NEST Newsletter (June 2021)

India's S&T Efforts to Combat Covid-19

CSIR

The CSIR and Tata MD, a healthcare venture from the Tata Group **have announced a partnership to ramp up the COVID-19 testing capacity** across Tier II and III towns as well as rural areas across India.

https://pib.gov.in/PressReleasePage.aspx?PRID=1728139

CSIR and Laxai Life Sciences, Hyderabad, **have been given regulatory approval by Drugs Controller General of India (DCGI) to undertake a two-arm phase-II clinical trial to assess the safety and efficacy of the drug Colchicine** for treatment of COVID-19 patients.

http://www.ddinews.gov.in/sci-tech/csir-partnership-laxai-life-sciences-has-received-regulatory-approval-undertake-clinical

Indian Institute of Chemical Technology under CSIR and Lee Pharma **have entered into a licensing agreement for the synthesis of 2-Deoxy-D-Glucose (2-DG)**. 2-DG was developed by DRDO and Dr Reddy's Laboratories and has received approval for use in Covid-19 patients.

https://pib.gov.in/PressReleasePage.aspx?PRID=1725576

Saline Gargle Sampling based RT-PCR, developed by CSIR-**NEERI is gaining wider acceptability across the country**, with private labs adopting this technique.

https://twitter.com/CSIR_NEERI/status/1406505841923182594

Office of PSA

'Project O2 for India' of the Office of Principal Scientific Adviser, Government of India**, a National Consortium of Oxygen is enabling the national level supply of critical raw materials** such as zeolites, setting up of small oxygen plants, manufacturing compressors, oxygen plants, concentrators, and ventilators.

https://pib.gov.in/PressReleasePage.aspx?PRID=1726727

DBT

Ubio Biotechnology Systems have developed DBT Biotechnology Industry Research Assistance Council (DBT-BIRAC) supported product SENSIT Rapid COVID-19 Ag kit **for**

qualitative detection of SARS CoV-2 Nucleocapsid Protein with an assay time of 15 minutes.

https://www.birac.nic.in/desc_new.php?id=89

DST

The Department of Science & Technology in collaboration with Bangalore based HealthTech startup Niramai and the Indian Institute of Science (IISc**) has developed an AI-driven platform named XraySetu**, for early intervention through rapid screening of COVID 19 with the help of Chest X-ray interpretation over WhatsApp by doctors with access to X-ray machines.

https://www.pib.gov.in/PressReleasePage.aspx?PRID=1723592

A 3D printed virucidal mask developed by Thincr Technologies India Private Limited, **has been selected for commercialization by Technology Development Board (TDB) of DST** as part of the Government's fight against COVID-19.

https://pib.gov.in/PressReleasePage.aspx?PRID=1726884

Vigyan Prasar

For more updates on India's S&T efforts in combatting Covid-19, please follow Vigyan Prasar's Fortnightly Newsletter (June 28, 2021).

https://vigyanprasar.gov.in/wp-content/uploads/vp-Covid-Newsletter-28June2021.pdf

Novel Graphene based Covid Detection

A US research team **has developed a Graphene based multiplexed, portable, electrochemical platform for ultra-rapid detection of COVID-19 virus**. Along with the virus platform also detects IgM, IgG antibodies and C-reactive protein (inflammatory biomarker) in subject's blood.

https://www.cell.com/matter/pdf/S2590-2385(20)30553-1.pdf

General Updates

MeitY

MeitY **will establish a Quantum Computing Applications Lab in the country, in collaboration with Amazon Web Services**, to accelerate quantum computing-led research and development and enable new scientific discoveries. The MeitY Quantum

Computing Applications Lab will provide quantum computing as a service to government ministries and departments.

https://pib.gov.in/PressReleseDetailm.aspx?PRID=1690085

"In order **to facilitate farmers by providing location specific 'Demand Based Tele Agriculture Advisories'**, the Indian Council of Agricultural Research (ICAR), Ministry of Agriculture and Farmers Welfare and Digital India Corporation (DIC), Ministry of Electronics & Information Technology **have signed an MoU**."

https://www.pib.gov.in/PressReleseDetailm.aspx?PRID=1725699

The Union Cabinet chaired by Prime Minister Shri Narendra Modi **has approved BharatNet implementation through Public Private Partnership Model in 16 States** with optical fibre connectivity to all inhabited villages.

https://www.pib.gov.in/PressReleasePage.aspx?PRID=1731457

DoT

Department of Telecommunications (DoT) **notified the "Production Linked Incentive (PLI) Scheme" with the objective to boost domestic manufacturing, investments and export in the telecom and networking products**.

