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SCIENCE & TECHNOLOGY

GLOBAL

Copper-based catalysts efficiently turn carbon dioxide into methane

Rice University researchers have developed a way to wrest the carbon from carbon dioxide and affix it to hydrogen atoms, forming methane -- a valuable fuel and industrial feedstock. The method relies on electrolysis and catalysts developed by grafting isolated copper atoms on two-dimensional polymer templates. The polymer templates, which were made of alternating carbon and nitrogen atoms, have tiny pores where copper atoms can fit at varying distances from one another. The catalysts assemble at room temperature in water with the copper atoms displacing the host metal ions in the polymer templates. When tested in a reactor, the catalysts enabled the reduction of carbon dioxide to methane in one half of the cell, while oxygen was produced from water in the other half. Modulating the distances between the copper atoms lowered the energy needed for key reaction steps, thereby speeding up the chemical conversion. This cooperative action of nearby copper atoms helped produce methane at a very high rate of selectivity and efficiency.

OSIRIS-REx capsule returns to Earth with a sample from asteroid Bennu

NASA's OSIRIS-Rex asteroid-sampling mission, tasked with finding hints about the origins of life on our planet, has returned to Earth from a seven-year journey to the other side of the solar system. The spacecraft fired its descent capsule and deployed parachutes to land in the Utah desert. Inside the capsule is 60 grams)of rocky space rubble from the asteroid Bennu. OSIRIS-REx (short for "Origins, Spectral Interpretation, Resource Identification, Security-Regolith Explorer") was launched in September 2016. Bennu (named after an Egyptian god of creation) is a rubble-pile asteroid with mass 77.5 million metric tons made up of rock chunks and boulders barely held together by weak gravity. OSIRIS-REx spent 22 months in orbit around Bennu before landing on Oct. 20, 2020. It fired a burst of nitrogen from its Touch-and-Go Sample-Acquisition Mechanism which sent rocks and dust around the craft, and some of that rocky debris was collected in a canister aboard OSIRIS-REx which then left the asteroid for Earth in May 2021. The samples will be analysed for presence of organic molecules. After

releasing its descent capsule, the spacecraft passed by Earth to its next target, Apophis, another near-Earth asteroid which it will reach in 2029.

Mysterious virus found in the deep Pacific ocean

Researchers from China have found a new virus, identified as a bacteriophage, at a depth of 8,900 meters. The virus, called vB_HmeY_H4907, was found inside the Mariana Trench, which drops to about 11,000 m at its lowest point on the floor of the Pacific Ocean. The virus is a bacteriophage — a type of lifeform that infects bacteria before hijacking their cellular machinery to generate more copies of itself. The newly discovered virus infects bacteria in the phylum Halomonas, and does so lysogenically — which means that it inserts its genetic material into the bacterial genome and replicates without killing the bacteria. This could be due to the harsh environments in which both the virus and bacteria evolved, meaning it cannot afford to kill its host. Halomonas can be found throughout the oceans, including on the Antarctic seafloor and in sediments surrounding deep-sea hydrothermal vents. By conducting a genetic analysis on vB_HmeY_H4907, the researchers discovered that its range is likely just as wide as that of the bacteria it infects.This newfound virus is only the third known to infect the Halomonas bacteria that lives in the deep oceans. The bacteria and viruses that live at these depths are so alien to humans that our immune cells do not even register that they exist, making them effectively invisible.

New self-cleaning membranes for desalination

A team of NYU Abu Dhabi (NYUAD) researchers has developed a new kind of self-cleaning, hybrid membrane that provides a solution that overcomes significant challenges. They created a unique hybrid membrane by utilizing stimuli-responsive materials, thermosalient organic crystals, embedded in polymers. The thermosalient crystals are a new class of dynamic materials that are capable of sudden expansion or motion upon heating or cooling.

