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भारत का नवाचार इंजन
The Innovation Engine of India

NEWS BULLETIN
26 TO 30 APRIL 2023

Compiled by Science Communication and Dissemination Directorate (SCDD), CSIR, Anusandhan Bhawan, New Delhi

New Director for CECRI-Karaikudi

CSIR-CECRI 30th April , 2023

K. Ramesha assumed charge as Director, CSIR-Central Electrochemical Research Institute (CECRI), Karaikudi, on Saturday.

He obtained his M. Sc. (Chemistry) in 1993 from Mangalore University and Ph. D. (Solid State and Structural Chemistry) in 2000 from Indian Institute of Science (IISc), Bangalore. His areas of specialisation are materials for energy storage, particularly for Li-ion batteries and other futuristic energy storage devices such as Na-ion, Li-S, Li-Air, and all solid state batteries.

Mr. Ramesha was a postdoctoral fellow at University of Maryland, USA, University of California, USA, and Los Alamos National Laboratory, USA, during 2001–06.

In 2007, he joined Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangalore, as a Fellow and worked there till he joined in CSIR-CECRI as a Quick Hire Scientist in 2008. Since then, Mr. Ramesha has been working here at various positions before being promoted to the present post of Senior Principal Scientist in 2016.

A recipient of K. P. Abraham Medal for Best Ph.D. Thesis from IISc, Bangalore, Mr. Ramesha has published 91 research papers in national and international peer-reviewed journals including two papers in the prestigious journal Nature Materials. He has also filed two patents. He has developed five technologies and transferred two process/know-how. He has guided 10 Ph.D. scholars and a number of post-graduate students.

At present, he is leading the team involved in developing indigenous Li-ion battery prototypes. He is involved in fabricating cylindrical-type Li-ion batteries containing various cathode chemistries such as LiNMC, LiNCA, etc. He has developed all solid state Li-ion

battery technology using garnet phases as solid electrolytes. For the first time, he had established the role of reversible anionic redox chemistry in doubling the capacity of layered cathodes, a press release issued here on Sunday said.

Published in:
The Hindu

"Mann ki Baat" conversations have been instrumental in giving a positive trust to Ayush: Shri Sarbananda Sonowal

CSIR-TKDL

28th April , 2023

Ministry of Ayush has launched a special edition of official research publication of Central Council for Research in Ayurvedic Sciences (CCRAS), Journal of Research in Ayurvedic Sciences (JRAS) focused on "Impact of Mann ki Baat on Ayush Sector". Minister of Ayush and Ports, Shipping & Waterways Shri Sarbananda Sonowal today launched the special edition of journal in the presence of Vaidya Rajesh Kotecha, Secretary, of Ayush and senior officials of the Ministry.

In his address, Shri Sarbananda Sonowal said, "Prime Minister's "Mann ki Baat" conversations have been instrumental in giving a positive trust to Ayush. With its innovative and unique interactive style of presentation, the radio program has carved out a niche for itself and has become popular among communities. The content of this special edition of the journal has taken inspiration from various thoughts of our PM on Ayush sector."

Ayush has been mentioned in about 37 of the "Mann Ki Baat" episodes. The Prime Minister had urged citizens to adopt a healthy lifestyle, practice yoga, and adopt evidence based Ayurveda and imbibe Ayurveda way of life into their lifestyle. As a result of the Prime

Minister's efforts to promote the Ayush sector, there has been increase in awareness about the benefits of traditional Indian systems of medicine, not only in India but also globally. The content of the special edition of journal is inspired by various conversations of Hon'ble Prime Minister Shri Narendra Modi on Ayush systems during the last 9 years. It highlights the impact of "Mann ki Baat" on Ayush sector and how Ayush is becoming a fundamental pillar of the country's national health policy and health interventions. A total of 24 articles of renowned experts are included on 7 potential areas i.e. Policy & Public Health, Science & Evidence, Health Education & Awareness, Yoga & Swasthavritta (Lifestyle, Exercise, Food, Nutrition), War against Corona, Industry & Academia Collaboration and Globalization & International Cooperation.

The special edition includes special message from Minister of Ayush Shri Sarbananda Sonowal, Minister of State for Ayush Dr. Munjapara Mahendrabhai. Vaidya Rajesh Kotecha, secretary, Ministry of Ayush, eminent authors from academia (like Dr BN Gangadhar, NMC and former Director NIMHANS), Industry (Like Acharya Balkrishna of Patanjali, Dr C K Katiyar of Emami), Research (Dr Viswajanani Sattigeri of CSIR-TKDL), Clinicians, experts (Dr Rajendra A Badwe, Director, Tata Memorial Centre, Mumbai), Biotechnology experts (Kalpana Joshi, Professor and Head Biotechnology, Savitribhai Phule Pune University), International experts and stakeholders (from Germany, Sweden and USA) have contributed in this edition.

