

In the News

## CSIR Celebrates International Women's Day



On 8 March 2025, the CSIR celebrated International Women's Day at the CSIR-National Physical Laboratory (CSIR-NPL) in New Delhi, highlighting the pivotal role of women in science and technology. The event was graced by the esteemed presence of Dr Jitendra Singh, Hon'ble Minister of State for Science and Technology and Vice President, CSIR.

The programme was graced by Prof. Ajay Kumar Sood, Principal Scientific Advisor to the Government of India, Directors of CSIR Labs and Heads of CSIR Headquarter Directorates. Smt. Kalpana Kalahasti, Associate Project Director of Chandrayaan-3 Mission of

ISRO was the invited guest along with three women entrepreneurs of CSIR technologies, Dr Disha Ahuja (CSIR-IICT's AGR Technology), Smt. P Sudha Reddy (CSIR-CMERI's e-Tractor) and Smt. Shikha Vermani (CSIR-IIIM's value-added Lavender products). The participants also included nominated CSIR officials from CSIR institutes and labs across the nation.

Dr Jitendra Singh, Hon'ble Minister S&T, underscored the expanding participation of women across various sectors. He noted a significant increase in women's representation in civil services, rising from 2-3% in earlier years to 25-30% currently.



Prof. Ajay Kumar Sood presented reports indicating that India leads globally with 42.7% of female graduates in STEM fields. Additionally, out of 1.5 lakh Indian startups in 2025, over 74,000 have at least one female director.

Dr N Kalaiselvi, the first woman Director General of CSIR, emphasised the indispensable contributions of women across all disciplines, highlighting their emotional strength and resilience.

The Associate Project Director of Chandrayaan-3, Smt. Kalpana Kalahasti was honoured for her significant role in India's successful moon mission.

The event featured a play highlighting the achievements of women entrepreneurs, including:

- **Dr Disha Ahuja:** Entrepreneur of biogas plants utilising CSIR-IICT's Anaerobic Gas Lift Reactor (AGR) – an advanced biomethanation technology to convert biodegradable waste into biogas for cooking and biofertilizers. Since its launch in 2015, approximately 40 such plants have been established nationwide, including locations like the Bowenpally vegetable market in Hyderabad and Amrita Hospital in Faridabad.
- **Smt. P Sudha Reddy:** Entrepreneur of the CSIR-CMERI's Prima ET11 E-tractor, an innovative electric tractor contributing to sustainable agriculture.

- **Smt. Shikha Vermani:** Founder of “The Purple Himalayas,” an initiative stemming from the CSIR-enabled Purple Revolution promoting lavender farming in Jammu & Kashmir and development of CSIR-IIIM's value-added lavender products.

A compendium of selected projects under the ASPIRE scheme of CSIR was released, showcasing research grants provided to around 300 women scientists over three years.

A video celebrating the Women's Power of CSIR – CSIR Shakti, was released during the occasion.

A skit by CSIR women on Women-led Technologies of CSIR was staged by the CSIR members and highlighted various CSIR technologies licensed to and promoted by women entrepreneurs. The technologies and schemes showcased included CSIR's ASPIRE one-time research grant to non-CSIR researchers; eTractor PRIMA ET11; production of incense sticks and other useful products from offered flowers in temples; AGR Technology; and Purple Revolution brought in Jammu & Kashmir by widespread farming of lavender flower.

CSIR Trivia, a quiz session on ‘How Much Do You Know About CSIR!’ was organised for the participants of the programme. The session included an exclusive parali-based box, designed and

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indigenously developed by CSIR-AMPRI, Bhopal, for the participants giving correct answers to the quizzes on CSIR.

The celebration underscored CSIR's commitment to fostering an inclusive environment that recognises and promotes the contributions of women in science and technology.



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## CSIR Participates in Rise in India 2025 Exhibition



CSIR actively participated in the Rise in India 2025 Exhibition, held from 20-22 February 2025, at HRIT University, Ghaziabad, UP. The event served as a platform for showcasing cutting-edge innovations and fostering collaboration between various stakeholders from industry, academia, and government sectors.

At the CSIR pavilion, CSIR-National Physical Laboratory (CSIR-NPL), New Delhi, and CSIR-Central Road Research Institute (CSIR-CRRI), New Delhi, presented a diverse range of pioneering technologies. Some of the key highlights included:

**Security Ink:** A specialised ink designed to prevent counterfeit currency and fake passports.

*CSIR's enthusiastic participation in the event reinforced its commitment to advancing scientific research, promoting innovation, and inspiring the next generation of scientists and technologists.*

**iRaste Intelligent Road Safety Solutions:** An advanced system aimed at enhancing road safety through AI-driven solutions.

