



New, Emerging & Strategic Technologies Division

Ministry of External Affairs

Government of India

TECH

PULSE

NEST NEWSLETTER

FEBRUARY 2026



Key Highlights

- *AI breakthrough could replace rare earth magnets in electric vehicles*
- *New Delhi Declaration at India AI Impact Summit 2026*
- *Scientists engineer bacteria to eat cancer tumors from the inside out*
- *Scientists build a 'periodic table' for AI*
- *The Quantum Clock: How Scientists Discovered the True Speed of Time*

CONTENTS

ARTIFICIAL INTELLIGENCE

03

International

1. *AI breakthrough could replace rare earth magnets in electric vehicles*
2. *Brain-inspired Device Could Lead to Faster, More Energy-efficient AI Hardware*
3. *Scientists build a 'periodic table' for AI*

BIOTECHNOLOGY & HEALTH

05

International

4. *Babies aged two months see the world in a more complex way than scientists thought, study suggests*
5. *Scientists found a way to plant ideas in dreams to boost creativity*
6. *Scientists engineer bacteria to eat cancer tumors from the inside out*

CLEAN ENERGY

07

International

7. *New calcium-ion battery design delivers high performance without lithium*
8. *Sodium-ion battery breakthrough could power greener energy – and even make seawater drinkable*

National

9. *Newly discovered unusual mechanism of heat transport in solids can enable ultra-efficient thermal insulators*
10. *Scientists unlock new cathode material enabling Zinc-Ion Batteries for grid storage*

QUANTUM & PHOTONICS

10

International

11. *Majorana qubits decoded in quantum computing breakthrough*
12. *The Quantum Clock: How Scientists Discovered the True Speed of Time*

National

13. *Novel environment friendly, photodetector with self-powered operation can be useful for consumer electronics*
14. *Simple tweak, brings big leap for electro-optics*

SEMICONDUCTORS

12

International

15. *Scientists create ultra-low loss optical device that traps light on a chip*

SPACE & DEFENCE

13

National

- 16. DRDO conducts successful qualification test for Gaganyaan Drogue parachute
- 17. DRDO carries out successful demonstration of Solid Fuel Ducted Ramjet technology

REPORTS/POLICY DOCUMENTS

15

International

- 18. Google Publishes 2026 Responsible AI Progress Report as EU AI Act Enforcement Nears
- 19. WEF - Organizational Transformation in the Age of AI: How Organizations Maximize AI's Potential
- 20. World Intellectual Property Report - Technology on the Move

National

- 21. NITI Aayog - India's Technology Services – Reimagination Ahead

TECHNOLOGY ENGAGEMENTS/DEVELOPMENTS

18

International

- 22. Infosys and Anthropic Announce Collaboration to Unlock AI Value across Complex, Regulated Industries

National

- 23. Casebook on AI and Gender Empowerment Launched at India AI Impact Summit 2026 - Joint Initiative of MeitY and UN Women
- 24. India's First State Innovation Mission (SIM) in Tripura
- 25. India and Sweden Deepen AI Partnership Through SITAC Framework
- 26. Indian AI Startup Sarvam Debuts 105B Sovereign Model and Indus Beta
- 27. Milestones and Missteps: Summarizing the India AI Impact Summit 2026
- 28. Tata group and OpenAI forge foundational partnership to advance AI transformation in India and globally

WHAT'S UPCOMING

23

- 29. Nasscom GCC Summit 2026, 6-7 May, 2026, Mumbai
- 30. Bengaluru Tech Summit, 17-19 November 2026



→ The Tech Showcase!

ARTIFICIAL INTELLIGENCE

International

1. *AI breakthrough could replace rare earth magnets in electric vehicles*

Scientists at the University of New Hampshire have used artificial intelligence to accelerate the discovery of new magnetic materials, potentially reducing reliance on rare earth elements in technologies like electric vehicles.



The research produced a large searchable resource called the Northeast Materials Database. It contains data on 67,573 magnetic compounds, including 25 newly identified materials that remain magnetic at high temperatures. These high temperature magnets are especially valuable for applications such as motors and energy systems, where performance under heat is critical.

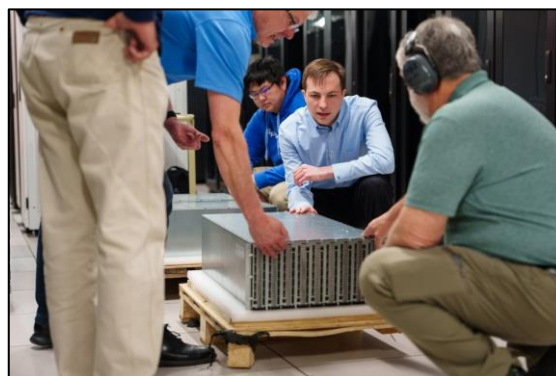
Magnets are essential in many modern devices, including smartphones, power generators, and electric vehicles. However, the strongest magnets today rely on rare earth elements, which are expensive and difficult to source. Finding alternatives has been a major challenge because of the vast number of possible material combinations. To address this, the researchers developed an AI system capable of analyzing scientific literature and extracting key experimental data. The system then predicted whether materials are magnetic

and determined the temperatures at which they lose their magnetism. This approach dramatically reduces the need for time consuming laboratory experiments. The discovery of new high temperature magnetic materials opens the possibility of developing cheaper and more sustainable technologies. By reducing dependence on rare earth elements, the work could lower costs and improve supply stability for industries such as renewable energy and transportation. The study highlights how AI can transform materials science by speeding up discovery and enabling more efficient design of critical components for future technologies. [Read More](#)

2. *Brain-inspired Device Could Lead to Faster, More Energy-efficient AI Hardware*

Neuromorphic computers modeled on the human brain can now solve complex scientific equations once reserved for supercomputers. This breakthrough suggests powerful computing could be achieved with far less energy.

Researchers at Sandia National Laboratories developed a new algorithm that allows brain inspired hardware to handle partial differential equations, which are essential for simulating physical systems like weather, fluid dynamics, and structural behavior.



Neuromorphic computing systems, designed to mimic how the brain processes information, have traditionally been used for pattern recognition and artificial intelligence tasks. However, the new study published in Nature Machine Intelligence demonstrates that these systems can also perform mathematically intensive computations efficiently. Partial differential equations, which typically require large scale supercomputers and significant energy, can now be solved using this alternative approach.

The researchers argue that this capability aligns with how the human brain already performs complex calculations in everyday activities such as motor control. These findings challenge previous assumptions that neuromorphic systems were unsuitable for rigorous mathematical tasks.