Combining these microcrystals with traditional, porous membranes, the researchers developed a "smart" membrane capable of deformation by self-modulating its pore size and surface properties in response to changes in temperature. The crystals on the surface of the membrane respond to short-term increase in temperature, which activates the membrane to effectively remove the deposited contaminants from its surface. The researchers found that this "gating" process increased the flow of desalinated water by more than 43 percent through osmotic distillation and significantly extended the membrane's operational lifetime. The ability of hybrid membranes to self-clean and minimize fouling could make desalination technologies more efficient and could increase the availability of freshwater. With more than twenty types of dynamic organic crystals available to use with different membrane compositions, this novel approach represents an important step forward towards the development of a new generation of 'smart' membranes that will be capable of self-cleaning in an energy-saving and environmentally benign manner, which will effectively improve the cost-effectiveness of the overall process of potable water production.

Nanotechnology to Help Treat Blindness

Scientists from Anglia Ruskin University (ARU) have successfully used nanotechnology to develop a 3D scaffold that supports the growth of healthy retinal pigment cells (RPE), a breakthrough that could revolutionize the treatment of age-related macular degeneration (AMD), a leading cause of blindness worldwide. RPE cells sit just outside the neural part of the retina and, when damaged, can cause vision to deteriorate. Utilizing electrospinning technology,

researchers created a scaffold that, when treated with the steroid fluocinolone acetonide, enhances the resilience and growth of retinal pigment epithelial cells, potentially aiding in the development of ocular tissue for transplantation. This research has demonstrated, for the first time, that nanofibre scaffolds treated with the anti-inflammatory substance such as fluocinolone acetonide can enhance the growth, differentiation, and functionality of RPE cells. This system shows great potential for development as a substitute for providing a synthetic, non-toxic, biostable support for transplantation of the retinal pigment epithelial cells.This breakthrough could potentially help millions of people worldwide.

Genetically Modifying Individual Cells in Living Animals

Researchers at ETH Zurich in Basel, have now developed a method that will greatly simplify and speed up research with laboratory animals: using the CRISPR-Cas gene scissors, they simultaneously make several dozen gene changes in the cells of a single animal, much like a mosaic.While no more than one gene is altered in each cell, the various cells within an organ are altered in different ways. Individual cells can then be precisely analyzed. This enables researchers to study the ramifications of many different gene changes in a single experiment.The team has applied this approach in living mice. The researchers used the adeno-associated virus (AAV) prepared so that each virus particle carried the information to destroy a particular gene, then infected the mice with a mixture of viruses carrying different instructions for gene destruction. In this way, they were able to switch off different genes in the cells of one organ. For this study, they chose the brain. Using this method,they obtained new clues to a rare genetic disorder in humans, known as 22q11.2 deletion syndrome. The method would also be suitable for use in studying other genetic disorders. The number of modified genes could be increased from the current 29 to several hundred genes per experiment. ETH Zurich has applied for a patent on the technology. The researchers now want to use it as part of a spin-off they are establishing.

INDIA

ISRO’s Aditya-L1 Solar Mission achieves successful Insertion manoeuvre

The Indian Space Research Organisation (ISRO) has proudly announced the successful execution of the Trans-Lagrangean Point 1 Insertion (TL1I) manoeuvre during its maiden solar mission, Aditya-L1. This manoeuvre has positioned the spacecraft on a trajectory destined for the Sun-Earth L1 point in about 110 days.The mission has commenced its scientific data collection phase. The Supra Thermal and Energetic Particle Spectrometer (STEPS) instrument's sensors have initiated measurements of supra-thermal and energetic ions and electrons at distances exceeding 50,000 km from Earth. This crucial data empowers scientists to analyze the behavior of particles surrounding Earth.

Indian scientists making high-purity polysilicon ingots from recycled PV cells

Researchers at the Academy of Scientific and Innovative Research (AcSIR) in India have used a “spark plasma sintering” (SPS) technique to produce polysilicon ingots from recycled solar cells in end-of-life PV modules. They claim to have produced small-sized ingots with purity levels of 98% to 99%. These purity levels slightly exceed the 3N purity level, which the scientists say is greater than that of metallurgical-grade silicon. It is also “good enough” for applications other than solar cells, like battery materials.The scientists used a modified hot pressing technology known as SPS, involving the passage of pulsed direct current with millisecond pulse widths, high

current, and low voltage through the pressing tool and sintered body. This approach enables rapid heating and short processing times, typically within a few minutes. The researchers specifically applied this technique to consolidate the silicon powder obtained from the recycled solar cells. The process involved thermally treating the recovered wafer pieces on a stainless steel plate at an optimized temperature of 480°C for 30 minutes in a muffle furnace. Subsequently, the researchers utilized SPS to consolidate the powder at temperatures ranging from 1,100 C to 1,200 C, significantly below silicon's melting point of 1,410 C. The sintering cycles were conducted for up to 20 minutes under vacuum conditions. Using X-Ray Fluorescence (XRF) analysis, they determined that the resulting ingots achieved a purity level exceeding 3N.

