

No.Misc.1/13/2019-CDN
Government of India
Ministry of Science and Technology
Department of Science and Technology
(CDN Section)

Technology Bhawan,
New Mehrauli Road
New Delhi-110016

Dated: 12.06.2020

OFFICE MEMORANDUM

Subject: Monthly Summary to the Cabinet for the month of May, 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 31.05.2020 for information.

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

(Balram Goel)
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. (secyvvp@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. Sanjay Kumar Mishra, Sc. 'G', DST for uploading the Monthly Summary on DST's website. (sanjaykr.mishra@nic.in)

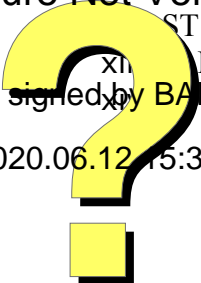
xiii. Anuj Tripathi, PPS to Secretary, DST. (anuj.tripathi@nic.in)

xiv. Kn Singh, DST for Hindi Translation (kn.singh65@gov.in)

Signature Not Verified

Digitally signed by BALRAM GOEL

Date: 2020.06.12 15:34:51 IST



Annexure-I

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Department of Science & Technology
Monthly Report
May, 2020

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

A. Various Measures taken by DST for COVID-19

1. Sree Chitra Tirunal Institute for Medical Sciences and Technology commercially launched Agappe Chitra Magna, a magnetic nanoparticle-based RNA extraction kit for use during testing for detection of COVID-19. The RNA extraction kit developed by the institute is the first indigenous kit based on magnetic nanoparticles.
2. Considering emerging health care requirements to combat the COVID-19 epidemic, Science and Engineering Research Board has invited proposals through second calls under Core Research Grant in the following thrust areas:
 - Antiviral nanomaterials and bionano antiviral systems [SEP]
 - Drug repurposing against key COVID-19 targets [SEP]
 - Affordable, portable rapid diagnostic kits / tools [SEP]
 - Computational identification and validation of COVID-19 molecular targets
 - In-vitro / clinical dose testing of nutritional supplements for immunity

Out of 941 proposals (768 under Life Sciences (LS) and 173 under Chemical Sciences (CS) the following six proposals were recommended:

 - 10-minute paper-based test kit to detect SARS-CoV-2
 - Rapid, affordable, portable SARS-CoV-2 screening kit for resource-limited settings
 - Re-purposing of approved drugs from Drug Bank database for possible treatment for COVID-19 by targeting SARS-CoV-2 main protease
 - Molecular Beacons-based detection of novel SARS coronavirus-19 (CoV-2)
 - Single ventilator design modification for optimal multi-patient use— A CFD study
 - Development of host-directed anti-coronavirus agents
3. Institute of Advanced Study in Science & Technology is setting up a COVID-19 testing and research facility (BSL II standard) in coordination with Guwahati Medical College and Hospital, Govt. of Assam providing space and equipment and will engage its own faculty and research scholars for efficient operation of the testing facility.
4. Birbal Sahni Institute of Palaeosciences succeeded in establishing a full-fledged COVID-19 Lab at the BSIP. BSIP also working to develop a multiplex PCR based assay to detect the COVID-19 viral load even in very small quantities (10 copy number of viruses). The institute has conducted more than 2000 tests for COVID-19.
5. Fabrication of Tribo-E-Face mask based on triboelectricity concept and design and fabrication of face shield to fight against COVID-19 was initiated at

Centre for Nano and Soft Matter Sciences. Antibacterial studies of Sea-urchin molybdenum oxide with Ag nano-particles was also conducted.