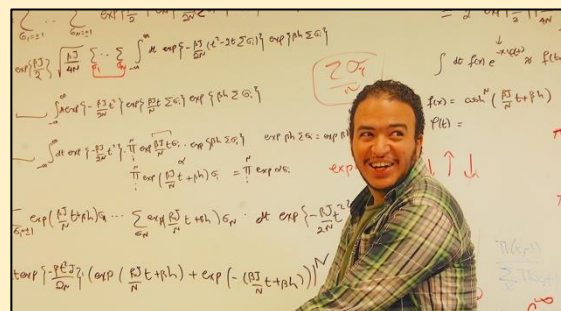
This advancement has important implications for energy efficient computing, particularly in national security applications supported by the National Nuclear Security Administration. Current supercomputers consume vast amounts of electricity to simulate nuclear systems and other critical scenarios. Neuromorphic systems could significantly reduce this energy demand while maintaining strong performance. [Read More](#)

3. *Scientists build a ‘periodic table’ for AI*

Researchers at Emory University have introduced a physics inspired framework that organizes AI methods like a periodic table, helping developers choose and design better multimodal systems. It shows many techniques share a common principle of compressing data while preserving what matters most.

The study addresses a major challenge in multimodal AI, where systems must combine text, images, audio, and video. Selecting the right algorithm has traditionally relied on trial and error. The

researchers discovered that many successful AI methods follow the same core idea: reduce data complexity while keeping the most predictive information. This insight allows different techniques to be organized systematically, similar to how elements are arranged in a periodic table.



Central to the framework is the Variational Multivariate Information Bottleneck, which acts like a control mechanism for deciding what information to retain or discard. By adjusting this balance, developers can tailor AI models to specific tasks. The framework also clarifies the role of loss functions, which measure how accurately a model predicts outcomes and guide its training process.

Using this approach, researchers can design new algorithms, predict their performance, estimate required training data, and identify potential weaknesses. The framework also improves efficiency by eliminating unnecessary data, reducing computational demands and energy use. This could make AI systems more environmentally sustainable and accessible for problems with limited data.

The work reflects a physics driven effort to uncover unifying principles behind machine learning, focusing not just on performance but on understanding why models work. Initial tests show the framework can identify important shared features across datasets and support effective model design. [Read More](#)

BIOTECHNOLOGY & HEALTH

International

4. *Babies aged two months see the world in a more complex way than scientists thought, study suggests*

Two month old babies can already organize what they see into meaningful categories, according to new brain imaging research. This suggests that learning and perception begin much earlier than previously believed.



Scientists at Trinity College Dublin, working through the Trinity College Institute of Neuroscience, used functional MRI scans to study brain activity in 130 infants. The findings, published in *Nature Neuroscience*, show that even at this early age, babies form distinct neural patterns

when viewing different types of objects such as animals, toys, and everyday items. This indicates that the foundations of visual cognition are already in place well before language or deliberate movement develops.

During the study, awake infants viewed colorful images while researchers recorded their brain activity. The data revealed that babies were not only processing how objects look but also grouping them into categories. This challenges earlier assumptions that such cognitive abilities emerge later in development.

Artificial intelligence played a key role in interpreting the results. By comparing infant brain activity with computational models of visual recognition, researchers were able to identify how category distinctions form in the brain. This approach provided a rare window into infant thinking, which is typically difficult to measure.

The study represents one of the largest efforts to use fMRI on awake infants and offers a new method for exploring early cognition. Researchers suggest that understanding how babies learn so efficiently could inspire improvements in AI systems, making them more effective and less resource intensive.

Beyond AI, the findings have important implications for developmental science and medicine. They may help guide early education strategies and improve the diagnosis and understanding of neurodevelopmental conditions. [Read More](#)

5. *Scientists found a way to plant ideas in dreams to boost creativity*

Researchers at Northwestern University have demonstrated that dreams can be gently guided during sleep, potentially improving creative problem solving. By using subtle sound cues during REM sleep, they were able to influence dream content and increase the likelihood of solving previously unsolved puzzles.



The study used a technique called targeted memory reactivation. Participants first attempted difficult brain teasers, each paired with a unique sound. While they slept, researchers monitored brain activity and replayed selected sounds during REM sleep to reactivate specific memories. As a result, 75 percent of participants reported dreaming about the cued puzzles.

Performance improved significantly for these dream related problems. Participants solved 42 percent of puzzles that appeared in their dreams, compared to only 17 percent of uncued puzzles. In a subgroup of participants whose dreams clearly reflected the cues, success rates doubled from 20 percent to 40 percent. These findings suggest that influencing dream content may support creative thinking, although the study does not prove that dreaming directly causes better solutions.

The experiment involved 20 participants experienced in lucid dreaming, though strong effects were also observed in non lucid dreams. Dream reports often included imagery connected to the cues, such as forests or interactions with dream characters related to the puzzles. Some participants even signaled during sleep that they were actively working on problems.

Overall, the research provides new evidence that REM sleep plays an active role in creativity and problem solving. It also opens possibilities for using sleep based techniques to enhance learning, emotional processing, and mental well being. [Read More](#)

6. ***Scientists engineer bacteria to eat cancer tumors from the inside out***

Scientists at the University of Waterloo are developing a novel cancer treatment that uses engineered bacteria to destroy tumors from within. By exploiting the oxygen free environment inside tumors, the approach

allows microbes to grow and consume cancerous tissue.



The method centers on *Clostridium sporogenes*, a bacterium that thrives only in environments without oxygen. Since the cores of many solid tumors lack oxygen and contain abundant nutrients, they provide ideal conditions for these bacteria to multiply. Once inside, the microbes colonize the tumor and begin breaking it down from the inside.

A key challenge arises as the bacteria spread outward toward parts of the tumor exposed to oxygen, where they typically die off. To overcome this, researchers introduced a gene from a more oxygen tolerant bacterium, enabling the engineered microbes to survive longer in these regions. However, to ensure safety, this feature must activate only at the right time.

To control this process, the team used quorum sensing, a natural bacterial communication system. As bacteria accumulate inside the tumor, they release chemical signals that increase in concentration. Only when enough bacteria are present does this signal trigger the oxygen tolerance gene. This ensures the bacteria remain inactive in oxygen rich environments like the bloodstream and activate only within the tumor.

The researchers describe their design as similar to a biological circuit, built from DNA components that work together predictably. Early experiments confirmed that the system can switch on at the intended moment.

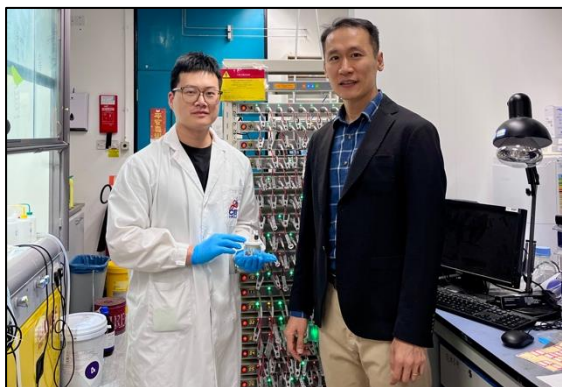
This work represents a step toward a new form of targeted cancer therapy. Future research will combine these features into a single organism and test it in preclinical studies, with the goal of creating safer and more effective treatments. [Read More](#)

CLEAN ENERGY

International

7. *New calcium-ion battery design delivers high performance without lithium*

Scientists at Hong Kong University of Science and Technology have developed a new calcium ion battery design that could provide a safer and more sustainable alternative to lithium based energy storage. The breakthrough addresses long standing issues that have limited the performance of calcium batteries.



