

# STRIDES

Science, Technology, Research, Innovation & DEvelopments

BRINGS NEWS ON S&T DEVELOPMENT FROM DST SUPPORT AND BEYOND

## EDITORIAL

June once again brought with it the celebration of the collective spirit and the science of yoga. Research supported by Department has brought out an interesting understanding of the science behind the health benefits of yoga and ways to carry out yoga in a scientific manner.

The month also saw India opening its new eye in the sky – a Liquid-Mirror Telescope on a hilltop in the Himalaya that would survey the sky, making it possible to observe several galaxies and other astronomical sources. This first liquid mirror telescope in the country and the largest in Asia is located at the Devasthal Observatory campus of Aryabhata Research Institute of Observational Sciences (ARIES).

Under the Department’s initiative of boosting new and emerging S&T through NMICPS, some of the 25 technology innovation hubs established all over the country have reached the people in the form of rural educational tools, AI making roads in India safer to drive, and technologies for cyber-secure future. A Self Certification Portal has been launched for conveying adherence to provisions of Geospatial Guidelines by Individuals, companies, organizations, and government agencies.

Besides, with this newsletter starts the process of bringing to you the efforts of Centres for Policy Research to contribute to formulation of robust S&T policies that will help the country’s march towards an S&T-based economy.

—DR AKHILESH GUPTA, EDITOR-IN-CHIEF

## COVER STORY



### Dr Jitendra Singh joins PM in performing Yoga from Jammu

On the eighth International Day of Yoga, Prime Minister Shri Narendra Modi performed Yoga at Mysore Palace in Karnataka, while 75 ministers from the cabinet joined online in their performance of Yoga at 75 historical and cultural sites in the country.

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### DST promotes scientific approach to Yoga on 8th International Day of Yoga

The role of Yoga in connecting mind,

body and soul and bringing balance in lifestyle was highlighted at a webinar organized by the Department of Science and Technology (DST) under SATYAM Programme on the occasion of 8th International Day of Yoga.

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# POPULAR SCIENCE STORIES



## A Unique Liquid-Mirror Telescope sees first light in the Indian Himalayas

A new telescope facility atop a mountain in the Himalayan range will now keep a watch on the overhead sky to identify transient or variable objects such as supernovae, gravitational lenses, space debris, and asteroids.

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## Smart material which responds to light stimulus can harness solar energy for applications in soft robotics

Scientists have developed a smart material which responds to light stimulus easily by converting light into thermal energy. This can be helpful for harnessing solar energy for applications in soft robotics and micro-electromechanical systems (MEMS) devices.

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## New catalyst for Zinc Air batteries can make them more durable & efficient

Scientists have synthesised a bi-functional catalyst made of nanocarbon material Fe, Co, N-C that can make rechargeable Zinc-

air batteries used in electric vehicle propulsion more efficient and durable.

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## AI to make roads in India safer to drive

A unique AI approach that uses the predictive power of AI to identify risks on the road, and a collision alert system to communicate timely alerts to drivers, to make several improvements related to road safety, is being implemented in Nagpur City with an objective of resulting in a significant reduction of accidents.

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## DST launches Geospatial Self Certification Portal

In what can be called a massive step towards liberalization of the Geospatial industry in India, the Department of Science and Technology (DST) launched the Self Certification Portal for conveying adherence to provisions of Geospatial Guidelines by Individuals, companies, organizations, and Government agencies.

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## Machine learning helps predict new materials for nano alloys, semiconductors & rare earths

Scientists have used Machine learning to develop a design map of alloys at the nanoscale which can help predict the match of pairs of metals that can form bimetallic nanoalloys.

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## Technology Innovation Hub paving the way towards Indias cybersecure future

A surveillance system installed at the National Highways Authority of India headquarters at Dwarka keeps track of the health of all the computers in its network, flagging attempts to hack into the system, malware in systems within the network, or malfunctioning programme being used.

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## Low-cost super-elastic buckling restrained braces can improve earthquake resistance of structures

Researchers have developed low-cost buckling-restrained braces that can give improved protection to constructions from earthquakes.

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## Study attributes tectonic linkage in the northeast edge of the Indian plate to great Assam Earthquake

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## Need for interventions in National IPR policy highlighted at DST-CPR meeting

The need for major interventions in some of the National level policies and the role of DST-Centre for Policy Research (DST-CPRs) was discussed at a review meeting of the DST-Centre for Policy Research, Panjab University, Chandigarh.

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## New manufacturing process for steel alloy powder for developing efficient cooling channels can make pressure die casting more efficient

Researchers have developed a manufacturing process for steel alloy powder that can act as a tool for developing efficient cooling channels for pressure die casting.

