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In The News

S&T Minister Calls for Greater Connect between Industry and Academia



Dr Jitendra Singh, Union S&T Minister, laid stress on building sustainable start-ups with indigenous innovations. He was speaking at the inaugural function of the “Iconic 75 Industry Connect (‘i’ Connect)” event at Jorhat, Assam, on 12 May 2022.

The Hon’ble Minister said, innovative start-ups by young entrepreneurs must shoulder the responsibility for India’s ascent in the next 25 years, when the country will celebrate 100 years of its Independence, as a frontline nation in the world.

Referring to Prime Minister Narendra Modi's vision of Government-Industry Connect, Dr Jitendra Singh said that the iconic 75 Industry Connect ('i'-connect) events aim to forge partnerships with industry in 10 thematic/focus areas.

The industry connect programme aims to explore globally benchmarked technologies and products for making the country self-sustaining and self-generating. While the research establishments in the country are well equipped to develop world-class technologies and products in laboratories, there is a gap in taking these to the market and ultimately to the society, said Dr Jitendra Singh.

Noting that research and industry share a reciprocal relationship to thrive and grow, the Union Minister urged the industry to have an equal stake in R&D through meaningful investment to make and take world-class products from laboratories to market. He also underlined the need for brand building of the products to carve a niche in Indian and world markets.

Referring to Prime Minister Narendra Modi's vision of Government-Industry Connect, Dr Jitendra Singh said that the iconic 75 Industry Connect ('i'-connect) events aim to forge partnerships with industry in 10 thematic/focus areas. It is a consolidated effort of DSIR/CSIR, DBT, DST, MoES, and other scientific departments of the Government of India to reach out to the industry. Coming together of several scientific departments for the cause of science is a phenomenon seldom seen before, and team spirit is the key mantra of the Government, the Minister added.

Dr Jitendra Singh said the reason to start the series of industry i-Connect from Jorhat in Assam stems from the Prime Minister's high priority for developing the North-Eastern Region. He reminded that in 2014 itself, the PM had made it clear that the Government's priority was to bring the underdeveloped regions of the North-East, J&K, and other hill states and island territories at par with the developed regions of the

country. He hoped the northeast region would become the destination of future start-ups, entrepreneurship, and new investment.

Dr Jitendra Singh lauded the role of scientific organisations in India's progressive journey and added that the industry knows the intricacies of taking the technologies from labs to land. He said, given this, the forging of partnerships with industry is of paramount importance and called for further strengthening of ties between academia and industry to develop cutting edge technologies and products and deliver them in the shortest possible time frame to realise the vision of Prime Minister for "Samarth" and "Atmanirbhar Bharat".

The Minister informed that each 'i'-Connect event would include a variety of programmes such as conferences, plenary talks, technical exhibitions, B2B meetings, round table discussions and breakout sessions, enabling the promotion and fostering of businesses.

The unique series of 75 Industry Connect ('i'-connect) events put up by the Ministries of Science & Technology & Earth Sciences aim to showcase the achievements in diverse S&T areas as part of the *Azadi Ka Amrit Mahotsav* celebrations, commemorating Independent India's 75 years of progress and the glorious history of its people, culture, and achievements.

Dr Jitendra Singh said that as an outcome of these events, he would look forward to receiving White Papers for thematic areas for collaborative research and technology development. This should have definitive targets and well-thought plans/roadmaps for achieving the same with strict timelines, the Minister stressed.

In his address, Shri Keshab Mahanta, Minister for Health and Family Welfare, Science and Technology

and IT, Assam Government said that the CSIR Compendium of Technologies for Entrepreneurship of Relevance in North East India will help in building technology-based entrepreneurship in the region.

Dr V.K. Saraswat, Member NITI Aayog, in his address, said that in the

last 7-8 years, India has jumped from 85th to 47th rank in Global Innovation Index, which has created a major cultural shift in the start-up culture in the country. He said the country could further leapfrog in the Innovation Index by bringing more and more industry into the innovation eco-system.

Hon'ble Ministers Release Special Issues of *Science Reporter* & *Vigyan Pragati*



During the inaugural programme of "Patch Fill Machine for Pothole Repair & Mobile Cold Mixer cum Paver Machine" organised by CSIR-Central Road Research Institute (CSIR-CRRI), New Delhi, on 9 May 2022, Dr Jitendra Singh, Hon'ble Union Minister for S&T; Mr Nitin Gadkari, Hon'ble Minister of Road Transport & Highways; and General Vijay Kumar Singh, Hon'ble Minister of State for Road Transport & Highways and Civil Aviation, released the May 2022 special issues of *Science Reporter* & *Vigyan Pragati*, focussing on India's Science & Technology Missions. *Science Reporter*

(English) & *Vigyan Pragati* (Hindi) are monthly science magazines published by CSIR-National Institute of Science Communication and Policy Research (CSIR-NIScPR), New Delhi.

As part of the *Azadi Ka Amrit Mahotsav* special issue series, and also to commemorate India's National Technology Day 2022 (11 May), the special issues focus on "India's S&T Missions" addressing specific issues related to electric vehicles, semiconductors, hydrogen energy, deep ocean exploration, biodiversity & health, waste management, quantum computing, and making India digital.