The study focuses on replacing traditional liquid electrolytes with a quasi solid state electrolyte built from redox active covalent organic frameworks. These materials create structured pathways that allow calcium ions to move more efficiently. This improves both ion transport and stability, two major challenges that have previously prevented calcium ion batteries from competing with lithium ion systems.

Calcium is an abundant element and offers similar electrochemical potential to lithium, making it an attractive candidate for large scale energy storage. However, calcium

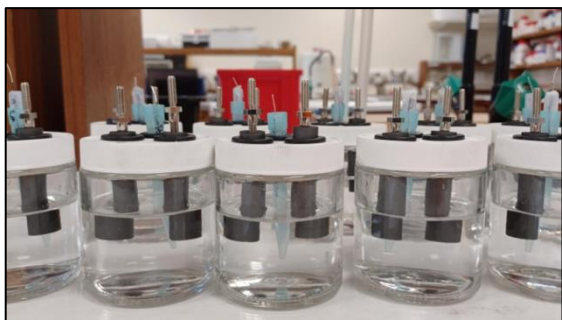
ions are harder to move within battery materials, and maintaining consistent performance over repeated charge cycles has been difficult. The new design overcomes these barriers by enabling fast ion movement along organized molecular structures.

The resulting battery demonstrated strong performance, including a high storage capacity and the ability to retain over 74 percent of its capacity after 1,000 charge cycles. These results indicate that calcium ion batteries could become viable for demanding applications such as renewable energy storage and electric vehicles.

The research represents a significant step toward reducing reliance on lithium, whose supply and cost pose long term concerns. By improving efficiency, durability, and material availability, this innovation could support cleaner and more scalable energy systems in the future. [Read More](#)

8. *Sodium-ion battery breakthrough could power greener energy and even make seawater drinkable*

Scientists at the University of Surrey have discovered a simple but unexpected way to significantly improve sodium ion batteries by keeping water inside a key material. The finding could help sodium based systems compete with lithium batteries while enabling new applications such as seawater desalination.



The study is focused on sodium vanadium oxide, a common battery material. Traditionally, water is removed from this compound during preparation because it was believed to reduce performance. However, researchers found that retaining the water creates a hydrated form called sodium vanadate hydrate, which performs far better. This version stores nearly twice as much energy, charges faster, and remains stable over more than 400 cycles.

The improvement comes from how the hydrated structure supports ion movement, enhancing both efficiency and durability. These results place the material among the highest performing sodium ion battery cathodes reported so far.

In addition to energy storage, the researchers demonstrated that the system can operate in seawater. During testing, the battery removed sodium ions while a graphite electrode extracted chloride ions, effectively performing electrochemical desalination. This suggests future devices could both store energy and produce fresh water at the same time.

Because sodium is abundant, inexpensive, and environmentally friendly compared to lithium, this advancement could accelerate the development of safer and more scalable batteries. Potential applications include renewable energy storage and electric vehicles.

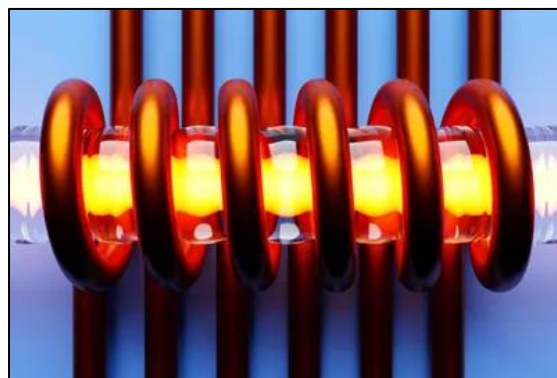
The research highlights how revisiting basic assumptions in material design can lead to major improvements, bringing

practical sodium ion battery technology closer to widespread use. [Read More](#)

National

9. *Newly discovered unusual mechanism of heat transport in solids can enable ultra-efficient thermal insulators*

Scientists at the Jawaharlal Nehru Centre for Advanced Scientific Research have discovered a new mechanism of heat transport in solids that challenges long standing theories and could lead to ultra efficient thermal insulators.



The research shows that heat in certain materials does not always move in the traditional particle like way. Normally, heat is carried by phonons that behave like particles scattering through a crystal lattice. However, in the material Tl_2AgI_3 , researchers observed a transition where phonons instead move in a wave like manner, tunnelling between localized vibrations.

This unusual behavior arises from the material's unique crystal structure, which consists of cluster like building blocks rather than a continuous network. Strong repulsion between positively charged atoms creates local distortions and highly anharmonic vibrations. These distortions disrupt normal phonon motion, causing particle based heat transport to collapse and giving rise to wave like coherent transport.

As temperature increases, this effect becomes more pronounced. Instead of decreasing steadily, the material's thermal conductivity stabilizes, indicating a shift from conventional transport to a regime dominated by phonon coherence. The material effectively behaves like both a crystal and a glass, maintaining ordered structure while conducting heat inefficiently.

The researchers confirmed this phenomenon using advanced experimental techniques and theoretical modeling, including a specialized transport equation to distinguish between particle and wave contributions. They found that wave driven heat transport becomes dominant at higher temperatures.

This discovery introduces a new strategy for designing materials with extremely low thermal conductivity. Such materials are valuable for thermoelectric devices, which convert heat into electricity, and for thermal management systems that require strong insulation.

The work reveals that heat transport in solids can operate in previously unknown regimes, opening new possibilities for controlling heat flow in advanced technologies. [Read More](#)

10. Scientists unlock new cathode material enabling Zinc-Ion Batteries for grid storage

Researchers at the Centre for Nano and Soft Matter Sciences have developed a new cathode material that significantly improves the performance of aqueous zinc ion batteries, offering a promising solution for large scale renewable energy storage.

The study focuses on a modified form of molybdenum disulfide known as sulfur vacancy induced 1T phase MoS₂. This material was synthesized as nanoflakes

with a high surface area and improved electrical conductivity, enabling faster electrochemical reactions and greater energy storage capacity.



Aqueous zinc ion batteries are considered attractive alternatives to lithium based systems because they use water based electrolytes, making them safer, cheaper, and more environmentally friendly. Zinc is also abundant and can be used directly as the anode. However, progress has been limited by the lack of efficient and durable cathode materials.

The newly developed material addresses this challenge by enhancing ion transport and stability. The researchers also optimized the battery's operating voltage range, identifying an ideal window that supports stable performance. As a result, the battery demonstrated strong durability, retaining nearly 98 percent of its capacity after 500 charge and discharge cycles, along with very high efficiency.

To demonstrate practical use, the team built a prototype coin cell that successfully powered a small electronic device. This confirms the material's potential for real world applications.

Overall, the breakthrough provides a pathway toward affordable and reliable energy storage systems. By improving zinc ion battery technology, it could support the expansion of renewable energy sources such as solar and wind by enabling efficient grid level storage. [Read More](#)

QUANTUM & PHOTONICS

International

11. *Majorana qubits decoded in quantum computing breakthrough*

Researchers from the Spanish National Research Council have achieved a major breakthrough in quantum computing by successfully reading the state of Majorana qubits, a long elusive form of quantum information storage. This advance confirms their stability and brings more reliable quantum computers closer to reality.