New "Metallic" 2D Material – Molybdenene

Researchers from Germany, India and Australia have developed a new 2D material named "molybdenene." Composed of a single atomic layer of molybdenum atoms, this material stands out due to its metallic nature. It consists of just one atomic layer of molybdenum atoms and is also referred to as "molybdenene."The scientists succeeded in producing a thin sheet of the metal molybdenum, which is just one atomic layer thick, similar to graphene. The researchers created the new 2D material using a microwave, in which they heated a mixture of molybdenum sulfide (MoS2) and graphene to incandescence at a temperature of around 3000 degrees Celsius. In a reaction driven by the microwave electric field, finely branched hair structures, also known as "whiskers," were formed in which the tapered molybdenum layers can be found. In the first tests, the scientists could already observe a variety of useful properties. Molybdenene is mechanically extremely stable. It could be used, for example, as a coating for electrodes to make batteries even more powerful and robust. The researchers expect that the material has further exotic electronic properties, similar to graphene, because of its special 2D structure.

India retains 40th rank in the Global Innovation Index 2023

India retains the 40th rank out of 132 economies in the Global Innovation Index 2023 rankings published by the World Intellectual Property Organization. India's rank has moved up from 81 in 2015 to 40 in 2023. The consistent improvement in the GII ranking is owing to the immense knowledge capital, the vibrant start-up ecosystem, and the amazing work done by the public and private research organizations. All Departments of the Government have played a pivotal role in enriching the National Innovation Ecosystem. Most importantly, the Atal Innovation Mission has played a major role in expanding the Innovation ecosystem. The GII is a reliable tool for governments across the world to assess the innovation-led social and economic changes in their respective countries. Over the years, the GII has established itself as a policy tool for various governments and helped them to reflect upon the existing status quo.

G-20 AND GLOBAL CHALLENGES

G20 University Connect Finale

Prime Minister Narendra Modi addressed the G20 University Connect Finale programme at Bharat Mandapam in New Delhi on September 26. Addressing the participating students and faculty members of universities, PM Modi said that the youth of a country progress where there is optimism, opportunities, and openness. He asked the youth to think big and praised the participation of youth in the event as more than 100,000 students from more than 100 universities participated in the G20 University Connect. The government took the G20 to 50 million students

in schools, higher education, and skill development institutions. The G20 University Connect initiative was undertaken with the aim to build an understanding of India's G20 Presidency among India's youth and enhance their participation in the different G20 events. PM Modi also said the number of startups in the country had gone up from less than 100 in 2014 to more than 100,000 today. PM Modi also released four publications on the occasion — The Grand Success of G20 Bharat Presidency: Visionary Leadership, Inclusive Approach; India's G20 Presidency: Vasudhaiva Kutumbakam; Compendium of G20 University Connect Programme; and Showcasing Indian Culture at G20. Union Minister for Education and Skill Development, Dharmendra Pradhan was also present on the occasion.

G20 results follow up actions

A high-level officials meeting conducted a comprehensive assessment regarding the outcomes of the recent G20 Leaders Summit held in New Delhi.This review aims to transform the summit's achievements into tangible actions. Various ministries leading specific Working Groups have been tasked with executing outcomes relevant to their respective sectors. Furthermore, a high-level monitoring group is in the process of formation. Officials have been instructed to prepare for the upcoming G20 Virtual Summit in November. Multiple entities, including the G20 Secretariat, Department of Economic Affairs (DEA), and Ministry of External Affairs (MEA), are collaborating closely to ensure the success of the virtual G20.All ministries have been directed to concentrate on delivering on commitments outlined in the declaration and those stemming from previous ministerial and working group meetings. Ministries are to conduct webinars involving stakeholders and engage state governments and think tanks in this process.
The meeting called for formulating an action plan for outreach to the African Union and the broader global south.

