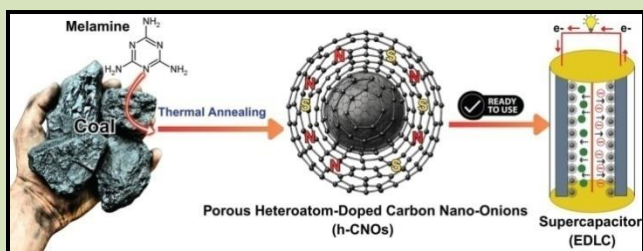


INFOWATCH

An In-house Monthly Communication (March, 2026)

CSIR-NEIST demonstrates Sustainable Conversion of Low-grade Coal into High-Performance Carbon Nano-onions for Supercapacitors



Graphical abstract of the research

Dr Tonkeswar Das and his team developed an economical and sustainable approach to convert high sulfur, low grade coal into advanced carbon nanomaterials for energy storage. Their study, titled *“Transforming low-quality high-sulfur coal into porous heteroatom-doped carbon nano-onions for supercapacitor electrodes,”* has been published in ScienceDirect Journal.

Using a simple one-step thermal annealing process, the team successfully synthesized porous heteroatom (N, S)-doped carbon nano-onions (h-CNOs) without the need for expensive precursors, specialized equipment, or high-energy input. Detailed structural analyses revealed multilayered concentric graphitic nano-onions with high surface area and tunable porosity, which significantly enhance ion diffusion, electrical conductivity, and electrolyte wettability. When tested in supercapacitor devices, the material demonstrated a high specific capacitance of 162 Fg at 0.5 A g⁻¹, excellent 98% capacity retention after 8000 cycles, and impressive energy density of 32 Wh kg with power density up to 24 kW kg. This work highlights a sustainable pathway for valorizing low-grade coal into high-value nanocarbon materials, offering promising opportunities for next-generation energy storage technologies and affordable supercapacitors.

CSIR-NEIST celebrated International Women’s Day



Group photo of the attendees of the programme

CSIR-NEIST celebrated International Women’s Day on 02 March 2026, under this year’s theme i.e “Give to Gain.” The event was graced by Padma Shri Smt Parbati Baruah, India’s first woman mahout and animal conservation activist, as the Chief Guest; Dr Kusumita Arora, Director, the Indo-German Science & Technology Centre, New Delhi, attended as the Guest of Honour; and Squadron Leader Tanvi Sahu, Indian Air Force was present as a distinguished guest.



Dr V M Tiwari, delivering welcome speech

In his welcome address, Dr V M Tiwari, Director, CSIR-NEIST highlighted the significance of the theme *“Give to Gain”* and emphasized the vital role of women in the advancement of science and national development.

He appreciated the dedication and contribution of women researchers at CSIR-NEIST and acknowledged the valuable contributions of women scientists and staff in shaping the institute's progress. He then to remain positive and actively contribute to society for a better future.



Dr Swapnali Hazarika, Scientist G delivering her speech

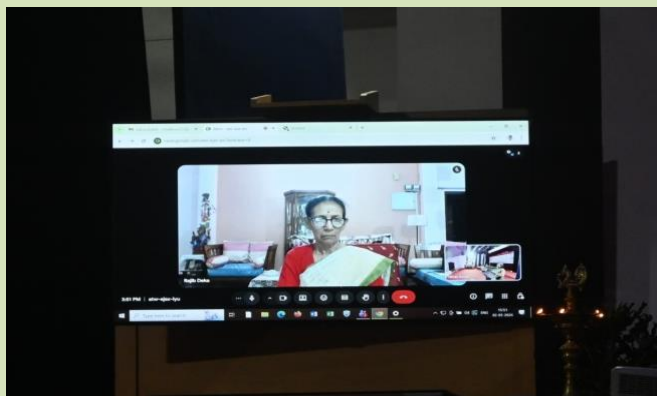
Dr Swapnali Hazarika addressed the gathering and noted that International Women's Day is not only a celebration but also a moment to reflect on the progress achieved in women's empowerment. She presented data on the growing participation of women in research at CSIR-NEIST. She encouraged all to remain confident and persistent in pursuing their goals.



Dr Kusumita Arora, delivering her welcome speech

Speaking on the occasion, Dr Kusumita Arora discussed the long struggle for women's equality and the challenges that have historically limited educational opportunities for women. She stressed the importance of continuing efforts to ensure equal opportunities in education and professional fields.