Majorana qubits are based on Majorana zero modes, where information is stored across two linked quantum states rather than in a single location. This structure makes them highly resistant to noise and decoherence, one of the biggest challenges in quantum computing. However, this same feature has made them extremely difficult to measure, since the information is not localized.

To solve this problem, the researchers developed a method using quantum capacitance, which acts as a global probe of the system. This allowed them to determine the qubit's state in a single measurement. The team built a controlled nanostructure called a Kitaev minimal chain, made from semiconductor quantum dots connected by a superconductor. This setup enabled precise creation and manipulation of Majorana modes.

Using this system, scientists were able to observe the qubit's parity, meaning whether its quantum state was occupied or empty. They also detected random changes in this parity and measured coherence times exceeding one millisecond. This indicates that the qubits can maintain their quantum state long enough to be useful for computation.

Overall, the work demonstrates both the protected nature of Majorana qubits and a practical way to read them. This represents a key step toward building scalable and fault-tolerant quantum computers that can operate reliably in real-world conditions.

[Read More](#)

12. *The Quantum Clock: How Scientists Discovered the True Speed of Time*

Physicists at Ecole Polytechnique Fédérale de Lausanne have developed a new way to measure how long quantum events last, revealing that these processes are not instantaneous and depend on the structure of the material involved.



At the quantum level, events such as electrons absorbing light and changing energy states occur in attoseconds, extremely short timescales. Measuring these durations has been difficult because traditional timing methods can interfere with fragile quantum systems. To overcome this, the researchers created a technique that does not rely on an external clock. Instead, they analyzed changes in the spin of

electrons emitted from a material after absorbing light.

Using a method called spin and angle resolved photoemission spectroscopy, the team observed how multiple quantum pathways interfere during these transitions. This interference leaves measurable signatures in the electron's spin, allowing scientists to calculate how long the transition takes.

The experiments showed that the duration of quantum events varies significantly depending on atomic structure. In a three dimensional material like copper, transitions occurred very quickly, around 26 attoseconds. In layered materials such as titanium diselenide and titanium ditelluride, the same process took much longer, between about 140 and 175 attoseconds. In a simpler chain like material, copper telluride, transitions exceeded 200 attoseconds.

These results demonstrate that quantum time is not universal but influenced by the geometry and symmetry of materials. Simpler or lower dimensional structures tend to slow down quantum processes.

Overall, the study provides a new way to probe time in quantum mechanics and offers insight into how electronic behavior can be controlled. This could help guide the design of advanced materials and technologies that rely on precise manipulation of quantum states. [Read More](#)

National

13. Novel environment friendly, photodetector with self-powered operation can be useful for consumer electronics

Researchers at the International Advanced Research Centre for Powder Metallurgy and New Materials, in collaboration with IIT Hyderabad, have developed an eco friendly, self powered photodetector that

avoids the use of toxic lead while maintaining strong performance and stability.

The study introduces a device based on a lead free double perovskite material, Cs₂AgBiBr₆. Photodetectors are essential components in technologies such as cameras, sensors, and wearable devices, but many high performance versions rely on lead based materials that pose environmental and durability concerns. This new design addresses those issues by using a safer alternative without compromising functionality.



The device features a simplified structure that eliminates the need for hole transport materials and expensive metal electrodes. Instead, it uses low cost carbon electrodes and can be fabricated at room temperature through a straightforward one step coating process. This reduces manufacturing complexity and cost while making production more environmentally friendly.

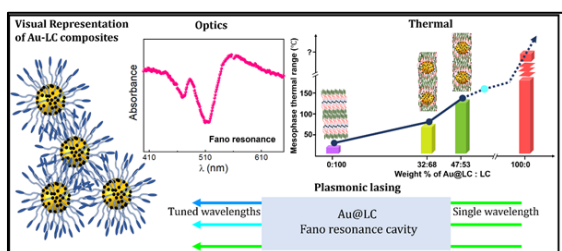
A key advantage of the design is its ability to operate without an external power source. The architecture naturally enables efficient separation of electrical charges when exposed to light, allowing the photodetector to generate its own power during operation.

Performance tests showed strong sensitivity to visible light and reliable switching behavior. The device also demonstrated excellent durability, retaining more than 90 percent of its performance after 60 days under normal environmental conditions.

Overall, the combination of non toxic materials, low cost fabrication, and long term stability makes this photodetector a promising candidate for consumer electronics, industrial monitoring, security systems, and biomedical imaging. It also supports broader goals of sustainable manufacturing and advanced electronic development. [Read More](#)

14. Simple tweak, brings big leap for electro-optics

Researchers at the Centre for Nano and Soft Matter Sciences have developed a new gold liquid crystal hybrid material with significantly improved thermal stability and optical properties, offering potential for next generation electro optical technologies.



The study focuses on combining nanotechnology with soft materials to create a nano soft hybrid system. The team used molecular engineering to design an amine functionalized liquid crystal that both forms and stabilizes gold nanoparticles within the material. This approach eliminates the need for additional chemical

agents and simplifies the fabrication process.

This simple modification led to major improvements in performance. The hybrid material showed a dramatic increase in thermal stability, extending its usable temperature range from about 27 degrees Celsius in standard liquid crystals to 145 degrees Celsius. It also exhibited enhanced optical behavior, including a rare phenomenon known as Fano like resonance, which enables unique interactions with light.

These properties make the material highly suitable for advanced optical applications. Potential uses include plasmonic lasers, highly sensitive detection systems for chemicals and biological markers, and devices that precisely control light propagation. Such capabilities are important for fields like nano photonics, sensing technologies, and biomedical imaging.

Overall, the research demonstrates how small changes in molecular design can produce large functional gains. The work provides a more accessible and scalable pathway for creating high performance optical materials, supporting future developments in energy efficient electronics and advanced sensing systems.

[Read More](#)

SEMICONDUCTORS

International

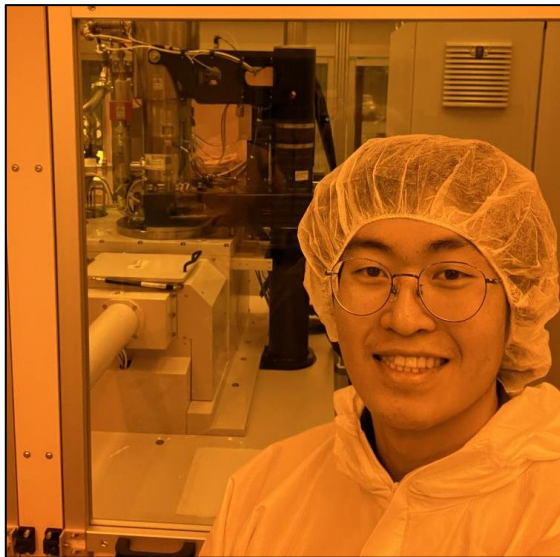
15. Scientists create ultra-low loss optical device that traps light on a chip

Researchers at the University of Colorado Boulder have developed an ultra low loss optical device that can trap and amplify

light on a chip, enabling more efficient photonic technologies.

