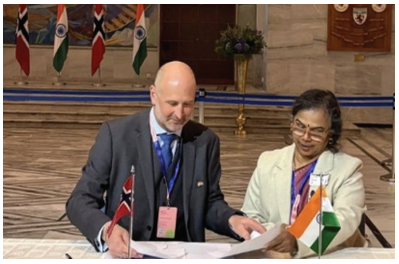

CSIR NEWS

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What's Inside

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CSIR Road Technologies

Driving India's Shift towards Sustainable and Resilient Infrastructure

In a significant push towards greener, more durable road infrastructure, the Council of Scientific and Industrial Research, through its premier lab, CSIR-Central Road Research Institute (CSIR-CRRI), New Delhi, is advancing a suite of innovative road technologies that combine sustainability with performance. These technologies are not only addressing long-standing challenges in road construction and maintenance but are also aligning with national priorities such as waste utilisation, energy efficiency, and climate resilience.

Among the standout innovations is the Steel Slag Road Technology, which uses processed steel slag as a substitute for natural aggregates. The approach not only enhances pavement strength and longevity but also offers a practical solution to managing industrial waste at scale.

Equally impactful is ECOFIX, a ready-to-use pothole repair solution that allows damaged stretches to be fixed within minutes, even under adverse weather conditions. Its quick application and durability make it particularly valuable for urban road maintenance where traffic disruption must be minimised.

Rejupave technology brings a sustainable edge to road rehabilitation by enabling the reuse of aged bituminous materials. By reducing dependence on fresh raw materials and lowering energy consumption, it offers an efficient solution for maintaining road quality, especially in difficult terrains.

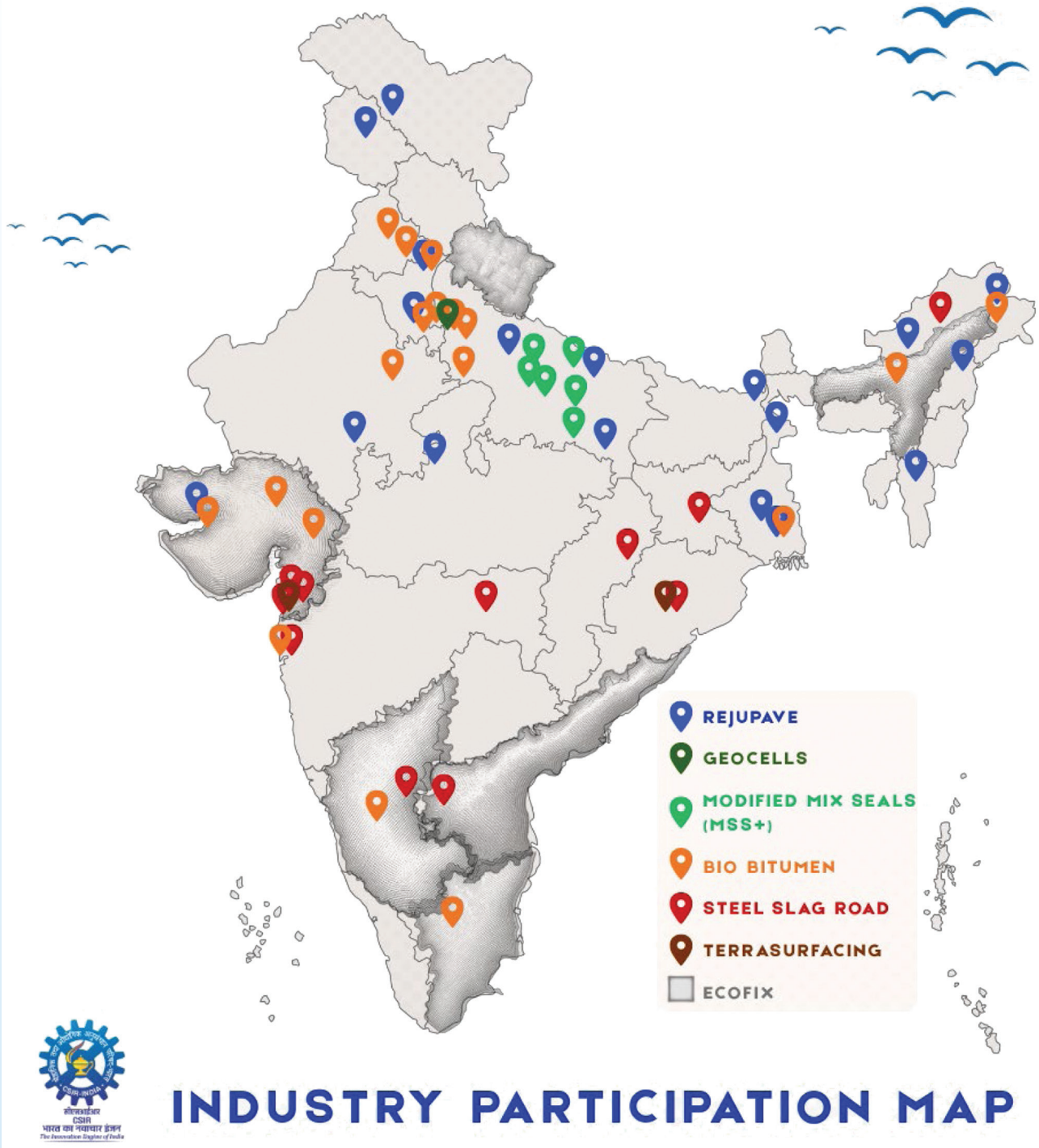
A notable addition to this portfolio is the development of bio-bitumen, a sustainable alternative to conventional petroleum-based binders. Derived from renewable biomass and waste resources, bio-bitumen has the potential to reduce dependence on fossil fuels and lower the carbon footprint of road construction, while maintaining comparable performance characteristics.

For rural connectivity, Modified Mix Seal Surfacing (MSS+) is emerging as a practical alternative to conventional methods. By eliminating the need for heating materials, it simplifies construction while improving efficiency and reducing environmental impact.

