

## In the News

# Hon'ble Prime Minister of India Inaugurates Virtually the Centre of Excellence for Fundamental and Translational Research in Ayurveda at CSIR-CDRI

*Celebrating the National Ayurveda Day, Hon'ble PM Shri Narendra Modi launched four Ayush Centres of Excellence.*



On the occasion of the 9th Ayurveda Day, Shri Brajesh Pathak, Deputy Chief Minister and Health Minister of Uttar Pradesh, visited the CSIR-Central Drug Research Institute (CSIR-CDRI), Lucknow, to witness the digital inauguration of four prestigious AYUSH Centres of Excellence (CoE) by the Honourable Prime Minister of India on 29 October 2024. This initiative

underscores India's commitment to integrating traditional medicine with modern healthcare practices. Shri Brajesh Pathak unveiled the plaque for the CDRI's AYUSH Centre of Excellence, marking the centre's official inauguration.

The Director, CSIR-CDRI, Dr Radha Rangarajan, extended a formal welcome and felicitated Shri Brajesh Pathak, commending

the institute's remarkable contributions to Ayurvedic research and innovation. The event featured an introduction to CDRI's legacy and contributions to the AYUSH system, followed by a presentation that outlined the objectives of the AYUSH Centres of Excellence. These centres are dedicated to advancing research, innovation, and scientific validation in traditional medicine.

The CDRI Centre of Excellence is set to play a transformative role by undertaking innovative studies evaluating select herbal extracts and phytoconstituents. This research will scientifically validate the effects of these extracts on immune function, anti-inflammatory responses, and immunomodulatory activities, potentially leading to their approval by regulatory authorities, including the Central Drugs Standard Control Organization (CDSCO) and the US Food and Drug Administration (US FDA).

National Ayurveda Day, celebrated annually on Dhanwantari Jayanti, this year embraced the theme "Ayurveda Innovation for Global Health," underscoring the need for Ayurveda-based innovative solutions to address global health challenges. On this occasion, Deputy Chief Minister UP, Shri Brajesh Pathak, informed the Prime Minister's initiative in this direction; he said, "Desh Ka Prakriti Parikshan Abhiyan is focused on raising health awareness among the citizens". He further mentioned the establishment of these Centres

of Excellence represents a pivotal step in advancing Ayurveda's role within the modern healthcare landscape, facilitating the integration of traditional medicine to benefit a broader global audience.

Shri Brajesh Pathak also toured CDRI's state-of-the-art laboratory facilities, gaining first-hand insights into the advanced research being conducted to enhance the effectiveness and applicability of Ayurvedic practices.

Prime Minister launched four Ayush Centres of Excellence, namely Centre of Excellence for Fundamental and Translational Research in Ayurveda at Central Drug Research Institute; Centre of Excellence for Diabetes and metabolic disorders at Indian Institute of Science, Bengaluru; Centre of Excellence in Sustainable Ayush for advanced technological solutions, start-up support and net zero sustainable solutions for Rasaushadhies at IIT Delhi; and Centre of Excellence on Ayurveda and Systems Medicine at JNU, New Delhi.

The main programme was organised at the All India Institute of Ayurveda (AIIA), New Delhi. On the occasion of Dhanwantari Jayanti and 9th Ayurveda Day, Prime Minister Shri Narendra Modi launched, inaugurated and laid the foundation stone of multiple projects related to the health sector worth around ₹12,850 crores. It has been the constant endeavour of the Prime Minister to provide quality healthcare services across the country.

*This initiative underscores India's commitment to integrating traditional medicine with modern healthcare practices.*

# Curtain Raiser of the 10<sup>th</sup> edition of the India International Science Festival (IISF)

*The IISF-2024 is being coordinated by the CSIR and involves all the major scientific departments and ministries of the Government of India in collaboration with Vijnana Bharati. CSIR-NIIST is the nodal institute for IISF 2024.*



During the curtain raiser ceremony of IISF 2024

Union Minister of State (Independent Charge) for Science and Technology, MoS (I/C) for Earth Sciences, MoS PMO, Department of Atomic Energy, Department of Space, Personnel, Public Grievances and Pensions, and Vice-President of CSIR, Dr Jitendra Singh announced on 4 October 2024 that Northeast will hold first-ever India International Science Festival.

At a press briefing at the National Media Centre, Dr Jitendra Singh disclosed that the 10<sup>th</sup> edition of the India International Science Festival (IISF) will be held at Guwahati,

marking a significant milestone in the region's journey towards becoming a hub for scientific and technological innovation. The festival, to be hosted at IIT Guwahati from 30 November to 3 December 2024, is a testimony to the Government's commitment to the Northeast and aligns with Prime Minister Narendra Modi's focus on the region as a key player in India's growth story.

Highlighting the unique importance of the venue, Dr Jitendra Singh said, "IIT Guwahati is not only one of the leading institutes of the country but also a symbol of how the

*Next wave of India's economic growth will be fuelled by advancements in biotechnology, bioeconomy, and space technology, says the Minister, Dr Jitendra Singh.*

*Reflecting on India's scientific progress under the leadership of Prime Minister Shri Narendra Modi, Dr Jitendra Singh noted the significant advancements the country has made in areas such as space exploration, biotechnology, and digital technology.*

Northeast is emerging as a focal point of India's scientific advancements. Hosting IISF 2024 in the Northeast is not just about celebrating science; it's about placing the region at the heart of India's scientific future."