The study introduces microscopic structures called microresonators. These devices confine light in a small loop, allowing it to circulate and build intensity. The team designed “racetrack” shaped resonators with smooth curves inspired by

highway engineering, known as Euler curves, which reduce energy loss caused by sharp bends.



This design significantly improves performance by keeping light circulating for longer periods. As a result, the device can achieve higher optical intensity using less input power, which is critical for applications such as sensing and signal processing.

A key factor in the breakthrough is the use of chalcogenide glass, a material known for its high transparency and strong interaction

with light. Combined with advanced fabrication techniques like electron beam lithography, the researchers achieved extremely precise structures at the nanoscale, minimizing imperfections that could disrupt light flow.

Testing showed sharp and stable resonance signals, indicating that light was efficiently trapped within the device. This level of performance places the resonators among the best in their class.

The technology has wide ranging potential applications. It could enable compact microlasers, highly sensitive chemical and biological sensors, and components for quantum photonics systems. These devices may also help integrate multiple optical functions onto a single chip, advancing miniaturized and energy efficient technologies.

Overall, the research demonstrates how careful design and material choice can dramatically improve light control at microscopic scales, opening new possibilities for advanced optical and quantum systems. [Read More](#)

SPACE & DEFENCE

National

16. DRDO conducts successful qualification test for Gaganyaan Drogue parachute

India has successfully tested a key parachute system for its human spaceflight mission, marking progress toward safe crew return. The test confirmed strong design reliability and added safety margins.

The Defence Research and Development Organisation conducted a qualification level load test of the drogue parachute for the Gaganyaan programme in Chandigarh,

in collaboration with the Indian Space Research Organisation. The drogue parachute plays a critical role in stabilizing and slowing the spacecraft during its descent back to Earth.





The test simulated loads even higher than what the parachute would experience during actual flight. Successfully withstanding these conditions demonstrates a strong safety margin in the design, ensuring reliability under extreme conditions. The effort also involved the Aerial Delivery Research and Development Establishment and teams from the Terminal Ballistics Research Laboratory.

Officials noted that the achievement highlights India's growing capability in designing and manufacturing advanced high strength ribbon parachutes. Such systems are essential for human space missions, where safe re entry and landing are critical.

Rajnath Singh praised the successful test, describing it as an important step toward strengthening technological self reliance under the Atmanirbhar Bharat initiative.

The successful qualification test represents a key milestone in the Gaganyaan mission, bringing India closer to launching and safely returning astronauts using domestically developed technologies. [Read More](#)

17. DRDO carries out successful demonstration of Solid Fuel Ducted Ramjet technology

India has successfully demonstrated a key missile propulsion technology, strengthening its advanced defence capabilities. The test confirms progress toward developing long range, high speed air to air missiles..

The Defence Research and Development Organisation carried out a successful flight demonstration of Solid Fuel Ducted Ramjet technology at the Integrated Test Range in Chandipur, Odisha. This achievement places India among a select group of nations capable of developing this advanced propulsion system.

The Solid Fuel Ducted Ramjet enables missiles to travel at high speeds over long distances by using atmospheric oxygen for combustion, improving efficiency compared to conventional rocket systems. During the test, the missile system was first accelerated to the required speed using a booster motor, after which the ramjet engine took over propulsion.



All critical subsystems, including the nozzle less booster, ramjet motor, and fuel flow controller, performed as expected. Flight performance was closely monitored using tracking instruments along the Bay of Bengal coast, confirming the system's reliability and effectiveness.

This technology is particularly important for next generation air to air missiles, as it allows sustained high speed flight and extended range, providing a tactical advantage in combat scenarios.

Overall, the successful demonstration marks a significant milestone in India's defence research, enhancing indigenous technological capabilities and contributing to strategic self reliance. [Read More](#)

REPORTS/POLICY DOCUMENTS

International

18. *Google Publishes 2026 Responsible AI Progress Report as EU AI Act Enforcement Nears*

Google's 2026 Responsible AI Progress Report outlines how the company is embedding AI safety and governance across its entire product lifecycle. The report highlights stronger controls for advanced AI systems, expanded testing, and preparation for upcoming regulations like the EU AI Act.



The report from Google marks a shift from broad AI principles to detailed, operational governance. Building on its 2018 AI Principles, the company now integrates oversight into every stage of AI development, including research, testing, deployment, and post launch monitoring. This includes large scale adversarial testing, with over 350 red teaming exercises conducted in 2025 across different AI systems.

A major focus is on managing risks from advanced and agentic AI. Systems like Gemini 3 are described as highly secure, supported by updated safety frameworks that classify risks using defined capability levels. New safeguards include tools that prevent AI actions misaligned with user intent, restrict data access, and require

human approval for sensitive operations. Google also introduced an AI Vulnerability Reward Program to identify and address potential risks.

The company expanded its Secure AI Framework into SAIF 2.0, adding guidance for autonomous systems and sharing risk data with industry partners. It also strengthened content authenticity measures through SynthID, which embeds watermarks in AI generated media, and contributions to global standards for content verification.

Beyond safety, the report highlights real world AI applications in areas such as flood forecasting, healthcare screening, and scientific research. These examples demonstrate how AI is increasingly integrated into critical systems.

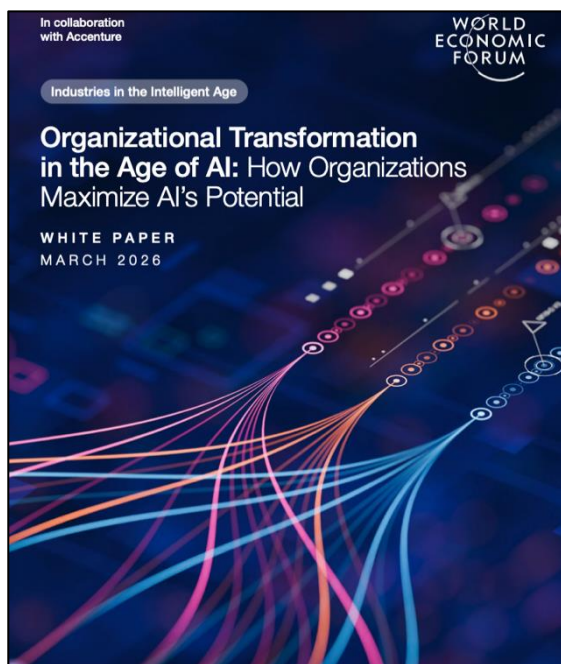
The report reflects a broader transition from experimentation to large scale deployment of AI. With the EU AI Act set to take effect soon, Google positions responsible AI governance as essential for compliance, trust, and long term adoption. [Download Report](#)

19. *WEF - Organizational Transformation in the Age of AI: How Organizations Maximize AI's Potential*

In 2026, artificial intelligence has moved from experimentation to delivering measurable business value, with organizations increasingly embedding it into core workflows. The focus is now on transforming how work, decisions, and operating models are structured to fully realize AI's potential.