Geocells technology, including versions developed using waste plastic, strengthens weak soil foundations and enhances load distribution, significantly improving pavement life. Meanwhile, Terrasurfacing provides a thin, resource-efficient layer that improves riding quality and extends the service life of roads.

Taken together, these innovations reflect CSIR-CRRI's growing role in shaping the future of India's road sector — where sustainability, resilience, and cost-effectiveness go hand in hand.

CSIR ROAD TECHNOLOGIES FOOTPRINT

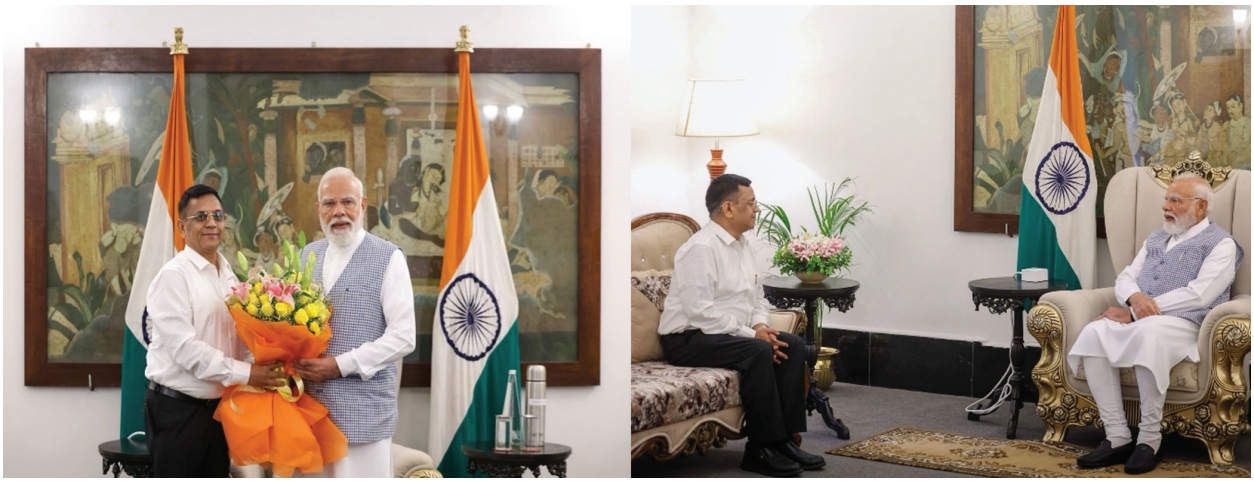


INDUSTRY PARTICIPATION MAP

Contributed by Science Communication and Dissemination Directorate (SCDD), CSIR, New Delhi.
Email: ask.scdd@csir.res.in

Prof. Gobardhan Das, an Alumnus of CSIR-IMTECH Appointed as a Full-time NITI Aayog Member

"Met Prof. Gobardhan Das Ji this morning. His personal life journey is very inspiring. Every struggle he faced only strengthened his commitment to serve society and make it free from suffering. This has been reflected in his contribution to public health and immunology. His rich work and scholarship will enrich our policy-making architecture," Tweeted (27 April) Hon'ble Sh. Narendra Modi, Prime Minister of India and President, CSIR.



Hon'ble Prime Minister, Sh. Narendra Modi meeting the newly appointed NITI Aayog Member Prof. Gobardhan Das (*Source: X handle @narendramodi*)

The CSIR-Institute of Microbial Technology (CSIR-IMTECH), Chandigarh, extended its heartfelt congratulations to Prof. Gobardhan Das, Director, Indian Institute of Science Education and Research (IISER) Bhopal, on his appointment as a full-time member of NITI Aayog. Prof. Das completed his PhD in Immunology — Host-pathogen relationship from CSIR-IMTECH in the year 1997. An esteemed scientist and distinguished alumnus of CSIR-IMTECH, Prof. Das has made significant contributions to the field of immunology and infectious diseases. He completed an important phase of his scientific training at CSIR-IMTECH, where he laid the foundation for his future contributions to biomedical research.

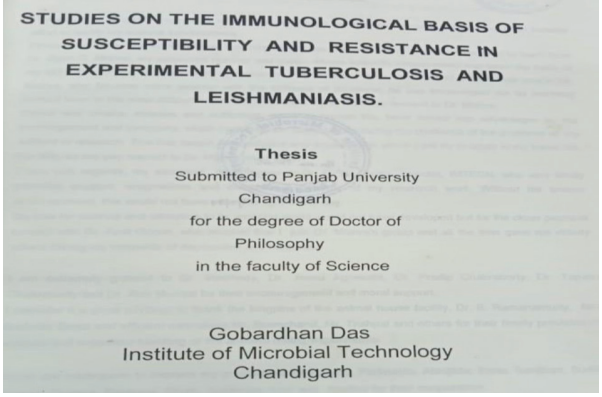
Prof. Das, who previously served as Professor and Chair at the Special Centre for Molecular Medicine at Jawaharlal Nehru University, is internationally recognised for his research in immunology, infectious diseases, and cell biology, particularly for his work on the pathogenesis of tuberculosis. His scientific career spans nearly three decades and includes leading research assignments at Yale University, Houston Methodist Hospital, University of KwaZulu-Natal, and the National Research Foundation.

Over the years, he has emerged as a leading figure in Indian science, earning national and international acclaim for his work. His illustrious academic and research career stands as a testament to scientific excellence, innovation, and

leadership. His appointment to NITI Aayog marks a recognition of his vast expertise and his ability to contribute meaningfully to national policy-making.

Dr Souvik Maiti, Director, CSIR-IMTECH, stated, "We take immense pride in Prof. Gobardhan Das's achievements. His journey from CSIR-IMTECH to one of the highest policy-making bodies in the country is truly inspiring. We are confident that his vision and expertise will significantly contribute to shaping India's science and technology landscape." He further added that the entire fraternity celebrates this milestone and wishes Prof. Das a great success in his new role in advancing the nation's developmental agenda.