Journal of Research in Ayurvedic Sciences (JRAS) is a peer-reviewed, open access, UGC-CARE listed official publication of Central Council for Research in Ayurvedic Sciences (CCRAS), New Delhi. The Journal is published quarterly and is available in both print and online forms. It is a multidisciplinary platform for publication of research in Ayurveda, Yoga, Naturopathy, Siddha, Homeopathy fields including interdisciplinary health sciences. The journal is published by Medknow, which is a part of Wolters Kluwer Health, one of the largest open access publishers worldwide with more than 450+ medical journals in its portfolio.

Published in:

Pib

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G20 India's 3rd Education Working Group meeting concludes today in Bhubaneswar with a commitment to ensure the betterment of learners with respect to skilling, upskilling and reskilling

CSIR-IMMT

28th April , 2023

G20 India's 3rd Education Working Group meeting concludes today in Bhubaneswar with a commitment to ensure the betterment of learner's with respect to skilling, upskilling and reskilling. The 3 day seminar and meeting held from 26th-28th April 2023 had discussions focussed around priority area 3 'Building Capacities, promoting life-long learning in context of future of work' in the seminar.

Shri K. Sanjay Murthy, Secretary Higher Education, Shri Sanjay Kumar, Secretary School Education and Literacy and Shri Atul Kumar Tiwari, Secretary Skill, Development and Entrepreneurship and senior officials of the Ministries attended the meeting. 60+ Delegates from 27 countries including G20 members, invited and International Organisations including United Nations International Children's Emergency Fund (UNICEF), United Nations Educational, Scientific and Cultural Organization (UNESCO) and Organisation for Economic Cooperation & Development (OECD) were present. The three-day event commenced with a seminar around the topic of the future of work in collaboration with the Ministry of Skill Development and Entrepreneurship. It was divided into three sessions of panel discussions. The themes of the panels were 'Building an agile response to the needs of labour markets and institutional capacity building in the context future of work: enabling high quality technical

and vocational education', 'Creating pathways between higher and vocational education' and 'Equipping children with a range of future skills to set them on course of lifelong learning'. Delegates shared their policies and initiatives in Vocational Education and Training. They also acknowledged the importance and the constant need to upskill and re-skill in order to keep up with the evolving world. They also discussed challenges that their countries are facing with respect to the future of work.

On the sidelines of the 3rd EdWG meeting and seminar, included a multimedia exhibition on the same topic. Key participants in the exhibition were NCERT, MEITY, IKS (Indian Knowledge System), TRIFED, Singapore, UNICEF, Meta, IIT Bhubaneswar, IIM Sambalpur, NIT Rourkela, CSIR-IMMT, Auroville Foundation and many other from Industry, Academia, Government Agencies, Multilateral Agencies, Startups, etc. along with Experience Zone on Future of Work and large technology exhibits. The exhibition was open to local institutions, students, academicians and researchers from 23rd-25th and 27th -28th April, 2023.

Day 1 of the event began with the inaugural address by Union Minister of State for Education, Shri Subhas Sarkar. He spoke about the importance of investing in education and skill development in order to ensure that people are equipped with knowledge, capabilities, skills and attitudes to succeed in the 21st century. The meeting observed G20 members and invited countries discussing on the outcome documents in preparation for the Education Minister's Meeting in June, which continued to the last day.

The meeting concluded with an excursion component. Delegates were taken to Konark Sun Temple, followed by cultural performances in Puri. Delegates were given patachitra paintings as a memorable token for their visit to Bhubaneswar. The 3rd EdWG meeting was successful in raising the awareness about G20. Various Jan Bhagidari Events were also organised starting from Utkal Diwas till 22nd April. Several Mock G20's were conducted across the state which included 590 student participation. About 1 lakh + citizens participated in about 1,235 Jan Bhagidari events making Indias G20 Presidency a truly People's Presidency

Published in:

Pib

Union Minister Dr Jitendra Singh says, India's global presence growing in the electronics related economy

CSIR-CEERI

28th April , 2023

Union Minister of State (Independent Charge) Science & Technology; Minister of State (Independent Charge) Earth Sciences; MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, Dr Jitendra Singh said here today that under Prime Minister Narendra Modi, India's global presence is growing in the electronics related economy.

The Minister was on a visit to the University of Surrey where he undertook a tour of the distinguished semiconductor facility.

While thanking the University for the invitation to visit the facility, Dr Jitendra Singh said, India is fast becoming an important player in the global electronics value chains and is ready to collaborate with the electronics industry and academia in the United Kingdom.

The University of Surrey is a public research university in Guildford, Surrey, England. The Surrey Ion Beam Centre (SIBC) has been in operation for over 40 years, providing ion beams for analysis and modification of materials initially to support the UK academic and industrial microelectronics research community. It provides access to academia and industry. The SIBC supports rigorous quality assurance and is ISO9001 certified. It was made a national centre to support microelectronics research in the UK in 1978, providing ion implantation and doping facilities as well as the background research skills to enable UK academia and industry with expertise and facilities for their R&D work. The UK semiconductor market has grown to be worth more than £10bn per year and the UK photonics market is worth around £14bn, with the UK being one of the top three leading countries in photonics.

