

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

## **EDITORIAL**

The rainy season brought with it a fresh boost for startups that could help in India's efforts to combat climate change. Union Minister of State (I/C) Science & Technology; Minister of State (I/C) Earth Sciences; MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, Dr. Jitendra Singh called for promoting Startups in "carbon neutral" building construction and linking them with industry to help India achieve 500GW non-fossil energy capacity by 2030, as promised by Prime Minister Narendra Modi at COP26 meeting. The first-of-its-kind, stateof-the-art Autonomous Navigation facility to develop unmanned ground and aerial vehicles was inaugurated in the IIT Hyderabad campus.

Scientists at the autonomous institutions of the Department of Science and Technology (DST) also discovered a new material that can convert infrared light to renewable energy, developed smart shock absorbers; spotted fossils of a small mammal resembling squirrels in Jammu and Kashmir and Technology Incubation Hubs (TIH) under the DST used Artificial Intelligence to boost rural connectivity and healthcare. The July newsletter features these innovative efforts of the scientists as well as the DST-Centre for Policy Research at the Indian Institute of Science (IISc).

-DR AKHILESH GUPTA, EDITOR-IN-CHIEF

## **COVER STORY**



Union Minister Dr. Jitendra Singh calls for promoting StarUps in "carbon neutral" building construction

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in "carbon neutral" building construction and linking them with industry to help India achieve 500GW non-fossil energy capacity by 2030, as promised by Prime Minister Narendra Modi at COP26 meeting.

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First of its kind testbed for autonomous navigation to develop unmanned g r o u n d and aerial v e h i c l e s

(An Autonomous

Organisation of DST)

### inaugurated at IIT Hyderabad

Union Minister Dr Jitendra Singh inaugurated first-of-its-kind, state-of-the-art "Autonomous Navigation" facility to develop unmanned ground and aerial vehicles in the IIT Hyderabad campus. Read More







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#### will take DST the up mentorship role to promote start-ups in Tier-2 and Tier-3 cities as wealth creators and problem solvers: Dr **Jitendra Singh**

Union Minister Dr Jitendra Singh has asked government agencies, including Department of Science Technology & Technology, Development Board and BIRAC, to reach out to potential Start-Ups and support them, in addition to offering support to those who themselves reach us.

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#### **DST-IISc** energy storage platform moves towards enabling fast-charging solidstate batteries

Researchers have reported on an innovative interfacial engineering approach to enable fast chargedischarge rates in solid-state lithium that nanoscopic refractory metal layers like Tungsten could improve the performance of these batteries which are crucial for purposes like electrical mobility.

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## New genus of treeshrew from Ramnagar in Jammu and Kashmir can provide a precise age estimate for the locality

Scientists have spotted fossils of a small mammal resembling squirrels called treeshrew belonging to a new genus and species from Ramnagar in Jammu and Kashmir.

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#### solidificat on Reverse mechanism of dense suspensions help can develop smart shock absorbers

Researchers have traced the mechanism by which a dense suspension when suddenly deformed first goes to a solid-like state with very high force and then gradually comes back to the initial liquid-like state with smaller force.

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## metal batteries. They have found : New material discovered can convert infrared light to renewable energy

Scientists have discovered a novel material that can emit. detect, and modulate infrared light with high efficiency making it useful for solar and thermal energy harvesting and for optical communication devices.

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#### New co-dopants identifie can create better performing and more stable solar cells

Scientists have identified codopants that can increase the photovoltaic performance of transparent metal oxides such as ZnO, In2O3 and SnO2 thereby creating potential for more efficient, better performing and more stable solar cells.

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#### Rapidly charging **E-cvcle** developed with Na-ion **batteries** and supercapacitors

Scientists have used nanomaterials to develop Na-ion-based





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batteries and supercapacitors, which can be rapidly charged and have integrated them in e-cvcles. The low-cost Naion-based technologies would be cheap and are expected to reduce the cost of the e-cvcles significantly.

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#### AI boosts rural connectivity & healthcare

A total of 15 villages in different parts of the country may soon be seamlessly connected a next-generation through networking solution that can address congestion issues in 4G infrastructure and provide hightech and affordable internet connectivity,

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#### Connecting the dots between virus infection and progress of brain cancer

Scientists have found that cancer-causing virus Epstein Barr Virus (EBV) can infect the neuronal cells and drive various changes in biomolecules such as fatty acids, carbohydrates, and protein components, leading to diseases of the central nervous system as well as brain cancer.

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Scientists develop novel mechanism to inactivate SARS-CoV-2 by blocking their entry to cells & reducing infection ability

Researchers have reported the design of a new class of synthetic peptides that can not only block the entry of SARS-CoV-2 virus entry into cells but also clump the virions (virus particles) together, reducing their ability to infect.

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#### New device memory with excellent switching characteristics and lowrequirements power developed

Scientists have developed a memory device with excellent switching characteristics and low-power requirements for data storage applications.

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N95 with mask coating nanoparticle developed using **3D** printing **Read More** 

Study reports the glacial history (since 33 kilo annum to the present-day) from the less explored region of the Himalaya, Zanskar, Ladakh

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Call for proposal-2022 under "India-Japan Cooperative Science Programme \_\_\_\_\_

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IIScDST-CPRprovidesevidence-basedrecommendations for enhancing decision-making processes in STI

The Department of Science and Technology- Centre for Policy Research(DST-CPR)attheIndianInstituteofScience(IISc)engages closely with different government bodies, private organizations and academic institutions of national and international repute to provide pragmatic and evidence-based recommendations for enhancing decision-making processes in STI.

The Centre is actively involved in collaborative projects, research publications and reports, and also various outreach, capacity-building and training activities. It has collaborated with international institutions to study research assessment practices. In partnership with the Latin American Council of Social Sciences (CLACSO), it has studied research assessment practices in the Global South. It has also collaborated with UNESCO - Jakarta Office for a study on the status of women in STI in selected Asia-Pacific countries; another project is on policies for basic STEM education in the Southeast Asian country Timor-Leste. The Centre has also initiated a collaborative project on Doctoral Education in India in partnership with researchers from the Indian Institute of Management – Ahmedabad, Manipal Academy of Higher Education, and Jindal Global University.

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