Government of India
Ministry of Science and Technology
Department of Science and Technology
(CDN Section)
***

Technology Bhawan, New Mehrauli Road
New Delhi-110016
Dated: #Approved Date#

OFFICE MEMORANDUM

Subject: Monthly Summary to the Cabinet for the month of October, 2020.

The undersigned is directed to enclose herewith a copy of the Monthly Summary of important policy decisions taken and major achievements of the Department of Science & Technology for the month ending 31.10.2020 for information.

2. This has already been approved by Secretary, DST.

(Pulok Sen Gupta)
Under Secretary to the Govt. of India

To,

All Members of the Council of Ministers (as per Annexure-I)

Copy with enclosures, forwarded to:-

i. Vice Chairman, NITI Aayog, NITI Bhawan, New Delhi. (vch-niti@gov.in)
ii. The Chairman, Union Public Service Commission (chairman-upsc@gov.in)
iii. Chief Executive Officer, NITIAayog, NITI Bhawan, New Delhi (ceo-niti@gov.in)
iv. The Principal Secretary to the Prime Minister, Prime Minister Office, South Block, ND (pkmishra.pmo@gov.in)
v. All members of NITI Aayog, NITI Bhawan, New Delhi. (vk.saraswat@nic.in, rc. niti@gov.in,vinodk.paul@gov.in)
vi. Secretary to the President of India. (secy.president@rb.nic.in)
vii. Secretary to the Vice-President of India. (secyvp@nic.in)
viii. Principal Scientific Advisor to the Govt. of India. (vijayraghavan@gov.in)
ix. All Secretaries to the Government of India (secy-goi@lsmgr.nic.in)
x. The Principal Director General, Press Information Bureau, Ministry of Information and Broadcasting. (pdg- pib@nic.in)
xi. The Director, Cabinet Secretariat, New Delhi. (cabinet@nic.in)
xii. Shri Sanjay Kumar Mishra, Sc. 'G', DST for uploading the Monthly Summary on DST's website. (sanjaykr.mishra@nic.in)
xiii. Sr. PPS to Secretary, DST. (anuj.tripathi@nic.in)
xiv. AD (OL), DST for Hindi Translation (kn.singh65@gov.in)

Signature Not Verified

Digitally signed by Pulok Sengupta
Date: 2020.11.12 11:35:46 IST

Department of Science & Technology

Monthly Report
October, 2020

I. Important policy decisions taken and major achievements during the month:

A. Various Measures taken by DST for COVID-19

1. The various projects under Remedial Action, Knowledge Skimming and Holistic Analysis of COVID-19 (RAKSHAK) to develop a technology platform based on Artificial Intelligence (AI) to mitigate the pandemic COVID-19 situation, are under implementation.

2. The COVID-19 Laboratory at Birbal Sahni Institute of Palaeosciences (BSIP) received 15945 samples for COVID-19 tests within three weeks of October out of which 15361 samples have been processed. BSIP COVID-19 lab has also achieved testing of more than 50,000 samples since the inception of laboratory in May this year which is fastest among Indian laboratories in terms of average processing time of the samples.

B. Science for Society

1. An International virtual conference on Earth's Changing Climate: Past, Present & Future was jointly organized by Birbal Sahni Institute of Palaeosciences (BSIP), Lucknow, The Society of Earth Scientists, Indian Institute of Tropical Meteorology, Pune, National Centre for Polar and Ocean Research, Goa, National Institute of Disaster Management, Delhi, and National Institute of Advanced Studies, Bengaluru. About 120 researchers participated in the event and 95 research papers were presented during the 3 days of conference.

2. North East Centre for Technology Application and Reach (NECTAR) being empanelled as "Technical Agency" for SFURTI programme under Khadi and Village Industries Commission (KVIC), Ministry of Micro Small Medium Enterprises, Govt. of India, has taken up technical supports for three cluster/sectors viz. Agarbatti bamboo stick, Cane and bamboo handicrafts products, and Eri silk cluster to be implemented in more than 10 villages in different blocks (Nongrim Nongladaw block, Mawkyrwat block, Shella Bholaganj C&D block) of Ri-bhoi, East and West Khasi Hills Districts of Meghalaya.

3. Indian Institute of Astrophysics (IIA) is contributing actively to Vigyan Samachar, an initiative of the DST to convey scientific activities to the general public in a simple manner.