The Minister mentioned that as India is investing heavily in the semiconductor programme and key supply chains, it can be a potential collaborator to support efforts. He added that in furtherance of the vision of Aatmanirbhar Bharat and positioning India as the global hub for Electronics System Design and Manufacturing (ESDM), the Cabinet approved a comprehensive program for the development of a sustainable semiconductor and display ecosystem in the country with an outlay of ₹ 76,000 crore (>10 billion USD). The programme aims to provide financial support to companies investing in semiconductors, display manufacturing and design ecosystem. This will serve to pave the way for India's growing presence in the global electronics value chains, he said.

The programme will usher in a new era in electronics manufacturing by providing a globally competitive incentive package to companies in semiconductors and display manufacturing as well as design.

In addition to support to industry, Dr Jitendra Singh said that the Government of India has also approved modernisation of Semi-Conductor Laboratory, Mohali as a brownfield Fab. Further Central Electronics Engineering Research Institute (CSIR-CEERI), PILANI is actively engaged in Semiconductor research and would be interested R&D collaborations to develop innovative meta-material-based tuneable filter for customised transmitter/ detector application and photonic crystal-based sensor-platform for customised healthcare diagnostics, he added.

India is investing heavily in the semiconductor programmes and key supply chains, University of Surrey can be a potential collaborator to support in efforts, the Minister concluded.

Dr Jitendra Singh is leading a high-level official Indian delegation of the Ministry of Science & Technology on a 6-day visit to the United Kingdom.

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Pib

CSIR-CRRI

29th April, 2023

सीएसआईआर-सीडीआरआई, लखनऊ में ऊर्जा साक्षरता प्रशिक्षण और जलवायु घड़ी जागरूकता कार्यक्रम का आयोजन किया गया

वैचारिक तूफान,संवाददाता।

लखनऊ। जलवायु परिवर्तन विश्व भर को प्रभावित कर रहा है, लेकिन 1.5 डिग्री सेल्सियस से अधिक तापमान उन 3 अरब से अधिक लोगों के लिए विनाशकारी साबित होगा, जो जलवायु परिवर्तन के लिए अत्यधिक संवेदनशील स्थानों में रहते हैं, जैसा कि जलवायु परिवर्तन पर अंतःसरकारी पैनल (आईपीसीसी) की रिपोर्ट में बताया गया है। सीएसआईआर-सीडीआरआई, लखनऊ में जलवायु घड़ी और इसका महत्व, जलवायु परिवर्तन और इसके परिणाम की जानकारी देने हेतु युवाओं के लिए ऊर्जा साक्षरता प्रशिक्षण कार्यक्रम आयोजित किए गए। जिसमें हाइजिया कॉलेज ऑफ फार्मेसी, लखनऊ; हाइजिया इंस्टीट्यूट ऑफ फार्मेसी, लखनऊ और विवेक कॉलेज ऑफ टेक्नोलॉजी एजुकेशन बिजनौर, उत्तर प्रदेश के छात्रगण संस्थान में विश्व पृथ्वी दिवस के उपलक्ष्य में आयोजित जिज्ञासा कार्यक्रमों में सम्मिलित हुए। 24 अप्रैल से 27 अप्रैल तक आयोजित ऊर्जा साक्षरता प्रशिक्षण कार्यक्रम में तीन अलग-अलग कॉलेजों के लगभग 150 छात्रों और 12 फैकल्टी ने जागरूकता कार्यक्रम में भाग लिया।

प्रतिभागियों को वेबसाइट (द्धह्लह्लश्चह्य-//ष्द्यद्बद्बड्डह्लद्ग-ष्द्यशष्द्य.2शह्द्यस्त्र/) के जरिए क्लाइमेट क्लॉक के रियल टाइम डेटा के बारे में जानकारी दी गई। क्लाइमेट क्लॉक हमे

यह बताती है कि वास्तविक समय के आंकड़ों के आधार पर वैश्विक तापमान में 1.5 डिग्री सेल्सियस की वृद्धि होने में कितना कम समय बचा है और यदि तापमान में वृद्धि हुई तो इसका परिणाम अपरिवर्तनीय होगा। इस कार्यक्रम मे प्रतिभागियों को ऊर्जा साक्षरता प्रशिक्षण लेने और जलवायु को बचाने के लिए प्रेरित किया गया। प्रतिभागियों ने जलवायु को बचाने और कार्बन फुटप्रिंट को कम करने की शपथ ली।

डॉ. संजीव यादव, वरिष्ठ वैज्ञानिक सीडीआरआई लखनऊ ने जलवायु परिवर्तन से होने वाले दुष्प्रभावों पर चर्चा की, उन्होने कहा ग्रीनहाउस गैसों के उत्सर्जन मुख्य रूप से ष्ठह2 से पृथ्वी का तापमान प्रतिदिन बढ़ रहा है जिससे ग्लेशियर पिघल रहें है और समुद्र का स्तर बढ़ रहा है जिससे कई देशों के तटीय क्षेत्र लगभग जलमग्न होने के कगार पर हैं। विश्व पृथ्वी दिवस के उपलक्ष्य में आयोजित ये छात्र-वैज्ञानिक कनेक्ट कार्यक्रम, सीएसआईआर-जिज्ञासा के अन्तर्गत में आयोजित किया गए थे जिसमें फार्मेसी छात्रों हेतु कैरियर के विभिन्न अवसरों की भी जानकारी साझा की गई। डॉ संजीव यादव ने विभिन्न क्षेत्रो के बारे में बताया जहां छात्र अपनी सामर्थ एवं अपनी कमजोरियों को ध्यान में रखते हुए देखते हुए खुद के लिए उपयुक्त विकल्प चुन सकते हैं, जिनमें से कुछ इस प्रकार हैं जैसे बायोमेडिकल रिसर्चर, मेडिसिन एडवाइजर, पेटेंट अटॉर्नी, फोरेंसिक साइंटिस्ट, रेगुलेटरी अटॉर्नी, क्वालिटी कंट्रोल केमिस्ट, क्वालिटी एश्योरेंस, मेडिकल साइंस लाइजनिंग, फार्माकोविजिलेंस एवं अन्य।

