If you can't see this message, view it in your browser.

Science Diplomacy News Alert

Forum for Indian Science Diplomacy

www.fisd.in

1-15 FEBRUARY 2023 **ISSUE 103**

RIS Science Diplomacy News Alert is your fortnightly update on Indian and global developments in scientific research, technological advancements, and G-20, global challenges, science diplomacy, policy and governance. The archives of this news alert are available at https://fisd.in/en/alerts-archives. Please email your valuable feedback and comments to science.diplomacy@ris.org.in.

CONTENTS

RESOURCES AND EVENTS

SCIENCE POLICY AND DIPLOMACY

SCIENCE & TECHNOLOGY

GLOBAL

Extracting Antioxidant Nutrients From Corn Processing Waste

Researchers at KTH Royal Institute of Technology have reported a way to unlock soluble ferulic acid-rich dietary fibers from this insoluble matrix, and they developed a hydrogel that delivers it to the intestines where it can prevent cell oxidation and improve gut health. Due to its insolubility, corn bran is a low-value side stream from corn starch production, which is otherwise discarded or sold off for animal feed. But instead of letting it go to waste, the researchers used a method called subcritical water extraction to isolate the soluble fiber part of the bran that contains ferulic acid. The next step is to create a hydrogel by crosslinking this soluble ferulic acid-rich dietary fiber part using natural enzymes (laccase and peroxidase). The hydrogel can be digested as a prebiotic for gut health, or even used as a treatment for wounds, since it counteracts oxidative stress and contributes to healing. The global market for cornstarch is estimated at more than 120 million metric tons, and is expected to increase to 160 million metric tons by 2026. This technology could upgrade a food waste side stream into a valuable material for both food and biomedical applications that could mitigate inflammatory processes.

Using CRISPR to Detect Cancer Biomarkers from Blood

Researchers in China have developed an easy-to-use method that can detect small amounts of cancer-related molecules in exosomes in plasma and effectively distinguish between malignant and benign samples. Exosomes are small vesicles that pinch off from a host cell, carrying cargo, such as nucleic acids, lipids and proteins, inside. Those from cancerous cells may contain biomarkers such as microRNAs (miRNAs).The team designed a CRISPR/Cas13a system to cut apart a fluorophore and quencher-labeled reporter molecule, then packed it into a liposome — essentially a manufactured version of an exosome. When the two types of compartments fused together, the CRISPR cargo could then interact with the exosomal genetic material. If the target miRNA sequence was present, the Cas13a protein became activated and

cut apart the reporter molecule, producing a fluorescent signal. In these experiments, the team targeted miRNA-21, which is involved in the development of several diseases, including breast cancer. The method successfully detected this miRNA within a mixture of similar sequences with high sensitivity. In other experiments, the researchers tested the method on a group of exosomes from healthy human cells and groups derived from breast cancer cells. The system consistently differentiated the cancer-related exosomes from those derived from healthy cells, showing it could be useful as a cancer diagnostic. The researchers say that this method has the potential to make cancer diagnosis and monitoring quicker and easier by analyzing blood samples.

Improving CAR-T Cell Therapy for Solid Tumours

National University of Singapore (NUS Medicine) researchers discovered that in Chimeric Antigen Receptor-expressing T cells (CAR T cells) with cell-signalling protein CD28, turning off the dominant lymphocyte-specific protein tyrosine kinase (LCK), makes another protein, FYN take over cell signalling instead. In the cell signalling pathway, the FYN protein is one of the later switches. In a study using laboratory tumour models, the CAR-T cells with disrupted LCK showed increased anti-tumour efficacy, a result of FYN signalling, because the CAR-T cells were able to persist longer in the body and continue killing tumour cells. In the LCK disrupted CAR-T cells, the graft-versus-host side effect is removed and the modified CAR-T cells, if transplanted from a donor, would be unable to attack the host, the recipient patient. This will significantly reduce production costs for CAR-T and can make CAR-T therapy much more available and accessible to patients. FYN improves the overall T cell function by enhancing its ability to attack solid tumours. At the same time, it gives them potential for use in “off-the-shelf” CAR-T therapy. With this discovery, CD28 CAR-T therapy may now be used to target solid tumours such as breast and ovarian cancers, as well as reduce the cost of CAR-T therapy. This would greatly improve its accessibility to all patients.