4. Live-streaming of the fourth episode of "Science Stories" on 31 October, 2020 on IIA YouTube channel. In this series, present and past students of IIA are interviewed, to share their life stories and experience in research. This series is aimed at motivating the younger generation to take up research in basic science as their career.

5. A total of 4 Marathi popular science articles were published in Krushival newspaper by Indian Institute of Geomagnetism (IIG). Two articles explained how pandemics in the past changed the cultural and scientific landscape of the world. The third article explained the geodynamics of the mantle of the earth and the fourth explained about the American woman astronomer, Henrietta Swan Leavitt.

6. A document titled 'Action Agenda for Atma Nirbharta' (AAAN) was finalized by Technology Information, Forecasting & Assessment Council (TIFAC). The document is based on the deliberations and recommendations emerging out of the five sectors namely Medical Sciences & Healthcare, Information & Communication technology, Agriculture & Food processing, Machinery & Manufacturing and Electronics.

7. National Innovation Foundation (NIF) facilitated granting of 4 patents to innovators. NIF provided the training for the preparation and effective usage of the herbal formulation for crops and livestock protection to 206 farmers. Live demonstrations of herbal formulation were conducted in 43 crop fields viz. cotton, tomato, rose, chilli and rice.

8. Validation of innovative agricultural plant varieties by National Innovation Foundation (NIF) revealed that casuarina variety MODI 1 performed exceedingly well and recorded higher wood yield (151 ton/ha) and exhibited higher growth rate with average height of 12.41 meters and 15.57 cm diameter at breast height.

9. Science for Equity, Empowerment & Development (SEED) Division of DST initiated a Web Clinic series ***"Science & Society Setu for Aatmanirbhar Bharat (S^{3}4ANB)"*** for bridging systemic gaps between S&T absorption capacity of the community, technological knowledge updating of Voluntary Organizations/CBOs and orientation of Knowledge Organizations (KO) to address local problem through Science, Technology and Innovation (STI). The program is being conducted through **India Science, Technology and Innovation (ISTI) Web Portal** and during last three weeks stakeholders (KOs, NGOs and Society) deliberated on the focal themes "**Agriculture production and innovation**"&"**Post-harvest technology**" **&** "**Allied Sector**". Recordings of past three Web Clinics are available at http://indiascienceandtechnology.gov.in/science-society-setu/agriculture-allied/past-web-clinic. Each Web-clinic tried to capture emerging technologies and their utilities to add value to existing practices for better production efficiencies and services for societal benefits particularly to vulnerable sections of the society.

10. A webinar was organised on October 1, 2020 by Department of Science and Technology (DST), Government of India (GoI); Embassy of India, Tokyo and the Ministry of Economy, Trade and Industry (METI) Government of Japan (GoJ) on the eve of joint celebration of the "International Day of Older Persons". The event also marked the first day of Decade of "Active Ageing". The webinar was organised to decipher the need to explore new directions in research on population ageing as well as to design and develop Science and Technology interventions for providing comprehensive health services to elderly at all levels of health care delivery in both India and Japan. A preliminary discussion was also held on 22/10/2020 with all the expert members of the TIDE PA&MC to identify broad themes for joint collaboration.

C. National Technology Mission

1. After incorporating the suggestions/comments of Working Group (WG) and inputs received from Host Institutes in the pre-draft version of Tripartite Agreement to be signed between the Host Institute, Section-8 Company and Mission Office under **National Mission on Interdisciplinary Cyber Physical Systems** (NM-ICPS), has been sent to Law Ministry for comments/approval.

2. The initial grant has been released to remaining 8 Technology Innovations Hubs (TIHs) **under National Mission on Interdisciplinary Cyber Physical**

Systems (NM-ICPS). Now, a total of 25 Technology Innovations Hubs (TIHs) have been established.

3. Organized, presented and provided response in Q/A session in an Indo-Dutch webinar on DST-NWO call "Cleaning Ganga and Agri Water" held on 08.10.2020.

4. Provided inputs on 10th Project Steering Committee meeting on GEF-UNIDO-BEE project "Promoting Energy Efficiency and Renewable Energy in selected MSME clusters in India" on 27.10.2020.

D. Technology Development

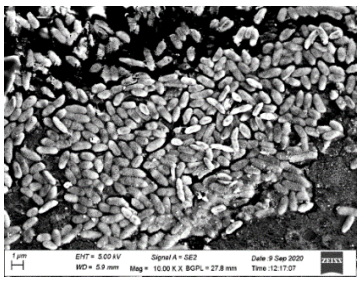
1. Technology transfer agreement signed with a Hyderabad based company by International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Hyderabad ARCI for easy-to -clean coating technology for solar PV application.