6. Online e-lecture/ webinar / series were organized and broadcasted live on different platform for research scholar, students by ARIES, INAE, INSA, NASI and NECTAR on contemporary topic in General & COVID-19 particular.
7. COVID19 website page was created by Indian National Science Academy and updated with latest information after coordinating with different institutions. <http://insaindia.res.in/covid.php>.
8. Vigyan Prasar has been producing Covid-19 bulletin in Hindi and English on daily basis which is made available to public through Indian Science on OTT Channel and also shared through Facebook , Youtube, Twitter and other social media platforms.
9. Technology Information, Forecasting & Assessment Council finalized and designed White paper on "Focused Interventions for Make in India post COVID19".
10. A Grant Agreement has been signed on 22nd May, 2020 with M/s Mylab Discovery Solutions Pvt. Ltd., Pune. Grant-in-aid towards the project is Rs. 400.00 lakh against project cost of Rs. 1360.00 lakh for implementation of their project. "Manufacturing of Testing Kits to detect Covid Corona Virus".
11. Technology Development Board had issued a 'call for proposals' inviting applications from Indian companies and enterprises for technologically innovative solutions towards "Fighting COVID-19" on 20th March, 2020. The aim of this call was to strengthen the nation's core capacities in surveillance, infection prevention/ control, laboratory support and in particular the preparedness in terms of isolation and ventilator management of critically ill patients for containing/ preventing the spread of COVID-9. Nearly 350 companies registered themselves with TDB through online process and a total of 228 applications were received through online mode.
12. During the month of May, 2020, large numbers of these applications were evaluated in TDB in phased manner. These applications were divided into six categories based on their domains i.e 'IT, IOT& AI', 'Diagnostic Kits', 'Mask & Sanitizer', 'Medical Devices', 'Thermal Scanner' and 'Ventilator'.

In this regard, many ISC and HLEC meetings were conducted via online mode to evaluate the proposals in different phases.
13. Covid 19 dashboard is being updated regularly with Infrastructure tab and MoHFW & ICMR data.
14. **BRICS Science and Technology Cooperation:** The 3rd Meeting of BRICS Scientific Ministries' Senior Officials was held on 25 May through Video Conference. The major agenda of the discussion was 'BRICS call on COVID' including research topics, funding requirements, and the timeline for the implementation of the projects at the shortest possible time. The following topics have emerged as areas of mutual interest: i) Research and development of new technologies and tools for coronavirus diagnostics and treatment; ii) Research and development on anti-coronavirus vaccines and drugs, including repositioning of drugs; iii) Genomic sequencing and mathematic modeling research targeted on the epidemiology of SARS-CoV-2 and epidemic of COVID-19 studies, iv) AI, ICT and HPC oriented research for Drug/vaccine design, fast screening, early warnings, tracking, prediction, and decision support systems including its application in public health infrastructures, and systems for fighting COVID-19.

15. The following government funding agencies from BRICS countries have confirmed their participation in 'BRICS Call on COVID-19': the Brazilian National Council for Scientific and Technological Development(CNPq) from Brazil; Russian Foundation for Basic Research(RFBR) from Russia; Department of Science and Technology(DST) and Department of Biotechnology(DBT) from India, Ministry of Science and Technology(MOST) and National Natural Science Foundation of China(NSFC); Medical Research Council (MRC)of South Africa.
16. Lecture delivered to the students of NIT Kurukshetra and UIET, Punjab University through webinar on "Job & Start-up Opportunity after COVID".
17. Talk on COVID 19 Special "Scientific Social Responsibility on AIR FM RAINBOW Channel.
18. Provided inputs in National programme on health and risk communication "Year of Awareness on Science & Health (YASH)" with Focus on COVID-19.
19. Project Completion Reports obtained on NSD & NMD related work and also preparing for NSD 2021 on COVID19 themes.
20. Worked with existing/ongoing projects for covering possible work related to COVID 19 and outreach activities on COVID-19 promoted.
21. A report on '*COVID-19: Scientific Social Responsibility of S&T Knowledge Organizations*' was prepared and shared with Press Information Bureau (PIB). A panel discussion on Scientific Social Responsibility (SSR) was also organized by india SCIENCE for its viewers.
22. A PIB report was submitted regarding tools, techniques and technologies supported to combat challenges faced by *Divyangjan* & Elderly during COVID-19. The initiatives were highlighted in COVID-19 Bulletin, S&T Efforts in India, 15 May, 2020 at India SCIENCE (www.indiascience.in).
23. As an immediate response to global pandemic of Covid 19, Department has invited proposal through online call under the programme of **Centre for Augmenting WAR with COVID-19 Health Crisis (CAWACH)** through Society of Innovation & Entrepreneurship (SINE) IIT Bombay, Mumbai.