Chief Guest Padma Shri Smt Parbati Baruah, who joined the programme virtually, thanked the CSIR-NEIST family for organizing the event and expressed her appreciation for being part of the celebration. She encouraged everyone with the message that "Women can do everything," urging



Padma Shri Parbati Baruah, delivering speech online

Squadron Leader Tanvi Sahu shared her inspiring journey of becoming an officer in the Indian Air Force. She outlined the pathways to pursue a career in the defence services and motivated the audience to contribute to the nation through dedication and excellence in their respective fields.



Tanvi Sahu, while interacting with the attendees

The programme also featured a cultural session followed by an award distribution ceremony. Dr Rituparna Duarah, Anita Kachari, Rumi Bora, and Pushpa Kaushal were felicitated for being among the winners in competitions held during SSBMT. Awards for academic achievements were presented to Dipsikha Gogoi, Twinkle Bora, Dr Banashree Saikia, Pallavi Hazarika, Chayanika Hazarika, and Anwasha Dutta Hazarika. The event concluded with a Vote of Thanks delivered by Dr Twahira Begum, Scientist followed by the National Anthem.

CSIR-NEIST celebrated 66th Foundation Day

CSIR-NEIST celebrated its 66th Foundation Day on 18 March 2026 with great enthusiasm and pride. The occasion was graced by eminent personalities,

including Chief Guest Dr P G Rao, Former Director of CSIR-NEIST, and Guests of Honour Dr D Ramaiah and Dr G N Sastry, both former Directors of CSIR-NEIST Jorhat. The celebration began with the felicitation of the distinguished guests.

He highlighted the rich cultural and biodiversity of the North East as a vital component of the nation's ecosystem and lauded CSIR-NEIST's contributions during the COVID-19 pandemic. He urged all members of the institute to continue striving for excellence and uphold its prestigious standing.



Dr V M Tiwari, delivering his inaugural speech

Addressing the gathering, Dr V M Tiwari, Director, CSIR-NEIST, highlighted the institute's significant contributions to innovation and entrepreneurship in the North Eastern region. He noted that over 200 publications have been released from CSIR-NEIST in the previous year, and emphasized institute's role in adapting to the changing global scenario through scientific intervention and collaborative initiatives.



Dr G N Sastry, delivering his speech

Dr P G Rao delivered an insightful presentation showcasing the institute's past achievements and technological advancements. He emphasized how CSIR-NEIST has played a crucial role in regional development despite limited resources and with the dedication of its scientists and staff. He also noted that the institute has been a two-time recipient of the FICCI Award and has developed several globally recognized technologies over the years.



Dr D Ramaiah, while addressing the gathering

Dr D Ramaiah, in his speech, expressed his gratitude for being invited to the auspicious occasion and praised CSIR-NEIST as one of the finest institutions in the country. Dr Ramaiah highlighted the importance of maintaining its legacy through dedication and perseverance.

In his address, Dr G N Sastry inspired the audience by acknowledging the sustained efforts of the institute's leadership and scientists in driving innovation over the decades.



Dr P G Rao, delivering the Foundation Day Lecture

As a part of the occasion, an umbrella MoU under Research & Innovation Consortium Hive (RICH-NE) was signed, bringing together 19 leading institutions to foster collaborative research, shared infrastructure, and innovation-driven growth. The partnership aims to address key regional challenges through joint efforts in areas such as healthcare, agrotechnology, climate resilience, and sustainable development.

This collective vision marks a new era of synergy and knowledge exchange for an impactful science for the North East.



Release of the CSIR-NEIST Highlights 2025-26

A publication titled, "CSIR-NEIST Highlights 2025-26" was also released in the presence of the dignitaries. Also the Certificates of Appreciation were distributed to scientists, research scholars, and employees in recognition of their contributions throughout the year. The newly redesigned CSIR-NEIST website was also officially launched in the occasion. The event concluded with a vote of thanks delivered by Dr Kalyani Medhi, Principal Scientist, CSIR-NEIST, following the National Song and the National Anthem.

NEIST-NEXUS Weekly Lecture Series 2026

CSIR-NEIST continues to host the NEIST-NEXUS Weekly Lecture Series 2026 which serves as a dynamic platform for scientific dialogue and innovation.

