



Science Diplomacy Alert

A Fortnightly newsletter on S&T, Science Policy and Diplomacy

Focus

India-Canada Joint Statement Anchors Science, Technology and Innovation Cooperation



As India and Canada deepen ties across science, technology, and innovation, their partnership reflects a shared commitment to building a resilient, inclusive, and sustainable future, one that not only serves national interests but also contributes meaningfully to global progress. Sneha Sinha writes.

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SCIENCE POLICY & DIPLOMACY

International S&T Cooperation



India–Australia Researchers Test Farm Waste as Coal Substitute for Green Steel

Researchers from the Indian Institute of Science and Australia's CSIRO have demonstrated that agricultural waste like rice husk pellets can partially replace coal in steelmaking. The trial, conducted at a Jindal Steel facility, produced stable syngas without affecting performance. The innovation could significantly cut carbon emissions in the steel industry and support greener steel production.

Singapore Declares 2026 the Year of Climate Adaptation

Singapore designated 2026 as its “Year of Climate Adaptation” and is developing its first National Adaptation Plan, shifting focus from mitigation to long-term resilience. The Plan prioritizes heat resilience, with new funding, a dedicated policy office, and measures to protect vulnerable groups like outdoor workers.

EU and Algeria Conclude PRIMA Negotiations

The European Union and Algeria concluded negotiations for Algeria's participation in PRIMA (Partnership for Research and Innovation in the Mediterranean Area), enhancing joint research on sustainable agriculture, water management and food security with 19 participating countries.

Canada and Japan Elevate Science & Technology Cooperation

Canada and Japan announced a Comprehensive Strategic Partnership in Tokyo, reinforcing bilateral cooperation across economic security, technology and innovation. Under the partnership, the two countries plan to deepen collaboration on semiconductors, AI, cybersecurity, clean energy, and other emerging technologies.

Emerging Tech & Governance



Haryana, Canada Explore Cooperation in AI for Agriculture, Smart Governance

Haryana Government held discussions with a delegation from the Indo-Canada Chamber of Commerce on collaboration in artificial intelligence for agriculture and smart governance. The partnership aims to develop AI-driven solutions to improve farming productivity and enhance digital public services in the state.

EU Council Agrees to Streamline Rules on Artificial Intelligence

The Council of the European Union agreed on its position regarding a proposal to simplify and harmonise AI regulatory rules as part of the broader Omnibus VII legislative package. The move is designed to make the EU's AI framework more efficient and coordinated across member states while supporting innovation and establishing clearer standards for AI technologies within the bloc. This effort builds on the EU's wider AI regulatory strategy, including its world-first AI Act, which aims to ensure trustworthy, safe and competitive AI development.

UK-Ireland Strengthens Research & Innovation Collaboration

The agreement provides a framework for collaboration in key areas like telecommunications, advanced materials, quantum technologies and creative industries, enabling researchers from both countries to work together more easily and support economic growth through shared knowledge and projects.

University of Toronto, IISc to Launch AI Healthcare Centre in Mumbai

The University of Toronto and the Indian Institute of Science (IISc) announced a new Centre of Excellence on AI in Healthcare to be established in Mumbai under a bilateral research cooperation initiative. The centre will focus on developing predictive AI tools for diagnostics, treatment planning and health-system improvement.

University of Sydney and New York University Launch Research Partnership

The University of Sydney and New York University (NYU) signed a research cooperation agreement to strengthen academic ties and expand collaborative projects in science and engineering. The partnership will support joint research in areas such as quantum technologies, computational biomedicine, and environmental resilience, and includes shared workshops, publications and researcher exchanges across hemispheres.

Singapore to Establish Biological Data Centre Prototype

Singapore is developing a pioneering biological data centre prototype using living neurons ("wetware") to power next-generation computing and AI systems. The initiative, led by NUS Medicine, DayOne, and Cortical Labs aims to enable energy-efficient innovation across drug discovery, neuroscience, and advanced AI applications.

Australia and Canada strengthen cooperation on AI safety

Australia and Canada signed a memorandum of understanding to advance bilateral cooperation on artificial intelligence (AI) safety, establishing a framework for technical collaboration. The agreement includes information exchange, joint research on risk mitigation, and alignment with international AI safety standards, reflecting deepening science and technology ties between the two countries.

Events & Meetings



Nuclear Energy Summit 2026 Held in Paris

The Summit emphasised international science and technology cooperation, with nearly 40 countries pledging coordinated efforts to expand nuclear capacity, share R&D, and implement clean, safe, and secure nuclear technologies. Participants highlighted nuclear power's role in achieving

net-zero goals, enhancing energy security, and fostering cross-border research collaborations.

Royal Thai Embassy in Singapore Hosts Meetings on Science Diplomacy and Digital Economy Cooperation

Thailand and Singapore advanced collaboration in science, innovation, and digital economy through embassy-led meetings with key delegations. Discussions focused on tech talent development, e-commerce growth, and strengthening bilateral innovation ecosystems.

INDIAN SCIENCE NEWS

Delhi Govt Signs MoU with IIT Madras to Combat Air Pollution

The MoU aims to test innovative 'smog-eating' surfaces that can help reduce air pollution. The project will study materials containing titanium dioxide that break down harmful pollutants when exposed to sunlight.