CSIR-NPL Celebrates World Metrology Day



Prof. A.K. Grover addressed the gathering and highlighted the importance of metrology and the role of NPL as a National Metrological Institute (NMI) in this direction.

CSIR-National Physical Laboratory (CSIR-NPL), New Delhi, is the custodian of national measurement standards through an act of Parliament and provides traceability to SI units in India. CSIR-NPL in association with the Metrology Society of India (MSI) organized the "World Metrology Day" on 20 May 2022 to commemorate the anniversary of the signing of the historic "*Metre Convention*" on 20 May 1875.

The theme for World Metrology Day-2022 was "Metrology in the Digital Era", which was announced jointly by the International Bureau of Weights and Measures (BIPM) and the International Organisation of Legal Metrology (OIML). This theme was chosen for introducing digital measurement frameworks and requirements for an open and transparent exchange of

digital information technology for revolutionising the scientific community, improving processes, and providing the way for new opportunities through new digital initiatives in metrology.

The event was inaugurated by Dr D.K. Aswal, Director of Health, Safety & Environment at Bhabha Atomic Research Centre (BARC), along with Prof. A.K. Grover, Chairman, Research Council of CSIR-NPL, Prof. Venugopal Achanta, Director CSIR-NPL and Dr Sanjay Yadav, Vice-President, MSI.

The event began with the welcome address by Prof. Venugopal Achanta. Further, Prof. A.K. Grover addressed the gathering and highlighted the importance of metrology and the role of NPL as a National Metrological Institute (NMI) in this direction. Dr Sanjay Yadav Introduced the vision and mission of

MSI and its activities held over the last year. The keynote address was delivered by Dr D.K. Aswal. He emphasised on the digital transformation in metrology and its impact on Quality Infrastructure in India. He also stressed that NPL should work on certified time dissemination to the users as cyber secure functionality of the entire digital infrastructure depends on accurate time stamping.

On this occasion, the World Metrology Day poster was released by the dignitaries. Three Bharatiya Nirdeshak Dravyas (BNDs®) namely, BND 6019 for gas, BND 4203, and BND 4204 for gold alloys, respectively, were also released.

India's first Robotic Mass Comparator was also inaugurated during this event. The robotic mass comparator is a unique and state-of-art facility that serves both the fundamental research and highly accurate automatic measurements in the field of mass. The automation will help in the significant reduction and potential elimination of manual handling risks and ensure the highest accuracy in weight calibration. It brings many benefits to scientists, metrologists, industries, and all the stakeholders throughout the country.



A technical session was chaired by Dr Ranjana Mehrotra, Vice-President, MSI. The first talk was delivered by Dr Daniel Hutzschenreuter from PTB, Braunschweig, Germany on the topic "Metrology for Digital Transformation". The second talk of the session was delivered by Prof. C.J. Tsai from the Institute of Environmental Engineering, NYMCT University, Taiwan on the topic "QA/QC of standard PM monitors and smart air sensors".

The event was concluded with a vote of thanks by Dr S.K. Jaiswal, convener and Senior Principal Scientist, CSIR-NPL.

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National Technology Day 2022

CSIR-NCL Celebrates the National Technology Day

CSIR-National Chemical Laboratory (CSIR-NCL), Pune, celebrated National Technology Day on 11 May 2022. On this occasion, Shri Vidyut Mohan, Co-Founder and CEO of "Takachar" rendered the National Technology Day Lecture on the topic "Harvesting Value from Agricultural and Forest Waste."

Shri Vidyut Mohan started with an overview of his journey, explaining how he turned from an engineering

student to an entrepreneur. He briefly informed about the waste generated in the agriculture and forest sector and its issues. He threw light on the crop residues, their harvesting, problems, and opportunities in the industry. More than Rs 9 lac crore worth of crop and forest residues are burned at a global level in the open space every year. Farmers cannot sell huge agro-waste due to several reasons and eventually burn it



Shri Vidyut Mohan, Co-Founder and CEO of Takachar while delivering the talk

Shri Vidyut informed that his company has developed a low-cost, small-scale, portable technology that works in coordination with the tractors on remote farms. The machine converts crop residues into sellable bio-products like fuel and fertilizers.

causing catastrophic consequences for human health and the environment. The burning of agricultural waste causes air pollution, reducing life expectancy by a decade in some areas.

Shri Vidyut informed that his company has developed a low-cost, small-scale, portable technology that works in coordination with the tractors on remote farms. The machine converts crop residues into sellable bio-products like fuel and fertilizers. He asserted that it could reduce smoke emissions by up to 98%, which will help improve the air quality. If scaled, it could cut a billion tonnes of CO₂ per year, and it will be a milestone in the fight against climate change. He shared valuable information on logistics challenges, current



Dr Ashish Lele, Director, CSIR-NCL felicitating the Chief Guest

paradoxes, and solutions. Using a novel concept called oxygen-lean torrefaction, his company has designed portable equipment to convert waste biomass into solid fuel, fertilizer, and other valuable chemicals. This technology significantly reduces the logistic cost of hauling loose, wet, and bulky biomass. Shri Vidyut highlighted the applications of this novel technology and shared the positive impacts of how it will increase the income of rural communities by 40% by creating a market for residues.

