



CSIR NEWS

Newsletter of the Council of
Scientific & Industrial Research

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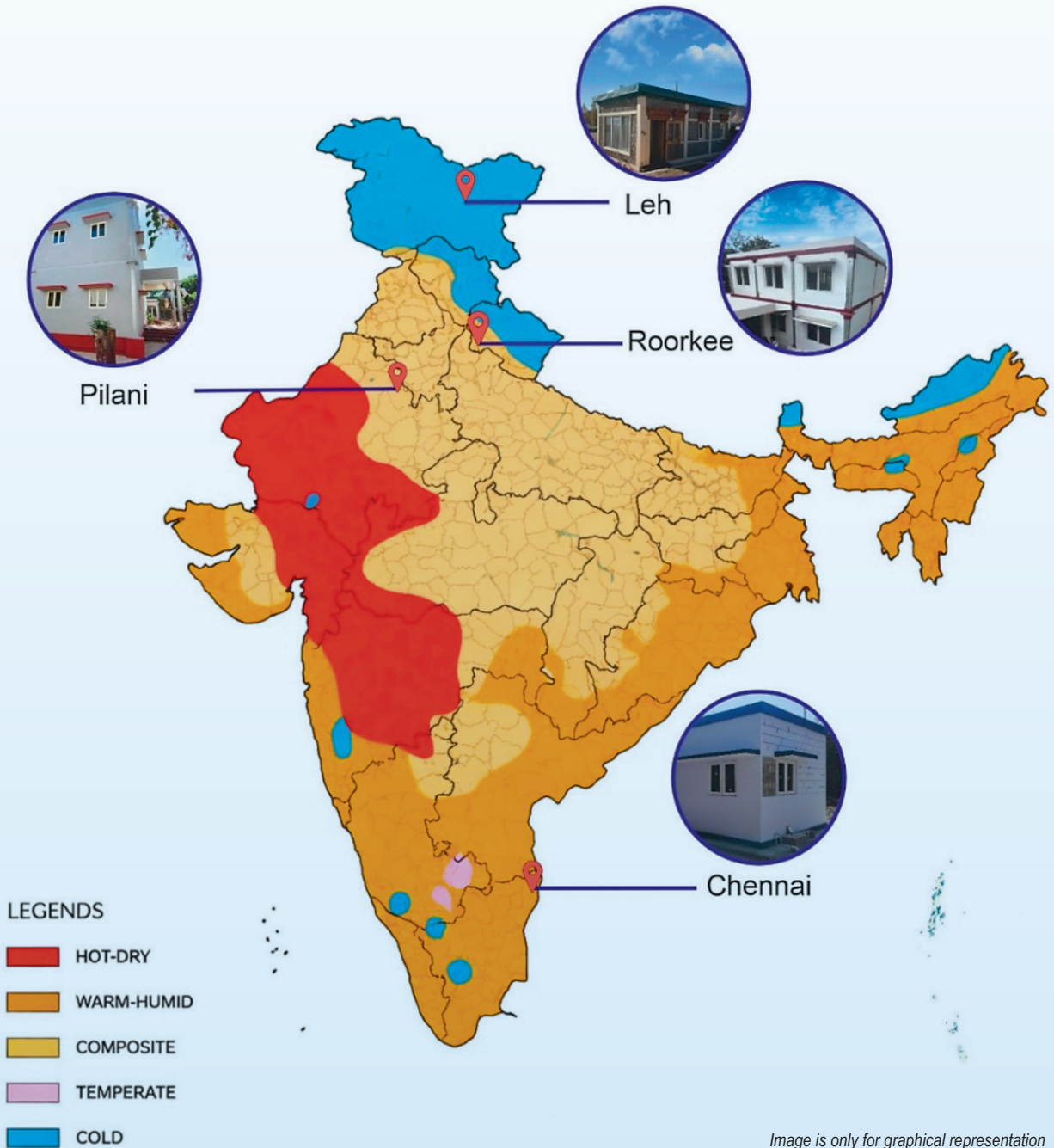
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CSIR Climate Resilient Building Initiative

Region-specific, Sustainable Habitat Solutions





The Climate Resilient Building (CRB) initiative of the Council of Scientific and Industrial Research (CSIR), led by CSIR-Central Building Research Institute (CSIR-CBRI), Roorkee. The initiative focuses on developing region-specific, disaster-resilient, energy-efficient, and affordable building technologies tailored to India's diverse climatic zones. The programme integrates advanced materials, structural safety, thermal comfort strategies, and real-time performance monitoring to create sustainable habitats across the country.

In the cold climate of Leh, CSIR has demonstrated climate-resilient housing featuring hybrid envelope systems, passive solar-heated spaces, superior thermal insulation, and locally sourced materials. These buildings are engineered for earthquake resistance, water resistance, and enhanced thermal performance to withstand extreme sub-zero temperatures while minimising energy demand.

For the composite climate of Roorkee, innovative structural systems such as cold-formed steel columns, hollow box section beams, deck slabs, Expanded Polystyrene (EPS) concrete panels, agro-industrial waste concrete panels, and Cellular Lightweight Concrete (CLC) blocks have been implemented. These technologies enhance structural efficiency, reduce material weight, and improve thermal insulation, ensuring durability and sustainability.