फिर उन्होंने समझाया कि कैसे एक नवीन यौगिक एक दावा के रूप में परिवर्तित/विकसित किया जाता है और किस तरह से औषधि अनुसंधान एवं विकास के विभिन्न क्षेत्र इसमें शामिल होते हैं। उन्होने विद्यार्थियों के ये भी बताया कि कैसे वे सीएसआईआर-सीडीआरआई के साथ अपनी यात्रा शुरू कर सकते हैं?

इसके अलावा, प्रतिभागियों ने विभिन्न प्रयोगशालाओं का दौरा किया और वैज्ञानिकों के साथ बातचीत की और विभिन प्रयोगों के बारे में जाना। विष विज्ञान विभाग में, डॉ. एस.के. रथ ने औषधि खोज और विकास में विष विज्ञान अनुसंधान के महत्व को समझाया।

Published in:

Vaicharik Toofan, Dainik Jagran, i-Next, Shaurya Kesri

Ancient DNA study confirms West Eurasian genetic imprints in Kerala's Pattanam

CSIR-CCMB

28th April , 2023

The archaeological site of Pattanam, on the South-western coast in Kerala's Ernakulam district, is believed by historians to be part of the ancient port city of the Muziris that played a key role in trade and cultural exchanges between India and the Middle East, North Africa and the Mediterranean regions.

The belief stems from the classical Greco-Roman records as well as Tamil and Sanskrit sources. Scientists and archaeologists have also found human bones, storage jars, a gold ornament, glass beads, stone beads, utilitarian objects made of stone, copper and iron, pottery, early Chera coins, brick wall, brick platform, ring well, wharf with bollards, and a six-metre-long wooden canoe parallel to the wharf structure about 2.5 m below surface level at Pattanam.

These archaeological evidences and ancient DNA analyses by CSIR-Centre for Cellular & Molecular Biology (CCMB) scientists led by Kumarasamy Thangaraj and PAMA Institute for the Advancement of Transdisciplinary Archaeological Sciences (Kerala) P.J. Cherian strengthen the hypothesis.

"These structures indicate a vast urban settlement. The excavations suggest that the site was first occupied by the indigenous and 'Megalithic' (Iron Age) people, followed by the Roman contact in the early historic period. It appears that the site was continuously occupied at least from the 2nd century BC to the 10th century AD," said Mr. Cherian.

Scientists used the DNA from the human skeletons to pinpoint the genetic ancestry of the

people found in the region. "We have analysed the mitochondrial DNA of 12 ancient skeletal samples. We found that these samples show the presence of both South Asian and West Eurasian-specific lineages," explained DST-Birbal Sahni Institute of Palaeosciences, Lucknow, senior scientist Niraj Rai, also a co-author of the study.

"Most excavated skeletal remains from the Pattanam site were in a very fragile state due to the tropical, humid, and acidic soil conditions. However, we have adopted the best practices in the field of ancient DNA and successfully analysed the samples. The unique imprint of West Eurasian and Mediterranean signatures found in these samples exemplify a continuous inflow of traders and multicultural mixing in ancient South India," said CCMB chief scientist and currently the Director, DBT-Centre for DNA Fingerprinting and Diagnostics, Kumarasamy Thangaraj.

"This is the first genetic data generated, so far, to infer their origin and genetic makeup of Pattanam archaeological site. The findings reinforce the early historical occupation of culturally, religiously, and ethnically diverse groups at the site," said CCMB Director Vinay Kumar Nandicoori. The study has been published in the journal, 'Genes', said an official release on Friday.

Published in:
The Hindu

DST-SERB Sponsored National Workshop on Green Hydrogen Production Organised at SMVDU

CSIR-IIIM

28th April , 2023

DST-SERB sponsored 2 days workshop was organized by the school of Mechanical Engineering at Shri Mata Vaishno Devi University. The workshop was attended by more than 30 participants across India. The workshop was graced by Padma Shri RK.Sinha Vice Chancellor, SMVDU & Dr. Mansa Ram Nouni Ex. Adviser, Ministry of New & Renewable Energy, GOI and Dr. AJAY Koul, Dean FoE. The workshop is a step towards spreading awareness about harnessing hydrogen as an energy source & applying it for the benefit of the society. The event was convened by Prof. M. Eswaramoorthy, Head,SOME & Dr. Yathesth Anand, Asst Prof. SoME and Dr. Sanjeev Anand, Asst Prof, SoEM, being the organising secretary. The workshop had speakers from the diverse fields sufficing the aim of the workshop. Dr. Mansa Ram Nouni, Dr Ravail Singh.