Earlier, Dr Ashish Lele, Director, CSIR-NCL, welcomed and introduced the speaker Shri Vidyut Mohan to the audience. He also informed about the importance of the National Technology Day.

CSIR-NIScPR Organises National Technology Day

To mark the National Technology Day on 11 May 2022, CSIR-National Institute of Science Communication and Policy Research (CSIR-NIScPR), New Delhi, organised a lecture on "Accelerator Technology in Everyday Life" by Prof. Avinash Chandra Pandey, Director, Inter-University Accelerator Centre (IUAC), New Delhi.

In her welcome address, describing the significance of National Technology

Day, Prof. Ranjana Aggarwal, Director, CSIR-NIScPR, recalled the contributions of CSIR to the Nation and mentioned that CSIR-NAL (CSIR-National Aerospace Laboratories), Bengaluru, developed the first indigenous aircraft, HANSA, which was tested on National Technology Day in 1998 and this became one of the achievements to be celebrated on National Technology Day. Further,



she informed that CSIR-NIScPR has been bringing out three popular science magazines and 16 scholarly journals in several scientific disciplines since a long time. She also added that CSIR-NIScPR also works as a bridge for taking technologies developed by CSIR laboratories to the rural community. CSIR-NIScPR has recently published a compendium in which 313 technologies developed by CSIR laboratories have been showcased, she added.

The chief guest of the programme Prof. Avinash Chandra Pandey, delivered a lecture on "Importance of Accelerator Technology in our lives" wherein he talked about the importance of Accelerator technology in various fields such as human healthcare, medicines, river reclamation, etc. Highlighting the various milestones in the field of accelerator science, he said, "Out of the over 15000 accelerators in use around the world today over 97% of these accelerators are used for dedicated commercial applications." Further, discussing the impact of accelerator science on research, Prof. Avinash informed that on average research based

on accelerators contributed one Nobel Prize every 2.9 years (in 70 years there have been 24 Nobel Prizes based on accelerators).

Citing various examples he briefly explained the use of accelerators in basic and applied research in nuclear physics, atomic physics, materials science, biosciences, and other allied fields. He also mentioned the working and importance of one of the prominent facilities provided by IUAC that is ASPIRE (Automatic Sample Positioning for Irradiation in Radiation Biology Experiments). ASPIRE is a Radiation Biology Beam line equipped with an irradiation computer-controlled system to irradiate cells placed on 35 mm petri dishes back to back in quick succession with a predetermined particle dose.

During the programme, a special issue of CSIR-NIScPR Rajbhasha magazine *Navasanchetana*, focused on "Azadi Ka Amrit Mahotsav", was also released by the dignitaries. Concluding the programme, Shri Rajesh Kumar Roushan, Controller of Administration, CSIR-NIScPR, proposed a vote of thanks.

The chief guest of the programme Prof. Avinash Chandra Pandey, delivered a lecture on "Importance of Accelerator Technology in our lives" wherein he talked about the importance of Accelerator technology in various fields such as human healthcare, medicines, river reclamation, etc.

CSIR-IHBT Celebrates National Technology Day



In his address, Dr Mukherjee highlighted the contribution to the development of plant-based medicine in the field of health.

CSIR-Institute of Himalayan Bioresource Technology (CSIR-IHBT), Palampur, celebrated National Technology Day on 11 May 2022. Addressing the gathering, Dr Sanjay Kumar, Director of CSIR-IHBT, discussed how digital technology has brought a change in our lives. This has given impetus to the spread of knowledge. The Institute is contributing to the socio-economic development of the communities through its mission mode projects. Under the Aromatic and Medicinal Plants Mission, the institute is playing an active role in increasing the income of farmers by growing aromatic crops and their processing, due to which farmers are moving towards self-reliance by getting more income than traditional crops. In his address, he guided the students to develop a

scientific aptitude. He discussed the important technological and scientific achievements, which help in making concerted efforts toward a self-reliant India.

Chief Guest of the function Prof. Pulok Kumar Mukherjee, Director, Institute of Bioresources and Sustainable Development (IBSD), Imphal, Manipur, delivered the Technology Day speech on the theme 'Ethnopharmacology: Integrating Shastra and Science from Tradition to Translation'. In his address, Dr Mukherjee highlighted the contribution to the development of plant-based medicine in the field of health. According to the folklore tradition, there is a need to save the traditional knowledge and its use and dissemination in the modern medicine field. The entire Himalayan region is a

source of medicinal plant wealth. There is a need for its documentation so that the bio-economy of the area can be upgraded by utilising this wealth and manufacturing potential drugs through quality control and evaluation in the future. It will be another meaningful step towards self-reliance.

Under "JIGYASA", over 100 students and teachers of Navodaya Vidyalaya, Paprola, Government School, Saliana, DAV, Palampur, DAV, Alampur, Neugal Public School, Brindavan, Parmarth School, Baijnath, Green Field School, Nagrota participated in the Technology Day function and visited various laboratories.

