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NEWS ALERT

Forum for Indian Science Diplomacy

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GLOBAL

[Hydrogen fuel cell trains for British railways from 2022](#)

British Railways is planning to introduce fuel cell technology to its network by 2022. The hydrogen-powered trains are being made jointly by UK Rolling Stock Operating Company (ROSCO) and the French rail multinational Alstom and would be owned by Eversholt, which will then lease them to rail operators. These fuel cell trains, nicknamed as Breeze have the potential to transform the railways, making journeys cleaner and greener.

[European Parliament approves enhanced €120B EU research budget](#)

The European Parliament on 12 December approved the EU's Horizon Europe programme— calling for a €120 billion budget, a 27.5 per cent increase on the €94.1 billion proposed by the European Commission. Horizon Europe is the successor programme to Horizon 2020, the EU's eighth consecutive multi-year funding programme for research and innovation. Horizon Europe will run from 2021 to 2027. There is uncertainty about UK scientists' participation in EU-funded research.

[Japan's pioneering detector set to join hunt for gravitational waves](#)

The Kamioka Gravitational Wave Detector (KAGRA) is the world's fourth major gravitational wave detector and the first in Asia. It will work on the same principle as the two detectors of the Laser Interferometer Gravitational Wave Observatory (LIGO) in the United States and the Virgo solo machine in Italy. It possesses unique characteristics, such as an underground-built design and having cryogenically cooled mirrors, that should help KAGRA to separate the cosmic ripples from background noise.

[Kigali Amendment to the Montreal Protocol enters into force](#)

The Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer entered into force on 1 January 2019, following ratification by 65 countries. It will help reduce the production and consumption of hydrofluorocarbons (HFCs), potent greenhouse gases (GHGs), and thus to avoid global warming by up to 0.4°C this century. HFCs had come into widespread use being an alternative to ozone-depleting substances in refrigeration and cooling equipment. In 2016, the Parties to the Montreal Protocol adopted the agreement on phasing out HFCs in Kigali, Rwanda.

IBM unveils its first commercial quantum computer

IBM on 8 January unveiled its first ever quantum computer designed for commercial use, the IBM Q System One. The company does not have any sale plans but would instead allow customers to perform quantum calculations over the internet. Quantum computers offer the promise to vastly outperform regular machines at certain tasks by exploiting the strange properties of quantum physics, though as of yet no quantum device has achieved this milestone.

Solution for overactive bladders developed

A team of scientists in the US have developed an optogenetic implant that can help people who suffer from overactive bladders. The implant harnesses a technique for controlling cells with light, known as optogenetics, to regulate nerve cells in the bladder.

Low cost sea water desalination technology developed

Researchers at the Turin Polytechnic, Italy have developed a passive multi-stage and low-cost solar distiller, where efficient energy management leads to significant enhancement in freshwater yield. Each unit stage for complete distillation is made of two hydrophilic layers separated by a hydrophobic microporous membrane, with no other mechanical ancillaries. The technology has the potential to further double the observed distillate rate. In perspective, this system may help satisfy the freshwater needs in isolated and impoverished communities in a sustainable way.

New bioinspired materials developed to aid the wound healing process

Material scientists from Imperial College, London have created a new molecule, known as traction force-activated payloads (TrAPs) that interact with tissues to drive wound healing. The TrAP technology provides a flexible method to create materials that actively communicate with the wound and provide key instructions when and where they are needed. The technology has the potential to serve as a conductor of wound repair, orchestrating different cells over time to work together to heal damaged tissues.

Portable Ebola test to bring quicker diagnosis to remote regions

A portable and fast-acting test have been created by researchers that can distinguish Ebola infections from other fever-causing infectious diseases. The test requires blood sample, pre-packaged vials and a battery powered reader and could offer a simple and less expensive diagnostic tool to accelerate the detection and management of Ebola epidemics in low-resource settings.

INDIA

Indian Science Congress 2019 concludes in Jalandhar, Punjab

The 106th edition of the Indian Science Congress registered the attendance of 20,000 scientists from 60 countries across the world. Lovely Professional University in Jalandhar hosted the event which was attended by eminent scientists, including many Nobel laureates. Prime Minister Narendra Modi inaugurated the conference and emphasised on the importance of science and technology in shaping the present-day India. Mr Modi also called on the engineers and scientists for bringing big data, AI and blockchain to solve India's biggest challenges such as healthcare, agriculture and other developmental needs. Emphasis was laid on the need for new technology to be relevant and locally suited.

Lok Sabha passes Bill for Regulating the use of DNA Technology

The DNA Technology (Use and Application) Regulation Bill, 2018 passed by the Lok Sabha on 8 January, allows regulated use of genetic information to establish the identity of

persons. It allows regulated use of DNA technology to establish the identity of certain defined categories of persons, including offenders, suspects, and undertrials. It also allows the use of the technology to establish the identity of persons in matters of crime, parentage dispute, emigration or immigration and transplantation of human organs.

[IIT Kharagpur develops microneedles for low cost painless injections](#)

Researchers from IIT Kharagpur have developed microneedles which can be used for painless delivery. Made up of carbon, these carbon needles showed no toxicity when tested on mice models. The team is now working on developing a drug reservoir and micropump to be attached to the patch for controlled drug delivery.

[Infosys Science Foundation announces the Infosys Prize 2018](#)

The annual prize by the Infosys Foundation which encourage scientific research and innovation in the country by recognising achievements of researchers across six different categories awarded its 2018 winners. The winners were selected by a six membered jury consisting of eminent scientists and researchers. The prize carries a gold medal, a citation and a tax-free purse for Rs 73 lakh.

[New research reveals dynamic changes in silver nanoparticles in solution](#)

Researchers from IIT Madras have found out that silver atoms of nanoparticles are mobile that might have many real-life implications. As per previous knowledge, it was considered that gold and silver particles are rigid, having well-defined structures even at nanoscale. This discovery will change the way the properties of nanoparticles such as catalysis, drug delivery and biological sensing are viewed. The results of the study were published in the journal Science Advances.

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