In warm and humid regions like Chennai, Thermally Efficient Lightweight Blocks (TELB), EPS lightweight roof panels, eco-friendly concretes, and interlocking masonry blocks have been deployed. These solutions reduce heat gain, improve indoor comfort, and promote faster, cost-effective construction.

For hot and dry climates such as Pilani, design interventions focus on minimising solar heat gain and optimising insulation through EPS panels and agro-waste concrete panels, thereby reducing cooling loads and enhancing energy efficiency.

A key feature of the initiative is IoT-enabled real-time performance monitoring, tracking parameters such as temperature, humidity, and energy usage to scientifically validate building performance across climatic conditions.

Through its integrated, science-driven approach, the CSIR Climate Resilient Building initiative demonstrates how innovative materials, structural design, and climate-responsive architecture can strengthen disaster resilience, improve thermal comfort, and advance sustainable construction practices across India.

Contributed by Science Communication and
Dissemination Directorate (SCDD), CSIR, New Delhi.
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CSIR–CEERI Transfers Four Technologies to Industry & Launches A New Product during DSIR Foundation Day

On the occasion of the Foundation Day of the Department of Scientific and Industrial Research (DSIR), a Technology Transfer and Product Launch Ceremony was organised on 4 January 2026 at New Delhi. During the event, CSIR-Central Electronics Engineering Research Institute (CSIR-CEERI), Pilani, transferred four indigenously developed technologies to industry partners and launched a new product developed by the Institute.

The programme was graced by Dr Jitendra Singh, Hon'ble Minister of State (Independent Charge) for Science & Technology and Earth Sciences; Dr Ajay Sood, Principal Scientific Adviser to the Government of India; Dr (Mrs) N Kalaiselvi, Director General, CSIR and Secretary, DSIR; and Dr PC Panchariya, Director, CSIR-CEERI. Senior

“The Hon'ble Minister, Dr Jitendra Singh, appreciated CSIR-CEERI's efforts in translating laboratory innovations into market-ready technologies, highlighting the importance of the “Lab-to-Market” approach in strengthening India's technological ecosystem.”

scientists, officials from DSIR and CSIR, industry representatives, and other distinguished guests were also present.



Hon'ble Minister, Dr Jitendra Singh, addressing the gathering

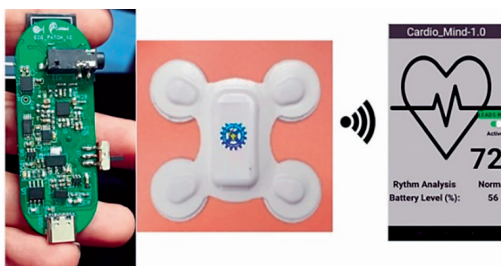


Dr PC Panchariya, Director, CSIR-CEERI, exchanging the Technology Transfer documents with the representative of M/s Divine Meditech Pvt. Ltd, Noida

Technology Transfers

AI-Enabled Reusable Vital Monitoring Patch

This advanced wearable smart device enables continuous and non-invasive monitoring of vital health parameters such as ECG (heart rate), body temperature, and blood glucose trends. Equipped with integrated sensors and wireless communication, the system transmits real-time data to mobile devices, cloud platforms, or hospital information systems. The embedded Artificial Intelligence (AI) algorithms analyse the data to detect abnormalities such as irregular heart rhythms, temperature fluctuations, or unusual glucose variations, and generate timely alerts for preventive medical intervention. The technology has been transferred to M/s PSI Healthcare Pvt. Ltd, Amravati.



AI-Enabled Reusable Vital Monitoring Patch

Endo-Tri-Flow Advanced Fluid Management System

The Endo-Tri-Flow system is an AI-driven, advanced fluid management solution designed for minimally invasive surgical procedures such as laparoscopy. It provides real-time closed-loop control of suction, irrigation, and fluid pressure to maintain a clear and stable operative field. Integrated flow, pressure, and vacuum levels are continuously monitored using AI algorithms to detect blockages, sensor faults, and abnormal operating conditions. This technology has been successfully transferred to M/s Divine Meditech Pvt. Ltd, Noida.



Endo-Tri-Flow Advanced Fluid Management System

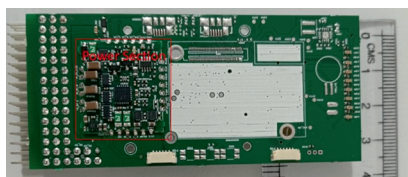
MBRT Analyzer – LactoBlue



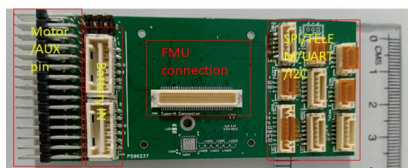
MBRT Analyzer-LactoBlue

The LactoBlue MBRT (Methylene Blue Reduction Test) Analyzer is a modern and reliable milk quality testing system. It assesses microbial load in milk based on the MBRT principle, enabling rapid determination of milk quality and safety. The system is suitable for dairy farms, milk collection centres, cooperative societies, and quality control laboratories. By facilitating on-site microbial testing, it helps prevent spoilage losses and ensures a safe milk supply across the dairy value chain. The technology has been transferred to M/s KR Electronics Industries Pvt. Ltd, Jaipur.