Senior Scientist, CSIR, IIIM Jammu , Dr. B Satya Sekhar, IIT JAMMU , Prof. Kannan Iyer, IIT JAMMU and Dr. Ravi Kumar Arun, IIT Jammu. The speakers deliberated on the various techniques for utilizing hydrogen from different sources and also the ways to utilize it. They also appraised the participants about the various government policies in action and ways to get involved with the hydrogen mission. The participants were also briefed about the alternate sources of hydrogen than the conventional ones and the limitations on the ways towards the green hydrogen mission. Dr. R.K. Mishra presented the vote of thanks where he thanked the DST SRB, GOI, all the participants, the university administration and the faculty and staff of the SoME for their sincere efforts towards the success of the event.

Published in:

Universalnewstimeline

CSIR-IIIM organizes training program under Aroma Mission Phase-III

CSIR-IIIM

28th April , 2023

A special training program for Panchayati Raj Institutions (PRI) representatives and farmers from Kathua district was organised by CSIR-Indian Institute of Integrative Medicine, Jammu (IIIM) today under the phase -III of CSIR-Aroma Mission. Around 50 farmers and PRI representatives from the Kathua district attended the program. During this day long programme, they were apprised about the cultivation, processing, value addition, product development and marketing of Aromatic Crops.

Dr Zabeer Ahmed, Director, IIIM Jammu, while speaking on the occasion, threw light on Aroma Project activities, which were initially launched in 2014 as J&K AROMA AROGYA GRAM- JAAG, a project on pilot scale undertaken as per vision of Union Minister Dr Jitendra Singh. After remarkable success in JAAG, the CSIR-Aroma Mission was launched and thereafter, two phases of this mission project were completed successfully, he added and further informed that the Phase-III of Aroma Mission has been approved under which the focus would be to establish clusters where end-to-end solutions would be provided to farmers for value addition, product development which would have great impact on inclusive economic development of the farmers of the region and the promotion of the agri-tech startup ecosystem.

He also assured farmers that CSIR-IIIM will provide all support possible under the CSIR-Aroma Mission Phase-III for the development of Aroma farming and industry in the Kathua region.

Dr Dhiraj Vyas, Head Plant & Agrotechnology Division, IIIM Jammu, discussed about the opportunities in the Aroma Sector and explained how the CSIR-Aroma Mission is transforming the lives of thousands of farmers across J&K through Lavender cultivation.

Earlier, Dr Sumeet Gairola, Nodal Scientist, CSIR-Aroma Mission Phase-III (IIIM), informed participants that the "Purple Revolution" or "Success model of Lavender cultivation in J&K" under CSIR-Aroma Mission has now reached other states of the country like Uttarakhand, Himachal Pradesh, Meghalaya, Arunachal Pradesh, and Sikkim.

Tajinder Singh, DDC member Mahanpur Kathua, Neeru Rajput DDC member Billawar Mandli, Kathua and Sushma Jamwal, BDC Chairman Basholi also spoke on the occasion. Sarpanches and Naib Sarpanches from many villages of Kathua also attended the programme. Dr Rajendra Bhanwaria, Senior Scientist presented the vote of thanks.

Published in:
Dailyexcelsior

India's sustainable jet fuel may get internationally certified in 2023

CSIR-IIP 27th April , 2023

A bio-jet fuel, also known as sustainable aviation fuel (SAF), produced using home-grown technology from cooking oil and seeds of oil-bearing plants will likely be certified internationally this year. An international certification would allow the SAF to be used in commercial flights in India.

The Indian Institute of Petroleum (IIP), a laboratory of the Council of Scientific and Industrial Research (CSIR), has tied up with Boeing, Indigo, Spicejet and the three Tata Airlines — Air India, Vistara and Air Asia India — to support the production of SAF.

The Indian Air Force received provisional certification in November 2021 to use SAF on their test flights, subject to case-by-case approval by the aircraft manufacturer concerned. However, it is yet to be internationally certified for use in commercial airlines in India.

CSIR-IIP-produced SAF is likely to obtain international certification this year and will drive up demand from the civil aviation sector, Anjan Ray, director at CSIR-IIP in Dehradun, told Down to Earth (DTE).

The institute's SAF samples have been sent to the United States Federal Aviation Administration Clearinghouse for rigorous testing to obtain the ASTM D4054 qualification from ASTM International. The Pennsylvania-based organisation develops and publishes standards for products and services globally.

"The process takes 18-24 months. We are moving as per plan. Before the certification can be awarded, it has to go through a ballot, where it is voted on by engine and airline manufacturers, organisations working on key components and safety regulators. The certification is expected within the next 12 months," Ray told DTE.

The world presently has only two major aircraft manufacturers, Boeing and Airbus. ASTM D7566 certification allows international airframe manufacturers like Boeing and Airbus to issue Service Letters permitting the use of the specified approved fuel on all aircraft, according to the CSIR-IIP director.