IBSA Foreign Ministers agree to strengthen G20 coordination

Meeting on the sidelines of the UNGA in New York, Foreign Ministers from the IBSA group reaffirmed G20's role as the premier forum for international economic cooperation and reiterated the need for implementing the SDGs and for promoting sustainable development. They commended the successful hosting of the 18th G20 Summit in New Delhi under the Indian G20 Presidency and expressed their full support to the upcoming Brazilian G20 Presidency. The Ministers reiterated the need for macroeconomic policy coordination, with the aim of achieving strong, sustainable, balanced and inclusive growth and minimizing negative spillovers and external shocks. The Ministers agreed to coordinate on issues of common interest, including international trade and investment, environment and climate change, counterterrorism, social inclusion and food security, development issues, health and education.The Ministers welcomed the inclusion of the African Union as a member of the G20 under the Indian Presidency. They agreed to continue to amplify and further integrate the voice of the Global South in the G20 agenda under the Brazilian and South African presidencies in 2024 and 2025, respectively.

G20 International Industries Research Park planned

25/9/23
https://www.thehindu.com/news/cities/puducherry/iit-m-plans-to-establish-g20-international-industries-research-park-at-sedarapet/article67345081.ece
The Indian Institute of Technology Madras (IIT-M), has initiated the process to establish a G20 International Industries Research Park to serve as a single point location for technology and

scientific research ecosystem. Modelled on the research centre functioning on IIT-M campus, the proposed research park in Puducherry aimed at bringing scholars, scientists, technocrats, and entrepreneurs from G20, European Union and friendly nations under one roof to carry out research in advanced materials, renewable energy, artificial intelligence, biotechnology, smart cities, and other nation-specific subjects.Around 250 acres at Sedarapet could be made available for the park. IIT-M will be pursuing the establishment of the park by 2026 including with the Union Government and investment from foreign countries. The park aims to accommodate more than 5,000 research scholars involved in innovation. The project will create job opportunities and establish the region further as an education hub.

G20 expert group on strengthening of Multilateral Development Banks meets

The G20 Independent Expert Group on strengthening of Multilateral Development Banks (MDBs) co-convened by former American treasury secretary Lawrence Summers and ex-chairman of the 15th Finance Commission N K Singh.met in New Delhi to work on Volume 2 of their report to be discussed in G20 meetings scheduled to be held under the Indian Presidency in Marrakech on sidelines of.the IMF-World Bank meetings.The IEG set up by G20 India Presidency has focused on strengthening MDBs and delivered Volume 1 of its report. The report said that MDBs need to provide an additional $260 billion annually to fund sustainable infrastructure and help nations achieve SDG targets. Additional spending of some $3 trillion per year is needed by 2030, of which $1.8 trillion represents additional investments in climate action, mostly in sustainable infrastructure, and $1.2 trillion in additional spending to attain other sustainable development goals (SDGs).

IN BRIEF

Illegal Drugs Detected Instantly With 95% Accuracy

A device that lights up in the presence of illegal drugs soaked into paper or fabric is expected to be cleared for rollout across the UK over the next few months.The pocket-sized device, invented by scientists at the University of Bath is intended to detect the synthetic cannabinoid Spice – a class of psychoactive substances used predominantly in prisons and homeless communities in the UK. The drug can be fatal and often causes severe side effects, including psychosis, stroke and seizures. The researchers hope that in its current format, the drug detector will be used to stem the flow of Spice smuggled into prisons and reduce the devastating effects on users of these highly addictive synthetic drugs. With further engineering, they are confident their device will be able to detect all types of synthetic drugs. The device is battery-operated, ultra-portable, low-cost and gives instant results that anyone can interpret.