**Steel Slag Road Technology:** An eco-friendly and cost-effective road construction technique utilising steel slag.

Additionally, CSIR-National Institute of Science Communication and Policy Research (CSIR-NIScPR), New Delhi, exhibited its vast collection of scientific journals and publications. As part of its outreach efforts, the team distributed *Science Reporter* magazines to visiting students, promoting scientific awareness and literacy.

The CSIR Jigyasa team from CSIR-HRDG (Human Resource Development Group) engaged with students, enlightening them about various CSIR initiatives such as:

- **EPIC Hackathon:** A platform for young innovators to tackle real-world challenges.
- **Student-Scientist Connect Programmes:** Interactive sessions aimed at fostering interest in scientific research.
- **Training Programmes:** Skill-building initiatives designed to

nurture future scientists and researchers.

One of the key attractions at the CSIR booth was a skit performed by CSIR officials, which creatively demonstrated the real-world applications and impact of CSIR's technologies across various sectors. The performance effectively highlighted how CSIR's innovations contribute to society, addressing critical issues in healthcare, infrastructure, and safety.

The CSIR exhibition stall garnered significant attention from students, industry professionals and the general public, all eager to explore the groundbreaking technologies and research initiatives presented. The Science Communication and Dissemination Directorate (SCDD) centrally coordinated CSIR's participation, ensuring maximum outreach and engagement.

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## Breakthrough TBM Retrieval Operation in the Himalayas by CSIR-CIMFR Scientists

The Pakal Dul Hydroelectric Project (HEP) is a 1,000 MW hydroelectric power station under construction on the Marusudar River, a tributary of the Chenab River, in the Kishtwar district

of Jammu and Kashmir Union Territory, India. This project falls under the parliamentary constituency of Hon'ble Minister of S&T, Dr Jitendra Singh, and represents a flagship initiative



CSIR-CIMFR and L&T officers at the site located 1.2 km below the surface and 3.5 km inside the hill

to harness renewable energy in Jammu & Kashmir. The project is being developed by Chenab Valley Power Projects Limited (CVPPL), a joint venture of NHPC Ltd and J&K State Power Development Corporation Limited (JKSPDC). The cost of this Project is ₹8,112.00 crore. Out of ₹8,112.00 crores, the HRT-TBM package (two HRTs of 7.34 km out of 9.6 km each having 8.34 m circular diameter) was awarded to M/s L&T Limited amounting INR 2575.64 crores with a strict timeline to complete the project in 2026. A Tunnel Boring Machine (TBM) with an 8.34 m diameter, valued at ₹180 crore, and having been named Marsu was stuck at HRT-1 since 26 October 2024 while mining.

The location of the stuck TBM was 1,218 m vertically below the surface and 3,496 m horizontally inside the hill. The TBM shield having a 12 m length was immobilised due to squeezing ground conditions in medium-strong quartzite and phyllite rock formations. Mr Vishal Anand, Head of Project, Pakal Dul HEP (1000 MW) of M/s CVPPL, along with M/s L&T management namely Mr Ashwini K Tripathi, played a pivotal role in initiating efforts to restart TBM excavation. On their instruction, M/s L&T Ltd

collaborated with CSIR-CIMFR, Dhanbad, to leverage scientific expertise for the recovery operation.

To safely recover the stuck TBM without causing damage, an unprecedented excavation strategy was employed under the direction of Prof. Arvind K Mishra, Director, CSIR-CIMFR and under the complete supervision of his team namely Dr Narayan K Bhagat as Team Leader, Dr C Sawmliana Head of Section, Rock Excavation Engineering, and Dr AK Raina from CIMFR, Nagpur unit.

The parallel cut blasting pattern involved precise drilling and controlled blasting to create a central gullet, ensuring minimal vibrations and protecting the TBM shield from further damage. The CIMFR team started work at the site on 13 January 2025 and the retrieval and complete restoration of TBM mining was restarted on 12 February 2025. This demonstrated a highly cost-effective and efficient operation in the history of TBM recovery worldwide. This achievement highlights India's growing expertise in tunnelling operations under extreme geological conditions, setting a benchmark for similar projects worldwide.

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## CSIR-IHBT Celebrates National Science Day 2025



*Dr Barry Pogson, Chief Guest, highlighted the new breeding technologies for crop improvement and discussed their opportunities and constraints in the changing environment.*

The CSIR-Institute of Himalayan Bioresource Technology (CSIR-IHBT), Palampur, celebrated National Science Day with fervour and gaiety on its campus on 28 February 2025. This day is celebrated to mark the discovery of the Raman Effect by Sir CV Raman in 1928, for which he was awarded the Nobel Prize in 1930. The theme for this year is “Empowering Indian Youth for Global Leadership in Science and Innovation for Viksit Bharat”

Dr Barry Pogson from Australian National University, Australia, was the Chief Guest of the function. He highlighted the new breeding technologies for crop improvement and discussed their opportunities and constraints in the changing environment. He emphasised on skill, precision and search for answering key questions that are the need of the hour.