"There is a lot of interest globally as CSIR-IIP has received multiple inquiries from international players to license the trademarked DILSAAF process for production outside the country," Ray explained to DTE.

The CSIR-IIP pilot plant in Dehradun has produced 10,000 litres of fuel for the IAF to date. It was produced from feedstock like non-edible, edible and used cooking oil. Specifically, palm stearin, sapium oil, palm fatty acid distillates, algae oil, karanja and jatropha were used.

The IIP's fuel received provisional certification from the Centre for Military Airworthiness & Certification (CEMILAC), a laboratory of the Indian Defence Research and Development Organisation, which the Directorate General of Aeronautical Quality Assurance approved.

SAF scaling in India

Aviation biofuel can be blended with conventional jet fuel for use. Its sulphur content is much lower, which can help reduce air pollution and contribute to India's Net Zero greenhouse gas emissions targets, according to a press briefing from the Centre released in November 2021.

If approved for commercial usage this year, the question of the country's ability to scale it for mass production comes into play. One public sector unit, Mangalore Refinery and Petrochemicals Ltd, is setting up the first plant, which is expected to come online by early 2025. However, two more such SAF plants are expected to be set up by other refineries in the near future, probably by 2025-26.

The Mangalore Refinery can produce 20 tonnes of SAF per day, meaning about 7,000 tonnes per year, Ray told DTE. "But to achieve even a per cent of blending of SAF in India, you need

about 60,000 tonnes a year." In the European Union, the blending of SAF with conventional jet fuel made of gasoline and kerosene starts at two per cent in 2025 and increases through five-year intervals to reach 63 per cent in 2050. This would comprise 28 per cent of synthetic aviation fuels too.

he US Congress introduced the Sustainable Skies Act in May 2021 to bring in incentives to use SAF. It includes a $1 billion grant over five years to expand the number of SAF-producing facilities in the US.

In India, Civil Aviation Secretary Rajiv Bansal, in November 2022 said the Union Ministry of Civil Aviation is in talks with the Union Ministry of Petroleum and Natural Gas to legally mandate the jet fuel blending. This was currently not a priority due to issues with feedstock and production, he indicated.

"There is a lack of segregation, collection and supply mechanism and infrastructure for biofuel feedstocks in general and particularly for SAF-appropriate raw materials," Kaveri Ashok, a senior associate at the Center for Study of Science, Technology and Policy (CSTEP) told DTE.

However, India has a reasonably substantial feedstock pool of used cooking oil and animal fat, much of which is being exported to international producers of SAF and renewable diesel such as Neste Oil in Singapore and the EU, according to Ray.

"There is enough demand in India for these feedstocks to make biodiesel or SAF, but the export happens much higher prices than domestic producers can pay. This is compromising the domestic availability of feedstock for SAF and biodiesel," Ray added.

Ashok believes that India will not need to cultivate any fresh biomass specifically for SAF at the current adoption rate. Crop residues that would otherwise go to waste are the biomass that will be used. SAF can also be made from used cooking oil or ethanol.

"If an extensive cultivation of crops is needed specifically for SAF production at a larger level, there will be trade-offs with food/water security, health / nutrition and so on," Ashok said.

Demand for bio-jet fuel must be increased through a national policy, along the lines of the National Biofuel Policy, for it to be commercially scaled and to accelerate production, said Ramya Natarajan, group head of climate change mitigation at CSTEP and reviewer of a recent study on sustainable aviation in India.

A nodal agency to implement this policy should be formed to bring together energy, transportation and agriculture sectors together under one roof, according to the study. Mapping the sources of the various feedstock could aid this policy, it added.

So far, a Bio-Aviation Turbine Fuel Program Committee has been constituted by MoPNG to facilitate clean jet fuel production in India.

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Downtoearth

NML One Week One Lab: Experts brainstorm on problem solving

CSIR-NML

26th April , 2023

Jamshedpur: CSIR-National Metallurgical Laboratory (NML) is organising the One Week One Lab campaign to showcase its technological innovations and achievements.

The third day events at the laboratory included, the continuation of "Technology Challenge Hackathon" for students, researchers and technocrats of ITI, Diploma, UG, PG, PhD and Industries, with a vision to obtain outreach to society at large. Around 11 teams were selected for final round presentation in the Industrial Problem Solving (IPS) contest. Problem statements received from Tata Steel, Jindal Steel, Saint Gobain and CSIR NML R&D projects were attempted to be solved by the participating teams. The participants presented detailed ideas and solutions for problems on Ferroalloys, Steel making, Industrial and E-Waste management and Mineral processing. Panel of senior scientists Dr. Sanjay Agarwal, Dr. Ganesh Chalavadi and Lalit Kumar Meena interacted with the teams and judged the presentations. Sovan Kumar Patra and Yashraj Kanaskar from Tata Steel stood as First Award Winners for their presentation on solution for the problem "Reduction of Carbon Footprint in Ferroalloys", and Adhiraj Kanrar and Sambit Tripathy, Project Assistants from CSIR-NML received Second Award in the competition for their solution for the problem "Utilizing AI Based Nozzles in Continuous Casting Operations to Minimize Water

Consumption". Sambit Tripathy and Shubendu Chaterjee, Project Staff, CSIR-NML were awarded the Third Award in the event for their idea on using microwave in "Reduction of Mn Ores to Reduce Energy Consumption in Ferroalloy Processing". Participation was received from NIT Jamshedpur, IIT Hyderabad, Govt. Polytechnic Adityapur, KIIT Bhubneshwar, Shavak Nanavati Technical Institute, Tata Steel Limited and CSIR NML.