The 826 proposals have been received and 54 applications has been identified by the CAWACH centre for further support and mentoring. These applications are categorized under 5 verticals viz. Diagnostic devices, Disinfectants, PPE & protective kits, informatics, Ventilators & Medical devices.
24. An online call for nationwide training in Covid-19 and post Covid era for emerging entrepreneurs has been given for each training mode Women Entrepreneurship Development Programme (WEDP), Technology based Entrepreneurship Development Programme (TEDP), Faculty Development Programme (FDP).
25. State Council of Science Technology & Environment (SCSTE), Meghalaya supported various field related activities to combat distressed condition of farmers due to COVID-19. SCSTE facilitated transportation of vegetables from Mawkynrew Block by creating forward linkages, installed solar egg incubator at Dachima Jakindi to improve the livelihood of poultry farmers.
26. 226 concept notes have been received in Special Call to combat COVID19 under SATYAM during May 2020 from all over the country.

27. **OGC-India Forum Virtual Meet – 14 May 2020**

Participants from Open Geospatial Consortium (OGC), Government Departments and Industry demonstrated potential use of Geospatial Data and Process Standards from OGC in the management of COVID19 outbreak and post-COVID19 process of economic recovery. Empowering healthcare with findable, accessible, interoperable and re-usable locational information should be the hallmark of Health Spatial Data Infrastructures (SDIs).

B. Science for Society

1. Under DST supported project “National Women Empowerment Atlas of India: Science & Technology Perspective” implemented through National Atlas and Thematic Mapping Organization (NATMO) a questionnaire for collection and collation of data pertaining to science & technology related issues with gender perspective was initiated.
2. A vision was presented by Head SEED on ‘Technology and Science for Society’ on Technology Day, May 11, 2020 through All India Radio (AIR).
3. Review of project on design and development of solar and agricultural waste-based building cooling system reported notable progress on development of renewable energy based hybrid cooling system using agriculture waste.
4. Under Programme activities on Integrated Technology Intervention for Sustainable Environment (ITISE) activities, 1st batch of 60 proposals were pre-evaluated by Experts Members during the month.
5. Call on National Innovation Challenge Awards for Designing and Developing Energy Storage Devices for Rural Household/Enterprise Application (NICA) is to develop cost effective, viable and reliable solution that can address the challenge of energy access through an energy storage system integrated with appropriate renewable energy sources.
6. An API for integration of INSPIRE Awards – MANAK with UMANG app was developed by National Innovation Foundation.
7. Jawaharlal Nehru Centre for Advanced Scientific Research has developed silk fibroin (SF) formulation using biocompatible additives and prepared an injectable SF hydrogel (iSFH) that can ease insulin delivery in diabetic patients. The iSFH has demonstrated successful delivery of active insulin in rats, and the results have been published in the journal ACS Applied Bio Materials.
8. Science Communication Forum constituted with Govt. agencies.
9. Discussion with the Director General, Indian Institute of Mass Communication (IIMC)/ Press Information Bureau (PIB) for starting joint courses on science and health communication, and science journalism.
10. Village Information System (Mahismari Village, West Bengal) – Draft brief report submitted.
11. Five Maps of Irrigation Atlas of India is being completed and under first Scrutiny level.
12. Cultural Heritage Atlas: Fifteen maps Completed and under scrutiny.
13. District Planning Map Series: Bhavnagar District Map of Gujarat state (1:250,000) completed.
14. Processing of data sets for uploading in geoportal and related activities.

- Design development related activities in progress.
- UAT (User Acceptance Test) of NSA is in process along with implementation of observations 70% job done.