Better Electrolytes in Energy Devices

A Chinese research team has proposed a new strategy to use a kind of molecule called zwitterions-polyoxometalates to optimize and broaden practical applications in energy devices such as fuel cells and supercapacitors. The zwitterions are used to optimize the application of polymetallic oxygen cluster electrolytes which are composed of different oxygen-containing acids with high proton conductivity. Using a zwitterion to optimize the application of polyoxometalate-based electrolytes in solid-state capacitors can improve the proton conductivity, cycling stability and capacitance performance. A zwitterion is a molecule containing both positive and negative electrical charges. Solid-state electrolytes based on polyoxometalates have high ionic conductivity and excellent redox activity but have problems, such as low solubility in polymers, specifically in solid-state supercapacitors. The team chose a zwitterion called MIMPS as a molecular additive to improve the solubility and dissociation of polyoxometalates in gel electrolytes. The zwitterion is used to dissociate, or break up, the polyoxometalates, relying on the push and pull of positive and negative charges to interact with the polyoxometalates anion. This interaction reduces the binding effect on protons and releases more active protons, which improves proton conductivity. Next the team investigated its application as a solid electrolyte in solid-state supercapacitors. With the addition of the zwitterion, the conductivity of the gel electrolyte and the performance of the solid-state capacitors were both improved. This opens up possible wider applications for the use of these

zwitterion polyoxometalate-based electrolytes.

Lunaemycin, a New Antibiotic From Moonmilk Deposits

Scientists from the University of Liège have found a compound from moonmilk, an antibiotic named "lunaemycin" produced by a new bacterium Streptomyces lunaelactis. Lunaemycin has interesting properties, and is particularly active against Gram-positive bacteria that are multi-resistant to antibiotics. Moonmilk, a concretion frequently found in various forms (pasty, dry or liquid) in limestone caves, has been a traditional remedy used for curative purposes in Europe. The team studied the microbial flora of moonmilk to isolate filamentous actinobacteria, the bacteria that are champions in the production of antimicrobial agents. The researchers found many of them, both in number and diversity. This microbial consortium is capable of producing hundreds of antibiotics, some of which are used daily today. But the vast majority of the biosynthesis genes involved in bioactive compound production found in these bacteria are cryptic, i.e. it is not possible to associate a known molecule with them. The team is continuing efforts to exploit the potential of the bacteria isolated from moonmilk and to reveal the most promising molecules in human therapy but also in the agro-industrial field.

Polymers with a Metal Backbone

A Chinese research team has now reported a polymer with a metallic backbone that is conductive, thermally stable, and has interesting optoelectronic properties. The team used a chalice-shaped molecule (calixarene) with four binding sites as the “scaffold” for the metal polymer. They attached four poly (aminopyridine) chains to the calixarenes, which bundles the four chains and aligned them in parallel. By using an iterative synthetic procedure the team was able to produce chains of equal length. They then carried out the metalation. The nitrogen atoms of the chain molecules can bind to nickel. Their distance from each other exactly matches the distance of metal–metal bonds, causing the nickel atoms to link together in a single line. The four poly (aminopyridine) chains wrap around the nickel chain in a helix, as shown by X-ray analysis, and stabilize it. The team was thus able to synthesize polymers with a nickel backbone and precisely controlled length. They produced versions with three to 21 nickel atoms. Interestingly, the distance between nickel atoms decreases as the chain length increases, strengthening the Ni–Ni bonds. The new materials may conduct electricity, are thermally stable, and can be processed in solution. They demonstrate strong length-dependent light absorption with narrow band gaps, which is promising for optoelectronic devices and semiconductors. The new synthetic strategy could also be expanded to other transition metals such as copper and cobalt.