On this occasion, CSIR-IHBT signed Technology Transfer Agreements with M/s Bitbaker Ramanattukara, Kozhikode, Kerala for travel/pocket perfume and air freshener and M/s Amalgam Biotech, Amalgam Engineering Pune (MH) for "Compost Booster – Stabilisation of Night Soil/ Kitchen Waste". A Memorandum of Understanding between IBSD and CSIR-IHBT aimed at R&D cooperation was also signed.

Dignitaries from the Palampur and faculty from adjoining institutes, scientists, research students & staff of CSIR-IHBT and media representatives were present in the function.

CSIR-CDRI Transfers Technology of Nucleic Acid Staining Dye GreenR™ on National Technology Day

On the occasion of National Technology Day-2022, CSIR-Central Drug Research Institute (CSIR-CDRI), Lucknow, transferred the technology of the nucleic acid staining dye GreenR™ to GenetoProtein Pvt. Ltd (GPPL), a start-up company registered in Uttar Pradesh. The dye GreenR™ has been developed by CDRI Senior Principal Scientist Dr Atul Goel in collaboration with an industry partner Biotech Desk Pvt. Ltd (BDPL), Hyderabad.

Dr Goel informed that the product GreenR™ provides an economical alternative to commercially available dyes that are used to stain DNA/RNA, which are currently imported. It binds to all nucleic acids including genomic DNA, PCR products, plasmids and RNA and fluoresces under blue light or UV exposure. This dye has varied applications in molecular diagnostics and life sciences research. The chemical synthesis of GreenR™ was standardised



by Dr Goel's team comprising Ms Shaziya Parveen and Mr Kundan Singh Rawat and the BDPL team has studied its biological applications in real-time PCR and DNA binding.

Dr Shradha Goenka, Director of GenetoProtein Pvt. Ltd (GPPL) plans to launch the GoGreenR™ campaign in which she urges scientists all over India to replace the use of mutagenic Ethidium bromide with the GreenR™ dye which is safe to use and easy to dispose. The company has already started sampling this product amongst researchers both

in academia and the industry. She announced that the product has received a positive response with the researchers already sending their purchase requests.

The director of CSIR-CDRI, Dr Srinivasa Reddy informed that over the past five years, the most popular DNA dye SYBR green contributed to a significant number of imports in this sector. The development of this indigenous dye will offer the Indian researcher an alternative to expensive imported dyes made by foreign MNCs and take India a step closer to 'Atmanirbhar Bharat'.

CSIR-CDRI Organises Swachhata Pakhwada and National Technology Day



Mass Awareness Rally

Swachhata Pakhwada-2022 was observed by CSIR-Central Drug Research Institute (CSIR-CDRI), Lucknow, from 1 to 15 May 2022. At the outset, Dr Sharad Sharma, Chief Scientist and Chairperson of



Dr Mansoor Hasan Khan addressing the audience

the Organising Committee detailed the various activities to be undertaken during the Swachhata Pakhwada.

A Pledge Taking Ceremony was held on 2 May 2022 in the Administrative Block of the Institute. Dr D. Srinivasa Reddy administered the “Swachhata Pledge” to the Scientists, officers and staff of the Institute through digital mode. He also released various posters of Swachhata Pakhwada during the event.

Various activities were organised during this fifteen-daylong programme including safety compliant waste bin distribution, weeding out old files and records, disposing off obsolete items, giving publicity to the programme/displaying banners, Shram Daan for Swachh Campus, cleaning drive, sanitisation of the buildings in view of COVID, herbal heritage tree plantation, Nukkad Natak & Group discussion, cleaning of water coolers/purifiers and other equipment of the buildings, workshop on waste to art, drawing/painting competition for kids of staff and students, slogan writing competition (for Research Scholars of CSIR-CDRI), essay and extempore

speech competition for school students, distributing hygiene kits/sanitisers, etc.

To spread awareness about cleanliness, a mass rally was also organised in which many scientists, staff and research scholars held banners and posters and marched from the Institute around the surrounding locality.

During the concluding session of Swachhata Pakhwada and Technology Day, former President of the Cardiological Society of India and famous cardiologist Dr Mansoor Hasan Khan delivered a very informative lecture on Medical Technology and Humanity. He informed the audience about the recent advancement in cardiology such as heart transplants. He further said all humans are medically the same as per their anatomy and physiology – we can't discriminate them by caste, creed and religion.

Later in the session, felicitation of staff for their special contribution to Swachhata Pakhwada-2022 and felicitation of participants of Nukkad Natak and Poetry were done. Winners of drawing and other competitions were awarded by the chief guest of the programme.

Dr Mansoor Hasan Khan delivered a very informative lecture on Medical Technology and Humanity. He informed the audience about the recent advancement in cardiology such as heart transplants.

C-CAMP Signs MoU with CSIR-CFTRI to promote deep-science innovation in Agri & Food Technology



On the occasion of the signing Dr Taslimarif Saiyed, CEO & Director, C-CAMP said, “We are delighted to formalise this pact with CFTRI, India’s leading food technology research institute.