2. Developed easy-to-clean coating on architectural glass for field-testing by the industry partner by ARCI.

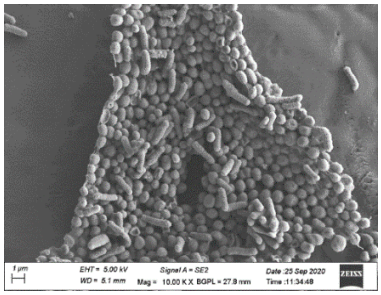
3. Indian Patent for "Method of producing hollow MgF2 nanoparticles, anti-reflection coating sols and coatings for optical and solar applications" granted to ARCI.

4. Module designed using 3D printed to attach with N95 mask to generate filtered positive pressure and provide fresh air to user while wearing N95 mask for long hours comfortably was developed by Centre for Nano and Soft Matter Sciences (CeNS).

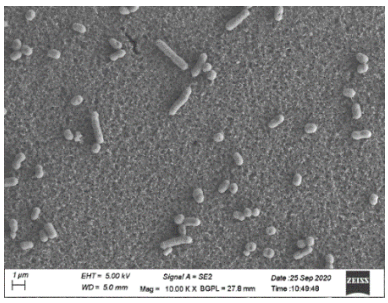
5. Eco-friendly hydrophobic nanocomposite coatings prepared under a collaborative project at International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Hyderabad for prevention of surgical site infections" exhibited 60-90% biofilm inhibition when compared to the 30-40% biofilm inhibition by normal hydrophobic coatings for different bacteria. ARCI, Translational Health Science and Technology Institute and LV Prasad Eye Institute are partners in the project.



Uncoated



Hydrophobic Coated (Water contact angle 100^{o})



Improved hydrophobic coated (water contact angle: 140^{o})

6. POWERED AIR PURIFYING RESPIRATOR (PAPR) FOR HEALTHCARE PROVIDERS has been developed under the NIDHI PRAYAS scheme through TIMed, the Technology Business Incubator of Sree Chitra Tirunal Institute for Medical Sciences & Technology (SCTIMST). Powered Air-Purifying Respirators (PAPR) holds a filtered ambient air space for the wearer to breath. Major advantage of a PAPR is the absence of breathing resistance usually seen in unpowered negative-pressure respirators like the N95 masks.

(Powered Air Purifying Respirator**)**

7. A startup company M/s Sascan Meditech Pvt Ltd, which incubated at TiMED, the Technology Business Incubator of Sree Chitra Tirunal Institute for Medical Sciences & Technology, Thiruvananthapuram is launching Oral Scan, a hand held imaging device for screening, detection and biopsy guidance of oral cancer. Oral Scan is a **Make- in- India initiative** with seed funding from the scheme National Initiative for Developing and Harnessing Innovations (NIDHI) of the Department of Science & Technology (DST), Govt of India. Oral scan was designed and developed entirely in India and supported by Biotechnology Ignition Grant of Biotechnology Industry Research Assistance Council (BIRAC), INVENT (DST) and Kerala Start Up Mission. The company recently received investment from Unicorn India Ventures.

(Oral cancerscreening tool)

8. A total of about 6.5 Lakh ideas and innovations have been received by National Innovation Foundation (NIF) for the INSPIRE Awards – MANAK 2020-21. NIF pooled more than 300 experts from different institutions across the country for evaluating the nominations received as part of the competition.

9. DST has supported 6 new projects recommended against WTI call 2019 on Water Energy Food Nexus :

- IIT Kharagpur led project on demonstration of sustainable mitigation of groundwater arsenic in arsenic-polluted Gangetic River aquifers of Bihar, Uttar Pradesh and West Bengal.
- Shiv Nadar University, UP led project on development of AI based DSS for Improved Crop Water Use Efficiency under Deficit Drip Irrigation Regime Simulating Climate Change.
- IIT Kanpur led project on development of electrochemical biosensors for detection of emerging pollutants in water.
- Central Soil Salinity Research Institute (CSSRI), Haryana led project for development of technologies for sustainable use of Sodic Groundwater Enhancing Agricultural Livelihood.
- Cummins college of Engineering for women, Pune led project for development of Hydodynamically-Optimum and Smart Sanitation Equipment for Minimization of Water Consumption.
- CSIR-AMPRI, Bhopal led project for lab to field demonstration of the Domestic Electricity Free Filter Device for Fluoride Free Drinking Water.