C. National Technology Mission

1. After establishment of 17 hubs under National Mission on Interdisciplinary Cyber Physical System (NM-ICPS), the process for identification of Host Institutes for remaining 8 Hubs in the following verticals has been initiated:
 - i. Advanced Communication System
 - ii. Bio-CPS
 - iii. Positioning and Precision Technologies (GIS, Remote Sensing, other non-invasive technologies, etc.)
 - iv. Technologies for finance sector (Fintech)
 - v. Quantum Technologies
 - vi. Cognitive Computing & Social Censoring
 - vii. System Simulation, Modelling & Visualization
 - viii. Data Science, Big Data Analytics and Data curation etc

A Call for Proposals selection of remaining 8 Hubs has been launched. The last date for submission of proposals through online DST portal, in the prescribed format is 8th June 2020.

2. The draft Detailed Project Report (DPR) on National Mission on Quantum Technology & Applications (NM-QTA) has been prepared and a meeting with DPR Advisory Committee (DAC) & DPR Drafting Committee (DDC) for discussing the improvisations in draft DPR on NM-QTA was held on **22nd May 2020** through Video Conferencing (VC). The last date for receiving the inputs on draft DPR by the committee members is 20th June 2020.
3. Review of project on Coal gasification of high ash content Indian coal using cyclone Gasifier reported notable progress on development of process for high ash containing coal with a prototype tested at 10kg/hr with air/oxygen/steam as a reactor to achieve various CO to H₂ ratio for converting into liquid fuels.
4. Review of Project on Bio-Methanation of Coal mill and coal washery rejects reported notable progress on Isolation, identification & selection of suitable fungi & bacterial consortium for bio- methane production from rejects.
5. Review of project on Microbial Recovery of Biogenic Methane from Coal Washery Rejects with Co₂ Sequestration Using Novel Hybrid Geo Photobioreactor and Reclamation of the Site reported notable progress on development of microbial consortium for converting coal washery rejects to methane.
6. A virtual face to face project review meeting was on Materials for Energy Storage (MES-2k16) to review the progress & achievement of ongoing projects under MES 2016 holding by IISER Trivandrum, Kerala on 25th – 30th May 2020.

7. The evaluation of 215 proposals received under the Solar Energy Research and Development Call 2019 has been completed by conducting multiple VC online meetings during the month.
8. Investigations of topological point defects on orientationally ordered spheres and on deformable fluid vesicles by Raman Research Institute researchers and collaborators from IISc, Bangalore has shown that singular wall defects, topologically unstable “bald lines” in two dimensions are stabilized near the order-disorder transition on a sphere. They attribute this stability to free-energetic considerations, which override those of topological stability. This study was partly motivated by their potential applications in creating super-atoms with directional bonds through functionalization of the “bald-spots” created by topological point defects, thus paving the way for atomic chemistry at micron scales.
9. S.N. Bose National Centre for Basic Sciences formulated the first protocol of device-independent self-testing (DIST) of entanglement in an unknown quantum state of two photons without having direct access to the state. The theoretical idea of quantum steering has been successfully implemented experimentally in collaboration with a group in Beijing Computational Science Research Centre, and Key Laboratory of Quantum Information, Hefei, Israel. Scientists at SBNBCBS have observed the novel thermal quenching phenomena in size controlled black phosphorus nanocrystals synthesized using a cost-effective sonochemical method. Fabricated photodetectors using highly luminescent nanocrystals reveal their potential applications as optical modulators and infrared detection for defence applications.

D. Technology Development

1. Indian Patent Granted to International Advanced Research Centre for Powder Metallurgy and New Materials on a Method and an apparatus for preparing nickel tungsten based nanocomposite coating deposition; Patent no. 337108 dated May 20, 2020. An automatic non-contact sanitizer dispenser unit (prototype model) using IR sensor was designed and fabricated at ARCI. A working model has been commissioned at ARCI to assess the regular functionality (Fig.).