Satellite images to predict wheat yield

Russian ecologists have found a parameter in satellite images that allows accurately calculating and increasing the wheat yield. Such technology helps agronomists monitor crops and make decisions. Theteam from Algeria, Egypt, and Russia have determined an indicator that will help calculate the yield with almost 100% accuracy. They made an experiment using several varieties of winter wheat as an example. Over a year, ecologists observed the growth of wheat that was grown under three different soil, seed, and plant treatment regimes, from standard to high intensity. To do this, the team used Sentinel-2 satellite images with a resolution of 10 to 60 meters. At the same time,they monitored the "ground" indicators of wheat: the crop yield and the

grain quality. With satellite images in different ranges, they determined the wheat growth indicators—vegetation indices, which reflect vegetation density, photosynthesis activity, chlorophyll content, and others. The results showed that the green chlorophyll index (CGI) turned out to be the most effective for predicting harvest volume—its correlation with yield was 98%.

New coating could cool and warm buildings through the seasons

A Chinese team has developed an energy-efficient, cost-effective coating that could keep buildings cool in the summers—or warm in the winters—without additional energy. To make the coating, researchers mixed thermochromic microcapsules, specialized microparticles and binders to form a suspension, which they sprayed or brushed onto a metal surface. When heated to 68 degrees Fahrenheit, the surface began to change from dark to light gray. Once it reached 86 degrees, the light-colored film reflected up to 93% of solar radiation. in summer, the coating reduces the temperature by 6.5 deg C. In the winter, the coating's dark color strongly absorbs solar radiation, resulting in a 4.3 deg C temperature rise. The researchers say that this color-changing system could save a considerable amount of energy for regions that experience multiple seasons, while still being inexpensive and easy to manufacture.

Improving Face Mask Efficiency

A research team at the University of Liverpool has developed a new material that captures coronavirus particles and could transform the efficiency of face masks and other filter equipment to stop the spread of COVID-19 and other viruses. The new material used in a conventional face mask was approximately 93% more efficient at capturing proteins, including coronavirus proteins, with little impact on breathability. The team “re-tuned” the surface of the spherical silica particle they used for chromatography to make the surface very “sticky” for the COVID-19 S1 spike protein. At the same time, they increased the porosity of the silica particle to give it a very large surface area of 300m2 per gram and increased the internal volume of the silica sphere to provide a large capacity to “capture” the virus. The new material is at the proof of concept stage and the team has shown it works in face masks in addition to air filters such as those used in airplanes, cars, and air conditioning.The group also developed a method to attach the sticky particles onto the surface of a conventional face mask.The team is looking at developing more advanced “sticky” surfaces for a variety of bioaerosols including the new Covid variant BA.2.86 as well as influenzas and other deadly viruses such as Nipah.

RESOURCES & EVENTS

Six young people sue 32 European states over climate change

Six Portuguese youths are taking 32 nations to the European Court of Human Rights this month for not doing enough to stop global warming, the latest bid to secure climate justice through the courts. The move was sparked by the massive wildfires that struck Portugal in 2017, killing over 100 people and charring swathes of the country. The Strasbourg-based court's Grand Chamber will examine the arguments on September 27, something that is reserved for exceptional cases. The youths argue that excessive carbon emissions are infringing in particular the right to life and the right to the respect of private and family life.Activists are increasingly turning to courts to force greater efforts by governments to tackle climate change, amid warnings the world is falling short of the 2015 Paris Agreement goals for limiting warming to 1.5 degrees Celsius above

mid-19th century levels. An ECHR ruling, expected in several months, in favor of the plaintiffs would be binding on the 46 member states of the Council of Europe and potentially constitute legal jurisprudence on climate cases. Nations would have to rapidly accelerate their climate mitigation efforts. But first, the court will rule on the admissibility of the case, since the Portuguese youths filed directly to the ECHR without first seeking recourse in domestic courts.They argue that trying to file separate cases in all 32 countries would be an excessive and disproportionate burden on an issue requiring urgent attention. An ECHR source confirmed that it was a "unique case" in terms of the number of nations targeted by a single complaint.The court has not previously ruled on member obligations with regards to climate change.Two other climate cases involving France and Switzerland were examined by the ECHR in March, though no rulings have yet been issued. According to the UN Environment Programme, the number of legal cases worldwide linked to climate challenges doubled between 2017 and 2022.