Dr Rishikesh Bhalerao from Swedish University of Agriculture, Sweden, was the Guest of Honour. He put forth his views that further investment in science is desired and that there is a need to attract young minds at the right age.

Prior to this, Dr Sudesh Kumar Yadav, Director CSIR-IHBT welcomed the guests and extended his wishes for the occasion. He briefed on the scientific endeavours of the institute and how they have been able to improve the bio-economy and livelihood of common people. He particularly cited examples of the Floriculture and Aroma mission. He emphasised that science should address the emerging problems and the national needs. He presented the Jigyasa initiative and skill development programmes that focus on empowering youth. He urged all to come together and

contribute towards building a Viksit Bharat.

On the occasion, a transfer of technology on artefacts from dried flowers was signed while quality planting materials of Peony and Marigold were distributed to farmers.

In addition to staff and students of the institute, participants of

the EMBO workshop, & nearby organisations; school students & teachers from Govt Sen. Sr School Jia, Kangra, also participated in the programme.

The National Science Day celebration at the institute also marked the culmination of the 4-day long EMBO international workshop organised by CSIR-IHBT.

## National Science Day Celebration at CSIR-NPL



*Dr Venugopal Achanta, Director, CSIR-NPL talked about the connection between Sir CV Raman and CSIR-NPL.*

In order to commemorate the announcement of the discovery of the Raman Effect by Sir C V Raman on 28 February 1928, CSIR-NPL celebrated the National Science Day (NSD-2025) programme on 28 February 2025. During the programme, the “Poster Presentation Symposium” was held in the morning session along with interactive “Fun with Science Activities”. Also the “National Science Day Lecture” was organised in the afternoon session.

The NSD Celebrations begin with the poster session, herein the students presented their poster under the three broad categories i.e. Materials Science



and Technology (MST), Physics, Engineering and Metrology (PEM) and Environment, Health and Chemistry (EHC). During the poster session, a live Prodcast of Prof. Venu Gopal Achanta, Director, CSIR-NPL, was held, wherein he responded to several questions related to core strengths of NPL, expectations from

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CSIR-NPL staff and students, he wishes to set up at NPL and advice to students. Subsequently, the Director and all staff of NPL visited all posters and interacted with the presenting students & team. At the end of the poster event, a brief interactive session was organised involving fun with science activities including quiz, enactment of physics laws, poem reading, etc. Those who actively participated and gave correct answers were given on spot prizes, making everyone happy and excited.

In the afternoon session, Dr Sushil Kumar, Convener NSD-2025 welcomed everyone and gave his remarks about the NSD celebrations and conducted activities.

Dr Venugopal Achanta, Director gave the opening remarks and extended a warm welcome to dignitaries including Chief Guest Dr S Sathiyarayanan Ex Chief Scientist & Head, CSIR, Central Planning Directorate (CPD), and Guests of Honour, Dr Vibha Malhotra Sawhney, Outstanding Scientist & Head, CSIR Technology Management Directorate (TMD), Dr Debashis Bandyopadhyay, Chief Scientist and Head, CSIR-Innovation Management Directorate (IMD). He also talked about the connection between Sir CV Raman and CSIR-NPL through the co-discoverer of Raman Effect, Sir KS Krishnan, who was the founder director of CSIR-NPL. He also reminded all about the great achievements of NPL and asked everyone to keep doing high-impact fundamental



research and translational outcome-related technological activities, and proposed to take up challenges related to quantum metrology and metrological interventions related to emerging areas of science and technology.

The “National Science Day Lecture” by Chief Guest, Dr Sathiyarayanan was on the theme “Strategies for Corrosion Protection” wherein he highlighted his work on the global problem of Corrosion, specialised corrosion protective coatings developed by them in collaboration with CSIR-NPL, specific features & advantages of these coatings and successful licensing of 3 technologies to various industries. Dr Vibha Malhotra Sawhney talked about the importance of making the right kind of proposal with clearly defined goals, objectives and deliverables. Dr Debashis Bandyopadhyay talked about the importance of the circular economy and also described various aspects of project handling at CSIR HQ.

In the next part of the event, technical presentations in the priority areas were given by CSIR-NPL scientists including Dr Dilip Shivagan, Sr Principal Scientist, (Quantum Metrology), Dr Sachchidanand Singh, Chief Scientist (Environmental Sciences & Biomedical Metrology), Dr Sushil Kumar, Chief Scientist

(Advance Energy Materials), Dr Nahar Singh, Chief Scientist (Bharatiya Nirdeshak Dravya: Indian Reference Material). Finally, the Chief Guest/Dignitaries have given the Best Poster

Awards to the winning students. The event was concluded with a vote of thanks by Dr Asit Patra, Sr Principal Scientist, followed by a Group Photograph outside the NPL auditorium.