The 7th lecture session, held on 6 March 2026, featured Dr Rinku Baishya, who presented an insightful talk on "*Harnessing Northeast India's Ethnic Bioresources: From Functional Food to Phytopharmaceuticals and Therapeutic Applications.*"



Dr Rinku Baishya

The session emphasized the immense potential of Northeast India's rich biodiversity. Dr Baishya highlighted how traditional fermented foods and underutilized indigenous fruits could be valuable sources of bioactive compounds. Advanced analytical techniques such as UHPLC-HRMS are enabling scientists to identify phytochemicals with promising antioxidant, antimicrobial, anti-inflammatory, and anticancer properties.

The 8th session held on 13 March 2026 where Dr Sandeep K Dey delivered a lecture on "*Noncovalent Organic Frameworks (NCOFs)*". His presentation introduced NCOFs as a new class of porous crystalline materials formed through non-covalent interactions like hydrogen bonding.



Dr Sandeep K Dey

Compared to traditional frameworks such as MOFs and COFs, NCOFs offer advantages including lightweight structures and easier processability. Dr Dey also discussed their potential in gas storage applications, particularly hydrogen storage, due to their high surface area and tunable pore sizes. The talk highlighted how nanoscale engineering can further enhance their efficiency and safety.

Continuing the series, on 20 March 2026, Dr Sumit Singh (FLS, FRAS), presented "*Plants, People, and Peaks: Unlocking Himalayan Biodiversity for Science and Community.*" His talk emphasized the extraordinary plant diversity of the Himalayan region and the importance of systematic taxonomy in documenting and conserving endemic species.



Dr Sumit Singh

He also highlighted the deep relationship between local communities and plant resources, showcasing traditional knowledge related to medicinal uses, cultural practices, and sustainable utilization.

Exhibition

CSIR-NEIST participated in exhibition held on the occasion of two-day National IP Yatra - Nagaland 2026, held under the theme "Embracing Modern Technology: From Traditional to Industrial", held during 12-13 March, 2026 at the Integrated Business Hub & Innovation Centre, Dimapur.



From Left: Mr Rishi Raj Phukan and Mr Manash Jyoti Borah representing CSIR-NEIST at the exhibition.

Awards/Honor/Recognition



Dr Pankaj Bharali

Dr Pankaj Bharali, Scientist, CSIR-NEIST, received the A P Das Biodiversity Medal Award for his contribution in understanding Taxonomic Aspects of different Angiospermic Plants of NE Himalaya from East Himalayan Society for Spermatophyte Taxonomy in the East Himalayan Society for Spermatophyte Taxonomy (EHSST) organized by the Department of Botany, University of Calcutta in collaboration with Mushroom Biotech, Jalpaiguri and the Botanical Survey of India on 14 March, 2026 at Vivekananda Hall, Ramakrishna Mission Institute of Culture, Golpark, Kolkata.

Ms. Anjali Hazarika, Project Assistant, working under Dr Pankaj Bharali, was awarded the Best Poster Presenter award in the two-day National Workshop on Emerging Diseases in North East India: A Data Driven One Health Approach (EDNEIHA-2026), held during 06-07 March, at Tezpur University.



Ms. Anjali Hazarika

Visit



Students and faculty members along with CSIR-NEIST Branch Lab., team during the field visit

On 26 March 2026, a field visit was hosted by the CSIR-NEIST Branch Laboratory Imphal for students of College of Pharmacy Kangleipak Medical and Nursing Institute, Imphal. The visit aimed to provide exposure to research and development activities related to medicinal plants. A total of 70 students, accompanied by 5 faculty members, participated in the programme.

Papers Published

In International Peer Reviewed Journals

1. Jadumoni Saikia, Nooreen Washmin, Bikas Das, Aditya Sarkar, Parthapratim Konwar, Prasanna Sarmah, Twinkle Borah, Saikat Haldar, Dipanwita Banik: Integrating cutting orientation and postharvest drying to enhance the processing efficiency of *Alpinia galanga* (L.) Willd. Rhizomes, *Journal of Applied Research on Medicinal and Aromatic Plants*, 2026, Vol. 52, 100704,
<https://www.sciencedirect.com/science/article/abs/pii/S2214786126000100?via%3Dihub> (IF: 3.6)
2. Rintumoni Paw, Palash J Thakuria, Ankur K Guha, Chandan Tamuly: Spectrophotometric detection of Fe³⁺ ions using garlic-derived alliin and bovine serum albumin-stabilized AgNPs, *RSC Advances*, Vol.16, Issue 16, pages 14170-14182,
<https://pubs.rsc.org/en/content/articlelanding/2026/ra/d5ra08842a> (IF: 4.6)