SDG Summit Reaffirms Shared Commitment to SDGs

The SDG Summit took place on 18-19 September, marking the half-way point to the deadline for achieving the 2030 Agenda, the Summit aimed to provide renewed impetus and accelerate action. The Summit adopted a political declaration, reaffirming Member States' continued resolve and shared commitment to the 2030 Agenda for Sustainable Development and its SDGs. The declaration highlights progress made and gaps and challenges that remain, and issues a call to action to turn our world towards 2030. The 2023 Summit was the second meeting of the HLPF to convene under the auspices of the UNGA since the 2030 Agenda and its 17 SDGs were adopted in 2015. It marked the half-way point to the deadline for achieving the Goals, seeking to provide renewed impetus for accelerated action. Negotiations on the political declaration had been co-facilitated over the course of several months by Qatar and Ireland. The SDG Summit was preceded by an SDG Action Weekend, which served as a platform for stakeholder engagement to maximize the impact of the Summit.

Climate Summit Demonstrates Collective Will.

The Climate Ambition Summit was convened by UN Secretary-General during the UN General Assembly (UNGA) High-level Week in New York, on 20 September. The meeting sought to accelerate action by governments, business, finance, local authorities, and civil society to support a just transition to a more equitable renewable-energy based, climate-resilient global economy. The Summit showcased "first mover and doer" leaders and included a special meeting on loss and damage finance. Participants held high-level discussions on pathways towards accelerated climate action and increased ambition, addressing: credibility standards for net-zero commitments; adaptation and early warning systems; and industrial decarbonization and energy transition. During the closing segment, the rapporteurs of these thematic sessions shared key messages. Some major issues discussed were - greenwashing, adaptation and early warnings for all, industrial decarbonization and energy transition,and loss and damage finance, The main outcomes of the Summit will be captured in a Chair's Summary

US National Security Agency unveils artificial intelligence security centre

29/9/23

https://www.aljazeera.com/news/2023/9/29/us-national-security-agency-unveils-artificial-intelligence-security-centre

The United States National Security Agency (NSA) has announced the creation of an artificial intelligence security centre that will oversee the development and integration of AI capabilities within US defence and intelligence services.This is in view of the increasing importance of AI in the national security landscape and the opening of the new centre was part of steps to “shape the future” of AI technology in the security, defence and intelligence sectors. While the United States has the advantage in AI there is the growing threat that China poses. The AI centre will be incorporated into the NSA’s current Cybersecurity Collaboration Center, Nakasone said, where it will become the focal point for “promoting the secure adoption of new AI capabilities across the national security enterprise and the defence industry base”. The NSA chief said it was imperative that the US maintains its leadership in AI development and that malicious foreign actors be prevented from obtaining US innovations in AI. The establishment of an AI security centre follows an NSA study.

SCIENCE POLICY AND DIPLOMACY

Germany joins Artemis Accords

Germany has joined the Artemis Accords promoted by NASA. The signing ceremony took place on 14 September in Washington.German space sector companies are already contributing to the Artemis program, and Germany's signing of the Accords brings new possibilities. The Accords were launched in 2020, when eight nations signed up. Germany becomes the 29th nation to sign the Artemis Accords, while Argentina became the 28th country in July, following India, Spain and Ecuador a month earlier. NASA aims to send four astronauts around the moon and back with the Artemis 2 mission, launching around November 2024. Artemis 3 will then seek to put humans on the lunar surface as soon as 2025 or 2026. China is leading another group of countries in a parallel lunar exploration endeavor, seeking to establish a lunar base in the 2030s. South Africa this month became the fourth country to join that effort, along with China, Russia and Venezuela.

FAA proposes rule to reduce space junk in Earth orbit

The U.S. Federal Aviation Administration (FAA) which awards launch licenses, has proposed a rule that would limit the amount of time that private rockets' upper stages stay in orbit.The proposed rule, which the FAA released in draft form on 20 September, seeks "to limit the growth of new orbital debris and reduce the potential for collisions with spacecraft and satellites to promote a sustainable space environment." The potential regulation would give commercial launch operators five disposal options for their upper stages (the part of the rocket that deploys the payload). The rule seeks to shorten the removal deadline and decrease the risk of orbital debris causing damage to spacecraft. As of July 2023, the number of orbital objects sized 10 cm or greater is estimated to be over 23,000. Recent estimates indicate a total of one-half million objects sized between 1 and 10 cm on orbit, and over 100 million objects larger than 1 mm.

