

NEWSPAPER HIGHLIGHT

Researchers have achieved a nearly 30% jump in the efficiency of a thermophotovoltaic (TPV), which converts photons emitted by a heat source to electricity. The idea is to feed surplus wind or solar electricity to a heating element, and then use TVPs to convert the heat into electricity.

A record-breaking simulation of the past two million years of Earth's climate provides evidence that temperature and other planetary conditions influenced early human migration — and possibly contributed to the emergence of the modern-day human species around 3,00,000 years ago. This might be another proof to support the role of climate in shaping human ancestry.

One of the important materials that is being studied today is twisted bilayer graphene. This is a material in which a wide variety of phases have been observed that pique the interest of physicists, such as insulator, superconductor, and even phases that imitate liquid crystals, such as nematic ordering. In a Letter paper published in the journal, Nature Physics, a group of researchers from Indian Institute of Science (IISc), Bengaluru, has discovered that it may possess a new phase that exhibits what are called charge density wave states. To start with, graphene is a two dimensional material comprising a single layer of carbon atoms arranged in a hexagonal lattice. Stacks of graphene layers can make up graphite.

Tunisian authorities intensified efforts on Saturday to avoid an environmental disaster after a merchant fuel ship carrying one thousand tonnes of fuel sank off the coast of Gabes on Friday.

Yemen's Houthis criticised a new U.S. led task force that will patrol the Red Sea following a series of attacks by the Iran backed rebels in a waterway that's essential to global trade.

Easing norms for infrastructure projects, the Union Environment Ministry has extended the tenure of environmental clearances (EC) granted for existing or new projects. The EC for river valley projects will now have a 13 year validity, and

SCHENGEN VISA

1.The European Union (EU) has reportedly decided to punish the United Kingdom (UK) by requiring non-EU citizens to get a transit Schengen visa in order to fly to the UK on transit flights operated by its airlines. On one-stop flights from India to the UK, passengers can pass through the Gulf and Switzerland (not an EU member) without needing a transit visa. A Schengen visa is the most common visa for Europe.

2.It is a short-term visa that allows its holder to travel freely throughout the Schengen area, which has 26 countries. It enables its holder to enter, freely travel within, and leave the Schengen zone from any of the Schengen member countries. There are no border controls within the Schengen Zone.

3.This is an authorisation granted by a Schengen State for the purpose of a planned stay in the Schengen States for no more than 90 days in any 180-day period ("short-stay visa") and Transit through the Schengen States' international transit areas ("airport transit visa").

4.Transit Schengen Visa is a Type-A visa that allows people to enter a specific airport in the Schengen area for transiting through the area on their way to the final destination outside of the Schengen area. If a traveller is passing through a Schengen airport, even if they are not leaving the terminal, they may be required to obtain a Transit Schengen Visa as a third-country national.

INTRANSE-II PROGRAM

1.The indigenous Intelligent Transportation Systems (ITS) Solutions for Indian Traffic Scenario was launched under the InTranSE -II Program. The InTranSE Phase-II program (2019-2021) is an extension of the InTranSE Phase-I program funded earlier (2009-2012) by the MeitY. Under ITS Endeavor for Indian Cities Phase-II initiative of Ministry of Electronics and Information Technology, the following initiatives has been launched Onboard Driver Assistance & Warning System (ODAWS), Bus Signal Priority System and Common SMART iot Connectiv (CoSMiC) software.

2.ODAWS (Indigenous) incorporates vehicle-borne sensors to monitor driver propensity and vehicle surroundings to deliver acoustic and visual alerts for driver assistance. It involves the development of sub-modules such as the navigational unit, driver assistance console, and mmWave radar sensor. Using mmWave radar sensors, the positional and dynamic characteristics of surrounding vehicles are probed.

3.Navigational sensor provides a precise geo-spatial orientation of the vehicle as well as trends in driving behaviour. Bus Signal Priority System is an operational strategy that modifies normal traffic signal operations to better accommodate in-service public buses at signal-controlled intersections. Unlike a blind priority that is given for emergency vehicles, here it is a conditional priority, which is given only when there is an overall reduction in delay for all vehicles.

4.It will enable to minimize person delay by providing priority to public transport buses, either through Green extension or Red truncation, considering all vehicles approaching a signalized intersection. CoSMiC is a middleware software providing standard based deployment of IoT adhering to oneM2M based global standard. It provides an end-to-end solution for the seamless connection of IoT devices and applications.

5.CoSMiC common service layer is used to interface any vendor specific standards and for increasing interoperability with smart city dashboard. It provides Interworking Proxy Entity (IPE) APIs for connecting non-oneM2M (NoDN) devices or third-party applications to get connected to the CoSMiC platform.

MUMBAI AND HYDERABAD-TREE CITY OF THE WORLD

1.Mumbai and Hyderabad have been jointly recognised as '2021 Tree City of the World' for their commitment to growing and maintaining urban trees and greenery in building healthy, resilient and happy cities. While Mumbai has made the list for

nuclear power projects or those involving the processing of nuclear fuel 15 years. Projects and activities other than the mining and river valley projects will have their EC valid for 10 years.

Childline 1098 is the country's only dedicated helpline number for children and the entire child rights sector relies on it to provide assistance to them, but today a cloud hangs over its future as the government plans to merge it with national emergency helpline 112. Childline 1098 is a 24x7 emergency, free phone outreach for children in distress. It is one of the world's biggest emergency helpline services dedicated to children, and is considered to be among the country's largest emergency response systems with 50 lakh calls received annually.

