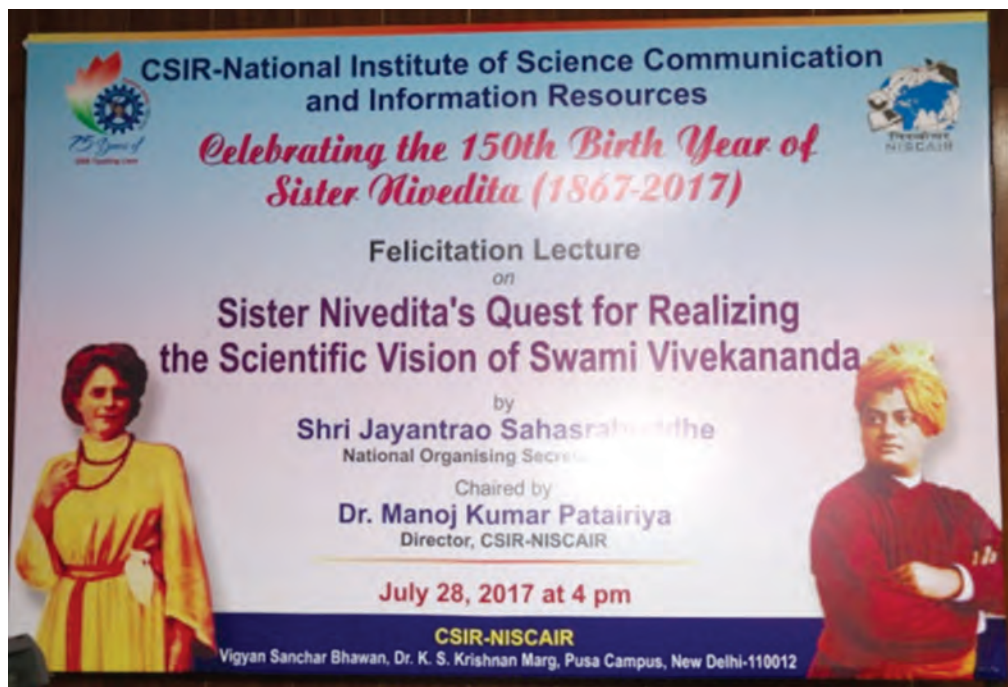
quiz with great enthusiasm.

Dr. Suman Lata, Principal, KV Ballygunje was present in the concluding session. The vote of thanks was delivered by Dr. Neeta Vatsala Massey Khalkho, convener of Jigyasa-2017. Certificates of participation were awarded to the students and the teachers. The programme ended with great success as the feedbacks received from the students, teachers and the Principal were highly appreciative.



## Lectures

# Felicitations Lecture on “Sister Nivedita’s Quest for Realizing the Scientific Vision of Swami Vivekananda”



On the occasion of the 150th birth anniversary of Sister Nivedita (1867-2017), CSIR-National Institute of Science Communication and Information Resources (NISCAIR), New Delhi, organised a felicitations lecture by Shri Jayantrao Sahasrabudhe, National Organising Secretary, ViBha on “Sister Nivedita’s Quest for Realizing the Scientific Vision of Swami Vivekananda” on 28 July 2017. The event was chaired by Dr. Manoj Kumar Patariya, Director, CSIR-NISCAIR.

Dr. Manoj Kumar Patariya in his welcome address said that our ancient visionaries have made an immense contribution to strengthen the fundamentals in the field of science and technology. Swami Vivekananda inspired Jamsetji Tata to establish an



Dr. Manoj Kumar Patariya welcoming Shri Jayantrao Sahasrabudhe, the chief guest



Shri Jayantrao Sahasrabudhe, National Organising Secretary, ViBha delivered felicitation lecture on "Sister Nivedita's Quest for Realising the Scientific Vision of Swami Vivekananda"

During his talk, he raised a question: "what is the final destination of science?" He said science is nothing but the finding of unity. According to Swamiji as soon as science would achieve perfect unity, it would stop from further progress and development, since it would reach the target, he added.

R&D institution in India. He also gave a number of thoughts that were translated into action by sister Nivedita through the establishment of a series of schools across the country especially promoting modern education, he added.