Sun-driven Gel Could Purify Water

Princeton University researchers used a water and ethylene glycol mixture to make a poly N-isopropyl acrylamide (PNIPAm) hydrogel with an open pore structure, similar to a natural loofah. Then they coated the opaque hydrogel's inner pores with polydopamine (PDA) and poly (sulfobetaine methacrylate) (PSMBA), and tested this material using an artificial light equivalent to the power of the sun. It absorbed water at room temperature and, when heated by the artificial light, released 70 per cent of its stored water in 10 minutes -- a rate four times greater than the one for a previously reported absorber gel. The researchers say that, at this rate, the material has the potential to meet a person's daily demand. And under lower light conditions, replicating partly cloudy skies, it took 15 to 20 minutes for the material to release a

similar amount of stored water. Finally, the new loofah-like material was tested on samples polluted with organic dyes, heavy metals, oil and microplastics. In all of the tests, the gel made the water substantially cleaner. For example, in two cycles of treatment, water samples with around 40 parts per million (ppm) chromium were absorbed, then released with less than 0.07 ppm chromium -- the allowable limit for drinking water. The researchers say the unique hydrogel structure that they created could be useful in additional applications, such as drug delivery, smart sensors and chemical separations.

INDIA

Hydrogen Bus at India Energy Week

Prime Minister Shri Narendra Modi flagged off Oil India Limited's (OIL) indigenously developed hydrogen fuel cell based e-bus at the India Energy Week (IEW) in Bengaluru on 6th February 2023. OIL, under the National Hydrogen Mission has developed this hydrogen fuel cell-based bus. The bus is a hybrid of an Electric Drive and a Fuel Cell, the Fuel Cell uses hydrogen to produce electricity which drives the electric motor & also charges the auxiliary battery that provides back-up power during acceleration and braking. The 60 KW capacity fuel cell uses Proton Exchange Membrane (PEM) technology to produce electricity. Bus has the tank capacity of 21.9 Kg at 350 bar pressure. The bus is designed to accommodate 32 persons including the driver and is provided with a wheel chair facility.

Successful Flight of Small Satellite Launch Vehicle (SSLV)

ISRO's Small Satellite Launch Vehicle (SSLV) in its second developmental flight, successfully placed EOS-07, Janus-1 and AzaadiSAT-2 satellites into their intended 450 km circular orbit with an inclination of 37 degrees. SSLV is the new small satellite launch vehicle developed by ISRO to cater the launch of small satellites up to 500 kg to Low Earth Orbits on 'launch-on-demand' basis. It is configured with three solid stages 87 t, 7.7 t and 4.5 t respectively. SSLV is a 34 m tall, 2 m diameter vehicle having a lift-off mass of 120 t. A liquid propulsion-based Velocity Trimming Module (VTM) achieves desired velocity for the insertion of the satellites into the intended orbit. SSLV is capable of launching Mini, Micro, or Nanosatellites (10 to 500 kg mass) to a 500 km orbit. It provides low-cost access to Space, offers low turn-around time, facilitates flexibility in accommodating multiple satellites and demands minimal launch infrastructure. The first developmental flight on August 7, 2022 had some failures, and technical changes had been made since then.SSLV-D2 carried EOS-07, a 153.6 kg Earth Observation Satellite realised by ISRO; Janus-1, a technology demonstration satellite weighing 10.2 kg belong ANTARIS, USA; and AzaadiSAT-2, an 8.8 kg satellite realised by Space Kidz India by integrating various scientific payloads developed by 750 girl students across India. SSLV is now set to serve the global space industry on a demand basis.