The CSIR-Centre for Food Technological Research Institute (CSIR-CFTRI), Mysore, signed an MoU with Centre for Cellular and Molecular Platforms (C-CAMP), India’s premier bio-innovation hub on 21 May 2022, in the presence of Dr Jitendra Singh, Hon’ble Minister of Science and Technology, and Smt. Shobha Karandlaje, Hon’ble Minister of Agriculture & Farmer’s Welfare, Govt of India. The agreement will initiate a joint effort in nurturing deep-science innovation in agriculture, food technology and allied areas towards sustainability and

food security in India’s Agri sector. It was formally inked by Dr Taslimarif Saiyed, CEO and Director of C-CAMP and Dr Sridevi Annapurna Singh, Director, CFTRI, at the third edition of the ongoing TechBharat Conclave in Mysore.

On the occasion of the signing Dr Taslimarif Saiyed, CEO & Director, C-CAMP said, “We are delighted to formalise this pact with CFTRI, India’s leading food technology research institute. The agreement will identify and foster Agri innovations and Agri entrepreneurship led by the twin pillars of deep-science and sustainability.”

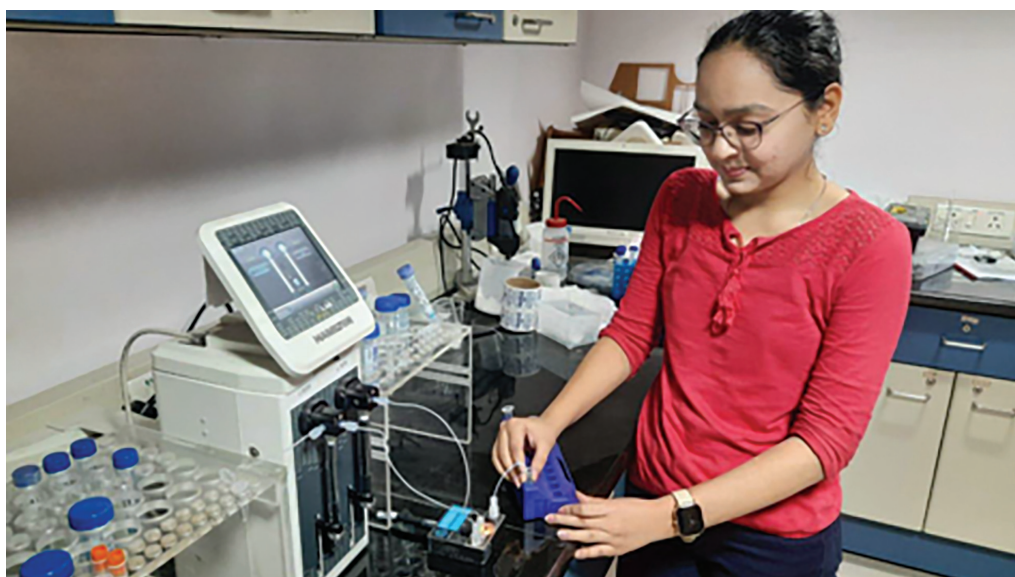
The Ministers acknowledged the contribution of both organisations in the development of Agritech and Agri entrepreneurship in India and appreciated this effort of unifying ecosystems for greater impact.

The agreement is envisioned to

augment C-CAMP's current efforts in Agritech and allied space under its recently launched Centre of Excellence for Agri Innovation in collaboration with the Govt of Karnataka. It will also strengthen science-based entrepreneurship in the CSIR-CFTRI.

R&D

CCMB & AIC-CCMB leading mRNA vaccine technology in India



Process of mRNA encapsulation into lipid nanoparticles to be used as a potential vaccine

mRNA vaccines are among the leading vaccine technologies today. The world witnessed the power of the first mRNA vaccines during the COVID-19 pandemic.

Vaccines work by training our immune system to identify disease-causing micro-organisms and eliminate them quickly when they encounter them subsequently. mRNA vaccine technology does this by introducing an mRNA of the micro-organism of concern. This mRNA in the host cells gives rise to the microbial protein or a part of it, which trains the immune system to evade it when the real infection happens with the same live micro-organism.

CSIR-Centre for Cellular and Molecular Biology (CSIR-CCMB), Hyderabad, is leading the development of mRNA vaccine technology in India. It has now announced the development of a potential mRNA vaccine candidate against SARS-CoV-2. The mRNA vaccine technology so developed is indigenous. The team at the Atal Incubation Centre-CCMB (AIC-CCMB) led the development of the vaccine candidate.

“We observed robust immune response against SARS-CoV-2 spike protein in mice upon administration of two doses of the mRNA. The anti-spike antibodies generated were found to be more than 90% efficient in preventing

The team at the Atal Incubation Centre-CCMB (AIC-CCMB) led the development of the vaccine candidate.

"The developed technology is different from mRNA vaccine being developed from Gennova Bio, which is based on self-replicating RNA," said Dr Madhusudhana Rao, CEO, AIC-CCMB.

the human ACE2 receptor binding to the coronavirus," said Dr Rajesh Iyer, scientist involved in the project. Currently, the mRNA vaccine candidate is undergoing pre-clinical challenge studies to evaluate its efficacy to protect against live virus infection.