## Prof BD Tilak Memorial Science Day lecture at CSIR-NCL

Prof. Bal Dattatreya Tilak served as the Director of the CSIR-National Chemical Laboratory (CSIR-NCL), Pune, from 1966 to 1978. Prof. Tilak significantly contributed to self-reliant chemical technologies in organic chemistry. The industrial research carried out under his leadership led to the establishment of several small, medium, and large-scale Indian industries to produce organic intermediates, dyes, pesticides, and textile auxiliaries. NCL Research Foundation, which promotes excellence in Science and Technology instituted the Prof. BD Tilak Memorial Lecture Series in Chemical Sciences in 2003 to honour his indelible contribution to the organisation. This year's lecture, held on 24 February 2025 was delivered by Prof. Sanat Kumar, Bykhovsky Professor of Chemical Engineering at Columbia University, USA. He spoke on the topic: Formation Mechanisms of Micro and Nanoplastics.

The oration began by highlighting the theme for the National Science Day 2025 – 'Empowering Indian Youth for Global Leadership in Science and Innovation for Viksit Bharat'. Prof. Sanat Kumar began by describing



the commonly practised linear plastic economy, around 400 million metric tons of plastic waste is produced by humans annually, 14% of this waste is collected for recycling and only about 2% is actually recycled. He spoke about plastic waste management wherein 70% of the plastic waste is dumped in landfills giving rise to micro and nano plastics that are hazardous to the environment and humans. Prof. Sanat's research focuses on understanding the underlying mechanisms involved in breaking these large plastic fragments into relatively smaller micro and nano plastics.

His research group has performed experiments on the commonly used PVC water-carrying pipes and Poly Ethylene Terephthalate (PET). This work involves a detailed analysis of various parameters and fracture

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mechanisms involved in the mechanical failure of the semi-crystalline structures to release nanoplastics comprised of polydisperse lamellae stacks. Non-crystalline fragments which do not have a well-defined microstructure, cannot give rise to nanoplastics. Although the amorphous phase of these semi-crystalline nanoplastics degrades, the crystal fragments do not and thus persist in the environment. Hence, his research findings play a critical role in understanding the polymer

microstructure and fracture mechanisms and how they lead to particulate nanoplastic creation.

The lecture was very interactive and discussions revolved around addressing the issue of micro and nanoplastic creation, the minimalistic approach toward plastic waste generation, the use of biobased polymers, and so on. After the lecture, the NCL RF research scholar awards for the year 2024 were given by Prof. Sanat Kumar to the meritorious research students of CSIR-NCL.

*The event, under the theme “Empowering Indian Youth for Global Leadership in Science & Innovation for Viksit Bharat,” included various activities.*

## CSIR-IIIM Celebrates National Science Day 2025

CSIR-Indian Institute of Integrative Medicine (CSIR-IIIM), Jammu, hosted National Science Day celebrations on 28 February 2025 with over 100 students from 20 schools. CSIR-IIIM marked National Science Day 2025 with School Students showcasing Brilliant Scientific Models, Quizzes, Extempore & Lab visits under the CSIR Jigyasa Programme.

The event, under the theme “Empowering Indian Youth for Global Leadership in Science & Innovation for Viksit Bharat,” included activities like lab visits, scientific model competitions,

a quiz, and extempore contests. Winners included: APS Damana (1st prize in the quiz), APS Jammu Cantt (2nd prize) and APS Akhnoor (3rd prize). In the model competition, BVM High School Hiranagar won first, followed by Happy Model Higher Secondary and Springdales English School. Bavleen Kour (APS Jammu Cantt.) won the extempore competition. Dignitaries present were Dr Zabeer Ahmed, Director, CSIR-IIIM, Dr Asha Chaubey, Senior Principal Scientist and Er Abdul Rahim (Head RMBD & IST Division).



## CSIR-NIScPR hosts One-Day Workshop on International Day of Women and Girls in Science

### *Empowering Girls in STEM*

The CSIR-National Institute of Science Communication and Policy Research (CSIR-NIScPR), New Delhi, successfully organised a one-day workshop on the first decadal anniversary of the International Day of Women and Girls in Science on 11 February 2025 at Pusa Campus. Themed “Empowering Girls for Participation in STEM: Fostering Awareness for Inclusive Education,” the event aimed to inspire and encourage young girls to pursue careers in Science, Technology, Engineering, and Mathematics (STEM).

Aligning with UNESCO’s theme, “Unpacking STEM Careers: Her Voice in Science,” the workshop was held at the CSIR-NIScPR, which brought together 56 undergraduate female students from four renowned women’s colleges of the University of Delhi, Gargi College, Kalindi College, Lady Irwin College, Deshbandhu College and Miranda House, alongside esteemed academicians, researchers, and policymakers. It provided a valuable platform for mentorship, resources, and critical insights into government initiatives, scholarships, and funding opportunities available for women in STEM.

