



Embassy of India, Berne

INDIA SCIENCE AND INNOVATION WEEKLY

27 September 2021

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

IIT Guwahati developed super-hydrophobic Cotton for oil-spill cleanup

Researchers at Indian Institute of Technology (IIT), Guwahati, developed a new class of super-hydrophobic cotton composite with Metal-Organic Framework (MOF), which is a novel, highly porous, & water-repellent super-hydrophobic cotton composite material. The material contains Metal-Organic Framework (MOF) and could absorb oil selectively from an oil water mixture. The material has separation efficiency between 95% and 98%, irrespective of the chemical composition and density of the oils. It has also practical applications in marine oil-spill clean-up in near future.

CSIR-CMERI Launched Solar DC Cooking System

To create a greener and pollution-free India, Indian researchers at Council of Scientific And Industrial Research, Central Mechanical Engineering Research Institute (CSIR-CMERI) Durgapur, developed and launched a Solar DC Cooking System, which consists of solar PV panel, chargecontroller, battery bank and cooking oven. The CSIR-CMERI developed Solar DC Cooking System provides a Clean Cooking Environment, Inverter-Less Direct Operation, Fast and Uniform Heating and a potential to save 1 ton Carbon Dioxide emissions year/household. CSIR-CMERI developed Solar DC Cooking Technology was transferred to two business entities namely M/s Asansol Solar & LED House, WB and M/s Meeco Solar & Infrastructure Associates, Durgapur, WB.

Indian Astronomers developed a new method to identify cluster stars

Indian Astronomers at Indian Institute of Astrophysics (IIA), an autonomous institute of the Department of Science & Technology, Government of India, developed a new method based on Machine Learning **Probabilistic Random Forest** that could identify cluster stars-assembly of stars physically related through common origin, with much greater certainty. The IIA researchers informed that the machine learning technique uses combination of parallax, proper motion, temperature, brightness and other parameters to classify each star as a cluster member or a non-member. With this technique the IIA team identified the hottest stars in the six clusters using ultraviolet images from Ultra-Violet Imaging Telescope (UVIT) on the Indian space observatory 'AstroSat'.

Indian scientists developed electronic polymer based low-cost sensor

For the first time, Indian Scientists at Advanced Study in Science and Technology, Guwahati, an autonomous institute of the Department of Science & Technology, Government of India, developed a thermally stable and cost-effective electronic polymer-based sensor for rapidly detecting nitro-aromatic chemicals used in high-energy explosives. Scientists also confirmed that the electronic sensing device build around a polymer gas sensor could quickly detect the explosive on-site and the team has also filed a patent for the novel technology funded by Department of Electronics and Information Technology (DeitY), Govt. of India.

Special Update: BHEL developed an indigenous technology to convert high ash Indian coal to methanol

To convert high ash Indian coal to methanol, Bharat Heavy Electricals Limited (BHEL) developed an indigenous fluidized bed gasification technology, which produces syngas and then convert syngas to methanol with 99% purity and established its first pilot plant in Hyderabad. This pilot-scale project with a methanol generation capacity of 0.25 metric tons per day has been initiated by NITI Aayog and funded by the Department of Science and Technology(DST) under Clean Energy Research Initiative. At present, the pilot plant is producing methanol with purity of more than 99%. Further, this technology would help India to move towards the adoption of clean technology and promote the use of methanol as a transportation fuel (blending with petrol), thus reducing crude oil imports.