Fig.: Non-Contact Sanitizer

2. Based on the discussion and suggestions made during the meeting held on 15th April 2020 on Remedial Action, Knowledge Skimming and Holistic Analysis of COVID-19 (RAKSHAK), it has been decided that a coordinated

consortium mode project will be submitted through IIT Jodhpur to SERB for possible funding. A total of 49 project proposal has been received by the IIT Jodhpur and sent to SERB. The Competent Authority, DST has approved Co-ordinating Institute (IIT, Jodhpur) and constitution of a Coordination Committee for setting up of Artificial Intelligence Technology Platform (AITP) – RAKSHAK. The OM in this regard has been issued on 14th May 2018.

3. A meeting on RAKSHAK has been organized online on **14th May 2020** through Video Conferencing. Secretary, DST and Dr Kris Gopalakrishnan, Chairman, Mission Governing Board (MGB), NM-ICPS participated in the meeting. The following recommendations have been communicated to the Co-ordinating Institute and Coordination Committee members on 22nd May 2020:
 - It is important that there is a need to leverage the capabilities that exist in our academic institutes to fight the pandemic. During this crisis, the Host Institutes who are awarded TIHs are unable to complete the formalities, and hence it was decided to allow them to utilize a SMALL PART of the funds in this emergency to find useful solutions.
 - IIT Jodhpur will coordinate this initiative.
 - Many other institutes will contribute solutions. They will utilize the funds that are released to the respective institutes.
4. Review of project on Development of Polymer Electrolyte Membrane (PEM) based Electrochemical Methanol Reformer (ECMR) for Hydrogen production reported notable progress on development of performance improved (GEN-2) ECMR stack for hydrogen generation with the capacity of 1.5 Nm³/hr.
5. Review of project on Technology Development for Utilization of Methanol in SI Engines reported notable progress on development and demonstration of Methanol usage for small SI engine.
6. Review of project on development of an Electronically Controlled High Performance Hot Surface Ignition Engine Running on Methanol for Automotive Application reported notable progress on development of highly efficient low emission and 100% methanol operated Hot surface ignition turbocharged automotive engine.
7. A project on Developing a Reliability Engineering Framework for Indian Railways Rolling Stock reviewed and reported notable progress on common data collection and analysis framework to support life cycle evaluations, decisions making reliability, safety, Life cycle costing model and maintainability requirements for Indian railways.
8. Review of project on Compatibility of fueling infrastructure materials with dimethyl ether and diesel blends reported notable progress on Investigation on the Compatibility of fueling infrastructure materials (metals, plastics, elastomers and engine spare parts) with Methanol/gasoline and dimethyl ether (DME) /diesel blends.
9. A project on Effective Utilization of Methanol and Di-Methyl Ether (DME) in an Automotive Engine Using Advanced Combustion Modes reviewed and reported notable progress on development and demonstration of an experimental automotive engine test rig for effective utilisation of Methanol and Dimethyl Ether (DME) under dual fuel reactivity controlled compression ignition (RCCI) combustion mode.
10. Review of project on development and evaluation of catalyst for production of DME from Dehydration of Methanol reported notable progression development

and evaluation of catalysts at lab scale for methanol dehydration and development of kinetic simulation model.