Dr Souvik Maiti, Director, CSIR-IMTECH, states, "We take immense pride in Prof. Gobardhan Das's achievements. His journey from CSIR-IMTECH to one of the highest policy-making bodies in the country is truly inspiring."


STUDIES ON THE IMMUNOLOGICAL BASIS OF SUSCEPTIBILITY AND RESISTANCE IN EXPERIMENTAL TUBERCULOSIS AND LEISHMANIASIS.

Thesis
Submitted to Panjab University
Chandigarh
for the degree of Doctor of
Philosophy
in the faculty of Science

Gobardhan Das
Institute of Microbial Technology
Chandigarh

A grab of the PhD thesis submitted by Prof. Gobardhan Das at CSIR-IMTECH in the year 1997

CSIR-IMTECH is a national centre for excellence in microbial sciences and was established in 1984. IMTECH's vision and mission are to create a translational ecosystem strengthened by fundamental discoveries and to address unmet healthcare and industrial needs with state-of-the-art processes and platforms, respectively.

Union Minister Hon'ble Dr Jitendra Singh Inaugurates Buyer-Seller Meet at CSIR-IC Mumbai

Union Minister of State (Independent Charge) for Science & Technology, Earth Sciences, and MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, and Vice President of CSIR, Dr Jitendra Singh, on 9 May 2026, inaugurated the buyer-seller meet organised by CSIR-Indian Institute of Integrative Medicine (CSIR-IIIM), Jammu, at CSIR Innovation Complex, Mumbai, as a prelude to the upcoming Lavender Festival 2026. The one-day Aroma Industry-Farmer Meet brought together leading aroma and perfumery industries, scientists, startups, entrepreneurs and lavender farmers, particularly from Bhaderwah and other regions of Jammu and Kashmir, with the aim of strengthening market linkages and building a sustainable lavender-based enterprise ecosystem.

Addressing the gathering through video conferencing, Dr Jitendra Singh complimented Director CSIR-IIIM Jammu, Dr Zabeer Ahmed, and his team for organising the Buyer-Seller Meet and said the initiative reflects the growing success of the CSIR Aroma Mission and the Purple Revolution in Jammu and Kashmir. He said the Aroma Mission has significantly strengthened aromatic farming in the region and created new livelihood opportunities

for farmers and youth. However, he noted that as the sector evolves toward a sustainable aroma-based economy, challenges such as inconsistent product quality, weak market linkages, and limited industry-oriented guidance still remain. The Union Minister expressed confidence that deliberations during the Buyer-Seller Meet would help bridge critical gaps between producers and the market. He said the participation of lavender farmers, startups, and aroma entrepreneurs from Bhaderwah and adjoining regions would enable direct interaction with leading stakeholders of the perfumery and fragrance industry.

Dr Jitendra Singh complimented Director CSIR-IIIM Jammu, Dr Zabeer Ahmed, and his team for organising the Buyer-Seller Meet and said the initiative reflects the growing success of the CSIR Aroma Mission and the Purple Revolution in Jammu and Kashmir.

Hon'ble Union Minister said several prominent industry players, including Kelkar, Ajmal Group, Expo Essential Oils, BBK Specialties, and Nishant Aroma, are participating in the event and engaging directly with farmers and startups. He said the platform would help align production with industry requirements, improve quality standards, and establish sustainable value chains with assured market linkages. Highlighting the importance of international exposure, the Minister said the event would also help stakeholders from Jammu and Kashmir develop aroma-based value-added products and strengthen the region's position in the global fragrance and wellness market. He extended his best wishes to the organizers, participating industries, farmers, and agri-startups for the success of the event.

Speaking on the occasion, Director, CSIR-IIIM Jammu, Zabeer Ahmed, said the institute is continuously working to connect science with rural livelihoods and entrepreneurship under the leadership of Hon'ble Prime Minister Narendra Modi, the guidance of Hon'ble Union Minister Jitendra Singh, and the personal supervision of the Director General, CSIR, Dr N Kalaiselvi. Dr Ahmed said the

Director, CSIR-IIIM Jammu, Zabeer Ahmed, said the institute is continuously working to connect science with rural livelihoods and entrepreneurship under the leadership of Hon'ble Prime Minister Narendra Modi, the guidance of Hon'ble Union Minister Jitendra Singh, and the personal supervision of the Director General, CSIR, Dr N Kalaiselvi.

Aroma Industry–Farmer Meet has been organised with the theme "Bridging Fields with Fragrance Innovation" to create stronger partnerships between farmers, startups, and industries and promote a complete value chain from cultivation to global aroma markets. He said CSIR-IIIM has played a key role in promoting lavender cultivation and aromatic crops in Jammu and Kashmir through scientific interventions, training, distillation technologies, and entrepreneurship support, especially in regions like Bhaderwah, which have emerged as important lavender clusters under the Purple Revolution. Dr Ahmed said the meet would provide farmers and startups with an opportunity to understand emerging market trends, contract farming opportunities, essential oil extraction technologies, value addition and entrepreneurship support. He added that participants would also gain awareness about various government schemes and startup initiatives linked to the aroma sector. He further said the direct interaction between industries and farmers would help ensure better quality production, sustainable incomes, and long-term market support for aroma growers and entrepreneurs.

The event witnessed participation from scientists, industry experts, startups, aroma farmers, and representatives of major perfumery and fragrance companies from across the country. In the two technical sessions followed by open discussion, the challenges and future directions in the Aroma Sector, with a main focus on Lavender cultivation, processing, upscaling, and marketing, were discussed.

India and Norway Deepen Strategic Science & Innovation Partnership through New Bilateral Agreements

CSIR, DSIR, GoI, Signs Five Key Agreements in Norway Covering Clean Energy, Offshore Wind, Sustainability, Geosciences and Academic Collaboration

As India and Norway deepen bilateral engagement during the visit of Prime Minister Shri Narendra Modi to Norway, the Council of Scientific and Industrial Research (CSIR), Department of Scientific and Industrial Research (DSIR), GoI, signed a series of important agreements with leading Norwegian research, academic and industrial organisations in Oslo on 18 May 2026 to strengthen cooperation in science, technology, innovation and sustainable development.