10. TMD Division of DST has strengthened its support towards the multi institutional Water Innovation Center led by ICAR-CAJRI, Jodhpur, focusing on "Enhancing Food and Water Security in Arid Region through Improved Understanding of Quantity, Quality and Management of Blue, Green and Grey Water". This Water Innovation Centre is currently in second year of its duration. The Centre aims on enhancing water productivity in farming systems/regional level (Jodhpur, Jaisalmer, Barmer and Bikaner), improving understanding of surface water and groundwater recharge and their interactions in relation to the environment, reducing evaporative losses from water bodies, characterization of pollutants in groundwater, periodical fluctuations and recharge in irrigated land uses. The objectives also include effect of irrigation with conjunctive use of fresh and poor-quality ground water on crop productivity and soil properties in field and under protected cultivation, development of software/model for better management of water, developing improved methods for reusing industrial effluents in agriculture and analyzing future demand and supply of water at regional and sub-regional level (Jodhpur, Jaisalmer, Barmer and Bikaner) and developing policy guidelines and capacity building of stakeholders.

11. Various R&D activities were supported under different schemes to promote/ develop the various geospatial technologies and tools. The details are as follows:

- R&D support was provided to Department of Architecture and Planning, NIT Calicut for developing a framework for decision making using SDSS in the event of crowd formation in smart cities.
- R&D support was provided to Signal Processing and Communications Research Centre, IIIT Hyderabad IoT Enabled Smart Cities Pollution, Health and Governance.
- R&D support was provided to Indian Institute of Water Management (ICAR) Chandrasekharpur, Bhubaneswar, Odisha for carrying out Drought and heat stress assessment using the GRACE gravity records in major river basins of India.
- R&D support was provided to Department of Earth Sciences, Indian Institute of Technology, Roorkee, Uttarakhand for carrying out the Assessment of deformation due to hydrological system using space borne gravity observation:

Assessment of deformation due to hydrological loading in Garhwal- Kaumaon Himalaya.

- R&D support was provided to Department of Computer Science and Engineering, Karunya Institute of Technology and Sciences, Coimbatore, Tamilnadufor Development of Industrial Indoor Assets Positioning and Navigation System using Geospatial Analysis and Ultra Wide Band Technology.
- R&D support was provided to Department of Computer Sciences and Engineering, Jadavpur University, Kolkata for Developing framework for Indoor Location based Services with Seamless Indoor Outdoor Navigation by Expanding Spatial Data Infrastructure.
- R&D support was provided to DhirubhaiAmbani Institute of Information and communication Technology, Gandhinagar, Gujrat for Development of Geo-Magnetism based Indoor Navigation System.
- R&D support was provided to Indian Institute of Technology, Banaras Hindu University, Varanasifor Forewarning System for Landslide Prediction along Mangan and Chungthang road, Sikkim
- R&D support was provided to Lovely Professional University, Jalandharfor Geotechnical and Geology study of an active landslide in Himachal Pradesh (HP) for Vulnerability Mapping and Risk Assessment.
- R&D support was provided to Indian Institute of Technology-Ropar, Punjab for Development of low cost Artificial Intelligence System for early detection of landslide.
- R&D support was provided to S.A. Engineering College, Thiruverkadu, Chennai, Tamil Nadu for GSM – GPS based Intelligent Safety & Navigational Aid for Women Security and smooth travel to unfamiliar destination.

E. International Cooperation

1. **Indo-Finnish Working Group:** To explore new avenues for joint Science, Technology & Innovation collaboration with Finland, Indo-Finnish Working Group meetings on 5 G; Sustainability and Quantum Computing were organised on October 26 & 29, 2020. Experts and Officials on two sides brainstormed and identified areas for future collaboration.

2. **7th BRICS STI Steering Committee together with the BRICS STI Funding Working Group:** The 7th Meeting of the BRICS Science, technology, and Innovation (STI) Steering Committee was held on 13 October 2020 to discuss the agenda of the forthcoming meeting of BRICS S&T Ministers and Senior Official Meetings that to be held on 12-13 November. Senior officials from BRICS countries participated in this meeting. The 8th BRICS S&T Ministerial meeting would be the adoption of the Moscow Declaration and BRICS STI cooperation. The committee recommended the publication of a report on the outcomes of the last five years of STI cooperation and development of the new framework and mechanism to deepen the BRICS collaboration.