The newly elected Punjab government on Saturday announced 300 units of free electricity per month to every household in the State from July 1.

The Directorate General of Civil Aviation (DGCA) has rolled out a surveillance mechanism to identify noncompliance of flight safety standards and alert the authorities concerned for taking urgent corrective action to resolve the deficiencies. The comprehensive surveillance programme involving experts drawn from stakeholders like scheduled airlines, non-scheduled operators, aircraft maintenance organisations, design and manufacturing organisations and flying training institutes will cover all areas of activities under the DGCA's control.

The Food and Drug Administration has issued an emergency use authorisation for what it said is the first device that can detect COVID19 in breath samples of humans. The Inspect IR COVID19 Breathalyzer is about the size of a piece of carryon luggage, the FDA said, and can be used in doctor's offices, hospitals and mobile testing sites.

Three Chinese astronauts returned to earth on Saturday after 183 days in space, ending China's longest crewed mission as it continues its quest to become a major space power. The Shenzhou13 spacecraft was the latest mission in Beijing's drive to rival the U.S., after landing a rover on Mars and sending probes to the Moon.

In the underground caves of north-eastern Mexico, groups of blind fish that communicate using clicks seem to be developing cave-specific accents. Researchers noticed

the first time, Hyderabad has featured on it for the second consecutive year.

2. 'Tree Cities of the World' is a programme started by the United Nations' Food and Agriculture Organisation (UN-FAO) and non-profit organisation Arbor Day Foundation. It is an international effort to recognise cities and towns committed to ensuring that their urban forests and trees are properly maintained, sustainably managed, and duly celebrated.

3. It provides direction, assistance, and worldwide recognition for a community's dedication to its urban forest. It provides a framework for a healthy, sustainable urban forestry programme in a town or city. For 2021, 138 cities have been recognised under the programme.

4. **A city is recognised as a 'Tree City' if it meets five core standards to show its commitment towards caring for its trees and forests. To be recognised as a Tree City**, a city must have a written statement delegating responsibility for the care of trees within the municipal boundary to a staff member, a city department, or a group of citizens - a Tree Board.

5. The city should have in place a law or an official policy to govern the management of forests and trees. The city should have a dedicated annual budget for the implementation of the tree management plan. To be recognised as a Tree City, it should organise an annual celebration of trees to raise awareness among people and to acknowledge citizens who carried out the tree programme.

TIME BANKING

1. Time banking is a bartering system for various services, where people exchange services for labor-time based credits as a unit of account, rather than money. Labor-time units can be credited to a person's account in the time bank and redeemed for services from other members of the time bank.

2. The term "Time Banking" was coined by American lawyer Edgar Cahn, who advocated its use to supplement government social services. It is an intermediate system between a system of monetary indirect exchange and a reciprocal gift economy with some of the pros and cons of each. Time banking can be considered a form of community currency.

3. **Time poverty - Time poverty is defined as "not having enough time" to pursue interests beyond unpaid domestic / care work. Unpaid labour is not considered 'real work' and is often devalued by the men and society**, who directly benefit from it. The situation leads to emotional strain and combined with the time poverty, the costs often outweigh the benefits.

4. Often, women do not find enough time or motivation to participate in activities outside the household. Time poverty has a direct bearing on the ability of women to contribute to or participate in the labour market and / or public or political life. In 2020, female labour force participation rate declined compared to 2019 in 58 of the 66 countries surveyed by the UN Department of Economics and Social Affairs.

SOIL HEALTH CARD SCHEME

1. The Soil Health Card (SHC) is a printed report that a farmer will be handed over for each of his holdings. It is used to assess the current status of soil health and, when used over time, to determine changes in soil health that are affected by land management. It displays soil health indicators and associated descriptive terms.

2. It will contain the status of his soil with respect to 12 parameters, N, P, K (Macro-nutrients); S (Secondary-nutrient); Zn, Fe, Cu, Mn, Bo (Micro-nutrients); and pH, EC, OC (Physical parameters). Based on this, the SHC will also indicate fertilizer recommendations and soil amendment required for the farm.

3. **Uses of SHC - The card will contain an advisory based on the soil nutrient status of a farmer's holding. It will show recommendations on dosage of different nutrients needed. Further, it will advise the farmer on the fertilizers** and their quantities he should apply, and also the soil amendments that he should undertake, so as to realize optimal yields.

4. **Implementation** - The SHC scheme is promoted by the Department of Agriculture & Co-operation under the Ministry of Agriculture & Farmers' Welfare. It is being implemented through the Department of Agriculture of all the State and Union Territory Governments. **Cycle** - The SHC will be made available once in a cycle of 3 years, which will indicate the status of soil health of a farmer's holding for that particular period.

5. The SHC given in the next cycle of 2 years will be able to record

significant differences: clicks were high-pitched in one cave, and deep and booming in another. The linguistic split could contribute to ongoing speciation among the fish.

DNA extracted from blood ingested by leeches has been used to track wildlife in China's Ailaoshan Nature Reserve. Researchers extracted DNA from the leeches' blood and detected 86 different species, from endangered Yunnan spiny frogs to Asiatic black bears and humans. Biodiversity was highest in the high-altitude interior of the reserve.

the changes in the soil health for that subsequent period. The sampling is done by the State Government through the staff of their Department of Agriculture or through the staff of an outsourced agency.