Talking about the scientific vision of Swami Vivekananda, Shri Jayantrao Sahasrabudhe said that he was the inspiration for freedom fighters. Swami Vivekananda delivered the famous speech in Chicago and represented Indian philosophical thought and Hinduism at the "Parliament of the World's Religions (1893)," he added.

He explained Indian philosophical thoughts beautifully related to science and technology. During his talk, he raised a question: "what is the final destination of science?" He said science is nothing but the finding of unity. According to Swamiji as soon as science would achieve perfect unity, it would stop from further progress and development, since

it would reach the target, he added.

Explaining the history of science Shri Sahasrabudhe said that before the discovery of the electron by J J Thomson in 1897, we had a notion that the atom cannot be divided further. Newton's theory fitted into all physical objects in the universe, and everyone thought that physics had reached its destination finally. However, people could peep into the structure of the atom by the discovery of the electron. Soon people realised that there was a need to apply Newton's law to the motion of the electron, but they failed. People got to know the limitations of Newtonian physics at that point. They started working on developing new physics from these particles which were unknown, and quantum physics came into existence, he added.

There are five basic forces of nature (electric, magnetic, weak, strong and gravitational) which are converted into three — Electromagnetic, Gravitational and Nuclear forces. Einstein thought that we need a unified theory which will explain all the five forces at one go. However, till today it has not been achieved, and great scientists like Stephen Hawking have said that even today we have not reached that point and if we reach that point that might be the end of theoretical physics. Scientists are working to generalise these three forces into one. That is what was expressed by Swami Vivekananda in the "Parliament of World's Religions". Shri Jayantrao stated that we have to understand the depth of Vivekananda's intellect at that time. His insightful and valuable statements are coming closer to the conclusions being interpreted today by scientists.

In 1896 Vivekananda was invited by

Harvard University for a lecture, and the topic given to him was Vedic cosmology. He explained how the entire universe has manifested from one single particle. Swamiji said that in the Vedas it was explained that force and matter could be reduced to potential energy. Nikola Tesla found it excellent and wanted to establish a mathematical expression for this concept according to modern science. But he failed to do so, and after ten years Einstein came up with his famous equation  $E=mc^2$  and published his paper on relativity. Einstein quoted that this concept of interchangeability between mass and energy was given by sanyasi Kanada. Such statements given by Swami Vivekananda before 1900 revealed the in-depth knowledge of ancient Indian culture and Vedanta of Vivekananda which was later proved according to modern science.

Shri Jayantrao said that we need to understand the mindset of the Japanese people. He emphasised that the Indian youth need to realise and learn from them how they became self-reliant in all aspects, especially with the help of S&T. They are trying to develop everything

on their own in the country by taking ideas from European countries.

Swamiji explained that the Patanjali theory of evolution is far more advanced than the theory of Charles Darwin and one should take up this topic for research and the entire world is now looking for Patanjali, said Shri Jayantrao.

Talking about the establishment of the research institution in India Shri Sahasrabuddhe said that Jamshedji Tata accidentally met Vivekananda when he was going to attend the Columbian mega expo in 1893 in search of technology. Jamshedji during his journey was thinking of making his country self-reliant in the domain of steel and discussed the same with Swamiji. At that time GDP of any country was directly proportional to the production of steel in that country, added Shri Jayantrao. So, Swami Vivekananda suggested him to take help from Americans to develop steel plants but also told him that America would not share the technology or the science behind it. So, Swamiji advised him to establish a scientific research institution in India, which gave birth to two premier research institutions in India — Indian



Dr. Manoj Kumar Parairiya, Director, CSIR-NISCAIR addressing the gathering

Institute of Science (IISc), Bengaluru, set up in 1909 and the Tata Institute of Fundamental Research (TIFR), Mumbai, established in 1945 with the active support of Jamshedji Tata. This was another example of Vivekananda's enthusiasm for science.

Shri Sahasrabudde said that Sister Nivedita was one of the disciples of Swami Vivekananda and she met him in 1895 at UN when she was in search of *moksha*. She found Swami ji as a guru and attended his lecture on spirituality. She met Abala Bose, the wife of Sir JC Bose in 1898 in Kolkata. And soon they started sharing ideas for woman education in India. She also came across the husband of Abala Bose, Sir JC Bose who was doing great things in the field of science. There is a scientific research paper, *Sister Nivedita's influence on J. C. Bose's writings*, which states that Bose's style of writing changed considerably in comparison to the earlier after came in contact with sister Nivedita.