The decision to host the festival in Guwahati reflects the Government's broader strategy to promote inclusive development, particularly in regions that have been historically underrepresented. Prime Minister Modi has consistently underscored the importance of bringing the Northeast closer to the rest of India and creating opportunities for it to play a critical role in the country's progress. "The Northeast is rich in natural resources and talent, and this festival is an opportunity for the rest of the nation to recognise and engage with the potential that lies here," Dr Jitendra Singh added.

The 10<sup>th</sup> edition of IISF carries the theme "Transforming India into an S&T-driven Global Manufacturing Hub" reflecting the government's ambition to merge science and technology with industrial growth, propelling India towards self-reliance and global leadership in manufacturing. The Minister says the theme aligns closely with national initiatives like 'Make in India' and 'Atmanirbhar Bharat,' and will spotlight emerging technologies such as artificial intelligence, robotics, and biotechnology.

Dr Jitendra Singh also emphasised the role of science in driving India's economic future, stating, "The next wave of India's economic growth will be fuelled by

advancements in biotechnology, bioeconomy, and space technology. This festival is a chance to highlight how science will shape the future of our economy, environment, and employment."

Dr Jitendra Singh emphasised that IISF-2024 will not only celebrate the country's scientific achievements but also create opportunities for collaboration and innovation. "This platform will bring together scientists, industry leaders, students, and the public to explore the transformative power of science. IISF-2024 will fuel discussions that will shape India's future as a global leader in science and technology."

In addition to its core emphasis on science-led industrial growth, IISF-2024 will serve as a key platform for engaging young minds nationwide. The Minister stated that the festival will allow students to connect with top scientists, participate in science competitions, and experience groundbreaking innovations up close.

Reflecting on India's scientific progress under the leadership of Prime Minister Shri Narendra Modi, Dr Jitendra Singh noted the significant advancements the country has made in areas such as space exploration, biotechnology, and digital technology. He reiterated that IISF-2024 will reaffirm India's commitment to becoming a global manufacturing powerhouse driven by scientific innovation.

The IISF-2024 is being coordinated by the Council of Scientific and Industrial Research (CSIR) and involves all the major

scientific departments and ministries of the Government of India in collaboration with Vijnana Bharati. The event will feature a range of exhibits, panel discussions, and international collaborations to address pressing global challenges like climate change, food security, and sustainable development.

With 30% of the festival's registrations reserved for participants from the Northeast, the event will offer a unique opportunity for local talent to engage with some of the brightest minds in the scientific community. Dr Jitendra Singh noted that this is part of a broader effort to bring India closer to the Northeast by creating more platforms for exchange and collaboration.

Dr Jitendra Singh concluded by urging more people from across the

country to visit the Northeast and experience its vibrant culture, vast resources, and innovative spirit. "It's time we bring the rest of India closer to the Northeast. The region has so much to offer in terms of natural resources, sustainable practices, and progressive culture. This festival will showcase that to the nation."

Prof. AK Sood, Principal Scientific Advisor to the Government of India; Dr N Kalaiselvi, Director General, CSIR; Dr M Ravichandran, Secretary, Ministry of Earth Sciences; Dr Abhay Karandikar, Secretary, Department of Science & Technology; and Dr Shiv Kumar Sharma, National Organising Secretary, Vijnana Bharati; along with senior officials, participated in the event.

*Adapted from PIB*

## CSIR-CSMCRI Organises IISF-2024-Pre-Fest event

India International Science Festival (IISF-2024) Pre-Fest event organised by CSIR-Central Salt & Marine Chemicals Research Institute (CSIR-CSMCRI), Bhavnagar, concluded on 06 November 2024. About 200 students and teachers from various schools in Gujarat participated in this programme under Jigyasa. Dr KB Pandey, Principal Scientist, informed us that during the programme, students had an opportunity to understand the research development work in the laboratories and discuss it with the scientists.





At the event, Chief Guest Dr Girish Goswami, Project Director, Regional Science Museum, Bhavnagar, and Special Guest Mr Sujit Kumar, Commissioner Bhavnagar Municipal Corporation, presented their views on Artificial Intelligence and the generation of scientific temperament

in students. Speaking on the occasion, Director Dr Kannan Srinivasan said that such outreach programmes provide students with an understanding of scientific advancements that pave the way for their future science careers. The nodal person of the event, Dr Mangal Singh Rathore, conducted the event.

## CSIR-NCL and CPI (UK) Start a ‘Living Lab’ to Bolster UK-India Effort to Decarbonise the Chemical Industry

*‘Living Lab’ will act as a testbed for companies to explore and de-risk advanced pharmaceutical manufacturing technologies that could significantly reduce greenhouse gas emissions.*



A new initiative to decarbonise the Indian pharmaceutical industry could reduce emissions by up to 80% by adopting innovative manufacturing approaches.

Part of the UK-India Net Zero Innovation Centre, this ‘Living Lab’ will act as a testbed for companies to explore and de-risk advanced pharmaceutical manufacturing technologies that could significantly reduce greenhouse gas emissions.

The Indian pharma industry owns over 20% of the global

supply chain and contributes to approximately 60% of the worldwide vaccine demand. It also provides 40% of the generic drug demand in the US and supplies 25% of all medicines in the UK.