11. Review of project on Methanol-diesel dual fuel engine for stationary applications reported progress on development of Prototype methanol-diesel dual fuel engine for stationary applications at grassroots levels such as genset-based power generation.
12. Review of project on Design and Development of a Membrane Reformer Prototype for Production of Ultra-Pure Hydrogen from Methanol for Fuel Cell Based Vehicle and Power Generators reported progress on design of an optimal compact membrane reformer for production of ultra-pure hydrogen.
13. Review of project on Comparative Appraisal of Thermal Performance of Traditional (Assam/IkraType) and Emerging Housing Typologies and Up gradation of Traditional Prototypes for Improved Thermal Behaviour in Different Sub-Climatic Zones of North eastern India reported notable progress on development of guidelines for various typologies for 3 hilly areas in Meghalaya, Assam and Tripura and ready by September 2020.
14. A Review meeting held with IIT Delhi and Thermax to discuss on Methanol Production from Indian Coal: Pilot Plant Demonstration, Catalysis and Scale-up Technologies.
15. A Review meeting held with BHEL, Hyderabad to discuss on Design, Development and Demonstration of high ash Indian Coal to Methanol (0.25 TPD Capacity) Technology.
16. Review of project on Development of High Volume Flyash Foam Concrete Wall Panel Using Rice Straw as Thermal Insulation Material reported notable progress on Development of cost effective high volume fly ash form concrete insulated wall panel using rice straw.
17. Review of project on Sustainable Engineered Cellular Geopolymer Masonry for Improved Building Envelope Performance reported notable progress on development of Cellular Geopolymer brick using fly ash.
18. Review of Water Technology Research and Innovation Centres (WATER-IC) : Centre for **Sustainable Treatment, Reuse and Management for Efficient, Affordable and Synergistic solutions for Water** (WATER-IC for SUTRAM of EASY WATER) reported progress on
 - Development of different sensors tested in the laboratory and in the field and filing of patents.
 - Tailor made sorbent material developed from waste material for water and wastewater treatment
 - Pilot scale reactor for removal of emerging contaminants from water and wastewater using Pulsed Power Plasma Technology
 - Greywater recycling in apartments

Water Innovation Center: Technology, Research & Education (WICTRE) reported progress on :

- Synthesis of nanoporousgraphene based material from agricultural waste
- New membranes containing polyethersulfone and zinc oxide carboxylatedgraphene oxide nanohybrid.

- A portable, low-cost system for on-field optical detection of phenolic compounds
 - A chemiresistor sensor based on graphene composite material detecting heavy metals.
 - A simple optical-electronic sensor for sensing water quality.
19. Conversion of Sunlight to Storable fuels project for CO₂ conversion to artificial (synthetic) liquid fuels by solid oxide electrochemical approach: Photo voltaic to fuels entails development of new catalysts for Solid Oxide Electrolytic Cell (SOEC) based CO₂ reduction.
 20. Another project reviewed on Earth abundant and scalable two dimensional catalysts for selective photo-electrochemical solar conversion of carbon dioxide to methane/methanol aimed to develop photo electro chemical system that is capable of converting carbon dioxide to methane/methanol.
 21. The project team have identified the open patent space in the technology of carbon dioxide electrolyzer and design & the process of making the setup fill in those gaps. Team is expecting to file a series of patents from this technology. Also upon successful outcome, team is motivated to spin a company off for delivering this deep-tech product.

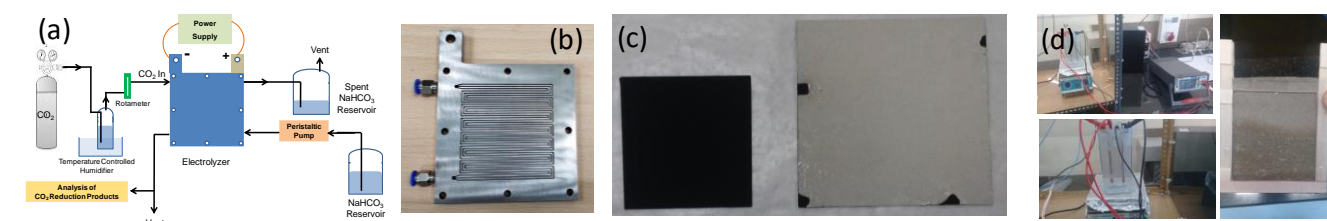


Figure 1. (a) Design of electrolyzer, (b) electrolyzer flow field on a stainless steel plate, (c) thermally evaporated silver on a carbon paper, and (d) electrodeposition of CoPi on a Ni-foam