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## Mechanism that helps active systems escape transformation to glass can aid study of cancerous metastasis

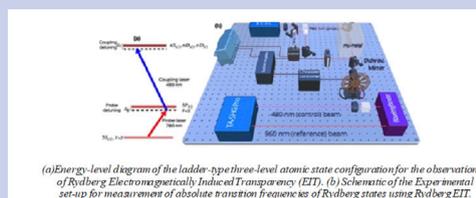
Pragya Arora, Prof. Rajesh Ganapathy from Jawaharlal Nehru Center for Advanced Scientific Research (JNCASR) and Prof. Ajay. K. Sood from IISc, who studied the glassy dynamics of an artificial active-matter system, found that patterns can form in systems consisting of active elongated particles that help it elude turning glassy.

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## Glacial advances in the Yankti Kuti Valley synchronizes with climate variability

Multiple events of glacial advances have been witnessed from the Yankti Kuti valley situated in the extreme eastern part of Pithoragarh district, Uttarakhand, since 52 thousand years (MIS 3) that synchronises with climate variability, according to a new study.

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## Highly excited Rydberg atoms provide framework for preparing atomic qubits for quantum information

## processing

Scientists have performed precision measurements of transition frequencies of highly excited Rydberg states, providing a framework for preparing ideal candidates for quantum information processing as well as for atomic sensor technologies.

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## Novel experimental framework in fluid dynamics can help in earthquake early warnings

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## TIH efforts reach new & emerging technologies to the rural populace

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## Neutral electron flow detected in Graphene could shape future quantum computation

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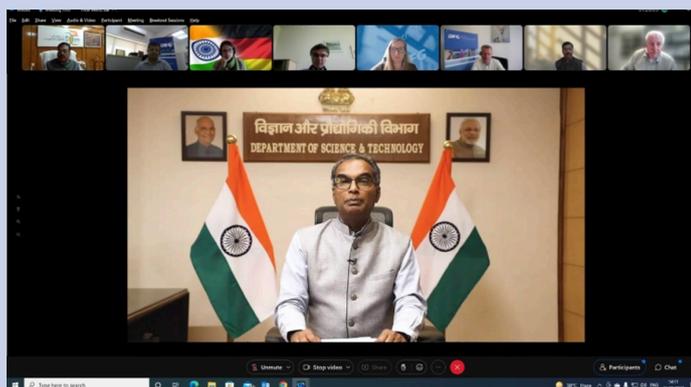
## Binary super massive black hole discovered in a system which could be site of future gravitational waves detection

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## Newly developed ultrathin heteroprotein film: better alternative to isolated protein films

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# INTERNATIONAL



## Priority areas with scientific importance of India and Germany need to be aligned: DST Secretary

Secretary DST Dr. S Chadraseshkar stressed on aligning the priority areas with the scientific importance of India and Germany at an online webinar conducted as part of the outreach activity to promote recently launched call for proposals for International Research & Training Group between DST and DFG.

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## NEW INITIATIVES

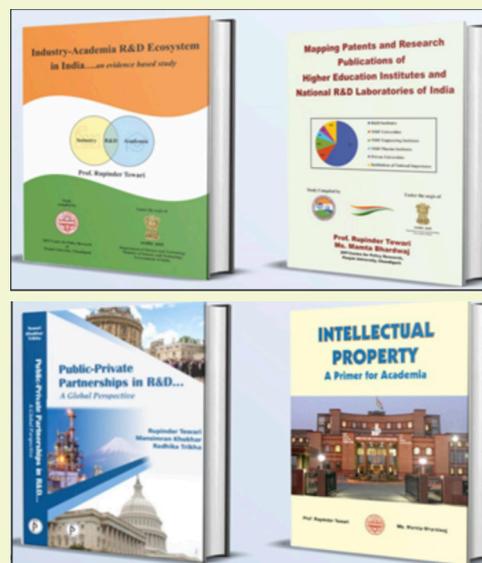
- ▶ Call for Proposals under Science Technology and Innovation (STI) Hubs for Development of SC and ST Communities

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- ▶ Indo-Swedish Joint Call for Proposals within Circular Economy

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## Featured Policy Centre



## DST-Centre for Policy Research at PU works towards a robust patent commercialisation ecosystem

A collaborative mechanism by the public organizations to increase trust between the industry and academia and further the economic and moral values of the SMEs and Academic sector is just one of the suggestions by the DST-Centre for Policy Research at Panjab University, Chandigarh, keen on improving the patent commercialisation ecosystem in India.

The Centre, which is playing a critical role in recommending interventions for making National level S&T policies more robust, has also insisted on promotion of innovations, encouraging funding mechanism, policy interventions at the state & central level, university-industry linkages, public and private spending on R&D, to enhance translational research ecosystem in India.

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