The report from the World Economic Forum draws on insights from over 450 executives and shows a clear shift in how AI is used. Companies are moving away

from isolated use cases toward integrated systems that span customer experience, operations, research and development, strategic planning, and talent management. This transition also reflects a move from one time initiatives to continuous processes, and from simple task automation to enhancing human driven value creation.



To enable large scale adoption, the report identifies five key principles. First, human accountability ensures that people remain responsible for AI driven outcomes. Second, organizations must redesign operating models end to end, rather than adding AI onto existing structures. Third, scalable talent systems are needed to build skills and support widespread use of AI. Fourth, transparency is essential to build trust in AI systems. Finally, disciplined experimentation allows organizations to test, learn, and refine AI applications effectively.

Together, these principles help organizations achieve sustained productivity, resilience, and growth. The report emphasizes that maximizing AI's benefits requires not just technological

adoption but fundamental organizational transformation. [Download Report](#)

20. WIPO - World Intellectual Property Report : Technology on the Move

The World Intellectual Property Report 2026 explains how technology diffusion is accelerating globally while highlighting both opportunities and gaps for countries like India.



Globally, the report shows that technologies are spreading faster than ever. Innovations that once took decades to reach global markets now spread within years or even days due to digital infrastructure. Knowledge flows across borders have also accelerated significantly, with the time for international knowledge transfer roughly halving over the past 50 years. However, innovation remains concentrated in a few leading regions such as the United States, Western Europe, and Japan.



A key insight is that while adoption is speeding up, the ability to absorb and reuse knowledge varies widely. Leading economies not only innovate but also quickly build on global discoveries, reinforcing their advantage.

The report notes that India, along with other Asian economies, is increasingly building on its own technological knowledge rather than relying entirely on foreign sources, indicating growing domestic innovation capability.

However, India still faces significant challenges in fully benefiting from global knowledge flows. It lags behind leading economies in reusing foreign breakthrough technologies, showing limitations in absorptive capacity such as skills, infrastructure, and innovation ecosystems.

The report also highlights that innovation originating in India is often adopted faster by advanced economies than within India itself. For example, the United States can reuse Indian breakthrough inventions much more quickly, reflecting stronger capabilities in leveraging new knowledge.

At the same time, India is actively participating in global scientific and technological networks, contributing to and drawing from international knowledge flows, though at a smaller scale compared to global leaders.

Overall, the report suggests that countries like India have a strong potential to benefit from faster global technology diffusion but must strengthen its ability to absorb, adapt, and scale innovations. This requires investment in skills, research, infrastructure, and policy frameworks to translate access to technology into sustained economic growth. [Download Report](#)

National

21. NITI Aayog - India's Technology Services - Reimagination Ahead

NITI Aayog has released a ten year roadmap outlining how the country's technology services sector can expand significantly in the AI era. The plan aims to grow the industry from about 265 billion dollars today to 750 to 850 billion dollars by 2035, positioning it as a central pillar of the Viksit Bharat 2047 vision.



The roadmap highlights a major structural shift driven by artificial intelligence. Traditional labour driven services are expected to give way to models focused on intellectual property, outcomes, and platform based delivery. This transition presents an opportunity for India to move beyond its role as a global services provider toward becoming a leader in building AI native systems.

Five key growth levers are identified to guide this transformation. These include agentic AI, software and product development, digital infrastructure, innovation led engineering, and solutions tailored for domestic needs. Together, these areas are intended to drive higher value creation and global competitiveness.



To enable this shift, the roadmap emphasizes coordinated action between government and industry. Key priorities include accelerating enterprise adoption of AI, increasing investment in research and intellectual property, reskilling the workforce at scale, and ensuring regulatory clarity to support global market access.

Government leaders stress that India is at a pivotal moment in its technology journey. The strategy focuses on building a full stack AI ecosystem spanning infrastructure, chips, models, and applications, with the technology services sector acting as a

bridge between innovation and real world deployment.

Overall, the roadmap reflects a transition from incremental growth to a comprehensive reinvention of the sector. By aligning policy, industry capabilities, and talent development, India aims to capture new value pools, generate high quality employment, and establish itself as a global leader in next generation technology services. [Download Report](#)

TECHNOLOGY ENGAGEMENTS/DEVELOPMENTS

International

22. *Infosys and Anthropic Launch Telecom-First Enterprise AI Partnership as AI Revenue Hits 5.5%*



Infosys and Anthropic have announced a major enterprise AI partnership focused initially on the telecom sector, signaling a shift toward large scale, revenue generating AI deployment in regulated industries.

The collaboration integrates Anthropic's Claude models, including Claude Code and Claude Cowork, with Infosys Topaz, the company's AI first platform. This setup enables automation of complex enterprise workflows, faster software development, and improved governance. The models are deployable across major cloud platforms, ensuring flexibility for enterprise clients.

A key focus of the partnership is agentic AI, where systems can handle multi step, long running tasks rather than simple queries. These AI agents are designed for real world applications such as claims processing, compliance checks, automated testing, and enterprise documentation. The telecom sector will be the first area of deployment, with planned expansion into financial services, manufacturing, software development, and broader enterprise operations.

India plays a central role in this strategy. It is the second largest market for Claude, with significant usage in application development and modernization. Anthropic's revenue in India has grown rapidly, reinforcing the region's importance for enterprise AI adoption.

The announcement comes amid pressure on Indian IT firms, as investors question how AI will impact traditional outsourcing models. Despite recent market volatility, Infosys reported that AI already contributes about 5.5 percent of its revenue, supported by thousands of projects and hundreds of deployed AI agents.

The partnership reflects a broader transition in the industry from experimental AI use to scalable, production level deployment. It highlights how agent driven systems are beginning to reshape enterprise operations, cost structures, and the future of IT services. [Read More](#)

National

23. *Casebook on AI and Gender Empowerment Launched at India AI Impact Summit 2026 - Joint Initiative of MeitY and UN Women*

The Casebook on AI and Gender Empowerment, launched at the India AI Impact Summit 2026, highlights how artificial intelligence can drive gender equality through real world applications across the Global South. It showcases 23 proven AI solutions addressing areas such as healthcare, education, safety, and economic inclusion.



The initiative was led by the Ministry of Electronics and Information Technology under the IndiaAI Mission, in partnership with UN Women and supported by the Ministry of Women and Child Development. The casebook compiles selected projects from over 233 submissions across more than 50 countries, emphasizing measurable impact and real world deployment.

The featured AI solutions span critical sectors including healthcare, particularly menstrual health, financial inclusion,

digital safety, climate resilience, access to justice, and education. These examples demonstrate how AI can be designed to address gender specific challenges and improve outcomes for women and girls, especially in developing regions.

The casebook also serves as a policy and implementation resource, guiding governments, researchers, and developers in building inclusive and ethical AI systems. It aligns with India's broader goal of democratic AI adoption and integrates gender responsive principles into national AI strategies.

