

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



### **EDITORIAL**

Cheer up, women in science! The Department of Science and Technology (DST) has a deep, long-term commitment to bring more talented women into science and promote women in leadership positions in science, and this issue of the newsletter is dedicated to that commitment.

As International Women's Day (IWD) witnessed the announcement of the Women Excellence Grant by the Science and Engineering Research Board (SERB), an attached institution of DST on the occasion of IWD, the day was celebrated with a release of a booklet on the activities & status of WISE-KIRAN and a study report on the Gender Advancement for Transforming Institutions (GATI) program by Secretary DST. Vigyan Vidushi, a bunch of inspiring stories on the lives of leading women scientists of India, was also released. Training completion certificates were awarded under DST's Women Scientist Scheme WOS-C, and a connection of all women-related programmes under one platform was mulled upon.

With a whole division dedicated to promoting women in science, DST focuses on helping women navigate the challenges they face due to their gender roles, due to the mindset of society, and other obstacles. While programmes like Vigyan Jyoti encourage talented girls, particularly from resource-constrained settings, to pursue a career in underrepresented areas of STEM, the GATI programme promotes gender equity in leadership positions in S&T institutions of excellence. The department also supports S&T-related infrastructure and training in the new and emerging areas in women universities and nurtures women S&T entrepreneurs in several ways.

The department's programmes have exposed girls and women to education and career opportunities in Science and Technology and created some of the most dynamic leaders in science, heading S&T institutions as well as crucial divisions in S&T Ministries steering the scientific future of the country.

This issue brings together success stories from some of these programmes as well as research success stories led by some of the illustrious women scientists from the Autonomous Institutions of DST. The newsletter also features the women leaders heading critical divisions in DST, the central department co-ordinating S&T in India.

-DR AKHILESH GUPTA, EDITOR-IN-CHIEF





# **RESEARCH STEERED BY** WOMEN SCIENTISTS





Indian scientists find efficient way to quantify quantum entanglement in higher dimensional systems

Experiments on quantum entanglement (where several particles behave like a single unit even when they are separated), which received the Nobel Prize in Physics in 2022 have seen a major achievement by Indian scientists, who have found a simpler way to quantify the amount of entanglement in higher dimensional systems.

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#### Quantum computers may help test fundamental physics providing universal programmable setup for quantum experiments

Going beyond the usually known use of quantum computers --- performing certain tasks at an exponentially faster rate than classical computers, scientists have for the first time used quantum computers for a novel purpose.

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#### New finding that explains novel instability of flow of viscoelastic materials in confined environments can help in efficient displacement of granular slurries

Scientists have found a clue to explain the

fingering instability in viscoelastic fluids • Journey from a break in career -a phenomenon in the flow of materials like corn starch in confined environments that resemble porous media.

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#### New study on behaviour of charged particles in a magnetic field under ultra-cold temperatures can help control noise in quantum technology

A new study conducted by Bengalurubased scientists has thrown fresh light on how a charged particle in contact with an environment in the presence of a magnetic field behaves when it is subjected to ultracold temperatures.

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#### New study offers hope for children suffering from intractable epilepsy

A new study has unravelled mechanisms that lead to certain epilepsies of genetic origin in pediatric population, providing hope for a larger cohort of children suffering from related brain disorders. **Read More** 

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

Dr. Divya Somvanshi, currently working at the Department of Electronics and Telecommunication Engineering (ETCE), Jadavpur University, Kolkata, is a recipient of the INSPIRE Faculty fellowship instituted by the Department of Science & Technology, Govt. of India.

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to a professor with diversified profile

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The journey of physics a researcher to a patent associate

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Certain mangrove species in east coast and west coast of India is likely to reduce and shift landward

Certain mangrove species in Chilika and Sundarbans along the east coast and Dwarka and Porbandar along the west coast of India is likely to reduce and shift landward by 2070 due to decline in suitable habitats in response to precipitation and sea level changes, said a study based on a prediction model.

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#### Westerlies governed the climatic variations and landscape of Trans-Himalaya historically: study

It was the Westerlies, or the permanent winds that blow from the subtropical high-pressure belts towards sub-polar low-pressure belts, and not the Indian Summer Monsoon (ISM), that governed the climatic variations and the evolution of its landscape, particularly during the Mid-Holocene Thermal Maxima (between 7075 and 6040 cal yr before present), according to a new study.

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# RESEARCH STEERED BY WOMEN SCIENTISTS





First evidence of solitary waves near Mars may decode the mystery behind ion loss in the planet

Scientists have reported the first evidence of the presence of solitary waves or distinct electric field fluctuations in the Martian magnetosphere.

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Rare instability dynamics detected in Earth's geomagnetic equator can help understanding their affect on communication systems better

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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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Medicinal plant commonly called Borthekera in Assamese found to have cardioprotective potential Garcinia pedunculata, a medicinal plant commonly called 'Borthekera' in the Assamese language, traditionally forbidden for raw consumption, has been found to protect from heart diseases.

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### 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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Cost-effective, supercapacitor with high capacity to store charge developed by Indian scientists

Indian Scientists have developed a highenergy density aqueous supercapacitor with a wide electrochemical window, high stability as well as high energy retention.

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#### Unique non-cytotoxic nanocomposite coatings developed to prevent post-surgical infections

A newly developed nanocomposite coating can inhibit biofilm formation and

also kill attached bacteria, thereby helping tackle growing post-operative infections, a common occurrence these days due to antibiotic resistance in bacteria.

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#### Science behind jets of plasma occurring all over Suns chromosphere unravelled

Scientists have unravelled the science behind the jets of plasma - the fourth state of matter consisting of electrically charged particles that occur just about everywhere in the sun's chromosphere, which is the atmospheric layer just above the Sun's visible surface.

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# 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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## WOMEN SCIENTISTS OF DST ARE TAKING LEAD **ROLE IN PROMOTING SCIENCE IN INDIA**

### 10 out of 18 scientific divisions are headed by WOMEN



Dr. Nisha Mendiratta. Adviser & Head, WISE-KIRAN Division & Climate Change Program

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Dr. Pratistha Pandey, Scientist 'F' & Head, R&D Infrastructure



Dr. Anita Gupta. Adviser & Head, NSTEDB & Energy Technologies (ET) Cell



Dr. Anita Aggarwal, Scientist 'F' & Head, Technology **Development & Transfer** 



Dr Namita Gupta Adviser & Head, INSPIRE & INSPIRE-MANAK



Dr. Ekta Kapoor, Scientist 'F' & Head, Mission Director NM-ICPS & Head FFT & GLP



Dr. Namrata Pathak Scientist G, Energy Technologies (ET) Cell .....



Dr. Rashmi Sharma. Scientist 'F' & Head, SHRI Cell



Mrs Indu Puri. Scientist 'F', SEED & SSTP



Dr Usha Dixit. Scientist 'F', Al Division



Dr. Neelima Alam. Scientist 'F', Water Technologies Cell



Dr. Vandana Singh. Scientist 'F', WISE-KIRAN Division



Dr. Jyoti Sharma, Scientist 'F', International Cooperation



Dr. Shubha Pandey. Scientist 'E', NGP



Dr. Sulakshna Jain. Scientist 'E', International Cooperation 



Dr. Susheela Negi, Scientist 'E', Climate Change Program



Dr. Sapna Kaushik. Scientist 'E', NSTEDB



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-newsletter created by the DST communication team at Vigyan Prasar 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

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