Forum for Indian Science Diplomacy

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Science Diplomacy Alert

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

Focus

Revisiting BRICS Summit 2025

The Declaration aims for a multipolar, inclusive and equitable international order. It reflects a forward-looking approach by prioritising science, technology and innovation and technology governance, together with technological self reliance and cooperation as a key to maintaining influence in the global order. Sneha Sinha writes.

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SCIENCE POLICY & DIPLOMACY

International S&T Cooperation

India and Brazil Strengthen Ties with New Cooperation Roadmap

India and Brazil have agreed on a comprehensive roadmap to boost collaboration in defense, food security, and digitalization. The partnership aims to deepen strategic ties and foster joint innovation for mutual growth.

US Malaysia Sign MoU on Civil Nuclear Cooperation

U.S. Secretary of State Marco Rubio signed a Memorandum of Understanding with Malaysia's Foreign Minister Mohamad Hasan on civil nuclear cooperation. It marks an important step toward establishing a robust civil nuclear partnership between the United States and Malaysia.

India-Namibia Strategic S&T Agreement

PM Narendra Modi and Namibian President Netumbo Nandi-Ndaitwah signed key agreements to deepen cooperation in defense and maritime security, expand digital technology with UPI rollout, and collaborate on energy and critical minerals such as uranium, cobalt, and rare earths. They also committed to bolster agriculture, healthcare, and education, backed by new MoUs and digital infrastructure partnerships.

Emerging Tech & Governance

Quantum Teleportation Between Quantum Computers

Researchers at Oxford University created a functioning logic gate between two quantum processors located about six feet apart. It opens possibilities for quantum networks and the realization of scalable quantum systems. Quantum

teleportation transfers the state of a qubit from one qubit to another, without physically moving the particle itself.

Zoho's R&D Campus in Kerala to Deepen AI Capabilities

The Kottarakkara campus will be dedicated to strengthen R&D capabilities in AI and robotics, with an emphasis on building capabilities locally and making India self-reliant in critical technologies.

Quantum Machine Learning to Fabricate Semiconductors

Engineers at Australia's national science agency, CSIRO, showed that their approach outperformed classic AI computing currently used in semiconductor design and fabrication and could change how microchips are designed.

Events & Meetings

AI for Good Global Summit

The AI for Good Global Summit 2025 brings together governments, tech leaders, academics, civil society and young people to explore how artificial intelligence can be directed toward SDGs – and away from growing risks of inequality, disinformation and environmental strain. The UN-ITU report underlines deepfake risks, urging adoption of global multimedia verification standards, digital watermarking, and stronger international cooperation.

UNESCO's Conference on Open Science: Monitoring Progress, Assessing Impact

This conference is co-organized by UNESCO, PathOS, OpenAIRE, EOSC Track, and OSMI, with contributions from the French Ministry of Higher Education and Research and Inria (French Institute for Research in Computer Science and Automation. It serves as a platform for knowledge exchange through discussions and workshops, allowing participants to share findings, validate results, and reinforce the principles outlined in the UNESCO Recommendation on Open Science.

INDIAN SCIENCE NEWS

Research Development and Innovation (RDI) Scheme Approved

The Union Cabinet approved the scheme with a corpus of Rs. One lakh Crore. It aims to overcome the constraints and challenges in funding of the private sector and seeks to provide growth and risk capital to sunrise and strategic sectors to facilitate innovation, promote adoption of technology and enhance competitiveness.

Next-Generation Green Energy Material Engineered

Researchers injected lanthanum, a rare-earth element known for its beneficial electronic properties into silver niobate nanoparticles. This improved the material's ability to conduct electricity, thus speeding up the energy charge-discharge cycles.

IISc Develops Paper-Based Sensor to Detect Liver Cancer

Researchers have developed a unique luminescent probe that uses terbium, a rare earth metal, to sense the presence of an enzyme called β-glucuronidase, which can potentially aid in the detection of liver cancer.

GPS-Based Digital Address System

DIGIPIN uses geohashing to convert exact coordinates into short, intuitive codes. It works offline, doesn't collect personal data, and is built to handle home deliveries to emergency services and government schemes.