Established by the CSIR-National Chemical Laboratory (CSIR-NCL), Pune, a premier R&D institute in India, and Centre for Process Innovations (CPI), one of the UK’s leading technology innovation centres, the state-of-the-art ‘Living Lab’ facility at CSIR-NCL in Pune will initially develop

and demonstrate the potential of continuous manufacturing and solvent-free manufacturing methods. The 'Living Lab' is a part of the centre for Sustainable Continuous Manufacturing hosted by CSIR-NCL. The centre has three levels of industry engagements.

Recently, the 'Living Lab', part of the Centre for Sustainable Continuous Manufacturing, welcomed its first set of pharmaceutical companies in India to sign up for the partnership. Aarti Industries, Glenmark Life Sciences, USV, Anthem Biosciences, Corning and GMM-Pfandler will work with CPI and CSIR-NCL to create world-leading manufacturing practices. Three more large companies, including Sun Pharma, are in the process of joining this partnership imminently. Having these industries as partners in developing an ecosystem for pre-competitive research on decarbonisation using continuous flow synthesis, which is the strength of CSIR-NCL with digitalisation support from the CPI, will make this centre quite resourceful and unique.

Dr Ashish Lele, Director, CSIR-NCL, said, "The Indian pharmaceutical and fine and speciality chemicals industries have a strong culture of innovation and a drive to decarbonise. Continuous flow manufacturing coupled with digitalisation is an emerging powerful technology platform enabling higher productivity, improved safety, and reduced emissions from drug manufacturing processes."

"The 'Living Lab' will be a unique testbed that will

allow the Indian chemical and pharmaceutical industries to validate the advantages of emerging technologies and help them to transition from conventional batch manufacturing to continuous manufacturing, thereby contributing to a significant reduction in emissions. The involvement of the technology partners, who own niche technologies relevant to continuous manufacturing, will strengthen the centre and expedite the translation towards commercialisation," added Dr Lele.

Dr Arun Harish, Chief Strategy Officer at CPI, said, "At a time when global demand for treatments and vaccines has never been higher, the pharma industry must also act if it is going to achieve net zero." He added, "India makes such a huge contribution to the global pharmaceutical industry and plays a key role in manufacturing the treatments and vaccines that keep us healthy."

"The potential for this project and the impact it could have on the world's drive towards industrial decarbonisation is huge. By establishing the 'Living Lab', we have developed a new engagement model with industry to allow them to collaborate, test and develop business cases for new technology and innovation adoption at scale," he emphasised.

Mirik Gogri, Head, Corporate Strategy at Aarti Industries, said, "Aarti Industries firmly believes that the biggest lever for decarbonisation of the fine chemical industry is the development and

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commercialisation of less energy-intensive processes. “We are looking at the ‘Living Lab’ as an institution that will develop such processes in challenging chemistries and democratise access to the broader Indian industry. We are looking forward to working closely with the partnership and stewarding it,” added Mirik.

Dr Chetan Doshi, Chief Scientific Officer at USV, said, “NCL, A CSIR laboratory, has undertaken an ambitious goal to support the Indian chemical industry in reducing its carbon footprint through the development of platform technologies and in-depth understanding of factors affecting continuous manufacturing for some of the most common chemical reactions of hazardous nature. “In the first technical advisory meeting, I was pleased to see active participation from industry members and arriving at a consensus to steer this complex and ambitious project in the direction that will

enable us to develop platform technologies for sustainable continuous manufacturing and allow the Indian chemical Industry to participate in global markets ensuring Scope 3 compliance as per European regulations,” he said.

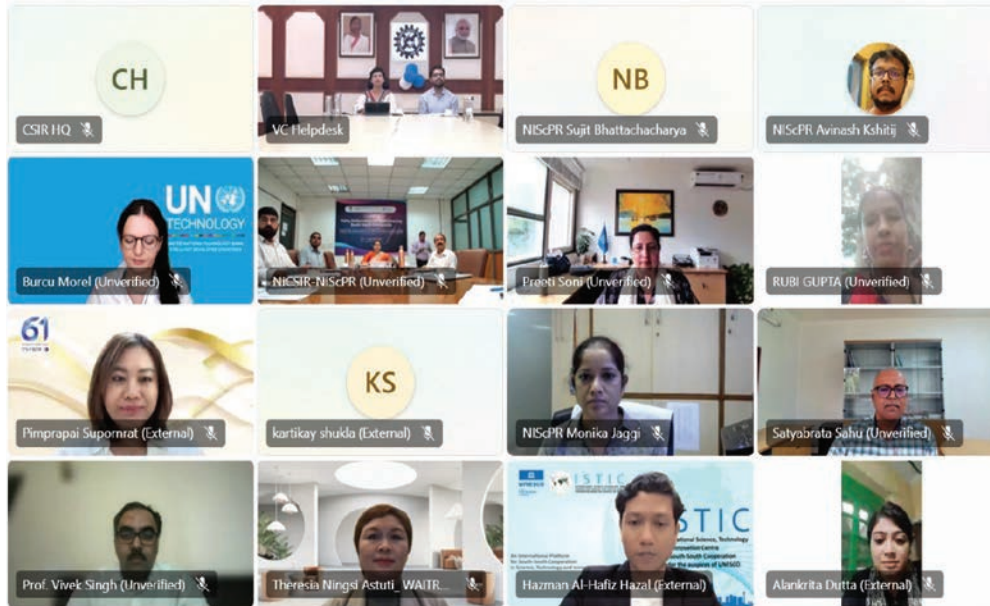
Jack Landers, Head of Net Zero Innovation Centre, British High Commission, New Delhi, said, “The UK-India ‘living lab’ in Pune is a wonderful initiative that provides us with an interactive testbed environment, enabling companies to trial and de-risk advanced manufacturing technologies to support the net-zero targets of both industries.”

