

NEWSPAPER HIGHLIGHT

The increasing role that large technology companies (Big Tech) are playing in the provision of financial services has the potential to accentuate systemic risks such as overleverage, Reserve Bank of India (RBI) governor Shaktikanta Das said on Friday. "Companies, whether from ecommerce, social media and search engine platforms, ride hailing and similar businesses have started to offer financial services in a big way on their own or on behalf of others," Mr. Das noted. "These companies have an enormous amount of customer data which has helped them to offer tailored financial services to entities and individuals lacking credit history or collateral."

Nearly five million people in India were internally displaced due to climate change and disasters in 2021, the United Nations has said in a report. The annual Global Trends Report by the UN Refugee Agency (UNHCR) highlighted that globally 100 million people were forced to flee their homes last year due to violence, human rights abuses, food insecurity, the climate crisis, war in Ukraine and other emergencies from Africa to Afghanistan. "The largest displacements in the context of disasters in 2021 occurred in China (6.0 million), the Philippines (5.7 million) and India (4.9 million)," it said.

The Reserve Bank of India has come out with "Payments Vision 2025" with a core theme of 'E-Payments for Everyone, Everywhere, Everytime' (4Es) with an objective to provide every user with safe, secure, fast, convenient, accessible and affordable e-payment options. "It promises to further elevate India's payment systems towards a realm of empowering users with affordable payment options accessible anytime and anywhere with convenience," the RBI said in the vision document.

U.S. President Joe Biden hosts a virtual summit of major economies on Friday attempting to tackle climate change just as fallout from Russia's invasion of Ukraine underlies the globe's reliance on fossil fuels. This is Mr. Biden's third convening of the Major Economies Forum on Energy and Climate since he took office in 2021 with a vow to make the United States a leader in the world's attempt to halt catastrophic global warming.

Massive protests demanding the

ULTRA-THIN HETEROPROTEIN FILMS

1. Scientists from the Institute of Advanced Study in Science and Technology (IASST) have developed ultra-thin monolayer heteroprotein films. Formation - These ultra-thin heteroprotein films were usually developed from bulk solutions. In the above-mentioned study, the ultrathin monolayer protein films were developed consisting of two globular proteins: Bovine serum albumin (BSA) and Lysozyme (Lys).

2. **This is the first time Langmuir-Blodgett (LB) technique was used to produce these films, which gives the films the thickness in nanometer. As a result of electrostatic attraction & hydrophobic interactions between the two proteins, a complex was formed at pH of 9.2.**

3. This monolayer complex was formed at the air-water interface, which was later transferred to the silicon substrates. Advantages - These soft heteroprotein films of the BSA and Lys are more flexible than other protein or plastic films.

4. These films can be used to fabricate highly stable biodegradable thin films of different protein complexes for expanding its applications in the area of thin-film technology. The monolayers at the air-water interface can hold its intrinsic structure for a sufficiently longer time period due to the complexation forming a highly stable film.

5. These films have an excellent thermal, mechanical and pH stability. So, they can pave the way for expanding applications of thin films in biomedical and food packaging industries. To make the protein film free standing for diverse applications, diverse physicochemical methods such as Parameter alteration or Incorporation of different fatty acids or polyol moieties (glycerol, starch, gelatin, etc.) into this complex can be done.

PRITHVI-II

1. A successful training launch of Prithvi-II was carried out from the Integrated Test Range, Chandipur, Odisha. Prithvi-II is a surface-to-surface Short-Range Ballistic Missile. This single-stage missile powered by liquid propulsion twin engines is capable of carrying 500-1,000 kg of warheads.

2. **It uses advanced inertial guidance system with manoeuvring trajectory to hit its target with a very high degree of precision. It was India's first indigenous ballistic missile developed in 1983. It was inducted into the armory of Indian defence forces in 2003.**

3. Prithvi is the first missile to have been developed by the Defense Research & Development Organization (DRDO) under the Integrated Guided Missile Development Programme (IGMDP).