3. Tonkeswar Das, Debashis Sarmah, Mousumi Bora, Prasenjit Saikia, Binoy K Saikia: Transforming low-quality high-sulfur coal into porous heteroatom-doped carbon nano-onions for supercapacitor electrodes, *Diamond and Related Materials*, Vol.164, pages: 113495, <https://www.sciencedirect.com/science/article/pii/S0925963526002062?via%3Dihub> (IF: 5.1)
4. Lonishree Dutta, Tanmita Gupta, Raghu Tamang, Twahira Begum, Mohan Lal: An Updated Review of Phytochemistry, Ethnobotany, and Bioactivity of the *Clausena* Genus, *Chemistry & Biodiversity*, Vol.23, Issue 3, pages e03150, <https://onlinelibrary.wiley.com/doi/10.1002/cbdv.202503150> (IF: 2.5)
5. S Sujatha, Kopparthi Amrutha Valli Sindhura, Prasanna S Koti, Shridhar Hiremath, Mantesh Muttappagol, H D Vinay Kumar, K S Shankarappa, V Venkataravanappa, K M Srinivas Reddy, C N Lakshminarayana Reddy: Influence of weather and seasonal factors on whitefly dynamics, associated endosymbiotic microbiomes, and Begomovirus transmission causing tomato leaf curl disease: insights from a metagenomic perspective, *Frontiers in Microbiology*, Vol.16, pages 1555058, <https://www.frontiersin.org/journals/microbiology/articles/10.3389/fmicb.2025.1555058/full> (IF: 4.6)
6. Sandeep Kumar Dey, Arghya Basu: Ion-pair receptors based on tripodal building blocks: perspective on cooperative recognition and extraction of inorganic salts, *Molecular Systems Design & Engineering*, <https://pubs.rsc.org/en/content/articlelanding/2026/me/d5me00190k> (IF: 3.2)
7. Vinay Kumar Sahani, Lemmem Gammi, Minom Pertin, Dipanwita Banik: *Agapetes wardii* W.W. Sm.—A New Addition to the Flora of India From Changlang, Arunachal Pradesh, *India Feddes Repertorium*, <https://onlinelibrary.wiley.com/doi/10.1002/fedr.70085> Mar-26
8. Madhurima Borah, Archana Yadav, Jyoti Lakshmi Hati Boruah, Hemant Sankar Dutta: Paper-based single-enzyme dual-substrate assay for rapid detection and differentiation of *E. coli* and *E. coli* 0157:H7, *Biosensors & Bioelectronics*, 2026, Vol. 304, 118633, <https://www.sciencedirect.com/science/article/pii/S0956566326002654?via%3Dihub> (Highest Impact Factor publication, IF: 10.5)
9. Ashitosh Baruah, Mainee Baruah, Rassel M Bulbul; Sandeep Kumar Dey; Atul A More: Lewis Acid-Catalyzed Switchable Functionalization of C,N-Cyclic Ketimines with Vinyl Azides: Access to Diverse C(2)-Alkylated Pseudoindoxyls, *Journal of Organic Chemistry*, 2026, <https://pubs.acs.org/doi/10.1021/acs.joc.5c03190> (IF: 3.6)
10. Anupam Biswas, Jyoti Lakshmi Hati Boruah, Prosenjit Mridha, Rinku Baishya: Phytochemical Profiling and Mechanistic Evaluation of the Antioxidant and Anti-Inflammatory Activities of *Curcuma caesia* Roxb. Rhizome Extract: An Integrated In Vitro, In Vivo, and In Silico Study, *Chemistry & Biodiversity*, 2026, Vol. 23, Issue 3: e02056, <https://onlinelibrary.wiley.com/doi/10.1002/cbdv.20250205> (IF: 2.5)
11. Angana Mahanta, Manju Kumari Jaiswal, Sarmistha Bora, Binud Attry, Abhishek Hazarika, Ashutosh Thakur, Binoy K Saikia: Performance and Structural Correlations of Low-Grade-Coal-Derived Carbon Additives for Coal-Water Slurry Electrolysis, *Energy & Fuels*, 2026, <https://pubs.acs.org/doi/10.1021/acs.energyfuels.6c00144> (IF: 5.3)

Farewell:

The following member(s) of the staff have retired from Council's service on superannuation from CSIR-NEIST w. e. f. 31 March, 2026.

1. Anjali Hatibaruah, Group C (MTS), Store & Purchase.