India Discovers 5.9 Million Tonnes Lithium Deposits

The Geological Survey of India for the first time established Lithium inferred resources (G3) of 5.9 million tonnes in the Salal-Haimana area of the Reasi district of Jammu and Kashmir. The Geological Survey of India (GSI) was established in 1851 and has attained the status of a geo-scientific organisation of international repute. Lithium is a critical component for rechargeable batteries which are important for energy storage applications including for mobile phones, computers, and electric vehicles. The discovery of a massive reserve in India

will reduce import dependence.

IISc and Samsung Partner for Semiconductor R&D

The Indian Institute of Science (IISc) will partner with Samsung Semiconductor India Research (SSIR) for research and development in the field of on-chip Electrostatic Discharge (ESD) protection. Under a research agreement, the partners propose to build cutting-edge ESD device solutions to protect ultra high speed serial interfaces in advanced Integrated Circuits (ICs) and system-on-chip (SoC) products. The partnership "reinforced" IISc's commitment to strengthen industry-academia engagements that can make a significant impact in the coming years. The research agreement was exchanged by CVP & MD at Samsung Semiconductor India Research, Bengaluru, Balajee Sowrirajan, and IISc Director Prof Govindan Rangarajan, in the presence of delegates from Samsung and IISc.

G-20 AND GLOBAL CHALLENGES

G20 Energy Transitions Working Group Meets

The two-day meeting of the first G20 Energy Transitions Working Group was held in Bengaluru. The meeting discussed the need for energy security and diversified supply chains. The energy transition pathway should be different for each country depending on its energy base and potential. There emerged a clear understanding that fossil fuels would continue to be used more or less in most of the countries in the coming 15 to 20 years while increasing the share of renewable energy. Grid inter-connection projects under "One Sun, One World, One Grid" can lead to better utilisation of available energy sources amongst member countries without much storage capacity. Deliberations stressed the need to focus more on energy efficiency of industries. The need to manage fuel prices and choice of technology to see that everyone on the planet has access to affordable energy was underlined. The meeting favoured a people-centric energy transition mechanism. The next ETWG meeting is scheduled in the first week of April in Gandhinagar, Gujarat. As part of this strategic partnership, EESL will provide technical advisory, project management support, contracting and implementation support to execute select energy efficiency programmes from its portfolio with proven track records of successful implementation. Over 150 delegates including G20 countries and nine special invitee guest countries participated besides the World Bank, Asian Development Bank, United Nations Environment Program (UNEP) and many other international organisations.

G20 RIIG Inception Meeting Held in Kolkata

The initiation meeting of the Research and Innovation Initiative Gathering (RIIG), held in Kolkata, brought together scientists & administrators from different areas together to discuss research and innovation for an equitable society. Dr. S Chandrasekhar, Secretary Department of Science and Technology (DST), said that G20 has the greatest footprint and impact on growth, economy, and sustainability through international cooperation, stressing on the responsibility of the group to drive change and drive it now. A total of 36 foreign delegates representing twenty countries and International Organisations, namely Argentina, Australia, Brazil, Canada, European Union, France, Germany, Indonesia, International Solar Alliance (ISA), Italy, Netherlands, Republic of Korea, Russia, Saudi Arabia, South Africa, Spain, Turkey, UAE, United Kingdom, and United States of America – participated in the Inception meeting. About 40 Indian delegates and special invitees from various scientific departments/

organisations of Govt of India participated in the meeting.

G20 Agriculture Working Group Deputies Meeting

The first Agriculture Deputies Meeting under the Agriculture Working Group (AWG), G20 concluded on 15th February 2023. The final day of the event started with technical theme-wise sessions wherein, deliberations were held on four themes covering: "food security and nutrition", "sustainable agriculture with the climate-smart approach", "inclusive agricultural value chains and food systems", and "digitalization for agricultural transformation". Discussions focused on agricultural transformation and the importance of digitalization in agriculture with a special emphasis on smallholder farmers and the need to have greater convergence and collaboration among the G20 member countries on agricultural research and development aspects.