Very soon, CSIR-NCL will announce an Industry Consortium on Continuous Manufacturing that aims to involve mid-size Indian fine and speciality chemicals industries and pharmaceutical intermediate and medicinal compound manufacturers, who will have access to various flow synthesis facilities at CSIR-NCL. This industry consortium will also be one of the activities of this centre.

## **CSIR, APCTT-UN ESCAP and WAITRO jointly Organise a Conclave on Policy Deliberations for Strengthening South-South Cooperation**

**C**SIIR, in partnership with APCTT-UN ESCAP (Asian and Pacific Centre for Transfer of Technology) and WAITRO (World Association of Industrial & Technological Research), organised a conclave on Policy

Deliberations for Strengthening South-South Cooperation on 11 September 2024 in online mode. The programme was designed, coordinated and hosted by CSIR-National Institute of Science Communication and Policy



Research (CSIR-NIScPR), New Delhi, with CSIR-International S&T Affairs Directorate (CSIR-ISTAD).

The conclave brought together several global institutions and eminent scholars from South countries. Head/Senior experts of major global institutions focusing on South countries: APCTT, WAITRO, ISTIC-UNESCO International Science Framework for Ethical and Responsible Governance, West Asia North Africa Institute Jordan, UN Technology Bank for Least Developed Countries, gave presentations during the conclave. Experts from various research institutions included National Research and Innovation Agency Indonesia, CSIR-NIScPR, CSIR-ISTAD, CSIR-IMD (Innovation Management Directorate), Wits Business School South Africa, National Research and Innovation Agency Indonesia, Computer Science Department-Delhi University, Indian Institute of Technology-Delhi, University of Nebraska-Lincoln USA, Institute for Studies in Industrial Development, Indian Institute of Science, Department of Science and Technology, Tshwane Univ of Technology South Africa.

The conclave deliberated on how South countries, through cooperative partnerships, can create responsible governance for science and innovation for achieving Sustainable Development Goals (SDG), especially Goal 5 (Gender equality and empowering all women and girls) and 17 (Partnerships for SDG). The potential partnerships among South countries and possibilities that can be created were highlighted to determine how challenges can be addressed more effectively and how the south-south connect can leverage the existing efforts of individual nations. The conclave, followed by the inaugural session, had three technical sessions on the topics – “Responsible Governance for Research and Innovation”, “Diversity, Equity, and Inclusion in Science”, and “Funding Mechanisms and Capacity-Building for R&D Cooperation”.

In the inaugural session, Prof. Ranjana Aggarwal, Director, CSIR-NIScPR, shared a broad overview of the conclave and its significance. She stressed the need to explore new models and mechanisms that can lead

*The conclave deliberated on how South countries, through cooperative partnerships, can create responsible governance for science and innovation to achieve Sustainable Development Goals (SDGs).*

to responsible research and innovation in science, open science, access to resources, gender equity, diversity and inclusion. She highlighted that the conclave's outcome will be presented on 19 September at the Science Summit at the 79 UN General Assembly CSIR Science Session on 'Strengthening South-South Cooperation for Achieving SDGs'.

During the conclave, Dr Rama Bansal, Head CSIR-ISTAD, emphasised the role of CSIR in strengthening India's scientific and technological capacity. Dr Preeti Soni, Head, APCTT-UN ESCAP, and Ms Theresia Ningsi Astuti, Regional Representative for WAITRO and National Research and Innovation Agency (BRIN) in Indonesia, highlighted the role played by their organisations in enhancing the scientific and technological capacity of South countries and in supporting them for achieving Sustainable Development Goals.

The first session was chaired by Prof. Mammo Muchie, DST-NRF SARChI Chair Rated Research Professor in Innovation Studies at Tshwane University of Technology, South Africa. The session focused on responsible governance in the context of research and innovation, emphasising the need for an open science framework that bridges gaps between North and South countries. Dr Yatendra Kumar Satija, Senior Scientist at ISTAD-CSIR, moderated the session. Panellists were Prof. Ravinder Rena from Durban University of Technology, South Africa; Dr Diran Soumonni from Wits Business School, South Africa; Prof. John

Kalu Osiri from the University of Nebraska-Lincoln, USA; Prof. Vivek Singh from the University of Delhi; and Prof. ChM Dr Mohd Basyaruddin Abdul Rahman from ISTIC-UNESCO.

The topics discussed included creating enabling policies for an open science framework, bridging the North-South divide in scientific knowledge and resources, responsible governance practices that foster inclusion, resource sharing, and sustainability, and developing frameworks for ethically acceptable and socially desirable research in South countries.