PX4-Based Drone Flight Controller



Bottom Side



Top Side

PX4-Based Drone Flight Controller

This drone flight control system strengthens indigenous UAV capabilities for commercial and research applications. Built on the internationally benchmarked PX4/Pixhawk autopilot platform, the controller ensures stable, precise, and secure flight operations. It integrates various sensors, power systems, and electronic modules for enhanced coordination and performance reliability. The technology will support the development of scalable

and dependable drone solutions for surveillance, mapping, and other critical applications. The technology has been transferred to M/s Aerobott Dronetech Solutions Pvt. Ltd, Mumbai.

Launch of IoT-Enabled Water Testing Kit - "Jal Prayogshala"



Alongside the transfer of technologies, CSIR-CEERI also launched an indigenously developed IoT-enabled, field-deployable digital water quality testing kit titled "Jal Prayogshala." Developed in alignment with the Government of India's Jal Jeevan Mission, the system enables real-time monitoring of 13 critical water quality parameters, including pH, Total Dissolved Solids (TDS), Turbidity, Iron, Sulphate, Free Chlorine, Nitrite, Fluoride, Hardness, and Alkalinity.

The kit features a user-friendly touch-screen interface, onboard memory, battery operation, and secure data transmission through integrated GPS and Wi-Fi modules. Commercial production has commenced through an industrial partner, and the first batch is ready for large-scale field deployment. The initiative is expected to significantly strengthen smart water governance, drinking water safety, and national water quality monitoring programmes.

The project has been led by Dr Satyam Srivastava, Principal Scientist, and his team members.

The Hon'ble Minister appreciated CSIR-CEERI's efforts in translating laboratory innovations into market-ready technologies, highlighting the importance of the "Lab-to-Market" approach in strengthening India's technological ecosystem. Dr N Kalaiselvi and Dr Ajay Sood also commended the Institute's scientists for their impactful contributions to technology development and industry collaboration.

Addressing the gathering, Dr PC Panchariya, Director, CSIR-CEERI, stated that these technologies embody the spirit of translational research and reinforce national self-reliance in critical sectors such as healthcare, water quality, agri-dairy, and advanced electronics. He emphasised that such industry partnerships represent a significant step forward in realising the vision of "Make in India" and "Atmanirbhar Bharat." The event marked yet another milestone of CSIR-CEERI's commitment to innovation-driven societal and industrial impact.

DG-CSIR Inaugurates Flower Show at CSIR-IIIM and Announces Continuation of Floriculture Mission

Secretary, Department of Scientific and Industrial Research (CSIR) and Director General CSIR, Dr N Kalaiselvi, inaugurated Flower Show-cum-Floritech Conclave 2026 at CSIR-IIIM on 14 March 2026. In her presidential address, Dr Kalaiselvi said the institute's long tradition of organising flower shows, which dates

back to 1961, reflects a rich legacy of connecting science with the community. Dr Kalaiselvi highlighted that floriculture and apiculture are emerging as powerful drivers of rural livelihoods and economic diversification. She stressed that such region-based scientific interventions allow farmers to cultivate crops that are best suited to their terrain



and market demand. Dr Kalaiselvi interacted with farmers, appreciated the work being carried out by CSIR-IIIM Jammu and announced the continuation of the CSIR Floriculture Mission. She also further emphasised its role in strengthening farmer livelihoods and promoting scientific innovations in the floriculture sector.

Speaking on the occasion, Dr Zabeer Ahmed, Director CSIR-IIIM Jammu, said the institute is committed to strengthening the floriculture ecosystem in J&K through research, innovation and farmer outreach. During the programme, winners of the floral drawing and painting competition for school children were felicitated.

Earlier, addressing the gathering, Dr Sudesh Kumar Yadav, Director, CSIR-Institute of Himalayan Bioresource Technology (CSIR-IHBT), Palampur, highlighted the growing importance of floriculture in creating new economic opportunities for farmers. He said that initiatives under CSIR missions have helped build an ecosystem of innovation that connects scientific research with rural communities. Dr Yadav also emphasised the need to develop indigenous varieties of flowers and planting materials so that India can gradually reduce dependence on imports and move towards self-reliance in the sector.

“The event also featured interaction between the DG, N Kalaiselvi, and farmers, during which several growers shared their experiences.”

The event also featured interaction between the Director General and farmers, during which several growers shared their experiences. Among others present on the occasion were Abdul Rahim, Chief Scientist and Head RMBD&IST Division at CSIR-IIIM (Branch Srinagar), along with several scientists, students, farmers and officials of the institute. Proceedings of the event were conducted by Manveet Kaur, while the vote of thanks was delivered by Dhiraj Vyas, Senior Principal Scientist and Head, Plant Sciences and Agrotechnology.

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The two-day Flower Show-cum-floritech Conclave 2026 was also organised, which was concluded at the campus of CSIR-Indian Institute of Integrative Medicine (CSIR-IIIM) on Canal Road on 15 March 2026, with experts emphasising the growing role of floriculture in research, livelihood generation and sustainable agriculture. Former Principal Chief Conservator of Forests, OP Sharma Vidyarathi attended the valedictory function as the Chief Guest. A large number of participants, including farmers, students, scientists, garden enthusiasts and members of the public, took part in the event and showcased a wide range of floral exhibits and innovative horticulture models.



“The Chief Guest, Former Principal Chief Conservator of Forests OP Sharma Vidyarathi, noted that flowers are not only symbols of beauty but also hold immense economic value in sectors such as cosmetics, essential oils and medicinal research.”

