

STRIDES

Science | Technology | Research | Innovation | Developments

Showcasing New Initiatives in S&T and Innovation

EDITORIAL

The emphasis of the government to promote the ease of doing science was emphasised upon in the approval of the unified Vigyan Dhara scheme by the Union Cabinet this month.

Besides strengthening the S&T infrastructure of the country by fostering well-equipped R&D labs in Academic Institutions, the scheme would enhance efficiency in fund utilization and establish synchronization among various programs.

The scheme focuses on innovation and product development, internships and fellowships, collaborative research through international co-operations and promotes research in areas aligned with National Priorities.

Two other major developments this month demonstrated the rapid transformation that science in India is undergoing—one of them being the signing of MOU with WHO aimed to make India a hub for production of medical devices. The second one is the launch of the first call for proposals for supporting startups in Quantum Technologies with a revolutionary set of Guidelines to support and nurture startups in quantum technologies.

Research achievements poured in from different institutions and the achievers received a major boost with the announcement of the first Rashtriya Vigyan Purashkars- three of the winners being from DST institutions.

The month brings transformations in science in India, and recognition to India's talented scientists-- steps which can boost science to produce National Impact.

Editor-In-Chief
Shri Sunil Kumar

COVER STORY

Union Minister Dr. Jitendra Singh hails WHO on signing MOU with India for production of medical devices

MoU Signed Between SCTIMST under DST and WHO: A Seminal Step said Dr. Jitendra Singh expressing his gratitude to the WHO for its wonderful humanitarian initiatives in India.



[Read More...](#)

DST to drive quantum leap for Indian startups I-Hub QTF at IISER Pune issues Call for Proposals

The first call for proposals for supporting startups in Quantum Technologies was launched today by Secretary, DST, Professor Abhay Karandikar, under NQM following a new set of Guidelines to support and nurture startups in quantum technologies



[Read More...](#)



विज्ञान एवं प्रौद्योगिकी विभाग
DEPARTMENT OF
SCIENCE & TECHNOLOGY

Inside the e-Newsletter

- Editorial
- Science Stories
- New Initiatives

Science Story

Paediatric heart transplant in Kerala takes place in DST institute

A five-hour heart transplant operation carried out by a motivated team of doctors provided a new lease of life to a 13-year-old girl who had been on ventilator due to severe



[Read More...](#)

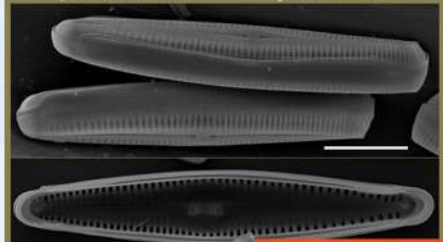
A new freshwater diatom genus discovered from the Eastern and Western Ghats

Researchers have discovered a new genus of the Gomphonemoid diatom found in the clean water river of the Eastern Ghats.



Light Microscopic Images of new genus *Indiconema*

Masila waterfalls habitat of the new genus *Indiconema*



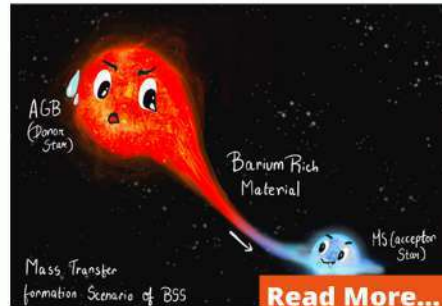
Scanning Electron Microscopic Images

[Read More...](#)

AstroSat exposes the mystery of vampire star rejuvenation

Researchers have made a groundbreaking discovery of a vampire star in the star cluster M67 located in the constellation Cancer, that has been rejuvenating

its youth by sucking up material from a companion.



[Read More...](#)

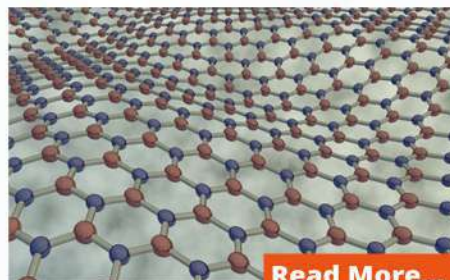
International collaboration of physicists achieves first successful laser cooled Positronium, a short-lived atom significant for quantum studies

For the first time, an international collaboration of researchers has successfully demonstrated the laser cooling of Positronium, a short-lived hydrogen-like atom that provides an ideal testing ground for bound-state quantum electrodynamics.

[Read More...](#)

Scientists provide groundbreaking insights into new class of materials for energy harvesting and power generation

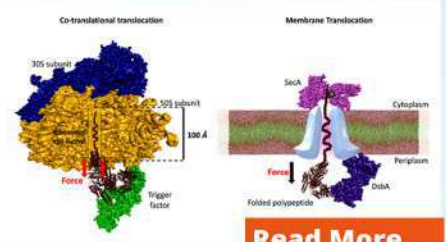
New study unravels the electronic mechanisms governing chemical bonding of new class of materials called incipient metals with metavalent bonding (MVB) within a single 2D layer of Group IV chalcogenides that can boost energy harvesting and power generation.



