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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

IIT Madras Developed Math Model for Understanding Environmental-Friendly 'Bio-Cement' from Bacteria

Researchers at Indian Institute of Technology Madras (IIT) Madras, developed a structured model ''Microbially Induced Calcite Precipitation (MICP)' to help in the production of bio-cement, which is an alternative sustainable process for cementation. The researchers studied the MICP process using the bacteria, S. pasteurii and proposed & developed a structured model for the overall ureolysis processes (uptake and breaking of urea using bacteria) to scale up the MICP process, which could be an alternative to manufacturing cement. The Key Advantage of Bio-cement as its synthesis is more energy efficient as it requires temperatures in the range of 30-40A °C whereas conventional cement production requires above 900a °C.

Researchers Developed Smart IoT-based machine for making welding operations faster, energy efficient and eco-friendly

Researchers at Dayananda Sagar University, Bangalore developed the Internet of Things (IoT) integrated machine titled "Magnetically Impelled Arc Butt Welding Equipment" embedded with sensors for sound, vibration, arc light intensity, for welding ferrous tubes faster than conventional fusion welding or solid-state processes presently used with less consumption of energy. The low-cost IoT integrated machine was supported by the Department of Science and Technology.

Researchers Developed Supersensitive Immunosensor for Early Breast Cancer Detection

Researchers & scientists from Council of Scientific & Industrial Research (CSIR) Advanced Materials and Process Research Institute (AMPRI), Bhopal, developed a highly sensitive electrochemical immunosensor for the detection of a breast cancer biomarker CD44 antigen (CD44 antigen is a cell-surface glycoprotein involved in cell-cell interactions, cell adhesion, and migration). Further, scientists added that biosensor-based detection has several advantages over the existing cancer detection diagnostic tests such as high specificity, rapid detection, ultralow detection limit (LOD), cost-effectiveness, portability, and low sample volume requirement and in addition, it has remarkable biocompatibility and stabilizing potential for biomolecules.

Indian astronomers Discovered Latest Member of Episodically Accreting Young Stars ' Gaia 20eae'

Indian astronomers from the Aryabhatta Research Institute of Observational Sciences (ARIES), an autonomous institute under the Department of Science & Technology, Government of India, as part of an international team, including groups within India from the Tata Institute of Fundamental Research (TIFR) and Indian Institute of Astrophysics (IIA), discovered the latest member of episodically accreting young stars 'Gaia 20eae'. The team of astronomers carried out simultaneous photometric and spectroscopic observations using Indian facilities like the 1.3m Devasthal Fast Optical Telescope, 3.6m Devasthal Optical Telescope, 2m Himalayan Chandra Telescope, and international facilities like 10m HET telescope and 0.5m ARC Small Aperture Telescope.

Special Update: India Launched Digital India RISC-V (DIR-V) Program

With an overall aim to enable creation of Microprocessors for the future in India, for the world and achieve industry-grade silicon & Design wins by December'2023, India launched the Digital India RISC-V Microprocessor (DIR-V) Program. DIR-V would see partnerships between Startups, Academia & Multinationals, to make India not only a RISC-V Talent Hub for the World but also supplier of RISC-V SoC (System on Chips) for Servers, Mobile devices, Automotive, IoT & Microcontrollers across the globe. Furhter, Ministry of Electronics and IT, Govt. of Inida has planned to join the RISC-V International as Premiere Board Member to collaborate, contribute and advocate India's expertise with other global RISC-V leaders.