3. **DST-Institute of Mathematics and Physical Sciences (IMSP), Benin Meeting:** DST along with MEA has been implementing the S & T cooperation initiative with Africa. This includes the Fellowship Programme, institute strengthening, technology transfer etc. Towards strengthening the Institute of Mathematics and Physical Sciences (IMSP) Benin, a discussion meeting was held on October 28,

2020 with IMSP and C-DAC Bangalore to initiate collaboration in Big Data Analytics, High-Performance Computing, and Operations Research. The meeting was chaired by the Head of the International Cooperation Division.

4. **BRICS Working Group meeting:** India participated in the second meeting of the BRICS Working Group on New and Renewable Energy Sources and Energy Efficiency held online on 14-15 October 2020, via videoconference. It was hosted by the National Research University and the Ministry of Science and Higher Education of the Russian Federation. Forty-seven participants from all five BRICS countries and speakers from selected joint scientific projects attended the meeting. The Indian Delegation was led by Head, International Cooperation, DST.

   Each country shared the development of new and renewable energy in their respective countries, and interest in scientific, educational, and industrial areas. The country representatives also proposed topics under the priority themes of Wind Energy, Solar Energy, Bioenergy, Water treatment, Energy systems with renewables-based generation for the next BRICS STI (2021) joint calls. Considering India's chairmanship of the BRICS next year, India offered to hold the next meeting of the BRICS Working Group on New and Renewable Energy Sources and Energy Efficiency, in India in 2021.

5. **India-Russia Webinar:** Embassy of India, S&T wing, Moscow (Russia) in coordination with Department for International Cooperation of the 'Russian Academy of Sciences and 'Department of Science & Technology', Government of India, organised a Scientific India-Russia Webinar on "Cyber-physical systems; Society 5.0; Artificial Intelligence" on 28-29 October, 2020. Distinguished Experts from the Russian Academy of Science and leading Indian Institutes IITs, IISc & BITS participated and discussed collaborative projects, exchanges, and way forward.

6. **India-Iran Webinar:** An India-Iranian Webinar on 'Water Resource Management' is being held during October 27-29, 2020. It is an outcome of the Implementation Protocol between the Department of Science and Technology, Government of India, and the Ministry of Science, Research, and Technology of the Islamic Republic of Iran. The Jamia Millia Islamia from the Indian side and Ferdowsi University from the Iran side are coordinating the webinar. Approximate 40 eminent speakers from prominent India and Iranian institutes/ universities and more than 500 participants are attending this webinar.

   The eminent researchers from the research institutions of both countries are participating to discuss the need-based technologies and best practices in the following themes: Integrated water resource management, Groundwater management, Governance, management, and institutional arrangements. This webinar will help to map the way forward on water management issues that are common to both countries.

7. **India-Japan Webinar:** India-Japan Webinar on "Celebration of the International Day of Older Persons" was held on October 1, 2020, organized by S&T Wing, Embassy of India, Tokyo in association with Department of Science and Technology (DST), GoI and the Ministry of Economy, Trade and Industry (METI), Government of Japan. Eleven presentations were made by experts from India and Japan during the Webinar followed by detailed discussion for identifying the sub-areas for pursuing the bilateral collaboration. The sub-areas will be further discussed and finalized in the joint meeting.

8. **Announcement of DST-DAAD 2019 Result:** DST and German Academic Exchange Service (DeutscherAkademischerAustauschdienst- DAAD) announced

the result under DST-DAAD-2019 call. A total of sixteen joint proposals were jointly recommended for the financial support.

9. **Preliminary Technology Summit:** A preliminary preparatory meeting was held with the Portugal, CII and officials of the department of science and technology on October 28, 2020. The Technology Summit 2020 will be held on December 7-9, 2020 in the focus sector of WaterTech, AgriTech, HealthTech, Energy/ Climate changeIT/ ICT, and Biodiversity with Portugal as a partner country.

10. **'VaishwikBharatiyaVaigyanik (VAIBHAV) Summit' and 'PravasiBharatiya Academic and Scientific Sampark (PRABHASS):** A global summit 'VaishwikBharatiyaVaigyanik (VAIBHAV) Summit' was organized by S&T and academic organisations of India from 2 Oct 2020 to 31 Oct 2020. It was a collaborative initiative to enable deliberations thought processes, practices, and R&D culture with a problem-solving approach for well-defined objectives. The VAIBHAV initiative aims to bring out the comprehensive roadmap to leverage the expertise and knowledge of global Indian researchers for solving emerging challenges.