[Read More...](#)

Single-molecule techniques reveal new dynamics of protein folding associated with Alzheimer's disease progression

A new way to study protein folding & associated chaperons that saves proteins from non-native interaction, could help understand what exactly triggers the folding. The understanding could help track progression of diseases like cancer, Parkinsons & Alzheimer's.



[Read More...](#)

Fluvial Ichnofossils identified in Siwalik rocks of Pathankot in Punjab indicate semi-arid conditions with low energy deposits in prehistoric times

Trace fossils or Ichnofossils found by researchers from the Siwalik sediments in Pathankot District of Punjab have helped them assess the environmental conditions that prevailed in the region during prehistoric times.



[Read More...](#)

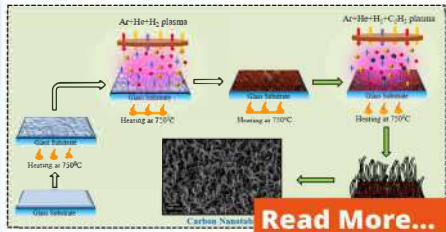
A new method for sodium catalyzed synthesis of carbon nanotubes could be useful for rechargeable batteries & flexible electronics

A novel method for directly synthesizing Carbon nanotubes (CNTs) on glass substrates at a



Science Story

temperature of 750 °C could help energy research, biomedical fields, and optoelectronics.



[Read More...](#)

Combustion research at DST supported centre provides base for space tech startup fuelling India's march towards low-cost space missions

An innovative two-stage orbital launch vehicle called Agnibaan powered by India's first patented Single-Piece 3D-printed Semi-Cryogenic Engines developed and incubated at IIT Madras was launched on 30th May 2024, marking a significant milestone for the country's space ecosystem.



[Read More...](#)

Scientists develop a pancreas-mimicking system for responsive insulin delivery in diabetes treatment

A new silk-based hydrogel system that mimics the pancreas, offers a potential breakthrough in insulin delivery for diabetes treatment. The proposed innovative approach can provide a more efficient and responsive method for insulin release, addressing the challenges faced by individuals with both Type 1 and advanced stage Type 2 diabetes.

[Read More...](#)

New niche base station solutions by TIH to realise government vision of affordable connectivity for all

The best-in-class Open Radio Access Network (ORAN) base station solution has been designed and is under development for commercialisation by IIITB COMET Foundation (COMET), Bengaluru for creating spectral and energy efficient wireless communications technology for 5G and 5G-Advanced radio networks.



[Read More...](#)

National Geospatial Policy meets Government commitment to inclusion & progress through access to locational data & related services

Demonstrating commitment towards inclusive development, the Government is implementing the National Geospatial Policy 2022 (NGP) and has substantially expanded the access and usage of spatial data, improving citizens services rapidly and increasing its reach to the remotest corners of the country.

[Read More...](#)

India's First Hypervelocity Expansion Tunnel Test Facility- a major step in the Government's path towards Atmanirbharata

A crucial step in the country's journey towards Atmanirbhar Bharat has been achieved with India's first Hypervelocity Expansion Tunnel Test Facility successfully established and tested

by Indian Institute of Technology, Kanpur (IITK). This is a major achievement that puts India amongst a handful of countries with this advanced hypersonic testing capability.



[Read More...](#)

Indian scientists develop open-source tool to generate infrared star catalogue for Thirty Meter Telescope

A new online tool to create a comprehensive star catalogue for the Adaptive Optics (AO) system of the upcoming Thirty Meter Telescope (TMT), can enable this ground-based telescope-- one of the largest to be operational in the next decade, generate sharper astronomical images.



[Read More...](#)

Low-cost Sree Chitra valve facilitating the Government's commitment to inclusive healthcare for all

The low-cost Sree Chitra valve is an example of how a successful implementation of the innovation ecosystem is helping India tackle Rheumatic heart disease and contributing to the country's march towards Swasth Bharat.

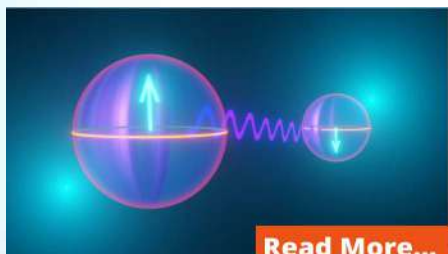
[Read More...](#)



Science Story

Scientists identify a quantum-based model system for better understanding new materials

Researchers have identified a model system of quantum critical points for better understanding new materials. This model system can help understand unusual behaviors in materials near to a quantum critical point and may be used in comprehending entanglement and quantum computing.



[Read More...](#)

Newly developed, resilient, cost-effective carbon capture technology represents significant advancement towards India's net zero targets

A Mumbai-based start-up has developed an aqueous-based CO₂ capture technology comprising a new catalyst that is robust, cost-effective, and scalable. This technology has the capability to capture CO₂ in industrial wastewater, marking a significant milestone in the country's transition towards climate-friendly technologies.