Prof. Rohini Godbole chaired the second session from the Centre for High Energy Physics, Indian Institute of Science (IISc), Bengaluru. It was moderated by Dr Naresh Kumar, Chief Scientist, CSIR-NIScPR. The panellists including Prof. Vivek Kumar from IIT Delhi's Center for Rural Development and Technology; Dr Yara Shaban, Head of the WANA Office and Senior Researcher at the West Asia-North Africa (WANA) Institute in Amman, Jordan; and Prof. Ranjana Aggarwal, Director CSIR-NIScPR, drew attention to the need for developing policies that promote diversity, equity, and inclusion in science, with emphasis on empowering women in STEM and addressing rural development. Some important examples from Indian policy and implementation in this direction were highlighted.

Prof. Nagesh Kumar, Director and Chief Executive of the Institute for Studies in Industrial Development (ISID) and Former

*The first session focused on responsible governance in the context of research and innovation, emphasising the need for an open science framework that bridges gaps between North and South countries.*

Director at UNESCAP, chaired the third session. Dr Mahesh Kumar, Senior Principal Scientist at the Innovation Management Directorate (IMD), CSIR, moderated the session. The panellists were Prof. Mammo Muchie; Dr Preeti Soni; Dr SK Varshney, Former Adviser and Head of International Cooperation at the Department of Science and Technology (DST) and Dr Rama Bansal of CSIR-ISTAD. The session addressed the funding mechanisms and capacity-building for R&D cooperation, exploring various funding instruments and schemes that support science and technology initiatives aligned with SDGs. APCTT, CSIR, and DST

highlighted examples of successful interventions and capacity building in South countries.

Dr Sujit Bhattacharya, Chief Scientist at CSIR-NIScPR, concluded the conclave with a detailed analytical summary of key issues deliberated and promising pathways that South countries have shown in meeting challenges. The conclave underscored the need for South countries to create mechanisms to promote learning and sharing, a collective endeavour to create a Science-Technology-Innovation ecosystem in South countries for achieving developmental challenges and addressing SDGs.

## CSIR Participates in MET & HTS 2024 Exhibition

CSIR participated in the MET and HTS 2024 International Exhibition on Materials Engineering, Technology & Heat Treatment from 4-6 September 2024 at the Bombay Exhibition Centre, Goregaon, Mumbai. During the exhibition, various labs from CSIR participated and showcased their technologies and products related to Metals, Mining, Materials, various labs from CSIR participated and showcased their technologies and products related to Metals, Mining, and Materials, & Minerals theme.

CSIR-IMMT showcased white led, MXENES, tungsten heavy alloy, and copper/nickel metal extraction from deep sea mining. CSIR-NAL showcased a Sic composite brake disc, CSIR-AMPRI showcased a

fire sensor alarm, and free X-ray shielding red mud tiles. CSIR-NML showcased a low-cost brass melting furnace, Jewel clean cream, and galvanising metal, and CSIR-CSMCRI showcased synthetic hydrotalcite, zeolite granules, precipitated silica, and CSIR-CIMFR showcased a digital mine system and vision enhancement system.

Science Communication and Dissemination Directorate (SCDD) at CSIR has coordinated the exhibition and put up a fabricated CSIR theme pavilion in a 100 square metre area, which attracted many industries, students and the general public, showing curiosity to learn more about the technologies under CSIR's Metals, Mining, Materials & Minerals theme.

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Tafcon Projects India Pvt. Ltd organised this exhibition to bring the Ministry of Defence, Ministry of Railways, Ministry of Steels & DSIR and allied industries on one platform and provide them with the opportunity to showcase their achievements, innovations, technologies, products/services.

## CSIR-NAL Q-Plane UAV Soars in the Skies over the Arabian Sea

CSIR-National Aerospace Laboratories (CSIR-NAL), Bengaluru, developed Q-Plane, the hybrid UAV, which has successfully flown over the Arabian Sea. The UAV's capability was demonstrated by flying in rough weather conditions with strong winds of over 20 knots. The Q-Plane could autonomously navigate to a predefined point 20 kilometres away from the launch and return to the home location before the commencement of auto landing. It can fly for an hour in fixed-wing mode before it transits to multi-copter mode for landing.

The Q-Plane, equipped with four rotors in addition to forward propulsion, takes off vertically and lands vertically; hence, it does not require a launching mechanism. It transits from multi-copter mode to a fixed-wing mode autonomously. The in-house designed flight control algorithms ensure



flawless operations in all weather conditions. The airframe is made of lightweight composite materials with minimum assembly joints. It has a 4 kg payload capacity and can be deployed to conduct surveillance missions, drop essential medicines, etc., during emergencies.

The trials were carried out in the presence of potential customers and officials from CSIR. The development team was excited to receive very encouraging comments from the user community. CSIR-NAL proudly declares that its UAV has unique capabilities compared to similar imported products.