https://www.pib.gov.in/PressReleseDetailm.aspx?PRID=1724121

Department of Telecommunications (DoT), Wireless Planning and Coordination Wing (WPC) **launched the initiative to facilitate online licensing for use of spectrum** to encourage spectrum-based applications and for experiment, demonstration and testing requirements.

https://www.pib.gov.in/PressReleseDetailm.aspx?PRID=1731219

NASSCOM

The NASSCOM Engineering, Research & Development (ER&D) Council **launched the inaugural edition of the Engineering R&D Showcase to demonstrate India's role as a global leader in Engineering, R&D** and recognize the impact delivered by the Indian ER&D ecosystem comprising of Global Capability Centers (GCCs), Engineering Services Providers (ESPs), Start-Ups, and India-based Manufacturing Companies, globally.

https://nasscom.in/sites/default/files/media_pdf/Press_Release_NASSCOM_ERD_Showcase_2021_24062021.pdf

DRDO

DRDO successfully **flight tested a New Generation Nuclear Capable Ballistic Missile Agni Prime** from Dr APJ Abdul Kalam island off the coast of Odisha.

https://pib.gov.in/PressReleasePage.aspx?PRID=1730828

DRDO **successfully test fired extended range version of indigenously developed Pinaka rocket from a Multi-Barrel Rocket Launcher (MBRL)** at Integrated Test Range (ITR), Chandipur off the coast of Odisha.

https://pib.gov.in/PressReleasePage.aspx?PRID=1730354

HAL

In line with Atmanirbhar Bharat vision of Prime Minister Shri Narendra Modi, **Ministry of Defense inducted Advanced Light Helicopters (ALH) Mk-III in Indian Coast Guard (ICG).** The state-of-the-art helicopters were indigenously designed and manufactured by Hindustan Aeronautics Limited (HAL), Bengaluru.

https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1726510

ISRO

Scientists from Ahmedabad based Physical Research Laboratory (under Department of Space) **used observations of the Sun in soft X-rays with Solar X-ray Monitor (XSM) onboard ISRO's Chandrayaan-2 mission**. The team **determined the abundance of elemental Magnesium, Aluminum &Silicon in the solar corona**.

https://www.isro.gov.in/update/22-jun-2021/unraveling-mysteries-of-solar-corona-new-results-chandrayaan-2-solar-x-ray

India's indigenous real-time navigation system **NavIC adopts indigenous digital codes designed by ISRO and IISc** as a part of a new civilian signal, which will be introduced in L1 band in the upcoming NavIC satellites.

https://www.isro.gov.in/update/25-jun-2021/navic-l1-adopts-indigenous-digital-codes-designed-isro-and-iisc

MoES

“The Cabinet Committee on Economic Affairs chaired by Prime Minister Shri Narendra Modi, **has approved the proposal of Ministry of Earth Sciences (MoES) on "Deep Ocean Mission"**, with a view to explore deep ocean for resources and develop deep sea technologies for sustainable use of ocean resources.”

https://pib.gov.in/PressReleasePage.aspx?PRID=1727525

DST

Science & Engineering Research Board (SERB), under DST & Intel India **launched a first-of-its-kind initiative that will enable Indians to pursue industry-relevant research in the areas of deep technologies**.

https://twitter.com/IndiaDST/status/1410111282124967937

DST under its Advanced Hydrogen and Fuel cell Programme **is promoting and supporting activities related to indigenous development** of new and existing material in large quantities, catalysts, membrane, components for fuel cells, electrolysers, hydrogen storage materials, materials for type IV cylinders and prototypes **for implementation of various applications of hydrogen and fuel cell in the country.**

https://dst.gov.in/sites/default/files/Final%20HFC%20Call-2021_0.pdf

IIT

Researchers at IIT Bombay **devise a novel and economical method to extract hydrogen from water** under a project supported by SERB & CSIR.

https://twitter.com/IndiaDST/status/1409740088225910785

“Divyasampark I-Hub Roorkee for Devices Materials and Technology Foundation, **intended to serve as a cyber-physical systems (CPS) technology hub and promote technology innovation and entrepreneurship** in the CPS domain**, is fully functional** at IIT Roorkee.”

https://twitter.com/IndiaDST/status/1410102887431106563

Researcher at IIT Hyderabad **has developed DuroKea, a world’s first low cost & long-lasting sanitizing technologies** to combat COVID-19 virus spreading.

https://pib.gov.in/PressReleasePage.aspx?PRID=1712225

IIT Hyderabad along with its start-up WiSig, working on 5G mobile communications and solutions **has developed ‘Koala,’ an NB-IoT SoC** (Narrowband Internet-of-Things System-on-Chip).

