DST

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STRIDES

Science, Technology, Research, Innovation & DEvelopmentS

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

EDITORIAL

As DST prepares for its Foundation Day in the beginning of May several international co-operations saw new directions. New and emerging areas of collaborations were discussed with Finland and Mexico with a joint declaration signed with Finland for setting up a Virtual Network Centre on quantum computing.

An Integrated Clean Energy Material Acceleration Platform with funding opportunity announced for Hydrogen Valley Platform under Mission Innovation while India UK science and innovation policy dialogue discussed the priorities of future India-UK collaborations.

The autonomous institutes of the Department continued with their innovative achievements which have been featured in this newsletter. Some of them are the indigenously developed platinum-based electrocatalyst which could pave way for low-cost, durable fuel cells from ARCI, the Polyherbal technology nurtured by NIF that can combat tick infestation among dairy animals and the smartphone-based, portable oxygen kit that can provide consistent oxygen supply during disasters and medical emergencies by NECTARE. Breakthrough research in astronomy like how interactions among coronal mass ejections can play a role in their evolution by ARIES and toxic chemical removal from wastewater with the help of visual ions through DST's PURSE programme continued to make news.

—DR AKHILESH GUPTA, EDITOR-IN-CHIEF

COVER STORY

Dr. Jitendra Singh discusses future Science & Technology collaborations with Minister of Foreign Affairs, Government of Mexico

Mexico Minister of Foreign Affairs, Marcelo Ebrard, currently on a visit to India, called on Union Minister of State (Independent Charge) Science & Technology and Earth Sciences, Dr Jitendra Singh and sought enhanced technology partnership between the two countries.

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Union Minister Dr Jitendra Singh holds delegation-level talks with the visiting Finnish Minister of Economic Affairs, Mr. Mika Lintila in New Delhi

Visiting Finland Minister of Economic Affairs, Mika Lintila, currently in India, today met Union Minister of State (Independent Charge) Science & Technology; and Earth Sciences, Dr Jitendra Singh and the two Ministers announced the decision to establish an Indo-Finnish Virtual Network Centre on Quantum Computing.

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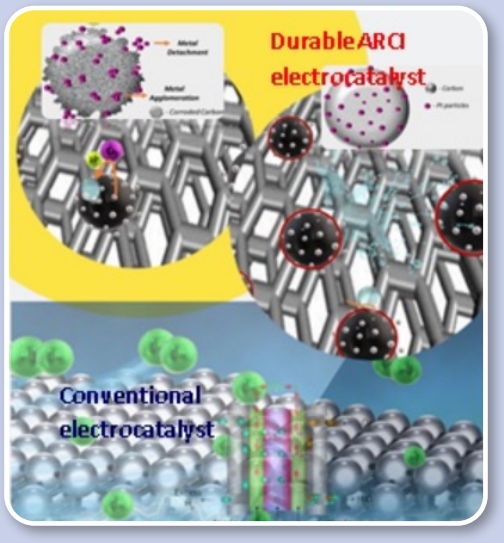
POPULAR SCIENCE STORIES



Indigenously developed platinum-based electrocatalyst could pave way for low-cost, durable fuel cells

Indian Scientists have indigenously developed platinum-based electrocatalyst for use in fuel cells through an efficient procedure. This electrocatalyst showed comparable properties to the commercially available electrocatalyst and could enhance the lifetime of the fuel cell stack performance.

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Novel tools for visual ion sensing and toxic chemical removal from wastewater developed

Researchers have designed and synthesized a bunch of smart materials that can easily detect biologically relevant ions visually and can remove toxic dyes and chemicals like picric acid from water.

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Interaction between Coronal Mass Ejections plays a key role in their evolution

A team of astronomers have found that interactions between two different Coronal Mass Ejections (CMEs) in the interplanetary medium as they travel towards the Earth play a key role in their evolution.

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New smartphone-based, portable oxygen kit can provide consistent oxygen supply during disasters and medical emergencies

An easy to handle and transport, multi-modal, smartphone-based, field-portable oxygen kit can now provide consistent and cost-effective oxygen supply to communities during situations like the recent COVID 19 pandemic and other disasters like medical emergencies and high altitude-related problems.

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Polyherbal eco-friendly technology can combat tick infestation among dairy animals

A formulation consisting of herbal ingredients like Neem (Azadirachta indica) and Nagod (Vitex negundo) has been found to be effective in combatting tick infestation among dairy animals.

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Indian scientists propose multi-sectorial strategies for the prevention and control of pollen allergy

Indian Scientists have suggested that large scale measures like developing pollen forecast systems and training of health care professionals and personal measures, regularly taking prescribed medications, limiting outdoor exposure, and avoiding gardening or grass-cutting during peak pollen seasons could help minimize the onset and exacerbation of pollen-related allergic diseases.

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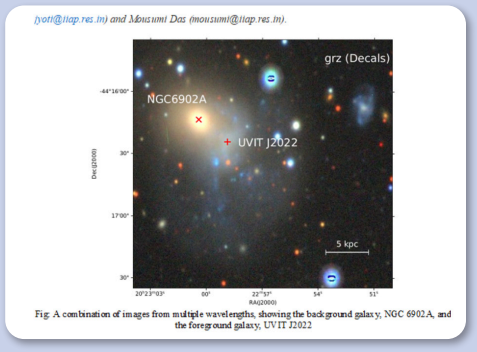

Fig. A combination of images from multiple wavelengths, showing the background galaxy, NGC 6902A, and the foreground galaxy, UVIT J2022

Hidden in Plain Sight: faint galaxy discovered in our local universe

Researchers have discovered a faint but star-forming galaxy, around 136 million light-years away which was so far undetected since it lies in front of a much brighter galaxy.