In the welcome address Prof. Ranjana Aggarwal, Director, CSIR-NIScPR, emphasised the importance of gender equality in STEM and the need to create an enabling environment for women to excel in scientific careers. She reflected on the challenges faced by women in transitioning from academia to professional roles, underscoring the significance of gender sensitisation and breaking stereotypes. Dr Geetha Vani Rayasam, Head, CSIR-Human Resource Development Group, delivered an insightful talk on CSIR’s various initiatives to support women in science. The session was further enriched by esteemed speakers discussing challenges and opportunities in STEM for young women. The keynote address was delivered by Prof. Mini Thomas, Dean, Faculty

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of Engineering & Technology, Jamia Millia Islamia, and Former Director, NIT Trichy, who served as the Chief Guest. She encouraged young women to break barriers in traditionally male-dominated STEM fields and urged institutions to create more opportunities for women scientists.

The second session featured Dr Monika Kulshrestha, Chief Scientist, CSIR-National Physical Laboratory, who emphasised the importance of maintaining good health while striving for lifelong learning and professional growth. This was followed by an expert lecture by Dr Ambika Behl, Senior Principal Scientist, CSIR-Central Road Research Institute (CSIR-CRRI), titled “Highway Engineering Field: A Man’s World”. She shared her journey from laboratory research to fieldwork, addressing gender biases and societal expectations. She emphasised the need for women to step out of their comfort zones, recognise their strengths, and navigate professional challenges with confidence.

Dr Kanika Malik, Senior Principal Scientist, CSIR-NIScPR

and Delhi branch convenor of the Indian Women Scientists’ Association (IWSA), delivered an IWSA-related talk. The interactive segment of the workshop included a group discussion based on pre-filled questionnaires, allowing students to express their aspirations and challenges in STEM education. Mrs Sandhya Wakdikar, Senior Principal Scientist, CSIR-NIScPR, delivered a talk on “Opportunities for Undergraduate Girls in STEM” and provided valuable information on government schemes, funding opportunities, and resources available to support women in STEM careers.

The workshop concluded with a vote of thanks by Mrs Sandhya Wakdikar, followed by the National Anthem. CSIR-NIScPR reaffirmed its commitment to bridging the gender gap in STEM and fostering an inclusive scientific community for future generations. This initiative marks a significant step towards empowering young women in STEM, ensuring that they receive the necessary support and resources to thrive in scientific careers.

## **MGMI and CSIR-CIMFR Organise National Seminar on “Technological Advancement for Sustainable Mining and Exploration” (TASME-2025)**

The Mining, Geological & Metallurgical Institute of India (MGMI) and the CSIR-Central Institute of Mining and Fuel

Research (CSIR-CIMFR), Dhanbad, jointly organised a National seminar on “Technological Advancement for Sustainable

Mining and Exploration (TASME-2025)” from 31 January 2025 to 1 February 2025 at CSIR-CIMFR Dhanbad.

The inaugural session began with an opening address by Prof. Arvind Kr Mishra, Chairman of TASME-2025 and Director of CSIR-CIMFR. He underscored that the mining sector contributes around 2.5% to India’s Gross Domestic Product (GDP) and plays a paramount role in propelling the country’s growth. As India advances toward becoming the 3<sup>rd</sup> largest economy in the world, mining will be a critical driver of this economic leap.

Dr Murari Prasad Roy, Convenor of TASME-2025 and Chief Scientist, CSIR-CIMFR, presented an overview of the seminar’s goals & theme, focusing on technological innovations that promote sustainable mining practices. Engaging more than 250 participants from 36 industries, the stimulating seminar fostered spirited discussions centred around sculpting a sustainable future for India’s progressively crucial mining industry.

Shri Ranajit Talapatra, Honorary Secretary of MGMI, began his address by outlining the MGMI’s diverse efforts & practices across India. In particular, he underscored the impactful initiatives spearheaded by MGMI’s specialised divisions and praised CIMFR for being a key partner in helping the association move its goals forward.

Distinguished Guest, Prof. DD Misra, Chairman, CSIR-CIMFR Research Council, addressed the importance of mine closure as



sustainable mining depends on effective mine closure. He noted that mining should not be seen as an indefinite activity; rather, before a mine begins operations, a plan for its closure should already be in place.

Guest of Honour Shri DB Sundara Ramam, Vice President, Raw Material at Tata Steel, shared his valuable experiences. He discussed Tata Steel’s initiatives in the sector and addressed several challenges faced by the mining industry, particularly the issue of mine closures, which is a significant concern.

He acknowledged that Coal India operates some of the largest mines in the country and emphasised the importance of sustainable practices in mining. Reuse and recycling of resources, he noted, are critical components of a sustainable mining strategy.

Shri Sundara Ramam praised open-cast mining as one of the most effective mining technologies and expressed pride in this achievement for the country. Throughout his speech, he emphasised that safety in mining must always remain a top priority.