"The current war with COVID-19 pandemic had brought to light many vaccine technologies, and India's vaccine programme is highly lauded. However, we lacked the potent mRNA vaccine technology, as developed by Moderna or Pfizer/BioNTech to combat COVID-19 in the USA and Europe. The developed technology is different from mRNA vaccine being developed from Gennova Bio, which is based on self-replicating RNA," said Dr Madhusudhana Rao, CEO, AIC-CCMB and the lead scientist of this work. He added that the AIC-CCMB team was able to establish mRNA vaccine technology and develop a home-grown mRNA vaccine candidate

against SARS-CoV-2 in less than a year since the inception of the project.

Even though COVID-19 is waning, the vaccine platform holds promise for many infectious diseases that India faces. "This is a proof-of-principle wherein we have shown that we can replicate the mRNA vaccine technology end-to-end. The beauty of this technology is in its modularity and rapid turn-around times. That means with significantly less effort, the developed technology can be used to sire vaccine for other infectious diseases like dengue, tuberculosis or malaria," said Dr Vinay Nandicoori, Director, CCMB. He also added that CSIR, the largest research and development organisation in the Ministry of Science and Technology, India, has taken prescient initiatives to establish capacities within India in modern health technologies as part of its programme on self-reliance.

Conferences/Workshops/Seminars

CSIR-CDRI Organises Symposium to Commemorate "International Year of Basic Sciences for Sustainable Development"

The year 2022 has been designated as the "International Year of Basic Sciences for Sustainable Development" by the United Nations General Assembly. To commemorate it, the Lucknow chapter of the Indian National Science Academy (INSA) organised a mini-symposium at CSIR-CDRI under the convenorship of Dr Saman Habib. The guests were welcomed by CDRI director Dr D. Srinivasa Reddy.

In her inaugural speech, Prof. Chandrima Shaha, President-INSA highlighted the significance of the

programme and said that concepts and ideas from basic research are vital for translation into applications. Further she added that material developments have made our lives comfortable and elevated our standard of living. However, humankind has also plundered earth so brutally that we have been forced to ponder if we have really progressed.

In the scientific sessions chaired by Dr P.K. Seth and Dr Madhu Dikshit, Dr Vandana Prasad, Director, Birbal Sahni Institute of Palaeosciences, traced the evolution of angiosperms (flowering

plants) from over 230 million years and put in perspective how a continental shift from the south pole to the present location led to interesting appearances and disappearances of plant and animal species in India.

Dr P.K. Singh from NBRI talked about his work on the development of cotton which is resistant to whitefly infestation. His team cloned a new insecticidal gene from an edible fern and introduced it in cotton plants for the control of whitefly. Dr Sabyasachi Sanyal talked of the detailed study in mice with diabetes that showed that female mice are fitter than their male counterpart during the same age group except during certain stages. Prof. Harshavardhan Wanare from IIT-Kanpur spoke on how light and its wavelength variations changed the visual and thermal colours of Earth. Prof. K.S. Venkatesh from IIT-Kanpur philosophically looked at the evolution of science and some limitations of S&T as an enterprise. He said that some of these constraints are inherent and epistemological, and will therefore remain with us forever, and limit the ability of an S&T driven society for 'endless' progress. He said that the worst problem of all is that our political maturity as a species is still extremely low, forcing us to live in a perpetual state of social unrest, which stems largely from unequal social relations.

The symposium saw discussions on wide-ranging themes wherein Dr C.M. Nautiyal from INSA talked about scientific temper and the



Prof. Chandirma Shaha & Dr D.S. Reddy

importance of nurturing and promoting it. Citing his experiences, he said that effective communication of science is essential to progress. He discussed the goals of IYBSSD2022 and explained how basic science was critical for achieving them. Journalist Ms Kanika Gupta shared her experiences from conflict zones, particularly Afghanistan, and inferred how lack of scientific temper can be the root of troubles in the society. Her presentation conveyed the tragedies of people some of whom were at no fault while some were self-damaging under the false dreams sold to them.

The talks were followed by presentations by 12 research scholars from the national research institutes of Lucknow (CDRI, NBRI, CIMAP, IITR, and BSIP) covering the role of basic science in health, clean water and sanitation, biodiversity, innovation, and climate change.

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Certificate Course on Skill Development in Advanced Spectroscopic Techniques at CSIR-CDRI

Under the CSIR-Integrated Skill Initiative, eight weeks (2 months) Skill Development Course on Advanced

Spectroscopic (NMR, HPLC, LC-MS, UV/IR) Techniques is being organised by Sophisticated Analytical Instrument



Dr Sanjeev Kanojiya, Dr K.V. Shashidhara & Dr Sanjeev Shukla

Dr K.V. Sashidhara, Senior Principal Scientist, Head SAIF, CSIR-CDRI said, the concept of the SAIF at CSIR-CDRI evolved around the needs of scientists and research personnel engaged in the research area of chemical and biological sciences.