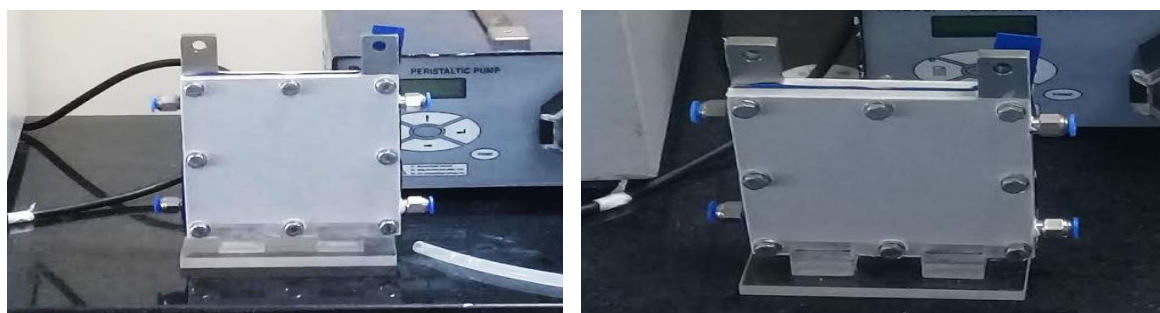


Figure 2. Completed large area electrolyzer setup (100 cm² active area)

E. International Cooperation

1. **India's engagement with the OECD:** In response to the OECD invitation, India agreed to become a 'Participant Country' in the OECD's Committee on Science and Technology Policy (CSTP). This status enables India to utilize the OECD CSTP platform for national gains and keep India abreast in the evolving S&T Sector. The Department of Science (DST) will lead these engagements.

2. **Participation in the Sherpa's Meeting of the Carnegie S&T Ministers Group:** DST participated in the virtual meeting of the 'Sherpas' of the Carnegie Group (of the S&T Ministers of G8 and Emerging Economies) organized by Russia on May 28 to discuss the 48th Carnegie Meeting, scheduled in September 2020. The Sherpas recommended postponing the 2020 Carnegie Group Meeting to the year 2021 in Russia due to the current pandemic. The discussion was also held on the possible topics of discussion for the next Carnegie Meeting and suggested to hold a special session on COVID-19.
3. **DST engagement with the Indian National Commission for Cooperation with UNESCO (INCCU):** India engages with the UNESCO through Indian National Commission for Cooperation with UNESCO (INCCU) and its various Sub Commissions. One of the Sub-commissions, the Natural Sciences Sub-commission (NSSC) of INCCU, chaired by the Secretary DST is coordinated by DST. DST contributed to the consultation process of the UNESCO's 'Future Medium-Term Strategy and Programme 2020-29 through a questionnaire floated by UNESCO.
4. **India-Austria Joint S&T Call:** Twelve Indian and Austrian joint projects were recommended for support under the joint India-Austria scientific cooperation between the Department of Science & Technology and the Austrian Federal Ministry of Science, Research and Economy (BMWFV). The call was open to all scientific disciplines within the thematic areas of science and technology.
5. **Webinar on the science, technology, innovation, and research cooperation between the Nordic countries:** A webinar on the science, technology, innovation, and research cooperation between the Nordic countries (Sweden, Norway, Finland, and Denmark) and India was organized on 28th May.
6. **India Africa DST World Bank Programme:** A virtual review meeting was held with all Indian and African institutions (20 in nos.) who are participating in the DST world Bank programme. It was agreed during the meeting that the fellowship period of 9 African fellows in India will be extended for a further 3 months if flights are not resumed. The recommendations to organize workshops in the virtual mode were also issued.
7. A meeting held with NRCan, Canada and , BEIS, UK to discuss on ongoing activities and future steps to achieve the proposed deliverables of IC1:Smart Grids- Flexibility options.
8. Discussions held with officials from Heat Pump Centre, RISE Research Institutes of Sweden, Sweden on Comfort Climate Box program.
9. An Interaction meeting held with Experts from IIT Delhi, IIT Kanpur, IIT Roorkee, CEA and POSOCO to discuss on MI2.0 (Power) and IC1:Smart Grids Impact report.
10. An Interaction meeting held with Experts from IIT Delhi, IIT Roorkee to discuss on MI2.0 (Buildings and Cities) and IC 7: Affordable Heating and Cooling of Buildings Impact Report.
11. India participation in ACT Call III programme was approved.
12. Management Review of on-line air and water quality sensors jointly supported by DST and Intel discussed the future steps of the WQM programme.
13. Had an online meeting with DoE USA on possible PACE-R activities.