    The advisory committee meetings were held from October 28-31, 2020 where the panellists of various verticals have presented the outcomes of the results of the discussion under various horizontals of the certain vertical. A meeting was held to discuss the details of Pravasi Bharatiya Academic and Scientific Sampark (PRABHASS) on October 22, 2020. A working group is set up to work towards development of a single national portal and promote collaboration between resident and non-resident Indian scientists. A new portal for Indian Diaspora namely PRABHASS was also launched on 31 Oct 2020 to synchronize / assimilate the inputs/targets and join forces towards engaging the Global Indian S&T Diaspora for enriching the Indian innovation ecosystem including their networking with Indian researchers / institutions.

11. DST was a part Indian composition of the Indo-Finnish Working Group on 5G to explore new avenues for joint STI collaboration with Finland held online on 26th October 2020 and also of Indo-Finnish Working Group on Quantum Computing to explore new avenues for joint STI collaboration with Finland.

12. Scientific India – Russia Webinar on "Cyber-physical systems; Society 5.0; Artificial Intelligence" was held on 28-29 October 2020. The purpose of the event was to exchange information on topics of bilateral interest in the framework of scientific and technical cooperation between Russia and India. More than 50 presentations were made from both the sides (India & Russia) during the Webinar.

13. Detailed proposal for bidding for **hosting the Second United Nations World Geospatial Information Congress (UNWGIC) in India,** tentatively scheduled for Year 2022 was submitted to UNGGIM Secretariat. It was envisaged that hosting the 2nd UN-WGIC in the country will be a good opportunity to showcase its vibrant geospatial ecosystem at the global platform.

F. Human Capacity Building

1. **Women Scientists Scheme:** First level screening of new proposals regarding eligibility of applicants has been done under WOS-B programme. Grant has been released for 55 projects under WOS-A and WOS-B programmes during October.

2. **Vigyan Jyoti:** Role model talk was given by Snehal More, Virginia Tech, USA on the topic "Remote Sensing for Monitoring Earth". Special lectures were conducted

on “Aero Space challenges” by Dr. G. Madhavan Nair, Former Chairman, ISRO, on “How can we help build Atma Nirbhar Bharat of our dreams” by Dr. Raghunath Anant Mashelkar, Former Director General of the Council of Scientific and Industrial Research (CSIR) and on “Aerogels-3D assemblies of nanoparticles for multifarious applications” by Dr C Naveen Kumar, CSIR. Besides this, students have participated in several webinars *viz*. “Language of Science and Math- 3030 STEM”, “The Science of vision- 3030 STEM” “Math of Music, Science of Sound - 3030 STEM ” & “Card Magic - 3030 STEM” by Dr. Manish Jain, Associate Professor, IIT Gandhinagar, “Exploring Science with Shanti Swarup Bhatnagar Prize winners 2020”**,** “Climate Change Challenge - What can children do in the climate crisis?” by Ridhima Pandey, under ATL Jigyasa series

Virtual Lab Visit: JNV East Medinipur organized a virtual lab visit “A New Spin on next generation computing” to S.N.Bose Center, West Bengal, under the guidance of Prof. Sakuntala Chatterjee and Prof Anjan Barman.

Special Online Classes: During October, 48 online classes have been conducted for girls selected under Vigyan Jyoti to help students in clarity of concepts and skills to face the competitive examinations.

3. A new call for proposal (CFP) has been issued under capacity building for Summer/ Winter School in Geospatial Science and Technology sub-scheme under capacity building sub-scheme of National Geospatial Programme (NGP). The Call is for the years 2021-23 and shall be valid upto 31st March, 2023. From this year **two new initiatives** viz. ‘**Geo-innovation Challenge**’ for harnessing new ideas in Geospatial Science, Technology and entrepreneurship and **a special call for SC/ ST category** under 21 Day summer/winter schools in geospatial science and technology (Level-1) have been launched.

The above CFP aims to develop national capacity for geospatial science and technology development through diverse programs in collaboration with various partner organizations across the country.

4. **INSPIRE Fellowship:**

- 138 INSPIRE Fellows received their fellowship for pursuing their doctoral degree programme.

5. **INSPIRE Faculty Fellowship:**

- 38 INSPIRE Faculty Fellow’s Fellowship was released for pursing their Post-doctoral programme.
- An Expert Committee Meeting was held on 16th October 2020 through video conferencing to review the INSPIRE Faculty Fellowship Scheme of the INSPIRE Programme under the Chairmanship of Prof. N. Sathyamurthy, Former Director, IISER-Mohali.