Chief Guest Shri PM Prasad, Chairman of Coal India Limited, emphasised the importance of responsible mining for ensuring sustainability. He pointed out that research funding in the

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*Prof. Arvind Kumar Mishra, Director, CSIR-CIMFR, emphasised the crucial role of mining in the energy sector and pointed out how, during the COVID-19 pandemic, even regions like Dhanbad saw cleaner air, while mining operations continued.*

mining sector is currently limited, and there is a pressing need to promote research in mining and exploration. He highlighted the opportunities in the sector that still need to be fully explored.

Shri Prasad also spoke about Coal India Limited's commitment to addressing climate change, with a focus on land restoration efforts. He mentioned the establishment of eco-parks and various environmental programmes aimed at minimising the impact of mining activities. Safety, he stressed, must always be a top priority, and there is a collective responsibility to the society, people, and communities impacted by mining.

The seminar concluded with the unveiling of the TASME-2025 souvenir and a vote of thanks by Dr Kripamoy Sarkar, marking the successful conclusion of the Inaugural Session.

This seminar has contributed valuable insights toward advancing sustainable mining practices in India's future. Earlier, the inaugural session was followed by a keynote Session which was addressed by Distinguished Speakers; Four Speakers are listed: Prof. VMSR Murthy, Director, IEST Shibpur; Shri Pankaj Satija, EIC, FAMD, Tata Steel Limited; Prof. Khanindra Pathak, IIT Kharagpur; Shri Om Prakash, CEO of Mining Business, Jindal Power Ltd Post Lunch four technical sessions were conducted.

The valedictory function of the National Seminar on "Technological Advancements for Sustainable Mining and Exploration" (TASME-2025) was organised on 1 February 2025 at CSIR-CIMFR.

Prof. Arvind Kumar Mishra, during his welcome address, emphasised the crucial role of mining in the energy sector and pointed out how, during the COVID-19 pandemic, even regions like Dhanbad saw cleaner air, while mining operations continued. He stressed the importance of the mining sector's commitment to greening and achieving zero carbon emissions. Prof. Mishra highlighted three key factors for achieving sustainable mining: government policies, corporate responsibility, and good available resources. He concluded by stressing the need for increased dedication, productivity, and sustainability in the mining industry's future.

Shri Ranajit Talapatra, Honorary Secretary of MGMI India, expressed his gratitude for the two enriching days of the seminar. He praised the efforts of CSIR-CIMFR in organising such a significant national seminar and thanked the participants for their involvement and contributions.

Prof. DD Misra, Chairman of the Research Council at CSIR-CIMFR, highlighted some of the

key recommendations from TASME-2025, particularly advocating the use of Artificial Intelligence (AI) as a tool to gather comprehensive inputs for improving the mining process.

Shri Manoj Kumar Agarwal, Director (Technical) P&P, Bharat Coking Coal Limited (BCCL), delivered the address as the Guest of Honour. He shared his insights on the mining sector's challenges and solutions, focusing particularly on safety measures. He also discussed BCCL's initiatives and the need for cutting-edge technology adoption in the mining industry.

Chief Guest Shri Satish Jha, CMD, Eastern Coalfields Ltd (ECL), discussed the importance of sustainability and a just transition

in the mining sector. He shared his views on sustainability, emphasising the challenges faced by local communities and the need for positive social and environmental impacts. Shri Jha also spoke of the requirement for the mining sector to reconsider its negative impacts on the environment and climate change. He committed ECL to collaborate with CSIR-CIMFR on future research projects that support sustainable mining practices.

The session concluded with a vote of thanks delivered by Dr MP Roy, Chief Scientist at CSIR-CIMFR. The event attracted experts, industry leaders, and researchers, to discuss the future of sustainable mining.

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## CSIR-CIMFR Organises a One-day Workshop on “Sustainability in Coal Beneficiation: Challenges and Opportunities”



One-day workshop programme on Sustainability in Coal Beneficiation: Challenges and Opportunities was successfully organised by the Coal and Mineral Processing Research Group at

the Digwadih campus of CSIR-Central Institute of Mining and Fuel Research (CSIR-CIMFR), Dhanbad, on 29 January 2025. Various experts, representatives and researchers from various coal



mining, processing and utilisation of the country, such as Tata Steel, BCCL, IIT ISM, NTPC, etc., participated in this programme.

In the inaugural session at the Digwadih campus, Shri Samiran Dutta, CMD, BCCL, was the Chief Guest. Prof. DD Mishra, Chairman, Research Council, CSIR-CIMFR, was the Special Guest.

Dr Pradip Kumar Banerjee, the outstanding scientist of the institute, welcomed everyone and wished for the success of the workshop. After that, a brief introduction and significance of the workshop was presented by the Chairman of the workshop, Dr Uday Sankar Chattopadhyay. He cited the sustainable contribution of CSIR-CIMFR since its inception in the area of coal beneficiation precisely in the development of the coal washeries of BCCL. The workshop souvenir was also unveiled by the dignitaries.