The agreements were signed by DSIR/CSIR under the leadership of Dr N Kalaiselvi, Director General, CSIR and Secretary, DSIR, together with senior representatives of the partnering orwegian institutions. The collaborations aim to expand India–Norway linkages in research, innovation, and technology development while promoting institutional partnerships, startup and industry engagement, academic cooperation, and sustainable growth initiatives in both countries.

Dr N Kalaiselvi, DG, CSIR and Secretary, DSIR with:
a) Prof. Tor Grande, Rector, NTNU; b) Dr Alexandra Bech Gjørv, CEO Stiftelsen Sintef (SINTEF);
c) Ms Anne Kjersti Fahlvik, Executive Director, Research Council of Norway; and
d) Dr Andreas A Pfaffhuber, CEO Emerald

The Memorandum of Understanding between DSIR/CSIR and the Research Council of Norway (RCN) seeks to promote cooperation in research, technology development, innovation, and capacity building. The agreement envisages joint workshops, collaborative R&D projects, exchange visits of scientists and researchers, program-specific implementation arrangements, and periodic review mechanisms in areas related to global challenges and the Sustainable Development Goals, including climate, clean energy, oceans, and health.

CSIR also signed a Collaboration Agreement (2026–2029) with Stiftelsen SINTEF, Norway's premier independent research organisation, under the framework of the existing 2014 MoU between the two institutions. The collaboration focuses on circularity and sustainability transition through joint research and innovation programmes in areas such as bio-based processes and materials, innovation hubs, ocean energy, including offshore wind and hybrid systems, carbon capture, storage, and utilisation, and waste valorization.

A Project-Specific Collaboration Agreement was subsequently signed between CSIR institutes and SINTEF institutions for Ocean Energy and Offshore Wind Energy. The agreement involves CSIR-Structural Engineering Research Centre (CSIR-SERC), CSIR-National Aerospace Laboratories (CSIR-NAL), CSIR-National Institute of Oceanography (CSIR-NIO), and CSIR-Fourth Paradigm Institute (CSIR-4PI), along with SINTEF Ocean, SINTEF Digital, FME NorthWind, and SINTEF Community. The collaboration aims to

These partnerships will advance joint R&D, clean energy, offshore wind, circular economy, sustainability, geosciences, academic mobility and innovation-led industrial collaboration between the two nations.

strengthen India's capacity in offshore renewable energy technologies and to contribute to national renewable energy and carbon-neutrality goals. The joint programme will focus on floating offshore wind technologies, reducing Levelized Cost of Energy (LCOE), sustainability and ESG considerations, standardisation, pilot demonstrations, skill development and industrial growth. The CSIR funding support for the project is approximately ₹341 lakhs.

A Joint Declaration of Intent titled "Science, Technology and Innovation Cooperation for the Green Shift" was also signed between CSIR, the Academy of Scientific and Innovative Research (AcSIR), and the Norwegian University of Science and Technology (NTNU). The declaration focuses on sustainability, circular economy, ocean science and technology, healthcare, and civil and infrastructure engineering technologies. The cooperation envisages student and faculty mobility, joint research activities, academic exchanges, seminars, and collaborative academic programmes.

In another significant development, CSIR-National Geophysical Research Institute (CSIR-NGRI) entered into a five-year Memorandum of Understanding with Emerald Geomodelling to establish scientific and business collaboration for geoscience-based solutions for large infrastructure projects in India. The collaboration will include joint R&D projects, geophysical survey planning, data analysis and modelling, technical advisory support, and organisation of scientific events and training programmes.

These agreements mark an important milestone in India–Norway cooperation in science, technology, and innovation and are expected to further strengthen collaborative research, innovation-led sustainable development, and long-term institutional partnerships between the two countries.

The Collaborations Include

- DSIR/CSIR – Research Council of Norway (RCN)
- CSIR – @SINTEF Collaboration Agreement (2026–2028)
- CSIR–SINTEF Project Agreement on Ocean & Offshore Wind Energy
- CSIR, AcSIR – Norwegian University of Science and Technology (NTNU) Joint Declaration of Intent
- CSIR-NGRI – Emerald Geomodelling

Adapted from PIB

National Technology Day 2026 Celebrations with Grandeur at CSIR-CEERI

CSIR-Central Electronics Engineering Research Institute (CSIR-CEERI), Pilani (Jaipur Campus) marked National Technology Day 2026 with great enthusiasm and pride on 11 May 2026. The celebration highlighted India's growing strength in indigenous technologies, innovation, and industry-academia collaboration. The event brought together eminent scientists, academicians, industry leaders, researchers, students, and media representatives to celebrate India's technological progress and innovation-driven future.

The Hon'ble Governor of Rajasthan, Shri Haribhau Kisanrao Bagde, graced the occasion as the Chief Guest. The programme was presided over by Dr PC Panchariya, Director, CSIR-CEERI. Among the distinguished guests present was Dr Meghendra Sharma, Secretary, Vigyan Bharati-Rajasthan.

Hon'ble Governor of Rajasthan, Shri Haribhau Kisanrao Bagde, lighting the lamp

Dr PC Panchariya, Director, CSIR-CEERI, delivering the presidential address during National Technology Day 2026

The ceremony commenced with the traditional lighting of the lamp and Saraswati Vandana. In his inspiring address, Governor Shri Haribhau Kisanrao Bagde extended greetings on National Technology Day and highlighted the historical significance of the occasion. Emphasising the importance of science and technology as pillars of national development, he noted that India's rich scientific heritage must be harmoniously integrated with modern technological advancements. He appreciated the indigenous technologies developed by CSIR-CEERI and stated that institutions like CSIR-CEERI are playing a pivotal role in strengthening the nation's technological self-reliance and innovation ecosystem. He also encouraged young researchers and students to actively contribute to scientific research and innovation.