G. Scientific Infrastructure Building

1. Science & Engineering Research Board (SERB) has launched a New Scheme SERB– Promoting Opportunities for Women in Exploratory Research, (POWER) which aims to mitigate gender disparity in science and engineering research funding in various S&T programs in Indian academic institutions and R&D laboratories. SERB-POWER is specially designed to provide structured effort toward enhanced diversity in research to ensure equal access and weighted opportunities for Indian women scientists engaged in research and development activities. Women Scientists in regular service in academic and research institution will be supported under two categories, namely, SERB –POWER Fellowship and SERB –POWER Research Grants.

2. Astronomers from Raman Research Institute (RRI) along with collaborators from NCRA-TIFR have used the upgraded Giant Metrewave Radio Telescope (GMRT) to measure the atomic hydrogen content of galaxies seen as they were 8 billion years ago, when the universe was young. This is the earliest epoch in the universe for which there is a measurement of the atomic gas content of galaxies.

3. Researchers at the RRI have developed a generic, reconfigurable, low-cost software-defined digital receiver system for temporal correlation measurements. While they have used it to perform time resolved high resolution magnetometry it could easily be adapted for other experiments in atomic, molecular and optical physics.

4. Wadia Institute of Himalayan Geology (WIHG), Dehradun has established landslide vulnerability zones along the Mansa Devi hill bypass (MDHB) road in the Haridwar township using geological, geotechnical, and ground penetration radar (GPR) investigations also delineated crustal thickness, intra-crustal structures, and seismic velocity characteristics using P-wave receiver functions, and provided seismogenesis and geodynamic evolution the Kumaon Himalaya and adjoining region.

5. WIHG has signed MoU with an Energy Private Limited to exploit the green geothermal energy into electrical energy in the Uttarakhand state of Himalaya.

6. Mutations in the membrane-fusion subunit of spike glycoprotein that might have played a crucial role in the recent outbreak of COVID-19 were identified by Bose Institute (BI), Kolkata. BI-shown that aspirin reverses SMAR1 repression by pluripotency factors and consequent chemoresistance in breast cancer stem-like cells. Immunomodulator mediated changes in plasma membrane calcium ATPase in controlling visceral leishmaniasis and Genome-wide targets and DNA recognition sequence of the Arabidopsis HMG-box protein AtHMGB15 during cold stress response were identified by BI. Aerobic microbial communities in the sediments of a marine oxygen minimum zone were also identified by BI.

7. Studies on design and simulation of a metasurface with perfect reflection (ongoing), Fabrication of radiative cooling films: thin films with random particles preparation, Effect of fluorescent dyes on the photonic band gap of Blue phase liquid crystal: PL and UV-Vis measurements, Defective NiO and its activity for electrochemical Urea Oxidation were conducted by Centre for Nano and Soft Matter Sciences (CeNS).

8. The Indian Institute of Astrophysics, (IIA) Science Team for the Visible Emission Line Coronagraph (VELC) instrument for the Aditya-L1 Mission worked on defining scientific requirements and justifications for acquiring a HPC system

under the VELC/Aditya-L1 Project at IIA. This HPC system will address the needs of data pipeline and processing for VELC at IIA Payload. Operation Centre (POC) as well as for computational modeling of solar and astrophysical plasmas of relevance to VELC observations.

9. Results of the Soft X-ray observations of the recurrent nova V3890 Sgr using theAstroSat-SXT were published by Indian Institute of Astrophysics.

10. IIA has completed bench test for Visible Emission Line Coronagraph (VELC) Tech Development detectors. Detector system and spacecraft data handling system interface test is also completed and on the Thirty Meter Telescope (TMT) a new work package agreement, "Data Management System prototyping software" work package under Observatory software for TMT from September 2020 is signed between ITCC and TMT project office.

11. Institute of Advanced Study in Science and Technology (IASST) scientist started a Collaborative work on Muga sericin protein for its structural evaluation started with Deakin University, Australia and with CBMR, Lucknow for protein structural characterization.

12. Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) and Indian Institute of Science (IISc), Bengaluru demonstrated novel experiments in the laboratory to study the behavior of liquids and glasses on spherical surfaces.