In his address, Prof. DD Mishra mentioned that, in India, power demand is rising and it is difficult to meet this demand even if all the conventional and non-conventional power plants run at full throttle. In this context he clarified that coal is going to remain a significant fossil fuel for power generation, however, we must consider the environmental aspects as well. He expressed his best wishes for the workshop.

Dr Samiran Dutta in his address expressed that in the

present scenario, global warming has forced the policymakers to re-evaluate the energy security and our mother earth needs to be compensated for the exploitations. For this, he described the significance of a proper mine closure plan. He stated that India majorly depends on fossil fuels for its energy security and economic security however to take care of environmental security scientific interventions are imperative. He further described the proposed plan of monetisation of BCCL washeries where the coal consumers will be encouraged to build washeries on the BCCL infrastructure and they can take away the entire washed product. At the end of the inaugural programme, a vote of thanks was proposed by Dr Manish Kumar Organising Secretary of the workshop.

Later, in the technical session Dr Uday Sankar Chattopadhyay, Mentor, Coal and Mineral Processing Research Group presented his talk on "Sustainability in Coal beneficiation and role of CMP Research Group". Dr Asim Kumar Mukherjee, Chief, R&D, TATA Steel presented his views on "Challenges and Way Forward in Coal Washing for Steel Industry in India". Next, Dr Shravan Kumar, Associate Professor and Head of the Department, Department of Fuel Minerals & Metallurgical Engineering, IIT(ISM), Dhanbad,

*Dr Samiran Dutta expressed that in the present scenario, global warming has forced the policymakers to re-evaluate the energy security and our mother earth needs to be compensated for the exploitations.*

presented his talk on “Clean coal recovery from middlings generated from coal washeries”. Shri Atanu Mahata, AGM, Coke Oven Operation, Shyam Sel & Power Ltd, WB, deliberated on “Challenges for Coke manufacturing in India with respect to present steel market scenarios and possibilities of washed coal usage in Coal blend without affecting required Blast Furnace Coke quality to compete with imported coke”. Shri Avinash Suman, Dy Manager (CP), CMPDI deliberated on “Unleashing the Potential of Coal Beneficiation: A Catalyst for India’s Energy Security and Economic Prosperity”. Shri B Ghosh, RDCIS, Ranchi, talked on the subject “Enhancing the use of Indigenous coking coal in Steel

Making”. Shri Tymofiy Chernyayev, CEO, CHE-Industry Group, Poland, virtually presented on the topic, “Comprehensive solutions for improving the efficiency of coal washing plants: Technologies and equipment for processing and recycling coal processing waste. Design and engineering”.

In the valedictory function, Dr Ashis Mukherjee, Scientist Charge, CIMFR, Digwadih campus, felicitated the Chief Guest and other dignitaries/speakers which was then followed by open discussion among the members present. Mr BK Tiwari, Director, In-charge BSL, presented concluding remarks. Finally, Dr KMP Singh, Convenor, Organising Committee, gave the vote of thanks.

## **Dr N Kalaiselvi, DG, CSIR & Secretary DSIR Inaugurates the New Building Complex of CSIR-AMPRI**

Dr N Kalaiselvi, Director General, CSIR & Secretary DSIR, visited CSIR-Advanced Materials and Processes Research Institute (CSIR-AMPRI), Bhopal, on 22 December 2024. In the first session, Dr N Kalaiselvi inaugurated the five-star rated eco-friendly green building complex of CSIR-AMPRI, Bhopal, facing the national highway in the gracious presence of Prof. Suhas S Joshi, Director, IIT Indore; Prof. Avanish Kumar Srivastava, Director, CSIR-AMPRI, Bhopal and staff of CSIR-AMPRI.

The total area of the building is ~13500 square metres. The building complex encompasses an Admin & Research Block (G+2)

having a total build-up area of ~11000 sqm housing various labs, departments and rooms, lifts, reception, etc. on the ground floor. The first floor has 75 rooms for Scientists, a Director Chamber, a Planning and Performance Division, an Exhibition Hall, a Common sitting area for research scholars, a service room, a conference room, a meeting hall and many more. The second-floor houses offices for Senior Officers with a Digital Library, Meeting Room, and Staff Room. In addition, the laboratory block also has sitting space for scholars. The complex also houses a service block and a canteen block with all state-of-



*A pilot plant for the fabrication of joint-free X-ray, gamma ray and neutron shields was inaugurated by Dr N Kalaiselvi at the new building.*

the-art facilities. The building is equipped with solar panels for renewable energy generation. The complex is also equipped with a 15 KLD sewage treatment plant, an extensive water supply network with an underground storage capacity of 102500 litres and a rainwater harvesting system.