4. Integrated Guided Missile Development Programme Integrated Guided Missile Development Programme (IGMDP) was a Ministry of Defence programme to research and develop missiles. The project was started in 1982-1983 under the leadership of Dr APJ Abdul Kalam.

5. It accomplished its design objectives by 2012. The Defence Research and Development Organisation (DRDO) and erstwhile Ordnance Factories Board (OFB) managed the programme with other Indian government political organizations.

6. After India test-fired the Prithvi missile (1988), the Missile Technology Control Regime (MTCR) decided to restrict access to any technology that would help the Indian missile development program. [The MTCR group, which was then an informal group, was formed in 1987 by the G-7 industrialized countries.] To counter the MTCR, the IGMDP formed a consortium of DRDO laboratories, industries and academic institutions to build the sub-systems, parts and materials for the missiles.

ASIAN AND PACIFIC COUNCIL

1. The 7th ministerial conference of the Asian and Pacific Council (ASPAC) was concluded emphasising the peaceful and non-military nature of the Council. The Asian & Pacific Council (ASPAC) was formed in Seoul (South Korea) in 1966 by 9 non-Communist Asian and Pacific nations.

2. It is a regional organization in the Far East and in the western

rollback of the Agnipath scheme continued across the country for the third day on Friday. One protester was killed in police firing in Secunderabad in Telangana and hundreds of people injured in various places in the violence that marked the agitation against the new armed forces recruitment scheme. Scores of people have been arrested or detained by the police in various States.

Chinese President Xi Jinping will host a virtual summit of the leaders of the BRICS countries on June 23, the Chinese Foreign Ministry said on Friday. Prime Minister Narendra Modi will join Russian President Vladimir Putin as well as Brazil's Jair Bolsonaro and South Africa's Cyril Ramaphosa in the virtual meet next week, which will mark the first summit of the leaders following Russia's invasion of Ukraine.

India slammed China for blocking a proposal to list Pakistani terror convict and LashkareTaiba/ Jamaat-udDawa (LeT/JuD) deputy chief Abdul Rahman Makki as a UN Security Council designated terrorist. Calling the decision by China to place a "technical hold" on the listing requested by the United States and India this month "regrettable" and "extremely unfortunate", India said that China's actions ran counter to its claims of combating terrorism. It added that evidence against Makki was "overwhelming".

Britain on Friday approved a U.S. government request to extradite WikiLeaks founder Julian Assange to face trial over the publication of secret military files, prompting outrage from his supporters. Home Secretary Priti Patel's Interior Ministry said Mr. Assange had 14 days to appeal the decision.

India is likely to impose a ceiling on sugar exports for a second straight year starting this October, aiming to ensure ample domestic supplies and keep a lid on local prices, industry and government sources said on Friday. India, the world's biggest sugar producer, could cap exports of the sweetener at 6 million to 7 million tonnes (mt) in the 2022/23 October-September season, about one third less than the total to be shipped out in the current season, industry and government sources said.

The prices of all electric vehicles (EVs) will be equal to the cost of petrol vehicles in the country within one year, Road Transport and Highways Minister Nitin Gadkari said on Friday. He further said the government is promoting ethanol produced from crop residue instead

part of the Pacific Ocean. This Council is not a political or military arrangement directed against other nations. But it was formed to preserve their integrity and sovereignty in the face of external threats.

3.ASPAC was an organisation for regional co-operation pursuing peace and progress in the Asian and Pacific region. It would devote its efforts to promote co-operation in economic technical, social, cultural, and other fields. Members - Japan, Australia, New Zealand, Thailand, the Philippines, Malaysia, South Korea, South Vietnam, and Taiwan.

4.The Council has an open door policy, which means that the organisation has permit open membership to all non-member countries of the region, regardless of ideologies.

GOOGLE LAMDA

1.An engineer at Google claimed that the company's chatbot Language Model for Dialogue Applications (LaMDA) had become "sentient". Google's Language Model for Dialogue Applications (LaMDA) is an AI-based chatbot that produces text in response to user input. It is a generative language model for the dialogue applications which can assure that the app will be able to converse on any topic.