Addressing the gathering, Vidyarathi said the tradition of organising the flower show in Jammu dates back to 1961 and has played a significant role in promoting awareness about floriculture and horticulture among citizens. He noted that flowers are not only symbols of beauty but also hold immense economic value in sectors such as cosmetics, essential oils and medicinal research. Highlighting the region’s biodiversity, he said that the Himalayan belt is rich in plant diversity, offering vast opportunities for research, conservation and economic development. He added that platforms

like the flower show help bring together researchers, students, farmers and nature lovers, which encourages innovation and knowledge exchange in floriculture and allied fields. Vidyarathi also appreciated the efforts of scientists and institutions working to promote horticulture and plant-based research, saying such initiatives can open new livelihood avenues for farmers and entrepreneurs.

Director of CSIR-Indian Institute of Integrative Medicine, Dr Zabeer Ahmed said the Flower Show and Floritech Conclave have emerged as an important platform connecting scientists, farmers, students and industry stakeholders. He said the institute functions under the Council of Scientific and Industrial Research, one of India’s largest scientific research networks operating under the Ministry of Science and Technology, with dozens of laboratories working across diverse scientific fields. Ahmed said the core objective of scientific research is to ensure that its benefits reach society, particularly farmers and rural communities.

He highlighted that initiatives such as the CSIR Floriculture Mission are aimed at strengthening linkages between scientists and farmers by introducing improved cultivation techniques and high-yield flower varieties. According to him, thousands of farmers across several states have already been connected through the mission, with many adopting scientific cultivation practices in crops such as marigolds and ornamental flowers. These initiatives, he said, are helping generate additional income opportunities and strengthening the floriculture sector. Ahmed also noted that scientists at the institute are exploring the medicinal and pharmaceutical potential of flowers and plants by identifying bioactive molecules that could contribute to future drug development.

Earlier, Senior Principal Scientist and Head of the Plant Sciences and Agrotechnology Division, Dr Dhiraj Vyas, welcomed the guests and participants, stating that the objective of the conclave is to promote floriculture technologies, innovations and public participation in gardening and flower cultivation. He said the event brought together experts, researchers, students and gardening enthusiasts from across the region.

Various competitions and exhibitions were organised as part of the programme, including floral painting for children, garden and lawn competitions, bonsai displays, artistic floral arrangements and innovative floriculture models. The event witnessed enthusiastic participation from educational institutions, defence establishments, government departments and local citizens.

Dr Shahid Rasool, Principal Scientist at the institute, presented the vote of thanks and acknowledged the efforts of organisers, participants, scientists and supporting staff for making the event successful. The programme concluded with prize distribution to the winners of different categories of the flower show and competitions.

CSIR and its Laboratories Celebrate National Science Day

Women in Science: Catalysing Viksit Bharat

The CSIR and its laboratories celebrated National Science Day 2026 across the nation through a series of engaging activities, including lectures, student visits, demonstrations, and public outreach programmes aimed at promoting scientific awareness and curiosity among young minds and the general public.

This year's National Science Day (28 February) was observed under the theme "*Women in Science: Catalysing Viksit Bharat*", highlighting the pivotal role of women in advancing scientific innovation and shaping a developed and self-reliant India.

As part of the celebrations in the national capital, the CSIR-Institute of Genomics and Integrative Biology (CSIR-IGIB), New Delhi, and the Science Communication and Dissemination Directorate (SCDD), CSIR Headquarters, organised a special programme to commemorate the life and legacy of Nobel Laureate Sir CV Raman and his path-breaking discovery of the Raman Effect.

An exhibition showcasing the life, scientific journey, and pioneering contributions of Sir CV Raman was displayed along Dr CV Raman Marg, drawing members of the public and creating awareness about India's rich scientific heritage.

Adding a strong experiential dimension to the celebration, scientists from CSIR-National Physical Laboratory (CSIR-NPL), New Delhi, namely



Dr Subashis Panja, Dr Shibu Saha, and Dr Vidyanand Singh, along with Dr Soumik Siddhanta and Mr Himanshu Yadav (PhD student) from the Indian Institute of Technology Delhi (IIT Delhi), conducted a live demonstration of the Raman Effect. The demonstration enabled participants to witness firsthand the phenomenon that revolutionised modern spectroscopy and continues to underpin advancements in science and technology.



This was followed by an engaging lecture session delivered jointly by the scientists from CSIR-NPL and IIT Delhi, who explained the Raman Effect, its scientific significance, and its wide-ranging applications in fields such as materials science, chemistry, medicine, and industry. The session was attended by enthusiastic school students as well as undergraduate students from Jamia Hamdard, who interacted actively with the experts.

In addition, participating students were taken on a guided visit to various laboratories at CSIR-IGIB, where they were introduced to ongoing research activities and cutting-edge facilities, further enriching their exposure to contemporary scientific research.

In a special public outreach initiative to mark the occasion, the Science Communication and

“In a special public outreach initiative to mark the occasion, the iconic Qutub Minar in the evening was specially lit up to spread awareness about National Science Day and to celebrate the transformative role of science in society.”

Dissemination Directorate, CSIR Headquarters, in collaboration with the Ministry of Culture, organised the illumination of the iconic Qutub Minar in the evening. The monument was specially lit up to spread awareness about National Science Day and to celebrate the transformative role of science in society.

