INDIA SCIENCE AND INNOVATION WEEKLY

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

IITians create method for heavy metal removal from water

A research team at the Indian Institute of Technology (IIT) Mandi has developed a fibrous membrane filter using an eco-friendly biopolymer-based adsorbent, called Chitosan, through a process called solution blowing, which results in better adsorption of heavy metals. This technology will be scaled up on an industrial level to handle large volume of metal-contaminated water.

DBT experts convert waste from Kinow fruit to food additive

Researchers at Department of Biotechnology's Mohali- based Centre of Innovative and Applied Bioprocessing (DBT-CIAB) have found a technique to convert food waste from Kinow fruit such as peels, pulp and seeds to food supplement by reducing the level of bitterness. Scientists at DBT-CIAB have found an enzyme called Naringinase, which can reduce the level of a compound called Naringin in the waste, by converting the compound into another compound called Naringenin, thus reducing the bitter taste in waste by 66% and reducing the strain on envinoment.

CSIR scientist develop mobile sensor to monitor health status

Scientists at Council of Scientific and Industrial Research's Central Electrochemical Research Institute (CSIR-CECRI), Karaikudi, Tamil Nadu, have developed a flexible low cost, wearable microfluidic sensor that can monitor a human's health by analyzing several biomarkers such as Lactate, Sodium and Potassium simultaneously from sweat samples. The team has also developed a solid-state flexible and stretchable supercapacitor as an energy buffering element for powering a wearable pulse rate sensor.

ISRO to establish Space Technology Innovation Center ar NIT Rourkela

Indian Space Research Organisation (ISRO) is going to establish a 'Space Technology Incubation Center' (S-TIC) at the National Institute of Technology (NIT) Rourkela to carry out research and product development in space technology and applications. This Centre will enable start-ups to build applications and products that could be used in future space missions. Space technology-related research and the products from the S-TIC will be utilised in future Space missions and will help nation building through 'Aatmanirbhar Bharat Abhiyan' in space technology and applications domain.

IIT researchers study shock wave oscillations in high speed flow

Researchers in the Department of Aerospace Engineering at Indian Institute of Technology (IIT), Chennai, have uncovered new and interesting dynamics that govern unsteady shock wave motion in order to understand design of rockets and high-speed aircraft. Shock waves are sharp physical boundaries in space across which a rapid increase in air pressure, temperature and density occurs, which is the case when rockets and aircrafts move faster than speed of sound. The experiments were performed in a high-speed wind tunnel, where a moving object, that resembled a cone set on a cylinder, was subject to air flowing at six times the speed of sound. To visualise the shock waves, an optical imaging technique called Schlieren was employed using lenses, a laser, and a high-speed camera. The researchers found that the different air flow and shock wave patterns created by the two shapes interacted to affect the unsteady shock-wave dynamics. For certain combinations of the parameters, the air flow and shock waves were highly disturbed, resulting in 'pulsations', which have much higher amplitude of unsteadiness than the relatively low-amplitude 'oscillations' which occurs at other combinations. The findings are relevant to design of rockets and high-speed aircraft.

IASST experts develop classification method based on AI to detect cancer

Scientists from the Institute of Advanced Study in Science and Technology (IASST) in Guwahati has developed a classification method based on artificial intelligence (AI) to evaluate hormone status for prognosis of breast cancer, which accounts for 14% of cancer cases amongst Indian rural and urban women. The team came up with a novel deep learning (DL)-based quantitative evaluation method for indicating estrogen or progesterone status with the help of Immunohistochemistry (IHC) specimen related to the prognosis of breast cancer. An ensemble method was also used to merge the decision of three machine learning (ML) models which will give the final Allred cancer score.

Special Update: Kalam Institute of Health Technology

Kalam Institute of Health Technology (KIHT) aims to facilitate focused research on critical components pertaining to medical devices by supporting institutions involved with R&D, industry, policy makers and knowledge repositories. This shall be achieved through transfer of technical knowledge and bringing strategic and coherent synergy of scientific facilities and institutions to compliment efforts on industrial promotion in the medical devices segment. Medtech specific innovation leads, like for example, Health Technology Assessment (HTA), creation/ adoption of medical device specific industry standards, technology upgrades in manufacturing, skill development programs etc., require a focused effort by a dedicated institution. It was with this objective the Kalam Institute of Health Technology (KIHT) was formed in July 2017.

Further details can be found at:
https://kiht.in/