Addressing the gathering, Dr PC Panchariya welcomed the Hon'ble Governor and other dignitaries. He presented an overview of the institute's major achievements, ongoing research activities, and advanced indigenous technologies such as AI-enabled Healthcare Systems, III-Nitride LEDs, Semiconductor Devices, MEMS Sensors, Agri-electronics Technologies, and Industrial Automation Systems. He highlighted CSIR-CEERI's significant contributions in the areas of electronics, semiconductors, sensors, defence technologies, healthcare devices, industrial automation, and artificial intelligence. He reaffirmed the institute's commitment to realising the vision of *Atmanirbhar Bharat* through cutting-edge research and technological innovation.

Dr Meghendra Sharma emphasised the importance of collaboration among educational institutions, industries, and research organisations for accelerating India's technological growth. He stated that Vigyan Bharati is actively working to

Chief Guest, Hon'ble Governor, Shri Haribhau Kisanrao Bagde, delivering his inspiring address on the occasion of National Technology Day 2026

Dr Meghendra Sharma, Secretary, Vigyan Bharati-Rajasthan, addressing the gathering during the event

strengthen this collaborative ecosystem and to foster scientific advancement across the nation.

During the programme, the Hon'ble Governor released the "*Rajasthan Vigyan Mahotsav*" souvenir and the "*Vidyarthi Vigyan Manthan*" poster published by Vigyan Bharati.

A special technology exhibition showcasing advanced indigenous technologies developed by CSIR-CEERI was also organised on this occasion. The exhibition reflected the institute's strong research capabilities, innovation-driven approach, and industry-innovation-driven approach, and industry-oriented technological solutions. Dr PC Panchariya briefed the Hon'ble Governor and other guests about various technologies developed by the institute. The dignitaries appreciated the institute's research excellence and impactful innovations.

A major highlight of the event was an engaging panel discussion featuring eminent representatives from academia, industry, and research organisations. The discussion was

Hon'ble Governor Shri Haribhau Kisanrao Bagde, visiting the technology exhibition showcasing the cutting-edge indigenous innovations developed at CSIR-CEERI

focused on scientific innovation, future research opportunities, and strengthening industry-academia collaboration.

The panel included Prof. Namit Ranjan Choudhary, Prof. Akhil Ranjan Garg, Prof. Tribhuvan

Releasing the "*Rajasthan Vigyan Mahotsav*" souvenir and the "*Vidyarthi Vigyan Manthan*" poster during the National Technology Day by Hon'ble Governor Shri Haribhau Kisanrao Bagde and distinguished guests

Distinguished panelists and dignitaries captured in a group photograph following the insightful panel discussion on science, innovation, and industry & academia collaboration

Sharma, Dr Kamaljeet Singh, Dr Surendra Singh, and Dr PC Panchariya, along with representatives from various universities and industries. The session was moderated by Dr Meghendra Sharma. The panelists emphasized the need for collective efforts to accelerate scientific and technological advancement in Rajasthan and across the country.

The programme concluded with a formal vote of thanks delivered by Dr PC Panchariya, expressing gratitude to all panelists, guests, and participants for making the event a grand success.

CSIR-AMPRI Celebrates National Technology Day-2026 and 46th CSIR-AMPRI Foundation Day

Dr Kalaiselvi stressed the need for need-based and socially relevant research, urging scientists to identify the requirements of society and develop technologies that can effectively reach and benefit the common people.

CSIR-Advanced Materials and Processes Research Institute (CSIR-AMPRI), Bhopal, celebrated National Technology Day-2026 and 46th CSIR-AMPRI Foundation Day from 12-14 May 2026 under the Chairmanship of Dr Thallada Bhaskar, Director, CSIR-AMPRI.

The programme was graced by Dr N Kalaiselvi, Hon'ble DG, CSIR & Secretary, DSIR, Government of India, as the Chief Guest on 12 May 2026. The event commenced with her welcome at CSIR-AMPRI, Bhopal, by Dr Thallada Bhaskar, Director, AMPRI.

As part of the programme, the foundation stone for the Underpass and Overhead Tank facilities was laid, followed by the plantation in front of the new building.

Dr Kalaiselvi visited the TEJASVI Centralised Testing Facility and inaugurated advanced research facilities, including ICP-OES and the Hydrogen Storage Materials Analyser.

The celebrations further included the inauguration of the Vivekananda Vigyan Pradarshani, Kalpana-Shala, and the UTM Facility, showcasing the institute's commitment towards strengthening scientific infrastructure and promoting innovation-driven research.

The Hon'ble DG visited the Roller Compacted Geopolymeric Road (cement-free) constructed at the institute campus.

Dr Thallada Bhaskar, Director, CSIR-AMPRI, delivered the welcome address, highlighting the institute's recent achievements, technological advancements, and future vision. He stated that it was a proud moment for the institute to celebrate National Technology Day 2026 and the 46th Foundation Day in the gracious presence of the Hon'ble DG, CSIR. Dr Bhaskar elaborated on the key research and technology focus areas of the institute, including circular economy, waste-to-value, additive manufacturing, lightweight & functional materials, sustainable construction materials, and many more.

During the programme, the latest edition of the "*Samvardhan*" Quarterly Newsletter was released,

and a demonstration of the SURYA Portal was presented by Shri Vivek Khare, Section Officer, Recruitment and Assessment Section.

The Indigenous SODAR Technology "Indigenous SODAR (Sound Detection and Ranging) System" developed by CSIR-AMPRI, Bhopal, was transferred to M/s Meteoxperts Solutions Pvt Ltd, Noida.

In addition, Memoranda of Understanding (MoUs) were exchanged with NIMHANS, Bengaluru; VIT Bhopal University; and Harcourt Butler Technical University (HBTU), Kanpur, to promote collaborative research and translational technology development.

Addressing the gathering, Dr N Kalaiselvi appreciated the remarkable accomplishments and advancements achieved by the institute over the years. Dr Kalaiselvi stressed the need for need-based and socially relevant research, urging scientists to identify the requirements of society and develop technologies that can effectively reach and benefit the common people.

Commendation certificate were given to CSIR-AMPRI staff members and researchers for outstanding performance during 2025-2026 under various categories.

