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*Ask the right questions, and nature will open the door to her secrets
- Dr. C.V. Raman, The Nobel Prize in Physics 1930*

Two RE Labs Inaugurated at IIT Roorkee

IIT Roorkee, inaugurated two RE labs i.e. Renewable Grid Integration Laboratory and Green Hydrogen Laboratory that has been set up at the Hydro and Renewable Energy Department (HRED) of the Indian Institute of Technology (IITR) Roorkee. IIT Roorkee also added that these labs are slated to significantly contribute to research on reliable, resilient, and Atmanirbhar transition to a clean energy grid in India. They are also expected to help meet India's Energy Independence and Net Zero Carbon Energy Systems Goals. The laboratories are also aligned towards catering to the goals of the prestigious National Hydrogen Mission launched by the Govt. of India. Necessary equipment and software are also installed to research domains such as stack development, contact resistance management, and hydrogen production.

Researchers Found Key Elements Affecting Osmotic Stress in Plants

Researchers at National Institute of Plant Genome Research, New Delhi, and the Kurukshetra University, Kurukshetra, have identified a potential candidate to grow plants that could withstand multiple abiotic stresses. Researchers added that plants are constantly exposed to extreme weather conditions and thus undergo abiotic stresses that minimize their growth as most of their resources and energy are utilized to combat stress. Working with Arabidopsis mutant plants, which are widely used for basic research in genetics and molecular biology, researchers found that the gene SEU exhibited enhanced susceptibility to osmotic stress treatments and lesser survival rates.

Researchers found Way to Track Minute Clay Particle Movements Within Soft Clay Colloids Using Optical Tweezers

Researchers at Raman Research Institute (RRI), an autonomous institute funded by the Department of Science and Technology, Govt. of India, studied the dynamics and hidden structural details of Laponite, a synthetic clay and found a new way to track particles in soft colloids using optical tweezers that could be applied in targeted drug delivery. Researcher also added that as these clay particles are the same size (monodisperse) and transparent, so they are best suitable for performing advanced studies under light. Laponite is a widely used raw material in the pharmaceutical and cosmetics industries. Furthermore, the team used cryogenic field emission scanning electron microscopy (cryo-FESEM) to examine the average pore areas formed by the Laponite microstructures. The RRI team thus concluded the prevalence of a direct relation between the morphologies of the clay suspension structures.

Researchers Studied Quantum Material to Develop Functional Properties

To investigate the advanced functionalities of thermoelectric materials since they have drawn significant attention as they demonstrate direct and reversible conversion between electrical and thermal gradients, offering prospects for sustainable energy. Researchers at Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bengaluru studied the quantum material 'TlBiSe₂' to investigate advanced functional properties in them.. Due to the shared chemical design pool, topological materials are also potential thermoelectric materials. The study provides fundamental insights into how chemical bonding could be used to optimize thermoelectric performance in quantum material and how, by rational chemical designing, intriguing emergent properties could be realized in quantum materials to meet the ever-growing demand for advanced functional properties.

Special update: INST Explored Potential of Anti-Inflammatory FDA-Approved Drug 9-aminoacridine (9AA)

Scientists at INST Explored Potential of anti-inflammatory FDA-approved drug Institute of Nano Science and Technology (INST), Mohali, an autonomous institute of Department of Science and Technology, explored the potential of the anti-inflammatory FDA-approved drug 9-aminoacridine (9AA) and the natural compound caffeic acid (CA), generally found in coffee or wine (reported to possess significant anti-arthritic potential) conjugated to nano micelles, an amphiphilic molecule that forms spherical structure when immersed in water, for the treatment of RA. (9AA).