Facility (SAIF) at CSIR-Central Drug Research Institute, Lucknow, from 30 May to 22 July 2022. SAIF, CSIR-CDRI has been providing analytical services for more than 46 years and is one of the first four such facilities set up by the Department of Science & Technology (DST), Government of India in the mid-seventies.

During the introduction session, the Coordinator, Skill Development Programme & Principal Scientist, Dr Sanjeev K. Shukla said, this two months course is intended to generate human resources with knowledge of operation, routine maintenance and interpretation of spectral data using state-of-the-art spectrometers to fulfil the need by enhancing the knowledge and skill-set of students, research fellows, faculty and staff working in the relevant area. During this training, exposure will be given to state-of-the-art instruments i.e. NMR, Mass, HPLC, FT-IR, UV-Vis. This training programme will provide knowledge about theoretical, practical training on basic and advanced experimental methods in these techniques. It also provides understanding and hands-on experience in elucidating the structural information of various molecules in the drug discovery process.

Dr K.V. Sashidhara, Senior Principal Scientist, Head SAIF, CSIR-

CDRI said, the concept of the SAIF at CSIR-CDRI evolved around the needs of scientists and research personnel engaged in the research area of chemical and biological sciences. It provides support to researchers from various universities, Govt. R&D institutes and industries lacking these expensive and sophisticated analytical instruments. He also advised the participants to utilise the next two months in the best way to gain maximum benefit from this course.

During this interactive introductory session, participants discussed in detail why they were interested in this course, their expectations and how they want to utilise the knowledge gained from this course in future.

Dr Sanjeev K. Shukla informed that salient features of this Skill Development programme include small batch size (only 17 participants) for effective training, about 40% theory and 60% practical hands-on session, lectures assisted with multimedia aids for better understanding basic principles & applications, exposure to diverse sample preparation techniques, demonstrations of working of state-of-the-art equipment and practical hands-on sessions as per course curriculum. After 8 weeks, participants will be evaluated and the certificate would be provided only after successful completion of training.

CSIR-NIScPR and CSIR-IIP Organise Farmer-Industry-Scientist Meet



Dr Anjan Ray, Director, CSIR-IIP delivering the talk

CSIR-National Institute of Science Communication and Policy Research (CSIR-NIScPR), New Delhi, has undertaken a major initiative to disseminate CSIR technologies for creating livelihood opportunities in rural areas. Taking this forward, a farmer-industry-scientist meet was organised at Lovraj Auditorium, CSIR-Indian Institute of Petroleum (CSIR-IIP), Dehradun, on 30 May 2022.

The programme aimed at disseminating the KisanSabha application developed by CSIR-NIScPR and Gur Bhatti Technology by CSIR-IIP to develop business opportunities for farmers' livelihood creation thereby enhancing their income too. The programme brought together scientists, industrialists, financiers and farmers on a single platform to discuss all the opportunities and challenges.

During his talk, Dr Anjan Ray, Director, CSIR-IIP, encouraged

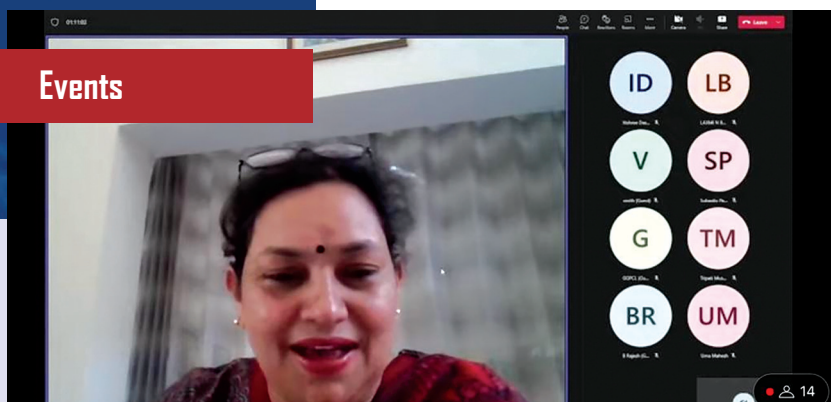
organisation of such meetings that will help to ensure the economic security and health of the rural people. He asserted the need for enhanced production with limited resources as well as to minimise the environmental impacts of the process. He also listed out some of the CSIR-IIP's technologies which could benefit the farmers. He further expressed his gratitude to the farmers for attending the meet.

Prof. Ranjana Aggarwal, Director, CSIR-NIScPR, joined the event online and described the recent initiatives taken by CSIR-NIScPR towards livelihood creation and income generation in the rural areas through CSIR technologies. Further, highlighting the success of Kisan Sabha she explained the potential of the Unnat Bharat Abhiyan (UBA) network. She also apprised about 82 technologies compendium selected for rural areas. She further discussed the importance and benefits of the Gur Bhatti technology and finally assured the



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Events



Prof. Ranjana Aggarwal, Director, CSIR-NIScPR, addressing the meet

full support of CSIR to the farmers.