The initiative received global attention during the summit, where António Guterres engaged with young women using AI for education and skill development. Their experiences highlighted how AI can expand opportunities and support future participation in technology fields.

The casebook reflects a collaborative model between government and international organizations, positioning India as a leader in inclusive AI development while promoting practical, scalable solutions for gender empowerment. [Read More](#)

24. *India's First State Innovation Mission (SIM) in Tripura*

India has launched its first State Innovation Mission to expand innovation beyond major cities and strengthen grassroots entrepreneurship. The initiative aims to build district level ecosystems that support startups, local ideas, and inclusive growth.



The mission was launched in Tripura by Jitendra Singh as part of a broader push to decentralize innovation under the Atal Innovation Mission. The new State Innovation Mission focuses on institutionalizing innovation at the district level, enabling the commercialization of local ideas into scalable startups.

Tripura has shown strong growth in entrepreneurship, with over 3.13 lakh MSMEs and more than 150 registered startups. The state has also recorded a 66 percent rise in startup recognitions, with a notable share of women led enterprises. The new mission is expected to further accelerate this ecosystem by linking innovation with local economic strengths such as bamboo and rubber industries.

The initiative reflects a shift toward inclusive innovation, aiming to bring opportunities to smaller towns, villages, and underserved communities. It also aligns with India's broader strategy to integrate technology, including artificial intelligence, into governance and economic development.

The government emphasized the need for coordinated efforts between central and state authorities, along with industry participation. Supporting policies include funding for deep tech startups, expansion of research and development programs, and plans to scale Atal Tinkering Labs to 50,000 across the country.

The launch of the State Innovation Mission marks a transition from centralized innovation models to a more distributed and participatory approach. By empowering local talent and strengthening regional ecosystems, the initiative aims to drive sustainable growth, job creation, and technological advancement across India.

[Read More](#)

25. India and Sweden Deepen AI Partnership Through SITAC Framework

India and Sweden have strengthened their collaboration in artificial intelligence through a new bilateral framework aimed at driving innovation, trade, and responsible AI development. The partnership introduces a structured approach to jointly build and deploy AI solutions across industries.

The agreement was signed between the IndiaAI Mission and Business Sweden during the India AI Impact Summit 2026. At its core is the creation of the Sweden–India Technology and Artificial Intelligence Corridor (SITAC), which will act as a central platform for collaboration between governments, industry, startups, and academic institutions.



SITAC is designed to facilitate joint innovation and ecosystem integration. Planned activities include conferences, workshops, exchange programs, and field visits to innovation hubs. It will also support connections between companies, investors, researchers, and policymakers, while identifying opportunities for joint investment and development of AI solutions across key sectors.

The partnership builds on complementary strengths. India brings scale, talent, and a growing AI ecosystem under the IndiaAI Mission, while Sweden contributes advanced industrial innovation, research capabilities, and experience in responsible AI deployment. Together, the two countries aim to co-develop scalable, inclusive, and trustworthy AI technologies.

A strong emphasis is placed on real world impact, ensuring that AI solutions address industrial and societal challenges while maintaining ethical standards. The collaboration also aligns with broader goals of sustainable development and global technological leadership.

The initiative reflects a shift toward international cooperation in AI, positioning India and Sweden as partners in shaping future AI systems that are both innovative and responsible. [Read More](#)

26. *Indian AI Startup Sarvam Debuts 105B Sovereign Model and Indus Beta*

Sarvam AI has unveiled advanced large language models and a full stack AI ecosystem, signaling a push toward sovereign, multilingual, and production ready AI infrastructure in India.



The company introduced Sarvam-30B and Sarvam-105B models, developed under the IndiaAI Mission. Its flagship assistant, Indus, runs on the 105B model and is currently available in limited beta due to compute constraints. These models use a mixture of experts architecture and are

designed to prioritize accuracy, efficiency, and alignment with Indian use cases.

Beyond core models, Sarvam is building an integrated AI platform. In document intelligence, its Vision model and Akshar system support advanced text extraction across English and 22 Indian languages, addressing challenges such as complex layouts and Indic scripts. In speech AI, Saaras V3 enables multilingual speech recognition with real-time capabilities and strong benchmark performance.

The company is also focusing on on-device AI through its Edge initiative, allowing speech processing without cloud dependency, reducing costs and improving privacy. Its Studio platform supports translation, dubbing, and multilingual publishing workflows, while Arya provides an orchestration system for managing complex AI agents and workflows reliably.

This approach reflects a shift from standalone models to a vertically integrated AI stack, covering models, applications, deployment, and infrastructure. The emphasis on multilingual capabilities and local deployment aligns with India's need for inclusive and scalable AI systems.

Sarvam's strategy positions it as a key player in building a domestic AI ecosystem. By reducing reliance on foreign cloud providers and focusing on India-specific requirements, the company aims to support enterprise adoption and strengthen technological self-reliance in the AI era. [Read More](#)

27. *New Delhi Declaration at India AI Impact Summit 2026*

The India AI Impact Summit 2026 positioned India as a major global AI hub while advancing a shared vision of inclusive and responsible AI. The event brought together more than 90 countries to adopt the New Delhi Declaration and

secured large scale investments in AI infrastructure.



Held in New Delhi, the summit marked a significant milestone in global AI governance. The New Delhi Declaration, signed by 92 nations, introduced a framework for “AI for All,” emphasizing equitable access, trust, and collaboration. India used the platform to promote a model of democratic AI, balancing innovation with accessibility and global cooperation.

A major highlight was the push for AI infrastructure. The government outlined plans to attract up to 200 billion dollars in data center investments, supported by policy incentives. Reliance Industries announced a massive ₹10 lakh crore investment in AI infrastructure, while global players like Google and Microsoft expanded their commitments in connectivity and compute. The government also operationalized a facility with 38,000 GPUs to support startups.

Technologically, the summit showcased India’s growing capabilities. Indigenous AI models such as BharatGen’s Param 2 and offerings from Sarvam AI highlighted progress in multilingual and sovereign AI. Companies like OpenAI also expanded their presence in India, signaling its importance as a global AI market.

The summit reflected a turning point where AI moves from experimentation to large scale deployment. India emerges as a key player aiming to shape global AI

governance while attracting investment and building domestic capabilities, though balancing growth with regulation and trust remains a critical challenge. [Read More](#)

28. Tata group and OpenAI forge foundational partnership to advance AI transformation in India and globally

OpenAI has launched its “OpenAI for India” initiative alongside a major infrastructure partnership with Tata Group, marking a significant expansion of AI capabilities, enterprise adoption, and local ecosystem development in India.



The partnership includes a multi year agreement with Tata Consultancy Services to secure 100 megawatts of AI ready data center capacity, with plans to scale up to 1 gigawatt over time. This infrastructure will support domestic hosting of advanced AI models, enabling better data security, regulatory compliance, and reduced latency for enterprise and government applications.

On the enterprise side, Tata Group plans one of the world’s largest AI deployments

by rolling out ChatGPT Enterprise across its workforce, beginning with hundreds of thousands of employees at TCS. The collaboration will also standardize AI driven software development using OpenAI tools such as Codex and integrate AI into engineering and business processes.