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## CSIR-AMPRI Transfers Know-how Technology on “Green Binder for Bio Composites”

On CSIR Foundation Day, a Thematic Exhibition was organised for the first time on 26 September 2024 at the National Agricultural Science Complex (NASC), Pusa Road, New Delhi. At this Thematic Exhibition, under the guidance of Dr Avanish Kumar Srivastava, Director, CSIR-AMPRI, Bhopal, a Know-how Technology on “Green Binder for Biocomposites” was transferred to a well-known composite materials manufacturing company, M/s Permal Wallace Private Limited, Bhopal, in the presence of Dr (Mrs) N Kalaiselvi, Director General, CSIR & Secretary DSIR, and Mr Kunal Merchant, Director, M/s Permal Wallace Private Limited, Bhopal. On this occasion, several other dignitaries were also present, namely Prof. VK Singh, Chairman Research Council, Dr Mayank Mathur, Chief Scientist, CPD, HQ & RC member; Sh MK Gupta, JS CSIR, Dr Ramanuj Narayan, Director, CSIR-IMMT, Dr Asokan P, Chief Scientist, Dr Sarika Verma, PI and Principal Scientist, CSIR-AMPRI, Bhopal, Dr JP Chaurasia, Head PPD, CSIR-AMPRI and Dr Sandeep Singhai, Head Business Development, CSIR-AMPRI, Bhopal.

Developing green binders from renewable resources



represents a major advancement in sustainable materials. CSIR-AMPRI has developed a green binder for making biocomposites from bamboo/natural resources. The binder is synthesised from renewable natural resources like rice, oats, etc., as a source of starch, lignin, and other ingredients. The green binder is derived from renewable resources, thus reducing dependence on petroleum-based synthetic binders and lowering greenhouse gas emissions, minimising environmental pollution. The green binder is non-toxic, making it safer for human use and reducing harmful emissions compared to petroleum-based binders. Also, the binder is biodegradable and recyclable, contributing to environmental conservation.

*The green binder is non-toxic, making it safer for human use and reducing harmful emissions compared to petroleum-based binders.*

Making the green binder cost-effective, energy-efficient and free of by-product formation makes the process environmentally friendly. The production and use of green binders contribute to a lower carbon footprint, helping mitigate climate change by reducing greenhouse gas emissions. The green binder can be used in various industries, including packaging, construction, and composites, offering a sustainable alternative without compromising performance.

Thus, developing green binders for making biocomposites is revolutionary and marks a significant step toward a sustainable and greener future. The technology has the potential to attract and encourage micro, small and medium enterprises, start-ups, entrepreneurship, etc., and thus, supports achieving sustainable goals by contributing to Aatmanirbhar Bharat, Swasth Bharat Abhiyaan, Swachh Bharat Abhiyaan.

## CSIR-CSMCRI Inks a Know-how Licensing Agreement with Memtrix Technologies

*CSIR-CSMCRI inked a Know-how licensing agreement “hollow fibre ultra-filtration membranes for water purification and removal of pathogens”.*

CSIR-Central Salt & Marine Chemicals Research Institute (CSIR-CSMCRI), Bhavnagar, inked a Know-how licensing agreement “hollow fibre ultra-filtration membranes for water purification and removal of pathogens” on 26 September 2024 with Memtrix Technologies LLP, Ahmedabad. The polymeric hollow fibre membranes can separate bacteria, larger-sized viruses, cysts, proteins, enzymes, colloids, etc. They are presently the best system for disinfecting water by providing potable water. It allows the entry of water molecules but retains contaminants like particles, colloids, bacteria and other pathogens. The hollow fibre filter equipped with a water level sensor works under gravitation (0.5 bar) without any electrical energy input. Expected life of this membrane is approx. three years.

Mr Nirjar Rajendra Bhatt & Mr Ravi Dilipkumar Trivedi from Memtrix Technologies LLP and CSIR-CSMCRI team Dr Kamallesh Prasad, Head BDIM, Dr Puyam Sobhindro Singh, Head MSST, Dr Shibaji Ghosh, Dr Kanti Bhooshan Pandey, Dr Nikhilesh Trivedi, the Scientists from BDIM and Dr Mrinmoy Mondal, scientist from MSST were present during the signing of the agreement.



## CSIR-CDRI and Zydus to develop best-in-class drug for Chronic Kidney Disease induced Osteoporosis

Chronic Kidney Disease (CKD) affects over 10% of the global population, posing significant health challenges. CKD causes a progressive loss of kidney function and can ultimately lead to kidney failure. One of the hallmarks of CKD is the disruption of mineral metabolism, increasing the risk of osteoporosis and fractures. Those above the age of 65, particularly women, are at higher risk. Unfortunately, most of the conventional anti-osteoporosis medications are contraindicated in patients with CKD, due to the risk of worsening renal function. Therefore, there is an urgent need to develop safe and effective drugs for osteoporosis that will reduce fracture risk without a deterioration of renal function.

Studies suggest that the protein Sclerostin plays a key role in the dysregulation of bone metabolism. In patients with advanced stages of CKD and osteoporosis, Sclerostin levels are observed to be high. Based on research conducted at CSIR-Central Drug Research Institute (CSIR-CDRI), Lucknow, and data from antibody-based therapies (biologics), Sclerostin has emerged as a promising drug target for treating CKD-induced and postmenopausal osteoporosis. To develop oral medication by discovering small molecule

inhibitors of Sclerostin, Zydus Lifesciences Ltd, Ahmedabad, and CSIR-CDRI signed a collaborative research agreement on 17 September 2024 at Zydus Research Centre, Ahmedabad. Under this agreement, CDRI and Zydus will jointly undertake preclinical research. Zydus will develop any drug candidate emerging from the efforts for India and other markets.

