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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 New technology to Transport of RF

Researchers at the India Institute of Technology (IIT) Madras developed a new technology to transport Radio Frequency (RF) through optical methods to improve digital & satellite communication. IIT-Madras with support from the IMPRINT programme of Science, Engineering, Research Board (SERB) developed the Next-Generation Photonic Analog-to-Digital Converters (NG-PADC), equipped with a time-stretched photonic ADC whose effective bandwidth is 12 times higher than a corresponding EADC, that enables sampling of higher bandwidth signal with effectively lower bandwidth EADCs. The scientists tied up with Hyderabad based Lightmotif Automation, for reaching the technology to the people.

Indian Scientists Developed Novel Method to Improve Accuracy and Precision of Nanomechanical Testing Technology

Scientists at the Advanced Nanomechanical Characterization (ANC) Centre at Centre for Engineered Coatings, International Advanced Research Centre for Powder Metallurgy & New Materials (ARCI), Hyderabad, in collaboration with KLA Corporation and Texas A & M University developed a novel method to test nanomechanical properties of materials at very minute scales with high precision and accuracy. The novel approach involved a combination of extensive modeling and simulation to understand the material response during test.

Raised Lines Foundation Launched Tactile STEM Learning Kit for Visually Impaired Children

Raised Lines Foundation (RLF), a non-profit start-up incubated at the Indian Institute of Technology (IIT) Delhi, launched a 'Tactile STEM Learning Kit' for visually impaired children. The kit includes a GEOMKIT developed in partnership with Vistril Gyan; a Mathematics Geometry Encyclopedia developed in partnership with XRCVC, Mumbai; a Science Primer developed in partnership with Saksham Trust; and JoJo blocks developed in partnership with Microsoft Research, Bengaluru, India. RLF converts standard textbooks, manuals, and resource books, with a focus on STEM books, into an accessible format incorporating tactile diagrams that visually impaired students can comprehend. The key objective is to enable students with visual impairments to pursue a career of their choice. Through its recently launched Touch, Learn, and Shine Program, RLF has trained more than 4000 students from 60+ schools across India.

IIT-Madras Developed an Innovative Cooling Solution for Electronics Applications

Scientists at the Indian Institute of Technology Madras (IIT Madras) in collaboration with Khalifa University, UAE, with the development of an electro-hydrodynamics based method for effective cooling of electronic devices, made significant strides in advancing heat management for miniature electronic devices, particularly for space applications. The process uses the 'Onsager-Wien Effect,' to induce vortices in the mini-channels, which leads to better heat transfer. This method uses minimal external power and is operationally safe. The researchers' latest breakthrough in mini-channel heat exchangers has been published in the reputed peer-reviewed journal Applied Thermal Engineering.

Special Update: IIT-Madras Developed Method to Forecast Merger of Cyclones

Researchers at the Indian Institute of Technology (IIT) Madras, IIT Hyderabad and Potsdam Institute of Climate Impact Research (PIK), Germany developed a novel, data-driven technique to forecast the merger of cyclones, so that early action such as evacuation could be taken to reduce the impact. Researchers used a set of connected nodes and links that interact in different ways and applied this methodology to study the interaction of cyclones - something meteorologists call Fujiwhara interaction. The teams used hourly data from the European Centre for Medium-Range Weather Forecast, combining weather model data with observational data from across the world. Researchers added that the results were found to be more accurate than those derived from conventional methods.