G20 Digital Economy Working Group Meets

The First G20 Digital Economy Working Group (DEWG) meeting in India concluded 15 February, setting the tone for a productive and meaningful deliberation for the future DEWG meetings. The three-day meeting, which took place in Lucknow, showcased India's digital transformation journey, and brought together G20 members, key knowledge partners, and guest countries to discuss digital public infrastructure, cybersecurity, and digital skilling. Five workshops covered various topics related to digital public infrastructure, cybersecurity solutions for MSMEs, sustainable development goals, and the use of geospatial technologies. In addition, the meeting showcased digital initiatives from the state of Uttar Pradesh. Discussions focused on Digital Public Infrastructure (DPI), Cyber Security in Digital Economy and Digital Skilling.

IN BRIEF

Vertical, Full-color Microscopic LEDs

MIT engineers have developed a new way to make sharper, defect-free displays by stacking red, green, and blue light-emitting diodes to create vertical, multicolored pixels. Each stacked pixel can generate the full commercial range of colors and measures about 4 microns wide. The microscopic pixels, or "micro-LEDs," can be packed to a density of 5,000 pixels per inch, the highest pixel density reported, which can enable higher-resolution displays in a smaller footprint. The MIT team has come up with a potentially less wasteful way to fabricate micro-LEDs that does not require precise, pixel-by-pixel alignment. The technique is an entirely different, vertical LED approach; in contrast to the conventional, horizontal pixel arrangement. The team grew ultrathin membranes of red, green, and blue LEDs. They then peeled the entire LED membranes away from their base wafers, and stacked them together to make a layer cake of red, green, and blue membranes. They could then carve the cake into patterns of tiny, vertical pixels, each as small as 4 microns wide. As a demonstration, the team fabricated a vertical LED pixel, and showed that by altering the voltage applied to each of the pixel's red, green, and blue membranes, they could produce various colors in a single pixel. The team plans to improve the operation of the vertical pixels to making an array of many vertical micro-LED pixels.

Passive Radiative Cooling Can Now Be Controlled Electrically

Researchers at Linköping University have shown that the temperature of a device can be regulated by electrically tuning the extent to which it emits heat through passive radiative cooling. The concept uses a conducting polymer to electrochemically tune the emissivity of the device. This approach could enable development of systems that can be laid on a roof, much like a solar cell, thus controlling the infrared thermal radiation from the house and cooling when needed. The method requires extremely little energy consumption and causes minimal pollution. Other areas of application can also include tunable clothing and wallpaper to thermal flows and improve thermal comfort indoors at lowered energy consumption.

Lubricants For Stainless Steel

A UK team has discovered that epoxy functionalization of polymer nanoparticles added to lubricating oil further promotes friction reduction on metal surfaces. The nanoparticles can be directly prepared within this oil solvent using a technique known as polymerization-induced self-assembly. The team developed “hairy” nanoparticles comprising oil-soluble poly(lauryl methacrylate) chains and an oil-insoluble nanoparticulate core. These nanoparticles were made to stick strongly to metal surfaces by introducing epoxy groups into the “hairs" by copolymerization lauryl methacrylate with glycidyl methacrylate, an epoxy-functional monomer. The team found that the epoxy-bearing nanoparticles react with hydroxy groups located at the surface of stainless steel. This reaction led to strong adhesion of the nanoparticles, a phenomenon known as chemical adsorption. Whether chemical adsorption occurred or not depended on the precise location of the epoxy groups. The adsorbed nanoparticles reduced friction significantly, at the typical operating temperature of an internal combustion engine.