https://telanganatoday.com/iit-h-wisig-develops-indias-first-5g-soc-to-drive-nb-iot-apps

IIT Hyderabad researchers **have developed 'Muscope,' the world's smallest microscope** that can image up to one milli micron diameter with off-the-shelf electronic components, without optimization.
https://twitter.com/EduMinOfIndia/status/1406575908253683716

MNRE

The United States Department of Energy (DOE) & the Ministry of New and Renewable Energy (MNRE), Government of India, along with the US India Strategic Partnership Forum (USISPF), **launched the US-India Hydrogen Task Force, under the US-India Strategic Clean Energy Partnership (SCEP).** The Task Force represents industry and government stakeholders to assess technology status, study innovative policy options, and make recommendations.

https://usispf.org/press_release/us-department-of-energy-india-ministry-of-new-and-renewable-energy/

To kick-start a domestic hydrogen eco-system in the country, the Union ministry of new and renewable energy (MNRE) **has circulated a draft Cabinet note for inter-ministerial consultation to put green hydrogen** consumption obligations on fertilizer producers and petroleum refiners.

https://www.financialexpress.com/industry/green-hydrogen-mnre-mulls-purchase-obligations-on-fertiliser-firms-refineries/2272602/

NTPC

NTPC Ltd, under Ministry of Power, **anchored a two-day workshop on Green Hydrogen**. The online event saw leading experts from the Brazil, Russia, India, China, South Africa (BRICS) countries who shared their insights and professional views on the subject as well as the latest developments going on in their countries in the area of green hydrogen.

https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1729630

DEVELOPMENTS IN THE PRIVATE SECTOR

Jindal Steel Works

JSW Steel joins the India Hydrogen Alliance (IH2A) energy transition coalition. Its inclusion is significant, as Steel and Cement have been identified as priority industrial sectors for decarbonization and where hydrogen may be adopted early on.

https://www.pv-magazine-india.com/2021/06/17/jsw-steel-csir-ncl-scotland-join-india-h2-alliance/

TATA GROUP

"Telecom major Bharti Airtel and Tata Group **announced a strategic partnership for implementing 5G networks solutions for India**."

https://www.livemint.com/companies/news/airtel-and-tata-group-joins-hands-for-5g-rollout-11624272222026.html

"India's move towards alternative automotive fuel technology got a fillip with **Tata Motors bagging an order of 15 hydrogen-based fuel cell buses from Indian Oil Corporation Ltd**."

https://www.business-standard.com/article/companies/tata-motors-wins-order-for-15-hydrogen-based-fuel-cell-buses-from-iocl-121063001691_1.html

"Tata Motors has some futuristic plans for the Indian market. During addressing to the shareholders in the 76th Annual Report, N Chandrasekaran chairman of Tata Motors**, has revealed that the company aims to launch 10 new battery-electric vehicles (BEV) by 2025**."

https://www.indiacarnews.com/news/tata-plans-to-launch-10-new-electric-cars-in-india-by-2025-47257/

GRAVTON

Gravton Quanta, **an e-vehicle was launched in India, thus contributing to the country's rapidly growing of EV sector**. This is the first offering from the stables of Gravton Motors, a Hyderabad-based start-up.

https://www.timesnownews.com/auto/bike-news/article/gravton-quanta-electric-vehicle-launched-in-india-at/777391

RELIANCE

Reliance Industries (RIL) **announced an investment of Rs 75,000 crore to create a New Energy Ecosystem**. The plan includes building four gigafactories, two of which are dedicated to renewables & green hydrogen.

https://www.moneycontrol.com/news/technology/auto/what-reliances-push-towards-green-hydrogen-power-means-for-indias-ev-ecosystem-7088261.html

ASHOK LEYLAND

Truck and bus maker Ashok **Leyland will set up a 'mother plant' in India under its UK-subsidiary Switch for its EV** business.

https://timesofindia.indiatimes.com/business/india-business/ashok-leyland-to-set-up-mother-ev-plant-in-india-under-uk-subsidiary-switch/articleshow/83852610.cms

L&T

L&T Technology Services (LLTS) and Mavenir **have collaborated on open RAN and 5G test automation solutions.** LTTS will contribute to the acceleration of Mavenir's cloud-native product roadmap driving increased market share in the 5G telecom landscape.

https://www.livemint.com/companies/news/lt-tech-partners-with-mavenir-for-5g-automation-services-11624938571861.html

ARTICLES/ EVENTS OF INTEREST

Observer Research Foundation (ORF)