[Read More...](#)

New prototype developed to generate neurovascular tissues/organoids from autologous blood can help in precision medicine

A new model for generating mass of neurovascular tissues or neurovascular organoids/embryoids (NVOEs) from autologous blood can help in the investigation of impaired brain functioning and development by

analysing in neuroimaging (preclinical) scans, correlating with altered blood supply.

[Read More...](#)

Camouflaging as a dead enzyme VEGFR1 holds key to medical solutions for colon and renal cancers

Researchers have decoded the molecular mechanism in which a cell surface receptor belonging to the family of enzymes that bind growth factors, regulate cell differentiation, proliferation, survival, metabolism, and migration, prevents cancers.

[Read More...](#)

New material design capable of controlling temperature at which converts from insulator to conductor paves way for novel superconductors

Scientists have developed a synthetic material design that can control the temperature at which a material can overcome electronic 'traffic jams' an transition from an electrical insulator to a conductor, setting the ground for an electronic switch that is more efficient than a transistor.

[Read More...](#)

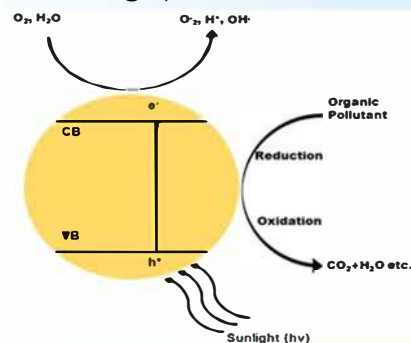
Highly porous Xerogel dressing can save lives by clotting blood faster

Researchers have developed a porous composite xerogel dressing incorporating Silica Nanoparticles and calcium, that can help blood clot rapidly and provide relief for uncontrolled hemorrhage. The composite showed significant improvement in rate of blood clotting in comparison to commercial dressing.

[Read More...](#)

New metal oxide nanocomposite can be used for sustainable photocatalytic degradation of organic pollutants

A new metal oxide nanocomposite has been developed that can help photocatalytic degradation of organic pollutants like dyes and pharmaceuticals and hence can be used as sustainable technologies for cleaning up the environment.



[Read More...](#)

What's new:

Call for applications for participation in the 74th Meeting of Nobel Laureates at Lindau, Germany

India UK Joint Call for proposal for telecommunication Research (DST-EPSC)

Indo-Russian Joint Research Call for Proposals 2024

DST- JSPS Indo Japan Call 2024

India EU Joint Call for Proposal



Unified Vigyan Dhara launched

Cabinet approves 'Vigyan Dhara' scheme

It will promote **S&T capacity building, innovation & technology** development towards **strengthening STI ecosystem** in the country

The DST scheme will **strengthen S&T infrastructure** of the country by fostering well-equipped **R&D labs** in Academic Institutions

#CabinetDecisions



[@IndiaDST](#) | [@IndiaDST](#) | [@IndiaDST](#) | [@IndiaDST](#) | [@IndiaDST](#)

Newly approved Vigyan Dhara scheme has 3 broad components

- Science and Technology Institutional and **Human Capacity Building**
- Research & Development**
- Innovation, Technology Development and Deployment**

#CabinetDecisions



[@IndiaDST](#) | [@IndiaDST](#) | [@IndiaDST](#) | [@IndiaDST](#) | [@IndiaDST](#)

Vigyan Dhara scheme focus

- Promoting **basic research** as well as **translational research**
- Collaborative **research** through **international cooperation**
- Building critical **human resource pool**
- Enhancing participation of **women in STI**
- Promoting **innovation** at all levels

#CabinetDecisions



[@IndiaDST](#) | [@IndiaDST](#) | [@IndiaDST](#) | [@IndiaDST](#) | [@IndiaDST](#)

Vigyan Dhara scheme alignment

Towards **5-year** goals of **DST** for realising the vision of **Viksit Bharat 2047**

R&D component of the scheme to be aligned with the **Anusandhan National Research Foundation (ANRF)**

Scheme to follow the **globally prevailing yardsticks** while in alignment with the **National Priorities**

#CabinetDecisions



[@IndiaDST](#) | [@IndiaDST](#) | [@IndiaDST](#) | [@IndiaDST](#) | [@IndiaDST](#)

This e-newsletter created by the DST Media Cell brings you brief information on scientific achievements and activities supported by DST. Each brief, links to detailed information on DST website. If there is any DST supported popular science event which requires wider outreach please share it with us. We also welcome your feedback/suggestions at mediacell.dst@gmail.com

Editor-In-Chief
Shri Sunil Kumar



विज्ञान एवं प्रौद्योगिकी विभाग
DEPARTMENT OF
SCIENCE & TECHNOLOGY

[@IndiaDST](#) | [@IndiaDST](#) | [@India.dst](#) | [@IndiaDST](#) | [dst.gov.in](#)