2.Based on the user's inputs, LaMDA can engage in a free-flowing way about a seemingly endless number of topics. This is possible due to its language processing model which has been trained on ample dialogue.

3.Sentience - **Becoming "sentient" means to attain sentience, or consciousness, or even intelligence. But, the fundamental difficulty is understanding the relationship between physical phenomena and our mental representation of those phenomena.**

4.This is what Australian philosopher David Chalmers has called the "hard problem" of consciousness. One common view of how consciousness can arise from physical systems is called physicalism. Physicalism is the idea that consciousness is a purely physical phenomenon.

5.If this is the case, there is no reason why a machine with the right programming could not possess a human-like mind. Australian philosopher Frank Jackson challenged the physicalist view with a famous thought experiment called the 'knowledge argument'.

MICRO-SWIMMERS

1.Researchers from the Max Planck Institute for Intelligent Systems (MPI-IS) have developed micro-swimmers that use light as a fuel to move in real-body conditions. The micro-swimmers are microbots that can move inside a human body. They are made from the 2-dimensional compound poly (heptazine imide) carbon nitride (aka PHI carbon nitride). These microbots range from 1-10 micrometre in size, and can self-propel when energised by shining light.

2.**These microbots can be moved inside the bloodstream for intelligent drug-delivery that is selectively sensitive to cancer cells. At the microscopic level, the viscosity of water is overwhelmingly high. Any effort by the bots to push backwards and thus generate forward motion would be hindered by the high viscosity of the water.** Working - The PHI carbon nitride microparticles of the micro-swimmers are photocatalytic.

3.Like in a solar cell, the incident light is converted into electrons and holes. These charges drive reactions in the surrounding liquid. This reaction, combined with the particle's electric field, makes the micro-swimmers swim. As long as there is light, electrons and holes are produced on the surface of the swimmers, which in turn react to form ions and an electric field around the swimmer.

4.These ions move around the particle and cause fluid to flow around the particle. So this fluid flow causes the micro-swimmers to move. With light, we not only move the microbots but can direct their motion towards a specific goal. The ions move from the bright surface of the micro-swimmer to the rear end.

5.The diffusion of the swimming medium in one direction propels the micro-swimmer in the opposite direction. The particles are nearly spherical, and the incident light illuminates one-half of the sphere, leaving the other dark. As photocatalysis is light-driven, it occurs only on the brightened hemisphere. As the ions move from the bright side to the dark side, micro-swimmers march towards the direction of the light source.

of petrol and diesel.

China on Friday launched its biggest and most modern aircraft carrier, marking a major military advance for the Asian superpower. The announcement comes at a time of heightened tensions between China and the United States over Beijing's sabre-rattling towards Taiwan, which it views as a breakaway province to be seized by force if necessary. China's carrier development programme is part of a massive overhaul of the People's Liberation Army under President Xi Jinping, who has vowed to build a "fully modern" force to rival the U.S. military by 2027.

Europe sent a powerful symbol of solidarity with Ukraine, when Brussels backed Kyiv's bid for EU candidate status, even as Russia shelled frontline Ukrainian cities and cut back gas supplies to the West. With the European Commission's backing, Ukraine could now be added to the list of countries vying for EU membership as early as next week, when member state leaders meet at their Brussels summit.

6. Drug delivery - In addition to transporting salt ions from the fluid, the voids and pores on the microparticles worked as cargo bays and could soak up large amounts of drug. By changing the pH of the solution or by triggering it with light, the drug release could be activated.

7. Treating Cancer - **The material also has an intelligent charge-storage property to store electrons when light is present. The environment of cancer cells is characterised by low oxygen. The stored electrons are sensitive to it.** We use that to deliver drugs, targeting the cancer cells. In 2021, researchers at Cornell University developed a type of "micro-swimmer" that's powered by ultrasound waves.