Developing clean energy alternatives for industries - (Article by Nandini Sarma)

"India needs more investments in design and research comparable to those of companies abroad. New renewable energy technologies require huge investments, and the role of government facilitation is important."

https://www.orfonline.org/expert-speak/developing-clean-energy-alternatives-industries/

Pricing carbon: Trade-offs and opportunities for India – (Article by Tanushree Chandra)

"A clear, robust regulatory framework for pricing carbon can play a key role in increasing the uptake of carbon pricing by businesses in India."

https://www.orfonline.org/expert-speak/pricing-carbon-trade-offs-opportunities-india/

India and cyberspace: Balance between offence and defence - (Article by Kartik Bommakanti)

Artificial intelligence (AI) has become a buzzword in technology in both civilian and military contexts. With interest comes a radical increase in extravagant promises, wild speculation, and over-the-top fantasies, coupled with funding to attempt to make them all possible.

https://www.orfonline.org/expert-speak/india-and-cyberspace-balance-between-offence-and-defence/

Gateway House

The Quad's strategy for China

"On 23 June 2021, Gateway House hosted the Interim Meeting of the Quad Economy and Technology Task Force. Elizabeth Roche, Editor - Foreign Affairs, Mint interviewed Lisa Curtis and Surjit Bhalla, co-chairs of the task force, who explain how the Quad can scale up economic and technological collaboration and pool resources to push back Beijing's plans to dominate supply chains and global tech."

https://www.gatewayhouse.in/the-quads-strategy-for-china/

Shaping the Israel-India-U.S. defense technology partnership – (Article by Sameer Patil)

"The idea of a U.S.-India-Israel trilateral cooperation is not unknown, but rather unfulfilled. Diaspora associations have repeatedly raised the idea of a technology triangle amongst the 3 countries, and in 2020, the three countries explored a potential cooperation in 5G communication technology. On these terms, taking advantage of the bilateral synergies and establishing a start-up corridor between Tel Aviv, Silicon Valley, and Bengaluru, can launch this partnership."

https://www.gatewayhouse.in/shaping-israel-india-us-defense-technology-partnership/

India's hibernating space launch sector – (Article by Chaitanya Giri)

"The Indian administration enacted much-needed space reforms in 2020, paving the way for a private space industry in the country. However, the COVID-19 pandemic has suspended space launch activities in the country. The Department of Space must remove these redundancies to make India's space launch centers and spaceports market-oriented and ready for commercial, military, civilian, and experimental space launches."

https://www.gatewayhouse.in/indias-hibernating-space-launch-sector/

The India-Taiwan imperative for cybersecurity co-operation – (Article by Sameer Patil)

"India and Taiwan face a common cyber threat from China – an extension of their respective territorial disputes with Beijing. This makes it essential for New Delhi and Taipei to initiate informal

cybersecurity cooperation. They can begin by focusing on cyberattack attribution, critical infrastructure protection and cyber hygiene."

https://www.gatewayhouse.in/the-india-taiwan-imperative-for-cybersecurity-cooperation/

NITI Aayog

India should focus on exports, attracting best manufacturers: NITI Aayog CEO

"I think it's a huge opportunity. COVID has accelerated the change, global supply chains will get relocated, there will be a China plus one strategy for manufacturing, a lot of foreign direct investment (FDI) has come into India and it's an opportunity for us to attract best manufacturers from all the world." – Amitabh Kant, CEO, NITI Aayog

https://www.business-standard.com/article/current-affairs/india-should-focus-on-exports-attracting-best-manufacturers-niti-aayog-121061300500_1.html

Department of Military Affairs

Indian military personnel to train in US on cybersecurity, command in the offing

"The proposed cyber command will marry the individual capabilities of all the three services to protect the military from being vulnerable to cyber-attacks from India's adversaries. With the threat of cyberattacks mounting against the Indian armed forces, the Department of Military Affairs (DMA) is planning to send up to 100 personnel to US to train in latest cybersecurity technology and artificial intelligence (AI) for future warfare."

https://www.hindustantimes.com/india-news/india-military-personnel-to-train-in-us-on-cybersecurity-command-in-the-offing-101625025032655.html

DRDO

"Counter-drone technology developed by DRDO could provide the armed forces with the capability to swiftly detect, intercept and destroy small drones that pose a security threat." –
G Satheesh Reddy, DRDO Chief

https://www.hindustantimes.com/india-news/our-anti-drone-technology-can-stave-off-threats-drdo-chief-101624993037673.html

Compiled by: Surya SK Guduru, NEST Fellow