Being a Physics professor, Sir J.C. Bose had to conduct many experiments

in a good scientific laboratory, but because of money problem, things were quite difficult. Realising the same, sister Nivedita helped him and went to another disciple of Swamiji Sara Ole Bull to establish a scientific laboratory in India. She gave 20,000 dollars for the establishment of a scientific laboratory in India to JC Bose. The amount was the same given to Nobel Prize winners at that time.

In 1917 JC Bose established his lab in Kolkata which is now known as Bose research institute and celebrating its 100th anniversary. In the inaugural speech of the laboratory, Sir Bose said that it was the dream of Sister Nivedita which was realised in the Institute called as Vasu Vigyan Mandir. Also, the logo of the institute was designed by Bhagini Nivedita. She took all kind of efforts to realise the dream of Swamiji and all scientific idea of Swamiji to establish scientific research institution in India for the development of the country.

Contributed by Kirti Bansal,  
CSIR-NISCAIR



## Honours & Awards

# Telangana Academy of Sciences (TAS) “Young Scientist Award-2016” for CSIR-NGRI Staff



Left to right: Dr. Uma, Dr. CH. Mohan Rao, Dr. K. Chandrasekhar

Dr. (Smt.) Uma Vadapalli, Technical Assistant at the CSIR-National Geophysical Research Institute (CSIR-NGRI), Hyderabad, has received the prestigious “Young Scientist Award for the Year 2016” from the Telangana Academy of Sciences (TAS), Hyderabad. The award was presented by Dr. CH. Mohan Rao, President Telangana Academy of Sciences and Dr. K. Chandrasekhar, Director, CSIR-IICT.

The Young Scientist Award-2016 has been awarded to Dr. Uma to recognise her significant contributions towards the development of an algorithm for reservoir permeability modeling by

using fractal theory & Monte-Carlo technique. The algorithm has been applied to model permeability distribution of Ankleshwar hydrocarbon reservoir, Cambay basin, India. Dr. Uma has been working in CSIR-NGRI on hydrocarbon reservoir modeling studies. She obtained her PhD from the Osmania University in the year 2016.

Dr. V.M. Tiwari, Director, CSIR-NGRI has been elected as Fellow of Telangana Academy of Sciences while Dr. Subash Chandra, Dr. M.S. Kalpana, Dr. D. Shashidhar and Dr. A. Vasanthi have been elected as Associate Fellows of the Telangana Academy of Sciences.

Obituary

## Former Director of CSIR-CDRI Prof. B.N. Dhawan Passes Away

Former Director CSIR-Central Drug Research Institute (CSIR-CDRI), Lucknow, Prof. Bholu Nath Dhawan who was distinguished for his contribution to the success of CSIR-CDRI in developing several drugs, died on 16 June 2017.

Prof. Dhawan joined the Pharmacology Division of CSIR-CDRI in 1967 as Assistant Director, a journey that lasted for nearly three decades in various capacities: Assistant Director (1967-75), Deputy Director (1975-83), Scientist in Director's Grade (1984-1988), Director (1988-1992) and Scientist Emeritus (1992-97). As an outstanding Pharmacologist of the country, Prof. Dhawan also contributed in various capacities in resolving several scientific issues and left his imprint both nationally and internationally.

His vast research interests encompassed Neuropharmacology, particularly characterization of CNS Neurotransmitter Receptor. Prof. Dhawan fully directed his research efforts in fulfilling the ultimate aim of the Institute to develop new drugs for the ailments prevailing in the Indian population.

Prof. Dhawan received many National and International recognitions for his expertise and devotion. He acted as a consultant to various National and International bodies such as IUPHAR,



UNIDO, WHO, UNESCO, ICMR, DBT, etc. The Third World Academy of Sciences Award (1996), OP Bhasin Award (1990), Ranbaxy Award (1988) and Life Sciences Foundation Research Award (1985) are included in the list of numerous awards conferred on Prof. B.N. Dhawan. He authored over 400 research papers in reputed biomedical journals, wrote/edited about 20 books and had over 50 patents to his credit.

Having superannuated from CSIR-CDRI in 1992 as Director (1988-1992) after serving the Institute in various capacities for over twenty-five years, Prof. Dhawan remained scientifically active and donned several scientific and administrative roles in science bodies of the country.

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