Low-Cost Sensor to Detect Toxic Sulphur Dioxide in Air

With its high sensitivity, portability, and user-friendly operation, this sensor system offers a practical solution to monitor and manage SO_2 pollution, supporting public health and

environmental safety.

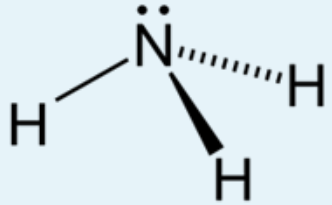
ADVANCES IN S&T

New Way to Transform Bacterial Cellulose into Multifunctional Plastic Alternative

The problem: Petroleum-based plastics accumulate as waste, degrade into microplastics, and release harmful chemicals (like BPA and phthalates), posing environmental and health risks. Many biodegradable options lack the mechanical strength, transparency, stability, or scalability needed to serve as true plastic replacements.

The Method: Researchers at the University of Houston and Rice University culture cellulose-producing bacteria in a cylindrical, rotating device. The shear flow aligns nanofibrils during growth, yielding uniform, high-performance cellulose sheets in a single, scalable step. The resulting material is strong, flexible, foldable, optically transparent, and mechanically stable over time.

Future Prospects: The new bacterial cellulose material holds strong promise for replacing plastics in packaging, textiles, and electronics due to its strength, transparency, and biodegradability. Its scalable, single-step production process allows for easy customization with functional additives. This positions it as a sustainable, high-performance material for diverse industrial applications. Future efforts will focus on commercialization and expanding its multifunctional capabilities.



Human-made Lighting for Green Ammonia

The Problem: Industrial ammonia production via the Haber–Bosch process relies heavily on fossil fuels, requires extreme heat and pressure, and accounts for roughly 2 per cent of global carbon emissions—posing major environmental and logistical challenges.

The Method: University of Sydney researchers have developed a two-step "artificial lightning" process which includes plasma excitation of air (nitrogen + oxygen) that mimics lightning to create reactive species. A membrane-based electrolyzer then converts these excited molecules directly into gaseous ammonia at room temperature—skipping the inefficient liquid-phase routes. This method bypasses fossil-fuel-derived hydrogen and centralised Haber–Bosch plants, enabling greener and more flexible production.

Future Prospects: This plasma-electrolysis approach could decentralize ammonia production—enabling small-scale, on-site fertilizer generation for farms and rural communities. It also holds promise as a clean hydrogen carrier and potential low-carbon fuel for shipping, provided further improvements boost energy efficiency to rival Haber–Bosch.

INSIGHTS & RESOURCES

Rio De Janeiro Declaration 2025

The “Rio de Janeiro Declaration” was signed by leaders from 11 member countries, outlining 126 commitments to strengthen global governance across politics, security, economy, finance, culture, health, AI, and climate. Key highlights include:

- BRICS called for expanded UN Security Council representation for Global South nations, IMF quota realignment, World Bank shareholdings, WTO reform, and a revamped multilateral system.

- Leaders endorsed the Framework Declaration on Climate Finance to mobilize funds for developing nations. They backed Brazil's Tropical Forests Forever Facility and pushed for carbon markets, accounting principles, and a legally binding plastics treaty.

- The summit featured a BRICS-wide statement on global AI governance aimed at inclusive, trusted frameworks that respect developing countries' needs—promoting capacity-building and risk mitigation.

- A new "Partnership for the Elimination of Socially Determined Diseases" was launched to reduce health disparities caused by poverty and social exclusion.

- BRICS strengthened cooperation on cross-border payments, local currency trade, carbon market linkages, and the New Development Bank's local currency financing and investment guarantees.

ICSSR and NSTC Joint Call for Research Proposals

The Indian Council of Social Science Research and National Science and Technology Council, Taipei, Taiwan signed a memorandum of understanding to encourage bilateral cooperation in the field of social sciences and exchange visits, exchanges of scholars and promote bilateral joint research projects. Under this, research proposals are invited for grants for joint research projects on new and emerging themes of mutual importance and strengthening of relationships between Indian and Taiwanese researchers in the field of Social Sciences and Humanities.

We welcome your comments and valuable suggestions. Please write to us for receiving publications, up dates and notices regarding seminars, conferences etc. Contact us at science.diplomacy@ris.org.in.

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