The Chief Guest Dr N Kalaiselvi, Hon'ble DG, CSIR & Secretary, DSIR, was felicitated by Dr Thallada Bhaskar, Director, CSIR-AMPRI, Bhopal.

A vote of thanks was proposed by Dr Mohd Akram Khan, Scientist G, CSIR-AMPRI, Bhopal.

The programme was concluded with Vande Mataram, the National Anthem, and a group photograph.

An open day was observed at CSIR-AMPRI, Bhopal, on 13 May 2026. Students, teachers, and professors from various institutes visited the exhibition hall, viz. Vivekanand Vigyan Pradarshani of CSIR-AMPRI showcases various R&D activities/ products developed by CSIR-AMPRI.

To add more technical and scientific flavour to the 46th Foundation Day celebrations of CSIR-AMPRI, two technical sessions were organised on 14 May 2026, featuring eminent academicians and renowned scientists as distinguished guests.

The morning session was graced by Prof. BS Murty, Director, Indian Institute of Technology (IIT) Hyderabad, as the Chief Guest. The programme commenced with a plantation activity in the new building campus. The Chief Guest visited several state-of-the-art facilities of the institute and also Vivekananda Vigyan Pradarshani, showcasing various R&D activities, technologies, and products developed by CSIR-AMPRI.

The formal inaugural session at TARA Auditorium began with a floral welcome of Prof. BS Murty by Dr Thallada Bhaskar, Director, CSIR-AMPRI.

In his welcome address, Dr Thallada Bhaskar mentioned that, considering Prof. Murty's vast experience and expertise in the fields of materials science, metallurgy, and advanced instrumentation, he is the most appropriate and inspiring invited guest for the celebrations on 14 May 2026. He also asked Dr Murty to join hands to contribute to nation-building and indigenous development.

On the occasion, Dr N Sathish, Scientist F, CSIR-AMPRI, Bhopal, delivered the Foundation Day Lecture on "Make-in-India Raman Spectrometer". Through his lecture, he highlighted the fundamentals, historical development, and detailed optical design aspects of Raman spectrometers and also the immense market potential of Raman spectroscopy systems.

Dr P Asokan provided a brief introduction of the Chief Guest, Prof. BS Murty & highlighted his achievements. Delivering the Foundation Day address, Prof. BS Murty emphasised that the vision of "Viksit Bharat" can truly be realised when Indian technologies and products become globally recognised and occupy shelves in international markets. He encouraged scientists and researchers to contribute wholeheartedly towards achieving this national goal through innovation-driven research and indigenous technology development. The Chief Guest, Prof. BS Murty, was felicitated by Dr Thallada Bhaskar, Director, CSIR-AMPRI, Bhopal.

Vote of thanks was proposed by Shri Hemant Kumar Shukla, Scientist G, CSIR-AMPRI, Bhopal.

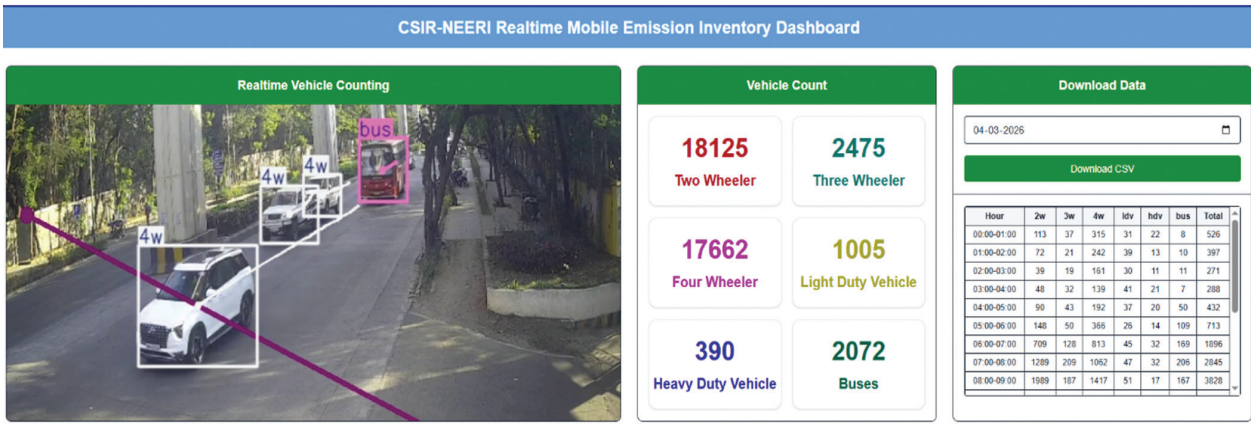
The evening session was graced by Prof. Gobardhan Das, Director, Indian Institute of Science Education and Research (IISER) Bhopal, and Member, NITI Aayog, Government of India, as the Chief Guest. The programme included plantation activity, a visit to the Roller Compacted Geopolymeric Road developed by CSIR-AMPRI in the institute campus, and a formal function at the TARA Auditorium.

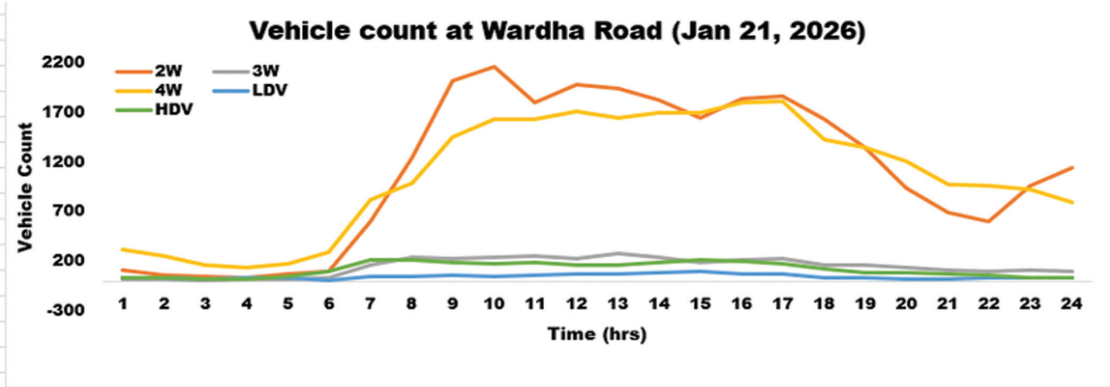
The evening session started with a floral welcome of Prof. Gobardhan Das by Dr Thallada Bhaskar, Director, CSIR-AMPRI. Welcoming Prof. Gobardhan Das, Dr Thallada Bhaskar, Director, CSIR-AMPRI, expressed his gratitude to him for continuous support to the institute, including facilitating collaborations through an MoU with CSIR-AMPRI. He stressed the need to align research and technological developments with national missions to enhance visibility and create new opportunities.

