

STRIDES

Science | Technology | Research | Innovation | Developments

Showcasing **New Initiatives** in **S&T** and **Innovation**

EDITORIAL

The festive season brought with it celebrations for the Department of Science and Technology (DST). The month witnessed the Golden Jubilee Celebration of the Indo-German S&T co-operation, one of the first international co-operations and a very successful one to boot. The occasion saw the signing of several collaborative initiatives that would strengthen relations between the two countries in S&T and beyond.

The first calls of the newly operationalized Anusandhan Research Foundation (ANRF) were also launched - the Prime Minister Early Career Research Grant (PMECRG) and the Mission for Advancement in High-Impact Areas -Electric Vehicle (MAHA- EV), initiating a new phase in the science, technology and innovation journey of the country.

DST participated in the India Mobile Congress and the ITU-WTSA, the National Learning week was kickstarted with a session on Artificial Intelligence (AI), while far way at Henle in Ladakh, the Second Hanle Dark Sky Reserve Star Party was organised by the Indian Institute of Astrophysics.

The month also saw several research achievements like a new photocatalyst that can degrade broad-spectrum antibiotics, a process that can streamline drug production & reduce costs, a polymer nanocomposite that creates base for road safety sensor for accident prone turnings as well as research on new materials for sustainable energy, better atomic clocks, as well as MoUs for technology transfer.

Editor-In-Chief
Shri Sunil Kumar

COVER STORY

Last 10 years have witnessed manifold rise in Indo-German collaboration, says Jitendra Singh

India and Germany commemorated 50 years of successful collaboration in science and technology at a landmark event attended by Union Minister Dr. Jitendra Singh and Federal Minister of Education and Research of Germany, Ms. Bettina Stark-Watzinger.



National Learning Week session emphasizes collaborative approach to transform India's technological landscape

Integration between Public and Private sectors is crucial to future growth, emphasized Dr. Jitendra Singh, Union Minister of State (Independent Charge) for Science and Technology, in a pivotal session during the National Learning Week, jointly organized for all level of employees of all the Science Ministries and Departments.



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DEPARTMENT OF
SCIENCE & TECHNOLOGY

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Science Story

Stakeholders meeting on call for proposals under MAHA-EV Mission brings together experts to drive India's smart transport research

Researchers, industry leaders and experts across India working on various aspects of Electric Mobility, came together at the stakeholders meeting organised under MAHA-EV Mission to discuss collaborative efforts for advancing the country's e-mobility ecosystem.

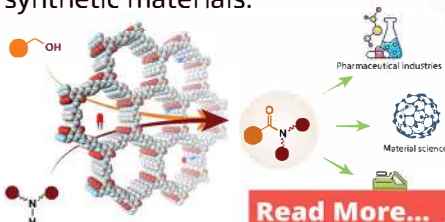


NIF organizes Outreach activity for 10th edition of the India International Science Festival (IISF) in Amarapur, Gujarat

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A new sustainable, efficient amide synthesis process can streamline drug production & reduce costs

Scientists have found a green and efficient chemical process for preparing amides directly from alcohol using a Covalent Organic Framework (COF) based photocatalyst that can revolutionize industrial manufacturing of pharmaceuticals and synthetic materials.



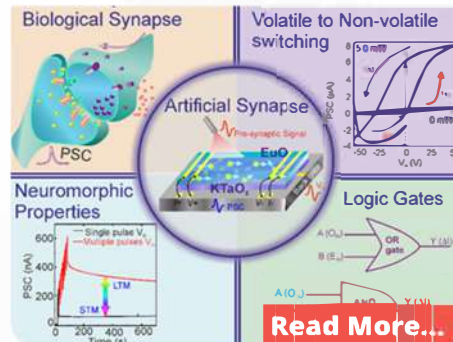
The Second Hanle Dark Sky Reserve Star Party observed in Ladakh

Expert astro-photographers and amateur astronomers came together at the Hanle Dark Sky Reserve between 29 September to 4 October 2024, for the second Star Party.



New artificial synaptic chip mimicking biological synapses to transform information technology

Scientists have created an artificial synaptic device that emulates the behaviour of biological synapses to transform information technology through more efficient computing models.



Novel polymer nanocomposite creates base for road safety sensor for accident prone turnings

Scientists are constantly trying to develop new materials for self-powered energy generating and pressure sensing devices and using them for several applications.

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Combination nanotherapeutic clotting implant reduces localized tumor recurrence post-surgery

A combination therapeutic implant consisting of metal-based nanomedicine reinforced with patient derived blood clotting components reduces localised tumour recurrence post-surgery.