13. S N Bose National Centre for Basic Sciences (SNBNCBS) has developed reprogrammable and reconfigurable spin-wave nanochannels, which may pave way to develop next generation all-magnetic computers. SNBNCBS has explored the isotope-selective water- metabolism in human body and has found a new "Breathprint" for the gastric pathogen in stomach using breathomics approach. SNBNCBS also fabricated novel Germanium-on-insulator structure with a crystalline Ge top layer and buried GeO2 layer by oxygen ion implantation.

14. Advisor & Head (NEB Division) was involved in compiling, collating information from the various sources for writing chapter on Science & Innovation to be included in Economic Survey-2021 report being released by the Ministry of Finance, Government of India, New Delhi.

15. National Science and Technology Entrepreneurship Development Board (NSTEDB)-DST is collaboration with IIT Kanpur has brought out 5 years Impact report on its entire initiative Titled **"Catalysing Innovation, Entrepreneurship and Incubation".**

16. Programme Division is working on compilation of data for the scheme of MSJE for startups/students belonging to SC and Divyangjan, The ASIIM (Ambedkar Social Innovation Incubation Mission) is structured around TBI and will provide funding to deserving startups.

17. Programme Division has planned to organize EUREKA-2020 in collaboration with Entrepreneurship Cell (E Cell), Indian Institute of Technology, Mumbai. EUREKA-2020 national event will be organized for the entrepreneurs to hone and strengthen their entrepreneurial skills and show case their innovations.

18. Programmme Division provided funding support to awardees of KPIT Sparkle Competition, 2020 to be incubated by College of Engineering, Pune (COEP's Bhau Institute of Innovation) and KPIT Technologies Limited. KPIT Sparkle, 2020 event aiming to foster the innovative culture across students from all over India, in the focused area of Energy and Mobility. Under this support will be provided to the student innovation activity in the above areas to top 5 student innovation teams.

19. **Fund for Improvement of S & T Infrastructure in Universities and Higher Educational Institutions (FIST)**

- The 24th Meeting of reconstituted FIST Advisory Board (FISTAB) was organized by the Division on 12 October, 2020. FISTAB finalized the logo design of the FIST Scheme in the meeting, out of 121 logo entries received through the online Electronic Project Management system. The FISTAB reviewed the Evaluation criteria for the fresh proposals received in different subject areas. Secretary, DST participated in the meeting and apprised about his vision to restructure the scheme to FIST 2.0. FIST Advisory Board deliberated on the restructuring and reinventing the FIST scheme for Scientific Infrastructure Building to FIST 2.0 to orient it towards the goal of Atma Nirbhar Bharat so as to create high end S & T infrastructural requirements of startups and industries.
- The R & D Infrastructure Division organized four Screening Meetings in October 2020 for the evaluation of proposals received online through electronic Project Management System. In Chemical Sciences, 54 proposals were evaluated by the Subject Expert Committee in this meeting and 19 proposals were finally screened in for presentation, Physical Sciences Committee shortlisted 15 proposals out of 40 proposals received, Earth & Atmospheric Sciences Committee shortlisted 10 proposals out of 18 proposals received, Mathematical Sciences committee shortlisted 15 proposals out of 23 for a detailed presentation.

20. **Promotion of University Research and Scientific Excellence (PURSE)**

Call for inviting the proposals under PURSE for Scientific Infrastructure Building exclusively for the University Sector was announced. The last date of receiving the proposals was 15 October, 2020. A total of Forty two proposals were received through electronic Project Management System against the Call of Proposals advertised in the PURSE Scheme.

21. **Sophisticated Analytical and Technical Help Institutes" - (SATHI)**

- The second expert committee (EC) meeting & the 12th meeting of SATHI Ki BAAT held on 15th October 2020 at DSTby involving IIT Delhi, IIT Kharagpur and BHU- Varanasi to review the annual work progress of recently supported SATHI centres.
- 2nd meeting of reconstituted Expert Committee of Sophisticated Analytical and Technical Help Institutes (SATHI) was convened on 15th October 2020 for Evaluation / identification of different criteria to set-up a new SATHI Centres. As five institutes have proposed based on invitation for Setting-up of new Sophisticated Analytical and Technical Help Institutes (SATHI) Facilities of DST, in the country five detailed proposal(s) were received through electronic Project Management System.

22. **Sophisticated Analytical Instrument Facilities (SAIF)**

Four Webinars on topics such as Mass Spectroscopy, Laser Raman Imaging, X-Ray Scattering 0were organized in month of October 2020 by SAIF IIT Bombay.

******