Indian Institute of Science Education and Research-Kolkata & Jawaharlal Nehru University Research to Aid Heat-resilient Crops

Scientists from IISER Kolkata and JNU have identified key molecular regulators that allow plants to detect and respond to increased temperatures, enabling adaptive growth. This discovery of temperature-sensing mechanisms could accelerate development of heat-resilient crop varieties, which is crucial for agriculture under global warming.

IIT Hyderabad Launches MTech in AI/ML for Chemical Engineering

The programmes are designed to prepare engineering graduates for emerging roles in process industries by combining core chemical engineering concepts with skills in artificial intelligence, data science and computational modelling.

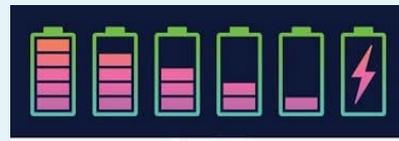
MoU Signed to Translate Basic Research on Infectious Diseases into Clinical Solutions

Jawaharlal Nehru Centre for Advanced Scientific Research and YR Gaitonde Centre for AIDS Research and Education signed an MoU to strengthen collaboration in infectious disease research. The partnership will establish the Suniti Solomon Research Laboratory in Bengaluru to bridge basic scientific research with real clinical solutions. The initiative aims to promote interdisciplinary research, training, and development of new treatments to improve public health outcomes in India.

ADVANCES IN S&T

Zirconium Sulfide Coatings Boost Lithium Battery Lifespan and Stability

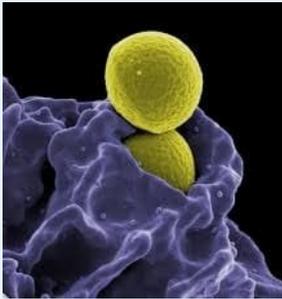
The Problem: Current lithium-ion batteries, especially those using high-energy NMC811 cathodes degrade quickly during repeated charging cycles because oxygen released from the cathode damages the electrolyte and causes structural failures, limiting lifespan, performance, and safety in applications like EVs and electronics.



The Method: Researchers at the University of Arkansas applied nanoscale zirconium sulfide coatings on NMC811 cathodes using atomic layer deposition. These coatings capture released oxygen by converting from sulfide to sulfate, stabilizing the cathode interface, preventing electrolyte decomposition, and reducing harmful reactions and microcracks.

Future Prospects: The sulfide-derived coating dramatically extended battery cycling performance (over 1,000 cycles vs ~200 for uncoated) and improved charge retention, pointing toward safer, longer-lasting lithium batteries for EVs, phones, and other devices. This approach may also guide commercial cathode development and broader interface-engineering strategies.

Nanoparticles That Seek and Destroy Diseased Immune Cells Engineered



The Problem: Traditional immune-cell therapies like CAR-T require extracting and engineering a patient's cells outside the body, a process that is expensive, complex, and slow, limiting access for many patients and diseases such as lupus and blood cancers. Researchers needed a way to reprogram immune cells inside the body to target disease-causing cells directly.

The Method: Scientists developed biodegradable polymer nanoparticles decorated with antibodies that direct them to T cells. The nanoparticles carry mRNA that instructs T cells to produce specific receptors, enabling them to identify and kill harmful B cells (which contribute to autoimmune diseases and blood cancers). When injected into mice, the particles reengineered T cells in vivo, causing large-scale elimination of B cells.

Future Prospects: This approach could lead to off-the-shelf immune therapies that bypass complex cell manufacturing, making powerful immune reprogramming treatments more affordable and scalable. If developed further, it may transform how autoimmune diseases and cancers are treated by enabling direct in-body engineering of therapeutic immune responses.

INSIGHTS & RESOURCES

Organisation for the Prohibition of Chemical Weapons Releases Report on the Impact of Artificial Intelligence on Chemical Weapons Verification

The Organisation for the Prohibition of Chemical Weapons (OPCW) released a landmark scientific advisory report on artificial intelligence and its implications for the implementation of the Chemical Weapons Convention. The report assesses how AI is reshaping chemical science, including opportunities for enhanced verification and analysis, as well as emerging risks and lays out recommendations for how the OPCW and member states can prepare and respond to rapid AI advances within the framework of international security and responsible science governance. The report highlights both opportunities to enhance verification and risks related to misuse, providing guidance for member states to adapt policies and technical capabilities.

- **AI strengthens verification capabilities:** Advanced AI algorithms can analyze complex datasets from laboratories, industry, and field inspections faster and more accurately, enabling quicker identification of chemical threats or anomalies.
- **Predictive modeling for risk assessment:** AI can forecast potential non-compliance or misuse by identifying unusual chemical production patterns before violations occur.
- **Dual-use challenges:** While AI aids peaceful chemical research, it can also be exploited to design toxic compounds or circumvent existing detection methods, raising ethical and security concerns.

- Capacity building for member states: The report emphasizes the need for technical training, updated infrastructure, and collaborative tools so countries can fully leverage AI while mitigating risks.
- Guidance for responsible integration: OPCW recommends embedding AI into CWC implementation frameworks, ensuring transparency, accountability, and international collaboration to maintain global chemical security.
- Call for ongoing research and monitoring: Continuous study of AI developments and their potential impact on chemical safety is essential to keep verification methods effective and adaptable.

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