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Study indicates significant shale gas generation potential in eastern South Karanpura coalfield, Jharkhand

Evidence from microscopic palynomorphs, organic remains, combined with geochemical assessments have indicated significant potential for hydrocarbon generation in the eastern region of the South Karanpura coalfield in the Ramgarh district of Jharkhand.

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New cancer therapy target could help patients overcome resistant to current treatments

Scientists have identified a promising new target for cancer treatment by activating a DNA repair enzyme called TDP1, suggesting a combination therapy which could be a potential precision medicine especially for those resistant to current cancer remedies.

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Experts deliberated on challenges & prospects of hydrogen energy commercialisation

Industrialists, entrepreneurs, business aspirants and enthusiasts from various sectors discussed the challenges and prospects of hydrogen energy commercialization at a workshop on fostering start-up ecosystems for commercialization of hydrogen technologies.

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Science Story

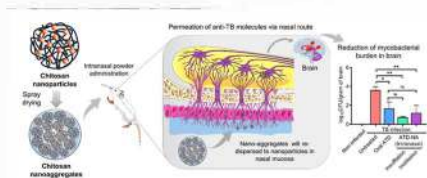
Rare observation in hidden structure in crystals brings new paradigms in material design for advanced energy solutions

Researchers have made a rare observation where the local crystal structure symmetry or the arrangement of atoms in the immediate vicinity of a given atom, in a crystal, reduces upon warming, contrary to the usual trend of symmetry of crystal structures increasing with rising temperatures.

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Unique drug delivery method can improve treatment of Brain TB

In an exciting new development, researchers have created a unique way to deliver TB medicines directly to the brain bypassing the challenging blood-brain barrier (BBB) that limits the effectiveness of many brain TB medicines.



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Mechanism identified behind exotic disordered state of matter could be used for optical data transmission & communications

Researchers have explored the mechanism behind the emerging property of recently discovered exotic disordered state of matter, known as "hyperuniformity".

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Novel insights into electron scattering in semiconductors creates potential for more efficient electronic devices

In a significant advancement for the semiconductor industry, researchers have unveiled novel

insights into the mechanisms that limit electron mobility in semiconductors.

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Candy leaf has potential beyond its natural sweetening properties

Candy Leaf (*Stevia rebaudiana* (Bertoni) Bertoni) a plant recognized for its natural non-caloric sweetening characteristics, also has therapeutic properties for diseases like endocrine, metabolic, immune, and cardiovascular diseases, because of its effect on cellular signaling systems according to a new study.

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Connections established between volcanic eruption & ionospheric disturbances

A new study has revealed a previously unexplored ionospheric connection between the massive eruption of the Tonga volcano, a submarine volcano in the South Pacific, on 15 January 2022 and the formation of Equatorial Plasma Bubbles (EPBs) or an ionospheric phenomenon near the Earth's geomagnetic equator at night time over the Indian subcontinent.

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Towards more precise atomic clocks useful for navigation, telecommunication & aviation

A team of experimentalists working with cold Rydberg atoms have used Quantum magnetometry to help the atomic clocks and magnetometers used for precise time keeping in navigation, telecommunication and aviation, achieve higher precision and make them additionally robust.

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IASST Guwahati, inks MoU with Bharat Biotech International Ltd. (BBIL), Hyderabad, on Technology Transfer

IASST, Guwahati, an autonomous institution of DST signed a crucial R&D collaboration and product development agreement with Bharat Biotech International (BBIL) to bring innovative health products developed from probiotics isolated from traditional fermented foods of Northeast India to market.



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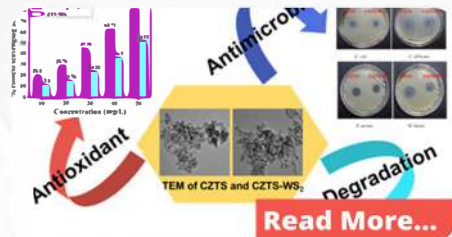
Anusandhan National Research Foundation Launches first 2 initiatives: PMECRG and MAHA-EV Mission

The newly operationalised Anusandhan National Research Foundation (ANRF) today announced the launch of first two of its initiatives-- the Prime Minister Early Career Research Grant (PMECRG) and the Mission for Advancement in High-Impact Areas -Electric Vehicle (MAHA-EV) Mission.

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A new photocatalyst can efficiently degrade broad-spectrum antibiotics

Scientists have developed an efficient photocatalyst that can degrade in sulfamethoxazole, a broad-spectrum antibiotic to less hazardous chemicals and reduce health and environmental concerns associated with antibiotic contamination.



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DST participated in India Mobile Congress 2024 & showcased around 60 innovative projects & startups supported under NMICPS, NIDHI, NQM & TDB



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