As a part of the Day-3 OWOL event, CSIR-NML organized a half a day workshop on "Materials Challenges in Unlocking the Hydrogen Era" on 26th April, 2023. Hydrogen plays an important role in decarbonizing the energy mix, but major investment and development along the supply chain are desired. Many challenges are associated with transporting hydrogen molecules by ship and pipeline, namely, the high-energy input needed for liquefaction is costly for exporters.The workshop aimed to focus only on the materials for the storage and transportation of gaseous hydrogen. The workshop formally began with the security announcements and the ceremonial lamp lighting. Dr. Avanish Kumar Srivastava, Director CSIR-NML, in his welcome address and briefed about the purpose of the workshop and the significance of the Hydrogen Energy for the development of the society. A total of eight technical lectures were presented by the eminent industry experts in the field. In the first half of the session, Dr. Indranil Chattoraj, Former Director, CSIR-NML delivered a lecture on "Hydrogen in Steel Making –Indian Context". He emphasized on increasing research on the topic before use of Hydrogen in steel industry can become economically feasible.

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CSIR-CDRI

27th April, 2023

उत्कृष्ट योगदान के लिए डा. अतुल सम्मानित

लखनऊ (एसएनबी)। केन्द्रीय औषधि अनुसंधान संस्थान (सीडीआरआई) में डा. अतुल कुमार, मुख्य वैज्ञानिक, औषधीय एवं प्रक्रिया रसायन विभाग द्वारा संस्थान को दिये गए उत्कृष्ट योगदान को मान्यता देने एवं सम्मानित करने के लिए बुधवार को एक संगोष्ठी का आयोजन किया गया। वे इसी महीने की 30 अप्रैल को सेवानिवृत्त होने जा रहे हैं। निदेशक, सीडीआरआई डा. राधा रंगराजन ने संगोष्ठी में सभी का स्वागत किया और औषधीय रसायन विज्ञान के क्षेत्र में डा. अतुल कुमार के उत्कृष्ट योगदान के लिए उनका धन्यवाद दिया।

सीडीआरआई में औषधीय रसायन विज्ञान में उपायुक्त (सस्टेनेबल) दृष्टिकोण पर संगोष्ठी

इस अवसर पर संगोष्ठी में दिल्ली विश्वविद्यालय, दिल्ली के प्रो. दीवान एस. रावत ने पार्किंसंस रोग के इलाज के लिए आशा की किरण के रूप में न्यूक्लियर रिसेप्टर नर एगोनिस्ट की खोज के बारे में जानकारी दी। उन्होंने आगे कहा कि पार्किंसंस रोग एक न्यूरो-डिजनरेटिव डिसऑर्डर है। दुनिया भर में लगभग 10 मिलियन लोगों को पार्किंसंस रोग है और पार्किंसंस रोग के इलाज के लिए फिलहाल कोई प्रभावी दवा उपलब्ध नहीं है। अभी उपलब्ध उपचारो का उद्देश्य लक्षणों को कम करना ही है। हैदराबाद विश्वविद्यालय की महिला वैज्ञानिक डा. आकांक्षा गुप्ता ने काइरल पूल एजेंट के रूप में कार्बोहाइड्रेट के माध्यम से एंटी-कैंसर एजेंट्स, वेंगामाइड एवं पायरानिसिन जो की प्राकृतिक उत्पाद हैं का लैब में सम्पूर्ण संश्लेषण की क्रियाविधि की खोज के बारे में चर्चा की। डा. सिद्धार्थ शर्मा सहायक प्राध्यापक रसायन विज्ञान विभाग मोहनलाल सुखाड़िया विश्वविद्यालय, उदयपुर ने आइसोसाइनाइड्स के कार्बनिक रसायन एवं उनकी फ्लास्क से इलेक्ट्रोकेमिकल सेल तक की यात्रा के विषय के बारे में जानकारी दी।

वैज्ञानिक सत्र के पश्चात संगोष्ठी में डा. अतुल कुमार के लगभग सभी 23 पीएचडी छात्र-छात्राओं ने कार्यक्रम में सम्मिलित होकर उनका अभिनंदन किया और कृतज्ञता के साथ अपने विचार साझा किए। निदेशक डा. राधा रंगराजन ने उन्हें पट्टिका और स्मृति चिन्ह देकर सम्मानित किया। डा. अतुल कुमार के समूह के शोध कार्यों में मुख्यतः महिलाओं के स्वास्थ्य संबंधी विकारों (डब्ल्यूएचआरडी) के लिए जैविक रूप से महत्वपूर्ण योगिकों के तर्कसंगत डिजाइन और संश्लेषण शामिल हैं। उन्होंने सेन्थांक सीडीआरआई-99/373 नामक यौगिक का डिजाइन एवं संश्लेषण किया है, जो ऑस्टियोपोरोसिस की रोकथाम और उपचार में एक आशाजनक विकल्प हो सकता है। डा. संजय बत्रा और डा. पी.पी. यादव ने धन्यवाद ज्ञापन किया और गोष्ठी का समापन किया।

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CSIR-CRRI

21st April, 2023

Construction of Steel Slag Roads - A Green Technology for Sustainable Road Building

The use of steel slag promises to open new vistas in highway construction and resource conservation in the country, especially at a time when India has embarked on a major road building programme.