Commenting on the partnership, Dr Radha Rangarajan, Director, CSIR-CDRI, said, “CSIR-CDRI has worked extensively in the area of bone metabolism under the leadership of Dr Naibedya Chattopadhyay. The CDRI team consisting of Dr Arun Trivedi, Dr Divya Singh, Dr Kinshuk Srivastava, Dr Imran Siddiqui, Dr Kishor Mohanan, Dr Pintu Mandal and Dr Shashi Gupta will take a



pioneering approach to identifying compounds that inhibit Sclerostin signalling. The complementary expertise and capabilities of the two organisations, combined with a shared mission to address India's unmet needs through innovative therapies, makes this collaboration particularly meaningful."

On this occasion, Mr Pankaj Patel, Chairman, Zydus Lifesciences Limited, said, "Zydus has a significant focus on chronic kidney disease (CKD),

having discovered the novel drug Desidustat in our R&D laboratories. CSIR-CDRI's deep-rooted expertise in biomedical research, coupled with Zydus's innovative approach to drug discovery and development, create a powerful synergy. Together, we'll explore new avenues for treating bone metabolism disorders, ensuring that CKD patients have access to effective and affordable therapies that improve their quality of life."

### Workshop/Conference/Symposium

## 47th OSI Symposium "OptoIn 2024" Inaugurated at CSIR-CSIO

The 47th OSI Symposium, "OptoIn 2024," an International Conference on Advances in Optics and Photonics Instrumentation, was inaugurated at CSIR-Central Scientific Instruments Organisation (CSIR-CSIO), Chandigarh. Organised by CSIR-CSIO in collaboration with the Optical Society of India (OSI), the three-day event has drawn approximately 400 participants from across the globe, including 70 distinguished invited speakers. From 23 to 25 October 2024, the symposium aimed to foster international collaboration and showcase advancements in optics and photonics technology.

The inaugural session opened with insightful remarks from Prof. W Osten, University of Stuttgart, Germany, who traced the history of India's accomplishments in optics and photonics and highlighted the strong, longstanding connection

between the Indian optics community and the University of Stuttgart. This relationship has significantly contributed to advancements in the field. Prof. Osten emphasised the importance of this rich heritage and its role in driving continued progress in optics and photonics research in India.

Mr Apurba Roy, Hal Korwa, underscored the critical role of international collaboration, specifically pointing to the successful partnerships that CSIR-CSIO has developed with global agencies. He highlighted how these collaborations have advanced the implementation of cutting-edge electro-optic technologies, setting a high standard for innovation and impact in this sector.

Chief Guest Mr KV Sriram from LEOS, Bengaluru, extended his best wishes for the success of OptoIn

*The Symposium aimed to foster international collaboration and showcase advancements in optics and photonics technology.*

2024, encouraging meaningful interactions and collaborations among the participants. Mr Sriram particularly noted the opportunities this symposium provides students, with dedicated thesis presentations and hands-on exposure to emerging trends in optics and photonics, all of which inspire and prepare the next generation of researchers.

The event has brought together an impressive gathering of scientists, researchers, industry experts, and students, all engaged in discussions, presentations, and networking sessions covering a wide spectrum of topics in optics and photonics. The symposium included specialised workshops, keynote addresses, and technical sessions led by world-renowned experts, offering a unique platform for participants to share knowledge and explore new research avenues.

## A Two-day “Technology Showcasing and Networking Meet of CSIR-CFTRI Food and Millet Technologies”

CSIR-National Institute of Science Communication and Policy Research (NIScPR), New Delhi, in collaboration with CSIR-Central Food Technological Research Institute (CSIR-CFTRI), Mysuru, Unnat Bharat Abhiyan (UBA), and Vijnana Bharati (VIBHA), jointly organised a two-day “Technology Showcasing and Networking Meet of CSIR-CFTRI Food and Millet Technologies” at CSIR-CFTRI from 19-20 September 2024. The



Concluding the inaugural session, Dr Sudipta Srakar Pal, Senior Principal Scientist, CSIR-CSIO, extended heartfelt thanks to the participants, invited speakers, and the entire organising team for their contributions to making the day a success. Dr Sudipta acknowledged the dedication of the OSI and CSIR-CSIO teams in bringing together this vibrant forum, which continues to strengthen global scientific partnerships in optics and photonics.

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range of stakeholders from all over the country. The event witnessed an overwhelming participation of more than 100 participants from all across the country.

The inaugural session commenced with a welcome address from Dr Sridevi Annapurna Singh, Director, CSIR-CFTRI. Dr Singh highlighted the CSIR-CFTRI's efforts to address the challenge of malnutrition along with the hidden micro malnutrition in the country during the initial years of CSIR-CFTRI. She talked about the important CSIR-CFTRI technologies like infant food from buffalo milk, parboiling of rice, spice, oil, automation technologies for traditional food, biodegradable leaf cup machines, etc. She highlighted efforts to fill the gap of skilled manpower in the food industry through the MSc course on Food Technology and the International School of Milling Technology course run by the CSIR-CFTRI.

Prof. Ranjana Aggarwal, Director, CSIR-NIScPR, provided the background of CSIR-NIScPR's ongoing collaboration with UBA and VIBHA to create livelihood and business opportunities in rural India using CSIR Technologies. She also highlighted reversing the migration from rural to urban through creating opportunities in rural areas for sustainable development.