Through these nationwide activities, CSIR reaffirmed its commitment to fostering scientific temper, inspiring young learners, and bringing science closer to society in meaningful and engaging ways, in alignment with the national vision of a science-led *Viksit Bharat*.

CSIR-IHBT Celebrates the National Science Day with Great Enthusiasm

The CSIR-Institute of Himalayan Bioresource Technology (CSIR-IHBT), celebrated the National Science Day with great enthusiasm on its campus on 06 March 2026, on the theme “*Women in Science: Catalysing Viksit Bharat*”.

Dr Sudesh Kumar Yadav, Director CSIR-IHBT, welcomed the guests and extended his wishes. He briefed on the recent scientific endeavours of the

institute with an emphasis on bio-economy and livelihood improvement. Highlighting the success stories of Floriculture and Aroma missions, he emphasised that science should be for society and meet the national needs. He lauded the Jigyasa initiative and skill development programmes that are focusing on empowering youth, thereby contributing towards a *Viksit Bharat*.



“Dr Shekhar C Mande, President, INSA, detailed the discovery of the Raman Effect in an illustrative manner and stressed curiosity as a driving force in science.”

Dr Shekar C Mande, President of the Indian National Science Academy (INSA) and Former Director General, CSIR, was the Chief Guest of the function. He wished the gathering on the occasion and congratulated the institute on the work being carried out that is directly touching the lives of the rural masses. He detailed the discovery of the Raman Effect in an illustrative manner and stressed curiosity as a driving force in science. Dr Mande emphasised indigenous technologies for inclusive growth.

Dr Sudhir Sopory, Senior Emeritus Scientist, ICGBE and former Vice Chancellor, Jawahar Lal Nehru University, New Delhi, was the Guest of Honour. He highlighted the challenges and opportunities in changing times and exhorted everyone to team up for furthering science and nation-building.

The national science day lecture was delivered by Dr Sridevi Annapurna Singh, former director of CSIR-CFTRI, on “Achieving Food and Nutritional Security in Bharat-Pivotal Role of Women”. She lucidly presented the status of food and nutrition in the country and highlighted the role of traditional

foods, balanced diet and nutrition in wellbeing. Dr Sridevi spoke about the women who have shaped science in the country, with particular emphasis on Dr Kamala Sohonie, the first Indian woman to receive a PhD in science.

On the occasion, the institute signed six transfer of technology agreements, one each with M/s Biolaxi Enzymes Pvt. Ltd, Thane, Maharashtra; M/s Red Mirchi Associates, Jind, Haryana; M/s Madan Lal Tissue Culture Lab, Jaisinghpur; M/s Harsh Enterprises, Patiala, Punjab; M/s Trimurti Udyog Palampur, Himachal Pradesh and Behatar Himachal, Vill Bhel, Teh. Ghumarwin, Bilaspur. For academic collaboration, an MoU was signed with Chitkara University.

A new variety of *Inula racemosa* “Him pushkarmool” developed by the institute was released on the occasion. The occasion also saw the launch of a new range of stevia-based products developed by RJ Saints, Una, based on the technologies transferred by the institute.

A garden, “Jaivsampada Udyan”, being developed under the aegis of CSIR Mission “Bioresource Conservation and Prospection”, was also inaugurated. Recognising the contributions made by the female S&T staff, the institute honoured them. In addition to staff and students of the institute, dignitaries from the region, employees of nearby organisations, and media representatives participated in the programme. 39 students and 2 teachers from JNV Paprola, Kangra, attended National Science Day Celebrations under the JIGYASA Programme.

CSIR-IIIM Celebrates National Science Day

CSIR-Indian Institute of Integrative Medicine (CSIR-IIIM) Jammu, celebrated National Science Day on 28 February 2026 with great enthusiasm and a spirit of discovery and innovation on its campus, bringing together scientists, research scholars, students, and innovators. The day is observed to commemorate the discovery of the Raman Effect by Nobel Laureate CV Raman. The daylong event was organised under the theme “Women in Science: Catalysing Viksit Bharat,” reflecting the institute’s commitment to strengthening scientific temper and advancing innovation in alignment with the vision of Viksit Bharat-2047.

The event was graced by Dr Madhu Dikshit, JC Bose National Fellow, Distinguished Scientist Chair (Ministry of AYUSH), National Science Chair of ANRF, and former Director of CSIR-Central Drug Research Institute (CSIR-CDRI), Lucknow, as the

“Citing examples from the COVID-19 pandemic, Dr Madhu Dikshit, Chief Guest, underlined how collaborative and inclusive scientific efforts can effectively address national challenges.”

Chief Guest. Delivering the National Science Day Lecture entitled “Harnessing Women’s Potential for Scientific Growth”, Dr Dikshit expressed her gratitude for being part of the celebration and congratulated CSIR-IIIM for its contributions to national development, including its leadership in the Aroma Mission and integrative healthcare research. Speaking on the theme of Women in





Science, she highlighted that women constitute nearly 43 per cent of India's STEM students, one of the highest proportions globally. However, she noted that representation declines at advanced research and leadership levels due to social and structural barriers.

She emphasised the need for mentorship, institutional support, exposure to conferences, and leadership opportunities to bridge this gap. Diversity in science, she said, leads to broader perspectives and innovative solutions. Citing examples from the COVID-19 pandemic, she underlined how collaborative and inclusive scientific efforts can effectively address national challenges. Dr Dikshit encouraged students to pursue science with passion and resilience, reminding them that determination and confidence are essential for success. She concluded with a call to unlock the full potential of women in STEM to accelerate innovation, economic growth, and India's global scientific competitiveness.