In August 2022, ArcelorMittal Nippon Steel (AM/NS) India received an order for the supply of steel slag from a leading integrated road EPC company, which has been given a contract for construction of a 36 km eight-lane stretch in Surat. The EPC company will use this steel slag to build this stretch of the Mumbai-Vadodara highway in a first of its kind project in India.

Similarly, processed steel slag from Tata Steel Jamshepur has been used by Border Roads Organisation (BRO) to construct roads in Arunachal Pradesh and in the Indo Bangla border. Another project is coming up on NH 66 using cement concrete steel slag from JSW Cement's Dolvi plant.

Earlier in June last year, the then Steel Minister Ram Chandra Prasad Singh inaugurated a six-lane highway in Surat made of steel slag – a first for the country. The one km road which was entirely constructed using one lakh tonnes of processed steel slag from AM/NS India's manufacturing plant in Hazira, Surat, is an example of converting "waste into wealth". AM/NS India is a joint venture between Arcelor Mittal and Nippon Steel, two leading global steelmakers.

The concept of using slag lies at the heart of making green steel where steel production and processes remain sustainable and environmentally friendly. More than 1,200 heavy vehicles ply daily on the 1.2 km Surat road, which was opened to traffic in May last year. It was jointly constructed under technological supervision of Central Road Research Institute (CRRI)-- a laboratory of the Council of Scientific and Industrial Research.

"Supported by the CRRI, AM/NS India is proud to have developed an alternative to natural aggregates in road construction, which is of international quality standards, cost competitive, and reduces the burden on natural resources. Part of the Waste to Wealth and Clean India Campaign, the first-of-its-kind initiative not only validates our quest to contribute to a circular economy but also sets a new benchmark for others to emulate," said Dilip Oommen, CEO, AM/NS India and Executive Vice President, ArcelorMittal. The Hazira steel plant generates around 4,000-4,500 tonnes of steel slag a day.

Slag, a by-product of primary steel making process, comes out during manufacturing of steel through processes like basic oxygen furnace (BOF) route and electric arc furnace (EAF). At present, disposal of steel slag is a major concern for steel industries. Production of steel slag in India from different process routes is set to increase by 2030. With domestic crude steel production planned to go up to nearly 300 million tonnes by 2030-31, the production of steel slag in the country is likely to reach 45 million tonne (mt) from the current level of 19-20 mt. The use of steel slag for road construction was taken up under the aegis of Niti Aayog as an inter-ministerial collaboration task between Ministries of Defence, Science and Technology, Steel and Indian Railways.

In step, Niti Aayog initiated a study undertaken by CRRI on setting the guidelines for construction of roads using processed steel slag. Led by the union steel ministry, the study was jointly sponsored by AM/NS India, JSW Steel & RINL.

Since then, LD converter slag from Tata Steel Jamshedpur plant has been used to construct a 1.5 km two lane border road at Ziro in Arunachal Pradesh by Border Roads Organization (BRO). Around 1,200 MT processed steel slag aggregates were transported from Jamshedpur to Itanagar by railways and then from Itanagar to project site near Ziro in Lower Subansiri district by road.

The use of slag will be a boon for BRO to build roads in border areas, V K Saraswat, Niti Aayog member who recently visited the site, had said during his visit.

More recently, the Indian Navy has evinced interest in developing a heavy duty 3 km steel slag road at the naval base in Vizag. "The improved durability of such roads along with the savings in construction cost work are significant," Satish Pandey, principal scientist of CRRI said.

Another project is currently under construction on National Highway 66, around 50 km outside Mumbai. The one km four lane stretch of road, which is located near JSW Cement's plant in Dolvi, Maharashtra, is being built using steel slag along with cement slag.

The CRRI is developing a web-based GIS platform on map of India that will have all steel plants in India and anyone who clicks on the location of the plant will get a real time data on availability of steel slag.

The Road Ahead

- These projects will lead to saving of natural resources, sustainable utilization of steel slag and overall cost reduction of 30 – 40% in comparison to natural aggregates and will facilitate sustainable utilization of 19-20 million tonnes of steel slag waste being generated annually in domestic steel plants.

It will also bring about reduction in greenhouse gas (GHG) emissions and carbon footprint in road construction, prevention of land, air and water pollution. In addition to these environmental benefits, the technological benefits would include improved durability of road with better service life, improved skid resistance, higher load resistance capacity, reduced road thickness and better moisture resistance.

by Rakhi Mazumdar

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