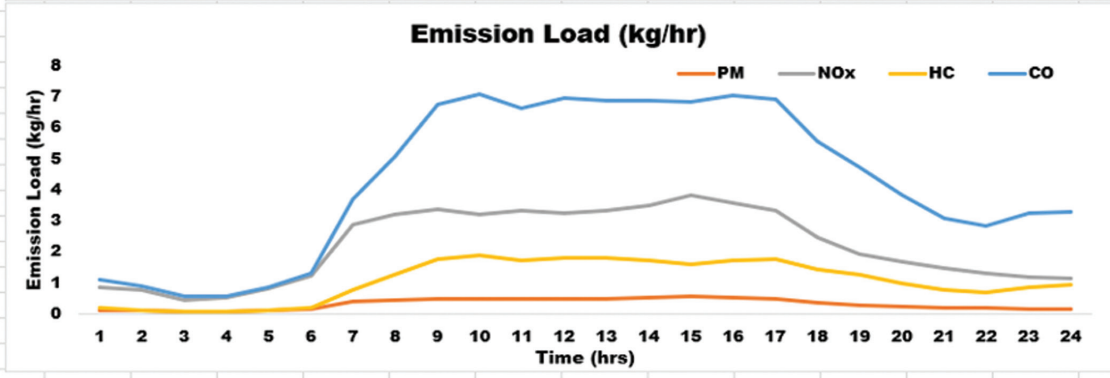
Dr P Asokan has provided a brief introduction of the Chief Guest, Prof. Gobardhan Das. Addressing the gathering, Prof. Gobardhan Das highlighted that India has become self-reliant in several sectors and is now exporting defence materials as well as food grains. He also mentioned that India records the maximum number of digital transactions and mobile phone calls globally, reflecting rapid technological advancement at every level. The Chief Guest, Prof. Gobardhan Das, was felicitated by Dr Thallada Bhaskar, Director, CSIR-AMPRI, Bhopal.

Vote of thanks was proposed by Dr P Asokan, Scientist G, CSIR-AMPRI, Bhopal. The programme was concluded with Vande Mataram, the National Anthem and a group photograph.

CSIR-NEERI Develops an AI-powered Dashboard to Track Vehicle Pollution Hotspots in Real Time







With increasing traffic congestion in Indian cities, vehicular emissions have become one of the major contributors to urban air pollution. To address this challenge, scientists at CSIR-National Environmental Engineering Research Institute (CSIR-NEERI) have developed an AI-integrated GIS-based Line Source Emission Inventory (LSEI) Dashboard that can identify

traffic-related pollution hotspots in real time using live CCTV feeds.

The intelligent dashboard combines Artificial Intelligence (AI) and Geographical Information System (GIS) technologies to automatically identify and count different categories of vehicles moving on roads. Based on the type and number of vehicles detected, the system instantly estimates the emission load of important pollutants such as Particulate Matter (PM), Nitrogen Oxides (NOx), Carbon Monoxide (CO), and Hydrocarbons (HC).

The dashboard performs a comprehensive temporal and spatial analysis of traffic emissions. It can estimate hourly and daily emission loads and also generate gridded emission maps for specific urban areas. Using colour-coded GIS visualisation, the system clearly highlights emission intensity, high-traffic corridors, and pollution hotspots within a city.

One of the major strengths of the AI-LSEI dashboard is its ability to provide real-time insights for urban air quality management. Users can interactively select hourly or daily time frames to observe traffic and emission trends. This helps authorities understand how pollution levels vary during peak traffic hours and across different locations.

The system works with existing CCTV infrastructure, requiring access to CCTV servers and footage. By integrating AI-based vehicle detection with GIS-based emission mapping, the dashboard offers a cost-effective and scalable approach for monitoring traffic emissions in urban areas.

The technology is expected to support several stakeholders, including Pollution Control Boards, Smart City Offices, Traffic Departments, Urban Local Bodies, Research Institutions, Town Planners, and industries. The dashboard can assist city administrators in planning traffic management strategies, identifying critical pollution zones, and developing evidence-based air quality control measures.

The AI-based system represents an important step toward smarter and cleaner cities by enabling data-driven traffic emission management and urban air quality planning.

First Decade-long Study on Hyderabad's Snake Encounters

The first long-term study on urban snake ecology, by a team of researchers in CSIR-Centre for Cellular and Molecular Biology (CSIR-CCMB), Hyderabad, in collaboration with Friends of Snakes Society (FOS) in Hyderabad, Telangana, has been published in *Global Ecology and Conservation*. The study analysed 55,467 snake rescues between 2013 and 2022 to show how

snakes persist and adapt within rapidly urbanising environments of Hyderabad. These findings contribute significantly to our understanding of the ecology of snakes in densely populated areas and predict future human–snake interactions.

Urbanisation and local climate are impacting snake encounters

The study found an annual increase of 8-10% in snake rescues over the ten years; this trend reflects a combination of urban expansion, land-use change, and improved reporting and rescue efforts in the city. It also highlights that human–snake encounters are structured and predictable rather than random.

Notably, 54% of recorded rescues involved venomous species, underscoring the significant public health relevance. Two species, the spectacled cobra (Naja naja) and the Indian rat snake (Ptyas mucosa), accounted for 76% of all rescues. These snakes appear to be particularly well-adapted to densely populated urban environments, indicating their ecological flexibility.