The initiative places strong emphasis on skills and ecosystem development. OpenAI will expand certification programs in India, with TCS as the first international partner, and provide over 100,000 ChatGPT Edu licenses to educational institutions. Additional efforts include training programs targeting at least one million young people and support for NGOs through AI toolkits.

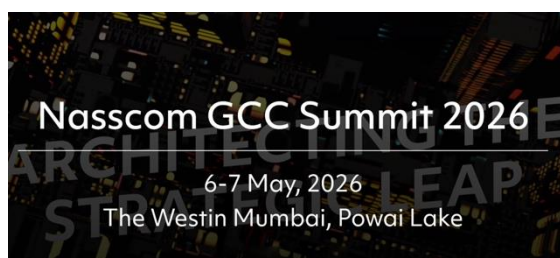
India is a key market for OpenAI, with over 100 million weekly ChatGPT users spanning students, developers, and enterprises. The company also plans to expand its physical presence with new offices in Mumbai and Bengaluru.

This initiative represents a comprehensive strategy combining infrastructure, enterprise deployment, and workforce development. By enabling local AI hosting and large scale adoption, the partnership supports India’s ambition to build a robust, sovereign AI ecosystem while accelerating digital transformation across industries.

[Read More](#)

WHAT’S UPCOMING?

29. Nasscom GCC Summit 2026, 6-7 May, 2026, Mumbai



The NASSCOM GCC Summit 2026, its 16th edition scheduled for May 6-7 at The Westin Mumbai Powai Lake, positions India's Global Capability Centres (GCCs) as ‘Intelligent Stabilisers’ for enterprises amid structural disruption, shifting from execution to strategic ownership under the theme ‘Architecting the Strategic Leap’.

It convenes senior leaders to explore four pillars: (1) AI-Native Enterprise Blueprint for governance, IP creation, and agile AI models driving P&L impact; (2) Rewiring Leadership and Adaptive Culture for decisive change management, hybrid talent, and innovation-driven purpose; (3) Unlocking Scale frontiers via mid-market

expansion, alternate cities, and next-gen partnerships beyond the US; (4) Governance as Strategic Advantage, mastering DPDPA data sovereignty, cyber-resilience, ESG, and policy agility for business confidence. [Know More](#)

30. Bengaluru Tech Summit, 17-19 November 2026



The Bengaluru Tech Summit (BTS) 2026, scheduled from 17-19 November 2026 at the Bangalore International Exhibition Centre, is positioned as Asia’s largest integrated technology event, bringing together global leaders from industry, government, startups, academia, and investors to drive innovation and collaboration. With participation expected from over 75 countries, 1,000+ startups, and 1,800+ exhibitors, the summit will



focus on the theme “AI & Beyond,” exploring emerging technologies such as deep tech, digital infrastructure, semiconductors, biotech, and cybersecurity. It serves as a major platform for dialogue, business partnerships, and

innovation showcasing through conferences, exhibitions, startup engagements, and global collaborations, further reinforcing Karnataka and Bengaluru’s position as leading global technology and startup hubs. [Know More](#)

THE TECH SHOWCASE! (ANNEXURE)

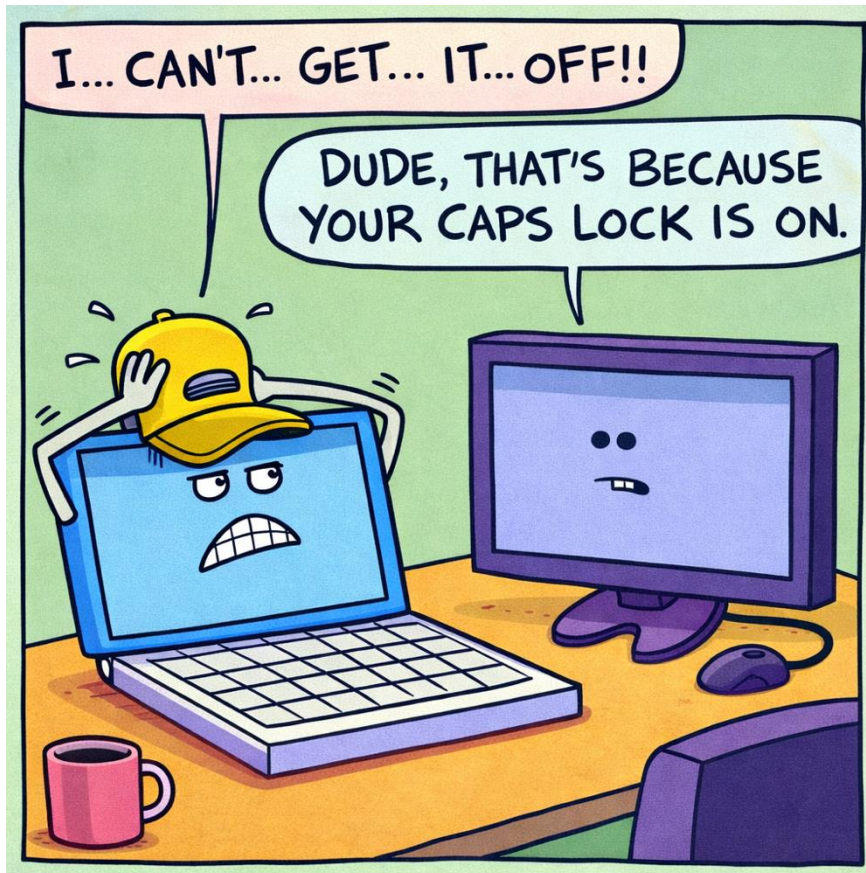
Compilation of Technology Innovations by premier research institutions of India. The details are shared in the Annexure.

1. High specific capacity layered double hydroxide and telluride-based electrode preparation method and application thereof
2. An organic polymer based photodetector for ultraviolet detection fabricated using heteroatom(s) enriched polytriazines
3. Plasma-based thermochemical reactor for mixed feedstock conversion
4. Method for detection of microplastics released from waste plastic modified asphalt mixtures
5. An electrocatalyst for hydrogen gas production and sulfur recovery and its method of preparation
6. An integrated and isolated dual-channel current source gate driver (I²D-CSGD)
7. A GaN MMIC-based broadband power amplifier using multi-resonant matching network

Courtesy - IIT Roorkee



#NESTLaugh-orithm



For suggestions/feedback or sharing your innovations with us, please reach out to us on:
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The New, Emerging, and Strategic Technologies (NEST) Division, established in 2020 under the Ministry of External Affairs (MEA), focuses on technology diplomacy and the international aspects of critical, strategic and emerging technologies. It enhances India's participation in global forums, shaping technology governance and safeguarding national interests. As technology has become central to economic and geopolitical agendas, the Division coordinates with domestic and international stakeholders on advancements like Artificial Intelligence, Quantum Technology, 5G/6G, Biotechnology, Green energy, Semiconductors, and others. NEST also builds internal capacity within MEA, facilitates policy engagement, and assesses foreign policy implications. It plays a key role in shaping India's stance on global tech governance and cooperation.



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