Dr Yogesh Suman, Senior Principal Scientist, CSIR-NIScPR, discussed the importance of the meet to sort out the challenges faced by the farmers. This exercise will boost the dissemination of the technology using the UBA Network which has a network of higher education institutions and provides grass-root information about the problems of the rural areas. This information would help in the dissemination and deployment of the CSIR technologies in rural areas. He also emphasised that strong linkages should also be developed between technology developers and adopters.

Dr Pankaj Arya, Principal Scientist, CSIR-IIP, emphasised that the traditional Gur making process results in air pollution and expressed the need for advanced technology solutions. In view of this, CSIR-IIP has developed advanced, simple and affordable



A farmer sharing his experiences

Gur Bhatti technology that not only reduces the emission of pollutants but also increases the efficiency of the Gur Bhatti by reducing the fuel cost by 15% and increasing production by 25%. He further listed multiple benefits of this technology, in particular, the increased life of the plant.

Dr Farhat Azad, Principal Scientist, CSIR-NIScPR, discussed and demonstrated the Kisan Sabha App that was launched to uplift the livelihood of small and marginal farmers. Discussing the dependency on the middle man and lack of information in the supply chain, she described the idea of the Kisan Sabha App and its use in the agri-supply chain. The app can keep the farmers updated by continuously adding new features. Most importantly the app is available in 12 regional languages. About eight lakh farmers and other stakeholders have joined the Kisan Sabha App. In addition, 3000 SHGs have also joined. Later, Dr Farhat informed about the jaggery products added in the Kisan Sabha.

During his presentation, Shri Bhupendra Kumawat, AGM, NABARD, Dehradun, informed about the central/state government and NABARD initiatives towards funding for farmers. He also mentioned Kisan Credit Card, Deendayal Kisan Yojana, Agriculture Infrastructure Fund and various other schemes to facilitate



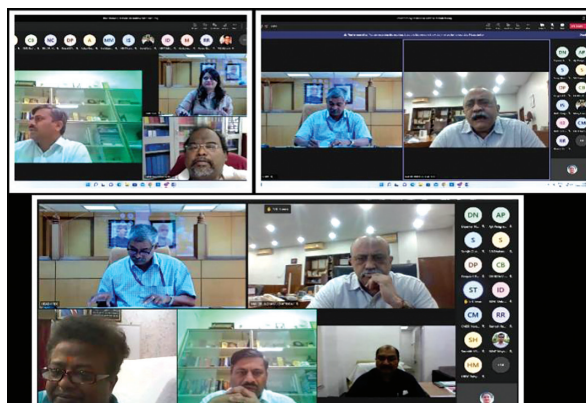
farmers' funding requirements.

Shri Satya Prakash from Dhampur Specialty Sugars Ltd explained the need for a marketing strategy to sell the product in the market. He emphasised on making other products like Sirka that will also enhance the income of the farmer.

Shri Ajay Gairola discussed the opportunities for farmers in the retail sector. He further emphasised the exploration of linkages between farmers and retailers which are yet less explored. The meeting concluded with the success stories of the farmers.



Brainstorming on Additive Manufacturing Organised by CSIR-HRDC



A Brainstorming on Additive Manufacturing was organised online on 26 April 2022 by CSIR-HRDC. The session was initiated with the welcome remarks of Dr R.K. Sinha, Head CSIR-HRDC (CSIR-Human Resource Development Centre), Ghaziabad. Dr Indranil Chattoraj, Director, CSIR-NML (CSIR-National Metallurgical laboratory), Jamshedpur, shared his experience and vision for this latest emerging field. Dr A.K.

Srivastava, Director, CSIR-AMPRI (CSIR-Advanced Materials and Process Research), Bhopal, was the moderator of the panel discussion.

Experts from various scientific organisations and academia of India and abroad participated in the panel discussion like Dr Ramesh Raghavendra from Waterford Institute of Technology, Waterford, Ireland. People from CSIR and other institutes were connected virtually.

National Technology Excellence Award for Women, 2022



Dr P.C. Panchariya, Director, CSIR-CEERI receiving the award from Dr Jitendra Singh, Hon'ble Minister of Science & Technology and Vice President, CSIR

Dr A. Hepsiba Kiranmayee, Principal Scientist, CSIR-Central Electronics Engineering Research Institute (CSIR-CEERI) Pilani, was awarded the National Technology Excellence Award for Women 2022 by the Technology Development Board. The Award carries a sum of Rs one lakh and a Trophy.

Dr Kiranmayee has been chosen for the award for her exemplary contribution to the technological innovations relating to systems using green detection of adulteration in milk (detection of adulterants such as urea,



Dr A.H. Kiranmayee

caustic soda, ammonium sulphate, sodium bicarbonate, hydrogen peroxide, detergent, liquid soap, boric acid, salt and many unknowns) called the Ksheer Scanner (Portable) and Ksheer Tester (Hand-held).

Dr P.C. Panchariya, Director, CSIR-CEERI received the award on behalf of Dr Kiranmayee from Dr Jitendra Singh, Hon'ble Minister of Science & Technology and Vice President, CSIR on 11 May 2022 during the National Technology Day function held in New Delhi.

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Phone: 25848702; Fax: 25847062; E-mail: hjk@niscpr.res.in

Website: <http://www.niscpr.res.in>

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