On this occasion, an MoU was signed between CSIR-AMPRI, and IIT Indore at the Director Office in New Building to explore academic and research collaboration in the areas of mutual interest.

Technology documents were exchanged between CSIR-AMPRI, and M/s Rollabss Hi-Tech Industries Kolkata at the Director Office in New Building for know-how titled “Nano adsorbent-based filters for arsenic and fluoride free drinking water”. The know-how is based on the CSIR-AMPRI developed technology of large-scale and cost-effective production of nano alumina as a nano adsorbent that can effectively remove fluoride and arsenic from contaminated water. The domestic filters designed using this adsorbent can provide clean water without the need for electricity as well as with zero discharge of wastewater. The technology will be crucial in providing potable water to the rural as well as urban population of India.

A pilot plant for the fabrication of joint-free X-ray, gamma ray and neutron shields was inaugurated by Dr N Kalaiselvi at the new building. Dignitaries visited various Laboratories/Facilities and saw various products developed by CSIR-AMPRI, viz. HPLC lab and Biomimetics and Biomaterials Lab at the new building, 3D Printing Facilities of Graphene Centre, Centre for Advanced Radiation Shielding & Geo-polymeric Materials and Gamma Radiation Panel, X-ray Shielding Tiles, Bamboo Composites, Bamboo Composite Structure “Baithak, Bio Green Composite, (Bio binder), Parali Composite, and Raman Spectroscopy Facility.

Dr N Kalaiselvi and Prof. Suhas S Joshi planted a tree at the Technology Development Centre for Bamboo Cultivation and Products site under #एक पेड़ माँ के नाम #Plant4Mother Campaign.

During the second session, Prof. Avnish Kumar Srivastava welcomed the dignitaries and highlighted that the inauguration of the new building is a lifetime achievement in the history of AMPRI. He further highlighted about inauguration of a Pilot plant for the fabrication of joint-free X-ray, gamma-ray and neutron shields. He said that this lab is working on engineering materials.



In the last 7 years, CSIR-AMPRI has transferred several technologies and four of the signature technologies are available in the market. He emphasised that last year we published around 150 research papers in SCI Journals with an average Impact Factor (IF) of around 6.0 and also published in 46 IF journals. We are receiving several prestigious awards. For the first time, CSIR-AMPRI has received the CII Waste to Worth award, and NRDC Societal Innovation award, and has also established 5 star rated green laboratory building.

In his address, Prof. Suhas S Joshi highlighted about inauguration of the new building being a massive achievement of CSIR-AMPRI. He congratulated Director CSIR-AMPRI and his leadership. He also elaborated on the greenery of the campus of IIT, Indore. He talked about technologies developed by IIT Indore like the technology on tribological nanogenerator for shoe soles for soldiers for charging batteries and the technology to identify real basmati rice. He also mentioned about various programmes for students at IIT, Indore.

About 160 Students and teachers (Vigyan Jyoti) from PM Shri Jawahar Navodaya Vidyalaya, Sehore, PM Shri Jawahar Navodaya Vidyalaya Sagar, PM Shri Govt Higher Secondary School, Shyampur, Sehore and Govt Girls

Higher Secondary School Doraha attended the programme.

Addressing the gathering, Dr N Kalaiselvi expressed her happiness for the inauguration of the new building and also appreciated the leadership of Prof. Avanish Kumar Srivastava. She highlighted that several technologies of the institute itself are used in this new building making it a unique structure. She talked about indigenisation and appreciated the efforts of CSIR-AMPRI in making indigenous Raman spectrometers. She encouraged students to visit CSIR-AMPRI and learn about upcoming eye-opening technologies. She expressed her happiness for around 1.5 lakh students and teachers receiving training and exposure to the scientific environment at CSIR-AMPRI through the Jigyasa programme.

She appreciated the growth of AMPRI in terms of technologies, papers and patents. She further highlighted that we are keeping doors open for the public. She emphasised that as per recent studies, it was found that only science and technology are capable of creating a safe and secure earth. Science and technology take us to different levels. She appreciated the mementoes developed by thermal evaporation and 3D printing technology at CSIR-AMPRI. Further, she appreciated the efforts made in making the model of 'Ram Mandir' using a metal 3D printer with the

highest level of perfection. She appreciated CSIR-AMPRI for taking care of the supply chain on the one hand and developing machines as well as technologies on the other hand. She also appreciated the work undertaken by AMPRI on wound healing, skin patches and many more. She also highlighted that India is coming up with its own standards for benchmarking in various fields and the landscape is appreciable.

Mementoes based on Raman technology and thermal



evaporation technique were presented to the Dignitaries. Dr Archana Singh, Principal Scientist, CSIR-AMPRI, moderated the programme. Dr Sandeep Singhai, Head, of Business Development, CSIR-AMPRI, proposed the formal vote of thanks.

*Dr N Kalaiselvi highlighted that several technologies of the institute itself are used in this new building making it a unique structure.*

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