Leaders at UN issue three declarations on health.

The High-level Week of the 78th session of the UN General Assembly (UNGA) featured three high-level meetings on health, addressing: universal health coverage (UHC); pandemic prevention, preparedness, and response; and tuberculosis. The meetings resulted in three high-level political declarations.The high-level meeting on UHC on 21 September 2023 approved a political declaration titled, ‘Universal Health Coverage: Expanding our ambition for health and

well-being in a post-COVID world.' In it, Heads of State and Government and representatives of States and Governments reaffirm the right of every human being to the highest attainable standard of physical and mental health.The political declaration approved by the high-level meeting on pandemic prevention, preparedness and response issues a call to action in the areas of equity, global governance, leadership and accountability, overarching health-related issues, financing and investments, and follow-up.The high-level meeting on the fight against tuberculosis on 22 September approved a political declaration reaffirming their collective commitment to end tuberculosis by 2030.

India calls for prohibition of the use of Nuclear Weapons

Speaking at the High-Level Plenary meeting to commemorate the International Day for Total Elimination of Nuclear Weapons on 27 September, Indian delegation said that India is firmly committed to the goal of universal, non-discriminatory and verifiable nuclear disarmament. India has called for a step-by-step approach for the total elimination of nuclear weapons, and for negotiating a Comprehensive Nuclear Weapons Convention. India has supported the immediate commencement of negotiations in the CD on a Fissile Material Cutoff Treaty (FMCT). India is a responsible nuclear weapon State and is committed as per its nuclear doctrine, to maintain credible minimum deterrence with the posture of "no-first use" and "non-use against non-nuclear weapon States". India has proposed a "Convention on the Prohibition of the use of Nuclear Weapons", prohibiting the use or threat of use of nuclear weapons under any circumstances. India believes that a multilateral, universal and binding agreement prohibiting the use or threat of use of nuclear weapons would help generate necessary political will among nuclear weapon States to engage in negotiations leading to the ultimate elimination of nuclear weapons. India, through its UNGA resolution 'Reducing Nuclear Danger', has been drawing the attention of the world to the hair-trigger alert of nuclear weapons that carries the unacceptable risk of unintentional or accidental use of nuclear weapons leading to a nuclear war with catastrophic consequences. India is an important partner in global efforts towards disarmament and non-proliferation. India has hosted a fully funded Annual Disarmament and International Security Fellowship Programme since 2019 to advance disarmament education.

BRICS Foreign Ministers on Space, Disarmament, ICT and AI

Meeting on the sidelines of the UNGA in New York, Foreign Ministers of the BRICS group reasserted their support for ensuring the long-term sustainability of outer space activities and prevention of an arms race in outer space (PAROS), including through negotiations to adopt a relevant legally binding multilateral instrument. The Ministers called for the strengthening of the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction (BTWC), including by adopting a legally binding Protocol to the Convention that provides for, inter alia, an efficient verification mechanism. The Ministers reaffirmed their commitment to the promotion of an open, secure, stable, accessible and peaceful ICT-environment and supported the leading role of the United Nations in promoting constructive dialogue on ensuring ICT-security, including within the UN Open-Ended Working Group on security of and in the use of ICTs 2021-2025, and developing a universal legal framework in this realm. Recognising the existing and emerging possibilities of criminal activities and threats, they welcomed the ongoing efforts in the Ad Hoc Committee to elaborate a comprehensive international convention on countering the use of ICTs for criminal purpose. The Ministers emphasised the responsible and ethical development and use

of Artificial Intelligence (AI) for socio-economic development and inclusive growth of all societies. They supported communication and cooperation on AI technology to promote mutual benefits, called for strengthening AI international governance and encouraged policy exchanges and dialogues on AI, with a view to establishing an effective global governance framework with the aim to protect human rights and spur innovation and economic growth.

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.