



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 develop novel technique for assembly of gold Nanorods

Indian Institute of Technology Madras (IIT Madras) researchers have developed a simple technique for assembly of gold nanorods in polystyrene sphere in an oil-water interface. The gold nanorods can be assembled in a more controlled manner than before, on substrates, to make sensors, which makes its applications in the field of electronics, agriculture, medicine, textiles etc. more realistic. The team aims to decrease the time required for gold nanorods to adsorb on the macro particle and improve the process of self-assembly to expedite the adsorption kinetics.

Self-check Kiosks for speedy and accurate result

Indian Institute of Technology Guwahati (IIT Guwahati) in collaboration with Workspace Metal Solutions Private Limited, Udaipur, has developed a first-of-its-kind self-check kiosk, as per the World Health Organisation (WHO) guidelines, which takes only 30 seconds to check if the person potentially has COVID-19 or any other viral or bacterial infection. The machine functions by allowing an individual to place their index finger on the SpO2 sensor to check the body temperature and the blood oxygen content.

MoES develop high-end forecast system for Indian Ocean

Indian National Centre for Ocean Information Services (INCOIS), Hyderabad with 3 other MoES Institutes has developed a high-end forecast system, named High-Resolution Operational Ocean Forecast and Reanalysis System (HOOFS). With this, the country is set to receive ocean forecasts with a lead time of more than three days. It will provide information and forecasts on the ocean currents, temperature, tides etc, which can boost the blue economy. It will also help to forecast potential fishing zones in the Indian Ocean which will save cost and time for the Indian fishing community. Besides, it is also equipped with SARAT, a rescue aid tool. Another offshoot product of HOOFS is the mapping of oil spill trajectories, which can determine the area affected by an oil spill.

ISRO's Chandrayaan-I shows Moon rusting on poles

Images captured by Indian Space Research Organisation's (ISRO) Chandrayaan-1 suggests the moon is rusting along the poles, due to the presence of two key elements; water and oxygen, when in contact with iron. Scientists propose that fast-moving dust particles might initiate the release of surface borne water molecules, while oxygen is thought to have come from Earth's magnetic field trails, thus allowing water and oxygen to mix with a form of iron rust called Hematite. Even though Hydrogen, delivered to the moon by solar winds from the upper atmosphere of the Sun, called the corona, should prevent oxidation to occur on Moon, the Earth's magnetic field blocks over 99% of the solar wind during certain periods of the Moon's orbit, which opens occasional windows during the lunar cycle when rust can form.

India becomes 4th country to develop & test hypersonic technology

The Defence Research and Development Organisation (DRDO) successfully demonstrated the Hypersonic air-breathing scramjet technology with the flight test of Hypersonic Technology Demonstration Vehicle (HSTDV) from the APJ Abdul Kalam Launch Complex at Wheeler Island, off the coast of Odisha, which makes India the 4th country to test hypersonic missile technology. As a result, India has joined United States, Russia and China to test hypersonic technology.

Indian scientists prepare COVID-19 predictor to track virus spread

A group of scientists in India is working on genomic sequences of SARS-CoV-2 around the World, including India, to identify genetic variability and potential molecular targets in virus and human to combat the COVID 19 virus. In a study sponsored by Science and Engineering Research Board (SERB), a team from the Department of Computer Science and Engineering of National Institute of Technical Teachers' Training and Research, Kolkata have developed a web-based COVID-19 Predictor to predict the sequence of viruses online on the basis of machine learning and analysed 566 Indian SARS-CoV-2 genomes to find the genetic variability in terms of point mutation and Single Nucleotide Polymorphism (SNP). The scientists are on track to spot the potential target proteins of the virus and human host based on Protein-Protein Interactions.

Special Update: Institute of Minerals and Materials Technology, Bhubaneswar

CSIR-Institute of Minerals and Materials Technology (IMMT) was established in 1964 as Regional Research Laboratory, Bhubaneswar in the eastern part of India under the aegis of the Council of Scientific and Industrial Research (CSIR), New Delhi. It was renamed in 2007 with a renewed research focus and growth strategy to be a leader in the areas of mineral & material resource engineering. The institute has expertise in conducting basic research and technology oriented programs in a wide range of subjects to address the R&D problems of mining, mineral and metals industries and ensure their sustainable development. For the last one decade, the main thrust of R&D at CSIR-IMMT has been to empower Indian industries to meet the challenges of globalization by providing advanced and zero waste process know-how and consultancy services for commercial exploitation of natural resources through the public-private-partnership (PPP) approach. Today, CSIR-IMMT is the first choice for many mineral based industries. It is also carving out a niche in processing of advanced materials for greater value addition and working on resource use efficiency of critical raw materials.

Further details can be found at:
<https://www.immt.res.in/>