Earlier, Dr Zabeer Ahmed, Director, CSIR-IIIM, in his welcome address, described the occasion as a moment to honour the discovery of a brilliant Indian physicist, Sir CV Raman, for the groundbreaking discovery of the "Raman Effect." More than 350 students from 13 schools across the Jammu region, including Bhartiya Vidya Mandir High School, Hiranagar, Springdales English School, Changran, Kathua, Jammu Sanskriti School, Jammu, PM Shri JNV Gharota Jammu-1, Army Public School Kaluchak, PM Shri JNV Samba, PM Shri JNV Udhampur, Heritage School Jammu, RRL High School, Maharishi Vidya Mandhir Sr Sec. School, PM Shri KV No 2 Akhnoor, Bhartiya Vidya Mandir Sr Sec. School Ambphalla, Jammu, participated in various competitions and laboratory visits. A total of 230 students attended laboratory visits, witnessing ongoing research in natural products, medicinal chemistry, biotechnology, and drug discovery. The programme included a Science Model Exhibition Competition, Quiz Competition, Poster Presentation, and Extempore Competition.

During the event, winners of various competitions were also felicitated by the Chief Guest, the Director, and other dignitaries. The programme was attended by scientists, faculty members, research scholars, and staff of the institute. The proceedings of the event were conducted by Dr Gurleen Kour, Scientist, whereas Dr Asha Chaubey, Chief Scientist, presented the formal vote of thanks.

CSIR–CSMCRI Celebrates Women's Day with Empowerment and Awareness Programmes

CSIR–Central Salt & Marine Chemicals Research Institute (CSIR–CSMCRI), Bhavnagar, celebrated International Women's Day on 11 March 2026 with a series of awareness and engagement activities highlighting the importance of women's empowerment, safety,

and well-being. The programme began with the ceremonial lighting of the lamp, followed by an address from Dr Arup Ghosh, the Director of CSIR–CSMCRI, who emphasised the significant contributions of women in science and the need for an inclusive and respectful workplace. An



awareness session on the Prevention of Sexual Harassment (POSH) Act was conducted and addressed by Dr (Mrs) Subarna Maiti, Sr Principal Scientist, explaining the key provisions of the Act and the importance of maintaining a safe professional environment.

Dr Kanti Bhooshan Pandey, a Principal Scientist at CSMCRI, informed that the event also featured an informative address on Cardiopulmonary

Resuscitation (CPR) by Dr Sejal Chauhan, MD, consultant physician & intensivist, highlighting essential life-saving techniques during medical emergencies. The celebration concluded with a vibrant cultural programme presented by AcSIR science club students, reflecting creativity, struggle, enthusiasm, and appreciation for women's contributions to science and society.

WORKSHOPS/CONFERENCES/ SYMPOSIUM

Eastern Ghats Conservation Take Centre Stage at CCMB

CSIR-Centre for Cellular and Molecular Biology (CSIR-CCMB), Hyderabad, at its Laboratory for the Conservation of Endangered Species (LaCONES) campus, hosted a four-day workshop and symposium titled *"Discerning the Eastern Ghats: From Genes to Landscapes"* from 18–21 February 2026 at LaCONES, Hyderabad. The event brought together researchers, students, conservation practitioners, NGOs, and government agencies, such as the forest department officials from across India, to deepen scientific understanding and conservation planning for the Eastern Ghats.

The Eastern Ghats represent one of India's most complex and little-understood mountain systems. It stretches as fragmented hill ranges across the eastern part of the country and blends gradually with both the Western Ghats and the forests of eastern India. It has a much older geological origin and different ecological histories from the Western Ghats. Much of its diversity remains poorly documented and is increasingly vulnerable to habitat loss, fragmentation, and climate change. The symposium provided a much-needed platform to refine perspectives on its biogeography, ecological processes, and conservation priorities.



1. **Bridging scales: from genes to ecosystems:**

studies at LaCONES-CCMB have estimated the biodiversity of the Eastern Ghats using the environmental DNA method. Unlike the traditional methods of checking DNA from biological samples, environmental DNA analyses allow scientists to detect genetic material that organisms shed into the environment. Using that, LaCONES-CCMB scientists estimate a rich biodiversity inhabiting the Eastern Ghats, including insects, arthropods, fish, reptiles, birds, mammals, plants, and even micro-organisms. These include organisms that are otherwise undocumented in the region.

The meeting integrated these findings with insights from landscape-level ecology studies. Speakers emphasised that effective conservation planning must connect information from genes, species interactions, entire ecosystems, and landscape-level data such as spatial information on land-use patterns, habitat connectivity, topography, and satellite-derived land cover maps. This will allow the management to identify vulnerable populations, detect hidden diversity, prioritise restoration sites, and develop climate-resilient conservation strategies. This will ensure that protection efforts are scientifically informed as well as practically effective.

"Combining genomic tools, species-level research, and large-scale ecological studies can help us better understand how species originated and spread, how habitats have changed over time, and what areas require urgent conservation attention in the Eastern

Ghats," said Dr Umapathy, Chief Scientist at LaCONES-CCMB and convener of the meeting.