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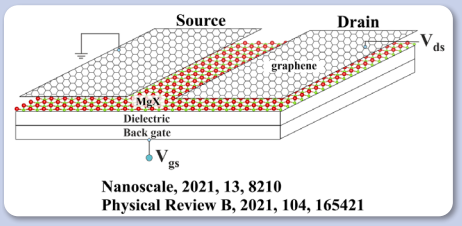
Low contact resistance metal-semiconductor

POPULAR SCIENCE STORIES



Nanoscale, 2021, 13, 8210
Physical Review B, 2021, 104, 165421

interface designed for next-generation transistors

Researchers have computationally designed a low contact resistance metal-semiconductor interface with 2D monolayers for next-generation transistors, which can boost device performance.

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Scientists decode the reason behind the Chamoli disaster

Little more than a year after the deadly ice-rock mass avalanche in Chamoli district in the Uttarakhand state led to a significant causality of more than 200 people and a substantial economic loss; scientists have been able to decode the reason behind the disaster.

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New materials & processes for carbon capture and utilization could show new light for global warming challenge

A group of scientists have computationally designed a hybrid material which can absorb greenhouse gas methane, converting it to clean Hydrogen and also simulated a process of capturing carbon dioxide in-situ and converting it to high purity hydrogen from non-fuel grade bioethanol.

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Newly patented diagnostic tool for aquaculture pathogen to boost shrimp cultivation

Scientists have developed a handy diagnostic tool that detects an aquaculture pathogen known as the White Spot Syndrome Virus (WSSV).

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Climate & policy experts discuss the seriousness of climate impact on South Asia & adaptation and mitigation steps need for it

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2D monolayers with potential applications in Self-Powered Flexible-Piezo-Spintronic Nanodevices predicted

A team of Indian Scientists have computationally predicted two fascinating 2D monolayers having great potential for applications in next-generation self-powered materials which develop spin currents in response to strain.

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A transforming break for a woman in science

Dr. Amita Kumari, a Ph.D. in chemistry from Chaudhary Charan Singh University, Meerut (U.P.), who had to leave her Senior Research Fellowship at ICMR to take care of her daughter, has now found a channel to utilize her scientific knowledge as a Patent Associate (Science) in one of India's leading IPR firms.

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The journey of a physics researcher to a patent associate

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INSPIRE Faculty Fellows work on surface electromagnetics can augment existing capabilities of RF & microwave devices, improving satellite communication

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DST-INSPIRE Faculty fellow conducting research and development for unique optical materials and optics for energy self-sustenance

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DST-INSPIRE Faculty fellow working on doping techniques for monolayer and bilayer 2D-semiconductors for future 2D-electronics devices optimization

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NEW INITIATIVES

- Announcement of Call for DST-ICTP-IMU Ramanujan Prize 2022

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MEET THE PSA

RENOWNED PHYSICIST PROF AJAY KUMAR SOOD TAKES OVER AS PSA

Professor Ajay Kumar Sood has taken over charge as new Principal Scientific Advisor to Govt. of India. He is a Physicist known for his outstanding contributions in both hard- and soft-condensed matter that are profound in terms of experimental discovery as well as theoretical understanding. His research focus ranges from overlapping areas of materials science and engineering to interfaces between physics and biology. He has developed some of the finest experimental techniques, applied them to discover many fascinating natural phenomena, and used them to design sensitive devices for practical applications.

Prof. Sood has held several leadership positions like Member of the Prime Minister's Science, Technology, and Innovation Advisory Council (PMSTIAC) from 2018 onwards, President of National Science Academies, Member, Scientific Advisory Council to the Prime Minister of India, Member, Science, and Engineering Research Board (SERB), Chairman, Council, Raman Research Institute, Member and Chairman of significant scientific committees. He has been honoured with Padma Shri by the Government of India and is also a fellow of the Royal Society (FRS) London.

With a Ph.D. from the Indian Institute of Science, Bangalore, and postdoctoral research from Max-Planck Institute in Stuttgart, he joined IISc, Bangalore, in 1988, where he continues to serve till now. He has been honoured with several prestigious National and international awards.

INTERNATIONAL

Integrated Clean Energy Material Acceleration Platform launched & funding opportunity announced for Hydrogen Valley Platform at MI meeting

Three Integrated Clean Energy Material Acceleration Platforms were launched at the MI Annual Gathering session on 4th April 2022, where new Energy Innovation Collaborations were announced.

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India UK science and innovation policy dialogue discussed the priorities of future India-UK collaborations

The India UK science and innovation policy dialogue discussed the priorities of future India-UK collaborations with focus on strengthening the startup ecosystem, net-zero economy, climate change mitigation and adaptation, sustainable technologies, health innovations, clean energy, R&D translation, and new and emerging technologies.

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India & Finland discuss possible areas of co-operation in quantum computing for virtual CoE

Delegates from India and Finland discussed possible areas of co-operation in quantum computing and a roadmap for the collaborative virtual Centre of Excellence (CoE) that has been planned to be set up.

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