Waste-Eating Bacteria Digest Complex Carbons

Researchers from Northwestern University have found that a common environmental bacterium, Comamonas testosteroni, has a natural appetite for complex waste from plants and plastics. C. testosteroni has a natural ability to digest synthetic laundry detergents and can also break down compounds from plastic and lignin (fibrous, woody waste from plants). C. testosteroni cannot use sugars, which makes this bacterium an attractive platform for digesting materials such as plastic and lignin containing compounds with rings of carbon atoms. By examining the relationship among transcriptomics, proteomics, metabolomics and fluxomics, the team mapped the metabolic pathways that bacteria use to degrade plastic and lignin compounds into carbons. They discovered that the bacteria first break down the ring of carbons in each compound. After breaking open the ring into a linear structure, the bacteria continue to degrade it into shorter fragments and feed those broken-down products into their natural metabolism, so they can make amino acids or DNA to help them grow. They also discovered that C. testosteroni can direct carbon through different metabolic routes. These routes can lead to useful by-products that can be used for industrially relevant polymers such as plastics. The team is working on a project investigating the metabolism that triggers this polymer biosynthesis.

Entire Color Palette of Inexpensive Fluorescent Dyes

ETH Zurich researchers have created new fluorescent dyes that are simple and inexpensive to make based on through-space charge transfer (TSCT) polymers that have full-color tunable

emission and was developed with the aid of predictive machine learning models. The dyes are made up of modular polymers with varying numbers of subunits that determine their color. The subunits such as Naphthalene diimide (NDI) and 1-vinylpyrene (VPy) are either easily obtainable commercially or can be easily produced. Potential applications for the fluorescent inks include UV-activated security inks for banknotes, certificates, passports, or for encrypting information. The method can also be used to produce inks that change color after prolonged UV illumination. They demonstrated this using the example of two initially red fluorescent inks, one of which turns blue after several minutes of UV illumination, while the other remains red. This property can also be used for security features.

Growing "Perfect" 2D Materials

A team from MIT has developed a method that could enable chip manufacturers to fabricate ever-smaller transistors from 2D materials by growing them on existing wafers of silicon and other materials. 2D materials are two-dimensional sheets of perfect crystals that are as thin as a single atom. At the scale of nanometers, 2D materials can conduct electrons far more efficiently than silicon. The new method is a form of "nonepitaxial, single-crystalline growth," which the team used for the first time to grow pure, defect-free 2D materials onto industrial silicon wafers. With their method, the team fabricated a simple functional transistor from a type of 2D materials called transition-metal dichalcogenides, or TMDs, which are known to conduct electricity better than silicon at nanometer scales. The team used conventional vapor deposition methods to pump atoms across a masked silicon wafer. They fabricated a simple TMD transistor and showed that its electrical performance was just as good as a pure flake of the same material. They also applied the method to engineer a multilayered device. This technology could have many potential applications.

RESOURCES & EVENTS

Denmark to Put CO_2 in the Seabed

The Danish government has awarded licenses to three fossil fuel companies to store carbon dioxide under the seabed, as a step towards its target of becoming carbon negative by 2050. The companies will try to store millions of tons of carbon dioxide in the sandstone of old oil and gas reservoirs in the North Sea. To start with, the companies will store carbon dioxide which has been captured from industrial sources like cement and steel companies and power plants. By offsetting emissions, this will help Denmark reach net zero – when it emits no more greenhouse gases than it sucks up. The government is also funding research into direct air capture, where carbon dioxide is sucked out of the air rather than from smokestacks. In theory, this can lead to negative emissions. The government wants the three projects to store 13 million tons of carbon dioxide a year from 2030 onwards. It estimates its depleted North Sea oil fields could store 22 billion tons in total, equivalent to over 500 years worth of Denmark's current emissions.