2. **Diverse disciplines, shared conservation goals:**

speakers from institutions including IIHS Bengaluru, IISER Tirupati, NCBS Bengaluru, BSIP Lucknow, IISER Thiruvananthapuram, NIAS Bengaluru, NRSC Hyderabad, ZSI Hyderabad, IISER Bhopal, and LaCONES-CCMB presented cutting-edge research spanning freshwater ecology, forest-grassland dynamics, pollination biology, animal behaviour, remote sensing, environmental DNA, ancient DNA, systematics, and conservation genomics.

A delegation of 70 participants, including Master's students, PhD scholars, postdoctoral researchers, faculty members, forest officials, and NGO representatives, engaged in the symposium talks across ecological and evolutionary scales.

3. **Intensive genomics workshop builds capacity:**

the symposium included an intensive, hands-on workshop on using genomics tools designed for novice learners with little or no prior experience in bioinformatics. PhD scholars, postdoctoral fellows, as well as faculty members of colleges and research institutes were introduced to the fundamentals of genomics and high-throughput sequencing technologies.

Through guided practical sessions, participants learned genomic data processing, genome assembly, statistical analyses,

genome annotation, visualisation, and biological interpretation. The workshop aimed to build technical capacity and empower researchers working in the Eastern Ghats to integrate genomic tools into their ecological and conservation studies.

"It needs a community of scientists who can work in the field as well as comprehend

genomic data. Only then we can build collaborative networks and integrate state-of-the-art conservation strategies for India. And, the underexplored biodiversity of the Eastern Ghats calls for it urgently," echoed Dr Siddharth Kulkarni and Dr Gopi Krishnan, the co-organisers of the meeting.

Workshop on “Strengthening India’s Semiconductor Ecosystem Policies, Challenges, and Opportunities” at CSIR-NIScPR

CSIR-National Institute of Science Communication and Policy Research (CSIR-NIScPR) organised a day-long workshop on “Strengthening India’s Semiconductor Ecosystem: Policies, Challenges, and Opportunities” at Vivekananda Hall, Pusa Campus, New Delhi, on 27 February 2026. The workshop brought together experts from R&D institutions, government, academia, and industry to deliberate on policies, challenges, and strategic opportunities for strengthening India’s semiconductor ecosystem.

The workshop was organised to strengthen the recent study undertaken by CSIR-NIScPR on “Comparative Analysis of Global Semiconductor Policies and Strategies vis-à-vis India’s Semiconductor Ecosystem” by Dr Shiv Narayan Nishad, Dr Vipin Kumar, and Dr Naresh Kumar. This workshop was organised to achieve the objectives of assessing India’s current landscape of semiconductor ecosystem, identifying challenges, exploring opportunities for collaboration, identifying global best practices and policy insights, facilitating dialogue on policy interventions, and developing actionable recommendations for supporting the strengthening of India’s semiconductor capabilities.

In the workshop, India Semiconductor Mission MeitY, BITS Pilani, NITI Aayog, CSIR-CEERI Pilani, Solid State Physics Laboratory (SSPL) DRDO,

NIELIT New Delhi, CSIR-CSIO, Chandigarh, CSIR-NPL New Delhi, IIT Jodhpur, IIT Delhi, Research and Information System for Developing Countries (RIS), Delhi Technical University, CSIR-NAL Bengaluru, Amrita University, Intel India, Lam Research, Applied Materials, Semiverse Solutions Pvt. Ltd, Sahasra Semiconductor Private Limited, New Delhi, VerSemi Microelectronics (P) Ltd, Noida, participated and shared their opinion for strengthening India’s semiconductor ecosystem.

The proceedings were also streamed live on YouTube to enable wider participation by stakeholders across the country.

In the inaugural session, Dr Geetha Vani Rayasam, Director, CSIR-NIScPR, highlighted the institute’s role in science communication and policy research and emphasised the importance of dialogue to strengthen India’s semiconductor ecosystem. Dr Vipin Kumar, Chief Scientist, CSIR-NIScPR, highlighted India’s semiconductor paradox, strong global design leadership, yet 95% import dependence, and emphasised evidence-based policy reforms, ISM 2.0 innovation push, and strategic self-reliance to position India as a credible global semiconductor hub by 2030. Prof. V Ramgopal Rao, Group Vice-Chancellor, BITS Pilani and Ex-Officio Member, ES Manufacturing Committee, delivered the Chief Guest address,



highlighting the strategic importance of semiconductors for national competitiveness and technological self-reliance. He argued for a strategy centered on indigenous technology, mission-mode programmes, and deep-tech startups rather than merely hosting advanced foundries. Prof. Rao recommended expanding centers of excellence, R&D hubs, and prototyping facilities to help innovations progress from low to high TRLs and overcome the “valley of death.”

The technical discussion was structured into three thematic sessions. The first session was focused on “R&D and Innovation, Design, and Manufacturing Ecosystem”. Dr Rajesh K Sharma, Former Director, SSPL, DRDO, and Chairman, Semiconductor Society (India), chaired the session with Dr Naresh Kumar as Co-Chair. The session featured interventions from Dr Manish Mathew (CSIR-CEERI, Pilani), Ms. Dipakshi Mehandru (Intel India), Dr Rahul Kumar (CREST, BITS Pilani), Dr Umesh Kumar Tiwari (CSIR-CSIO, Chandigarh), Dr Nirmalya Karar (CSIR-NPL, New Delhi), and Prof. Shree Prakash Tiwari (IIT Jodhpur). The speakers of the session urged ISM 2.0 to bridge academia–industry gaps via pilot fabs, niche defense semiconductors, indigenous materials/equipment, design-led R&D, photonics/AI focus, sustainable electronics, diversified manufacturing, stronger IP, skills, infrastructure, global partnerships, resilience strategies.