Prof. Virendra Kumar Vijay provided the overview of the Unnat Bharat Abhiyan and its collaboration with CSIR and highlighted the ongoing UBA initiative towards rural development. Project Director Prof. PK Singh of Unnat Bharat



Abhiyan, NCI, New Delhi, mentioned the Subject Expert Groups contribution and the working model in Unnat Bharat Abhiyan and their contributions.

The Guest of Honour, Shri NP Rajive, and Executive Director Vibha Vani highlighted the efforts towards addressing upscaling and speeding up the implementation of technologies and suggested convergence among stakeholders to address societal issues through collaboration and knowledge exchange. Dr Yogesh Suman, CSIR-NIScPR, discussed the importance of the joint efforts of CSIR, UBA, and VIBHA to create livelihood opportunities in rural areas by using CSIR technologies. The Chief Guest, Shri Sam Cherian, Chairman and Managing Director, Schevaran Laboratories Pvt. Ltd, Mysuru, highlighted the CSIR-CFTRI's efforts and contributions to the food industry in the country.

In the technical session, Dr Aashitosh Inamdar highlighted the various R&D activities and translation efforts of CSIR-CFTRI technologies that benefit stakeholders.

Sh Aashitosh Inamdar moderated the networking session, during which participants interacted with technology developer scientists to identify specific opportunities for CSIR-CFTRI Technology deployment. The panellists involved from the

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CSIR-CFTRI were Dr Umesh Hebbar H, Dr Pradeep Singh Negi, Dr Meera M S, Dr Attar Singh Chauhan, Dr PV Suresh, Dr Pushpa S Murthy, Dr Ashitosh Inamdar. They highlighted various technologies CSIR-CFTRI developed in fruits & vegetables, grains, traditional foods, meat processing, and value-added products using pepper, turmeric, ginger, spices, etc.

An interactive session was also held with the representatives from the banking sector and Government agencies responsible for implementing various Government schemes in agriculture. The

panellists Shri Chandra Kumar from KAPPEC Karnataka, Shri Chandrashekhar from Medikere, Shri Saiyad Rizvi from Union Bank of India and Shri Krishnamurti from State Bank of India, Mysuru, discussed the funding schemes like PFME, Agriculture Infrastructure Fund (AIF), Retail Asset Credit Centre (RACC) and other short term and long term funding schemes for technology adaptation and establishing enterprises and start-ups.

The event concluded with the distribution of certificates of participation to the participants.

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## Events

# ‘Swacchata Hi Seva Abhiyan 2024’ organised in CSIR-CIMFR Dhanbad, in honour of Gandhi Jayanti

In honour of Gandhi Jayanti on 2 October 2024, the CSIR-Central Institute of Mining and Fuel Research (CSIR-CIMFR), Dhanbad, organised the ‘Swachhta Hi Seva Abhiyan 2024,’ inspired by the theme of Hon’ble Prime Minister Shri Narendra Modi Ji’s call for ‘Swabhav Swachhta, Sanskar Swachhta.’

The initiative was led by Professor Arvind Kumar Mishra, Director CSIR-CIMFR, along with enthusiastic participation from all institute staff members. The programme commenced from the Community Center of the Barwa Road campus and involved a comprehensive cleanup of the

entire residential campus. This was followed by a traverse through the City Center locality of Dhanbad to promote cleanliness awareness further. The CSIR-CIMFR, in collaboration with Railway staff, extended the cleanliness drive to Bhaga Railway Station. The local community highly appreciated the effort, which aimed to raise public awareness about the importance of cleanliness. This initiative reflects the institute’s commitment to fostering a clean and healthy environment, aligning with national objectives, and highlighting the significant role CSIR-CIMFR plays in contributing to this cause.

## CSMCRI bags National Rajbhasha Kirti Award

CSIR-Central Salt & Marine Chemicals Research Institute (CSMRI), Bhavnagar, bags the Rajbhasha Kirti Award in Region 'B' under the category of Board/Autonomous Body/Trust/Society for best implementation of Official Language Policy during the year 2023-24. This award was presented in the dignified presence of Hon'ble Union Minister of State for Home Affairs, GOI, Shri Nityanand Rai, Hon'ble Deputy Chairman Rajya Sabha and others in New Delhi on the occasion of Hindi Diwas on 14 September 2024. The 4th All India Official Language Conference was organised by the Department of Official Language, Ministry of Home Affairs, from 14 to 15 September 2024 in Bharat Mandapam, New Delhi. CSIR-CSMCRI has received this national award for the fourth time in the last 5 years.

CSIR-CSMCRI is the only laboratory of CSIR in the state

of Gujarat engaged in diverse research and development areas directly benefiting humankind. The development of advanced water desalination membranes/units, the manufacturing of high-quality solar salt, and the cultivation of seaweed as a source of next-generation fuel and food are some of the major research areas in which the institute has shown its excellence.

Dedicating this national honour to the employees of CSIR-CSMCRI, Director Dr Kannan Srinivasan said that apart from research, the institute is committed to the maximum implementation of the Official Language Policy in its official works. During the occasion, Dr PS Subramaniam, Chief Scientist, Dr Pramod Shinde, Principal Scientist, Dr Kanti Bhushan Pandey, Principal Scientist, Shri Subhash Chandra Antil, Controller of Administration and Shri Neeraj Kumar Shaw, Jr Hindi Translator were present.

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**Please direct all Subscription-related queries to:**

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