SCIENCE POLICY AND DIPLOMACY

US-India Strengthen Partnerships in Critical and Emerging Technology

U.S.-India initiative on Critical and Emerging Technology (iCET) was launched in May 2022

to elevate and expand strategic technology partnership and defense industrial cooperation between the governments, businesses, and academic institutions of our two countries. The two National Security Advisors led the inaugural meeting of the iCET in Washington; DC.The two sides discussed opportunities for greater cooperation in critical and emerging technologies, co-development and coproduction, and ways to deepen connectivity across innovation ecosystems. They also identified the fields of biotechnology, advanced materials, and rare earth processing technology as areas for future cooperation. Both sides underlined their commitment to working to resolve issues related to regulatory barriers and business and talent mobility in both countries through a standing mechanism under iCET. New bilateral initiatives announced included - Implementation Arrangement for a Research Agency Partnership between the National Science Foundation and Indian science agencies. a joint Indo-U.S. Quantum Coordination Mechanism with participation from industry, academia, and government to facilitate research and industry collaboration; bilateral Defense Industrial Cooperation Roadmap, etc. Both sides agreed to enhance long-term research and development cooperation on identifying maritime security and intelligence surveillance reconnaissance (ISR), and to launch a new "Innovation Bridge" that will connect U.S. and Indian defense startups. On resilient semiconductor supply chains both sides intend to promote the development of a skilled workforce that will support global semiconductor supply chains and encourage the development of joint ventures and technology partnerships on mature technology nodes and packaging in India. Other decisions included strengthening cooperation on human spaceflight, commercial space partnerships, STEM talent exchanges, and expanding the agenda of the U.S.-India Civil Space Joint Working Group to include planetary defense, advancing cooperation on research and development in 5G and 6G, etc. The next iCET meeting is in New Delhi later in 2023.

EU Proposes Mass Exit From Energy Charter Treaty

The European Commission has told member countries that a joint EU exit from the controversial 1998 Energy Charter Treaty (ECT) appears inevitable, with some of them already announcing they would leave the accord over climate concerns. The Treaty has around 50 signatories including European Union countries, was designed to protect companies in the energy industry by allowing them to sue governments on policies affecting their investments. But in recent years it has been used to challenge policies that require fossil fuel plants to shut – raising concerns that it is an obstacle to addressing climate change. France, Germany, the Netherlands, Poland and Spain have already announced plans to quit the treaty, increasing pressure on Brussels to coordinate an EU-wide withdrawal. The treaty's 20-year sunset clause means that fossil fuel companies from other ECT states will still be allowed to use the ECT to sue EU countries until at least 2043. The EU governments who are pushing for a joint agreement stopping fossil fuel companies based in the EU from suing EU states. Non-EU ECT members have shown no interest in ending protections for their fossil fuel investments in the EU. An EU exit would require support from at least 15 EU countries and the European Parliament, which has already backed a resolution calling for the idea.

WHO Decision on Traditional Medicine Strategy

The WHO Executive Board adopted a draft decision calling for a global policy on traditional medicine that was tabled by Bangladesh, China, Eswatini, India, Indonesia, Japan, Malaysia, Nicaragua, Republic of Korea, Singapore, South Africa, Thailand and Turkey. The WHO and

India are establishing a Global Centre for Traditional Medicine in Jamnagar in Gujarat in India, and 170 of the 194 member states report that their citizens use traditional medicine. The resolution to be adopted at the next World Health Assembly asks WHO to extend the traditional medicine strategy 2014–2023 until 2025;and to develop a new global traditional medicine strategy 2025–2034 and to submit the strategy to the World Health Assembly in 2025.

UNEP Working Group Discusses Panel for Chemicals, Waste, and Pollution

The ad hoc Open-ended Working Group (OEWG) set up by the UN Environment Assembly in 2022 met in Thailand, (OEWG 1.2) for its resumed first session from 30 January – 3 February. The OEWG is to develop a new science-policy panel, modelled on the IPCC, on sound management of chemicals and waste, and the prevention of pollution. OEWG 1.1 held virtually on 6 October 2022 in Nairobi, Kenya, had focused on organizational matters. The recent meeting focused on the scope and functions of the panel. Capacity building attracted particular attention, which delegates agreed would be a new function of the panel. Discussions will continue, on the basis of two proposals that put forward different visions for the capacity building function. OEWG 1.2 also agreed on a list of the elements that will have to be negotiated and adopted in order to establish the panel. These include rules of procedure, processes for adopting assessments, and institutional arrangements, among many others. The outcome document includes an agreed outline of draft elements needed for the new panel. The second meeting of the OEWG will be held in the last quarter of 2023.