The study identified distinct clusters of snake encounters in Hyderabad, with 232 hotspots that account for 6.9% of the city. These hotspots were predominantly rapidly developing peripheral zones, indicating that urban expansion and habitat modification are key drivers of human–snake interactions.

The study further demonstrated that snake activity varies throughout the day among the species. While some species are predominantly active during the day, some are active at night, and others are active throughout the day. These reflect the intrinsic ecological behaviour of snakes as well as the influence of human activity on snake lives.

"This study provides the first empirical evidence for synanthropization, wherein snakes showed adaptations to human-modified environments. Snakes use urban green spaces, drainage networks, and prey availability, supporting their persistence within the cityscape. Forecasts of snake rescue suggest an annual increase of 8–12%. These projections highlight the need to scale up rescue infrastructure and capacity in the coming years," said Avinash Visvanathan, lead from FOS.

The study also noted clear seasonal trends in snake encounters; they peak during the monsoon period (July to November) and reach a maximum in October. These temporal patterns align closely with the biological processes of snakes, such as mating, birth of young snakes, and increased activity under favourable environmental conditions. Local climatic conditions, particularly temperature and rainfall, significantly influenced snake encounters. The study noted increased activity of snakes in warmer conditions, whereas a prolonged rainfall period temporarily reduced their activity.

Importance of long-term monitoring

Beyond conflict mitigation, the study underscores the value of rescue datasets as robust ecological resources. Long-term, systematically collected records offer a unique opportunity to examine wildlife behaviour across spatial and temporal scales, particularly in urban settings where traditional ecological monitoring can be challenging.

"Within urban ecosystems, snakes serve as important mesopredators; though at a rank lower than apex predators, they regulate rodent and small vertebrate populations. Species such as the spectacled cobra and the Indian rat snake play a critical ecological role, and disruptions to their populations may lead to unintended consequences, including a possible surge in urban rodent populations. The findings highlight the importance of standardised and sustained rescue operations, matched with public awareness campaigns. They also underscore the need to integrate ecological considerations into urban planning, including the maintenance of green spaces and habitat connectivity, to support both human safety and biodiversity conservation," commented Dr Karthikeyan Vasudevan, the lead scientist at CSIR-CCMB.

Overall, the study demonstrates the value of long-term datasets in advancing urban ecological research. It establishes a strong scientific foundation for understanding human–snake interactions and offers actionable insights for coexistence in rapidly expanding cities.

Induction Programme for Newly Recruited Scientists

The ten-day Induction Programme for Newly Recruited Scientists of CSIR was successfully organized from 4-13 May 2026 at CSIR-Human Resource Development Centre (CSIR-HRDC), Ghaziabad. The programme brought together forty-one young scientists from various CSIR laboratories across the country, providing them with a dynamic platform for learning, collaboration, and professional development.

The programme commenced on 4 May 2026 with an inspiring inaugural session that marked the beginning of an enriching journey of innovation, scientific learning, and nation-building. The inaugural ceremony was formally conducted with the ceremonial lamp lighting by Dr Bhaskar Narayan, Director, CSIR-IITR, Dr Ch. Ravi Shekhar, Director, CSIR-CRRI, and Dr TS Rana, Head, CSIR-HRDC, symbolise the illumination of knowledge and the spirit of scientific inquiry.

The induction programme was designed to provide a comprehensive understanding of the scientific, administrative, and collaborative ecosystem of CSIR while equipping participants with both technical expertise and behavioural competencies essential for effective scientific leadership. Throughout the programme, participants benefited from expert lectures delivered by eminent scientists and Directorate Heads from CSIR and other organisations, along with hands-on learning sessions and interactive discussions. The programme also created valuable opportunities for networking and collaboration among scientists from different CSIR laboratories. The programme focused on fostering a holistic approach to professional growth through a blend of technical learning and behavioural

development, and enabled participants to strengthen their interpersonal skills alongside their professional competencies, preparing them to contribute effectively in multidisciplinary scientific environments. Participants explored key themes such as enhancing creative problem-solving and decision-making abilities, strengthening leadership effectiveness, and promoting innovation-driven scientific thinking. Technical sessions on Global Science & Technology Collaborations, Technology Transfer, and Commercialisation of Research provided valuable insights into translating scientific innovations into societal and industrial impact.

The valedictory function of the programme was held on 13 May 2026 and was graced by Prof. Manoj Kumar Dhar, Director, AcSIR, as the Chief Guest. Addressing the newly recruited scientists, he motivated them to contribute actively towards innovation and impactful scientific research. He emphasised the importance of stronger collaboration between CSIR laboratories and the Academy of Scientific and Innovative Research to achieve greater academic and research excellence, including the shared vision of attaining the top rank among research and academic institutions.

The programme was seamlessly coordinated by Dr Shobhna Choudhary, Scientist E, and Mrs Preeti Chaudhary, Sr Technical Officer, whose dedicated efforts ensured a vibrant, engaging, and enriching learning experience for all participants.

The successful completion of the induction programme reflects CSIR's continued commitment towards nurturing the next generation of scientists and strengthening the nation's scientific and innovation ecosystem through capacity building, leadership development, and collaborative research culture..

Swachhata Pakhwada Celebrated at CSMCRI

The CSIR-Central Salt & Marine Chemicals Research Institute (CSMCRI), Bhavnagar observed the *Swachhata Pakhwada* from May 1 to May 15 with great enthusiasm through a series of programs. As part of the campaign, activities included cleaning the institute premises, organizing a quiz competition on cleanliness awareness, a painting competition, and administering a cleanliness pledge among employees. Principal scientist, Dr Kanti Bhooshan Pandey, mentioned that on 13 May, a tree plantation drive was also carried out. The institute's Director, Dr Arup Ghosh, emphasised that cleanliness should not be seen merely as a campaign but adopted as a way of life. He encouraged everyone to commit to keeping their workplace and surroundings clean regularly. Section Officer Mr Sanjay Chauhan, Sr Scientist Dr Sanak Ray, Chief Scientist Dr Soumya Haldar, and others actively contributed to the successful organisation of the campaign.

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