Session II on “Ecosystem for Skill Workforce & Talent Development” was chaired by Dr Manish K Hooda, Director (Technology), India Semiconductor Mission, with Dr Bornali Sarma, CSIR-NIScPR, as Co-Chair. Speakers in this session included Dr Ripunjay Singh (NIELIT, New Delhi), Prof. Awanish Pandey (IIT Delhi), and Prof. Rishu Chaujar (Delhi Technological University). Speakers of this session emphasised balanced design-manufacturing growth, CMOS-focused academic programmes, structured skilling initiatives, industry collaboration, and workforce development to scale India’s semiconductor ecosystem.

“Policy, Governance, and Institutional Framework” was the key topic of Session III, and this session examined the policy and institutional architecture needed to support a resilient semiconductor ecosystem. The session was chaired by Prof. Sujit Bhattacharya, Adjunct Professor, Amrita University, and Former Chief Scientist, CSIR-NIScPR. Speakers compared global policy models, urged unified governance and a national research centre, highlighted AI-chip startup opportunities, and emphasized semiconductor diplomacy, rare-earth access, supply-chain resilience, and strategic autonomy. Session III: Policy, Governance, and Institutional Framework examined the policy and institutional architecture needed to support a resilient semiconductor ecosystem. The session was chaired by Prof. Sujit Bhattacharya, Adjunct

Professor, Amrita University, Former Chief Scientist, CSIR-NIScPR, and co-chaired by Dr Vipin Kumar, Chief Scientist, CSIR-NIScPR. Contributions were made by Dr CM Ananda (CSIR-NAL, Bengaluru), Dr Shiv Narayan Nishad and Dr Sandhiya L (CSIR-NIScPR), Ms Naba Suroor (NITI Aayog), and Dr Amit Kumar (Research and Information System for Developing Countries – RIS).

The workshop concluded with a Panel Discussion and Concluding Session on “Strategic Pathways: A Roadmap for India’s Semiconductor Future.” The session was chaired by Prof. Navakanta Bhat, Dean, Division of Interdisciplinary Sciences and Professor, Centre for Nanoscience and Engineering, Indian Institute of Science (IISc), Bengaluru, with Prof. Sujit Bhattacharya as Co-Chair. Panellists included Dr Roopa Hegde (Lam Research), Dr Hemang Shah (Applied Materials India), Dr Manish Mathew (CSIR-CEERI), Mr George Paul (Sahasra Semiconductors Pvt. Ltd.) and Shri Rajendra Pratap (VerveSemi Microelectronics Pvt. Ltd). The experts highlighted the Indian government’s sustained momentum through the India Semiconductor Mission (ISM 1.0 and 2.0), stressing that the next phase requires focused execution, innovation, and scaling. Industry perspectives emphasised advanced manufacturing capabilities and structured workforce development through academia–industry collaboration, including partnerships with the Indian Institute of Science.

The workshop provided a valuable platform for dialogue and knowledge exchange among stakeholders involved in India’s semiconductor ecosystem. The discussions highlighted the strategic importance of semiconductors for economic growth, technological innovation, and national security.

India has made significant progress in launching policy initiatives such as the India Semiconductor Mission, but building a competitive semiconductor ecosystem will require sustained efforts in research, manufacturing, skill development, and international collaboration.

The insights and recommendations generated during the workshop are expected to contribute to the development of policy frameworks and strategic initiatives aimed at strengthening India’s semiconductor capabilities. The outcomes of the workshop will also support the preparation of a policy white paper that can provide actionable recommendations for policymakers and stakeholders.

Overall, the workshop underscored the importance of a collaborative and coordinated approach to building a resilient semiconductor ecosystem in India. Through sustained investment, strategic partnerships, and effective policy implementation, India has the potential to emerge as a significant player in the global semiconductor industry.

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AWARDS/HONOURS

CSIR-CSMCRI Scientist Honoured

Prof. Dr Vaibhav A Mantri, Chief Scientist and Divisional Chair, Applied Phycology and Biotechnology Division was honoured with "Prof. V Krishnamurthy Endowment Award" at the recently held 'S.E.A.W.E.E.D.S. 2026: International Symposium on Seaweeds: Value Chains, Climate Solutions, and Blue Economy Pathways, an expo and business meet being organised by Kerala University of Fisheries & Ocean Studies (KUFOS), Kochi in association with Seaweed Research Utilisation Association of India' during 5-7 March 2026.

Prof. V Krishnamurthy is known as 'Father of Modern Phycology' in India. This award is given to Prof. Mantri to acknowledge his contributions in the field of Applied Phycology during the last 25+ years. His work is centred around improving cultivation techniques for economically important seaweeds to achieve year-round farming, with focused attention on strain improvement, artificial seedling production, protocol to reduce epiphytic infestation, developing viable methods of farming as well as understanding role of environmental



determinants. Prof. Mantri delivered Prof. V Krishnamurthy Endowment lecture titled 'India's Enduring Efforts in Seaweed Research for Shaping Industry: A Strategic Perspective'.

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