WHO Releases Pandemic Treaty Zero Draft

WHO has released a "zero draft of the pandemic accord on 1 February addressing issues related to intellectual property waivers, as well as transparency and access conditions over publicly funded medical products. In the draft, parties — are to make manufacturers disclose information on medical products that received public funding, including product pricing and contract terms for public procurement during a pandemic. While the draft text mentions several measures to improve access to medical products in lower-income countries, particularly during a pandemic, there is some concern about the weak language in Articles 7 and 9 of the text, which specifically covers access and transparency provisions. The draft also gives WHO having access to 20 per cent of pandemic response products such as diagnostics, vaccines, personal protective equipment, and therapeutics “to enable equitable distribution.” The draft outlines the needs of health workers during a pandemic response. The draft prepared by the intergovernmental negotiating body (INB) bureau, will be negotiated in this body starting 27 February, and the final version of the accord is expected to be tabled at the WHO’s 2024 World Health Assembly.

Argentina and India Discuss Bilateral Cooperation

Argentina Minister of Science, Technology & Innovation of Argentina, Mr Daniel Filmus accompanied by a high-level delegation, discussed bilateral collaboration between the two countries with Union Minister of Science and Technology and Earth Sciences Dr Jitendra Singh. The Argentina Minister also sought India’s support to deploy technologies for implementation by industry and facilitating the entrepreneurs in Argentina. Dr Jitendra Singh said, CSIR would be very keen to connect with the Industries from Argentina and work towards implementation of the technologies/products/processes in Latin American Nations

with governmental support. He added that CSIR could play a lead role, especially in industrial innovation collaboration through joint technology development and upscaling of each other's Intellectual Property (IP) for commercialization.

NTNU and TCS to Expedite Transition to Sustainable Energy

Tata Consultancy Services (TCS) has entered into a strategic academic partnership with Norwegian University of Science and Technology (NTNU) to collaborate on the development of advanced battery cell technologies and expedite the global transition to sustainable energy. TCS will work closely with NTNU's Department of Energy and Process Engineering (EPT) on the design, development, and digital testing of sustainable energy solutions. TCS will provide technology consultancy and digital innovation across each stage of the battery value chain, including fabrication, lifecycle management, cell assembly and testing, and digital twins for solid-state and lithium-ion batteries. The partnership will see TCS offer dedicated support to the EPT in the form of technology collaboration, talent exchange, digital innovation, and startup engagement, for developing sustainable energy solutions that take health, climate changes, and available resources into consideration. TCS will be responsible for developing and testing a 'sustainable by design' platform for the end-to-end battery production process. This important academic collaboration will provide NTNU with access to TCS' international ecosystem of technologists and enterprise partners to help scale production and meet the increasing global demand for sustainable batteries. By forging an alliance of enterprise and academia and establishing a clear route-to-market, TCS and NTNU will accelerate the journey to electrification and a net zero future.

We welcome your comments and valuable suggestions. Please write to us for receiving publications, updates and notices regarding seminars, conferences etc. Contact us at science.diplomacy@ris.org.in

NOTE TO OUR READERS AND STAKEHOLDERS:

RIS Science Diplomacy Programme (fisd.in) is glad to present a new version of Science Diplomacy News Alerts, following India's assumption of the Presidency of the G20. A new section G20 and global challenges has been added. We request your cooperation to review the Alerts and improve its content. For this purpose, please complete the form at https://forms.gle/o4d869FxaM9t3KNw7, and submit it. Your support and cooperation is appreciated.