14. Had VC meeting and presented to Clean Energy ministerial on India's CCUS activities.
15. Online Management Board meeting was organized to discuss on the Joint Call on 'Energy Storage Solutions' (MICall19) proposals evaluation
16. Online Management Board meeting was organized to discuss joint call 2020 on 'Digitalization of Energy Systems and Networks' (MICall20).

F. Human Capacity Building

1. **Innovation in Science Pursuit for Inspired Research (INSPIRE) Scheme**
 - a. **Scholarship For Higher Education (SHE):**
 - 525 SHE scholars received their scholarship for pursuing B.Sc./M.Sc. Degree course in basic and natural sciences.
 - 214 SHE scholars received their mentorship grant for pursuing internship during their B.Sc./M.Sc. Degree course in basic and natural sciences.
 - b. **INSPIRE Fellowship:**
 - 291 INSPIRE Fellows received their fellowship for pursuing their doctoral degree programme.
 - Declared "INSPIRE Fellowship- 2019" First Level Screening result of 111 abeyance cases after seeking the clarifications from the respective institutes.
 - c. **INSPIRE Faculty Fellowship:**
 - 70 INSPIRE Faculty Fellow's grant was released for pursuing their Post-doctoral programme.
2. About 150 Research Students continued their research work in different mega science projects. 10 research publications emerged during the month.
3. A webinar on "*Gender Equity in STEM: A comparison on challenges and strategies for organizational change between India and USA*" has been organized on 19th May 2020. Dr Nandini Kannan, Executive Director, Indo-US Science & Technology Forum (IUSSTF) was the speaker.
4. A brain storming meeting on 'Science Communication' was conducted on 22 May, 2020 to initiate a new programme on 'Science Communication for Women'.
5. **Vigyan Jyoti:** Under JIGYASA platform, several webinars and discussions were conducted at different Vigyan Jyoti Knowledge Centres (i.e. Jawahar Navodaya Vidyalayas). Few of them are related with Covid-19 pandemic such as "Can Technology Combat COVID-19" by Prof. Shekhar C. Mande (DG, CSIR), "War with COVID: Detection and Destruction" by Dr. Anthony Addlagatta (CSIR-IICT, Hyderabad), KERASIEV(R) Ceramic membrane technology for COVID 19 viral bio-wastewater treatment" by Dr. Sandeep Sarkar (CTO, Need Innovation). Webinar on "Electron Microscopy and Spectroscopy" by Dr. Avanish Kumar Srivastava, Director AMPRI, Bhopal and "Earth and Earthquakes" by Dr. D. Srinagesh (CSIR-NGRI, Hyderabad). JNV Nagpur has conducted 4 online sessions on Tinkering and Digital Literacy under the guidance of Sonika Singh, In-charge, Atal Tinkering Lab.
6. A one-week online training session on in-house developed NAIN GIS software was organised by GIS Technology Centre, Surveyor General Office for senior

officers of Maharashtra land and settlement department. A total of 34 Directors and Dy. Directors led by their Commissioner Shri S Chokalingam(IAS) participated in the training session.

7. One day online training session on SARATHI - a Web GIS software, was organised by GIS Technology Centre, Surveyor General Office for senior officers of Maharashtra land and settlement department. A total of 73 senior officers from Govt of Maharashtra participated.
8. During the lock down period, an online training session on practical aspects of Digital Cartography and GIS was conducted by GISTC under guidance and support from IIS&M, Hyderabad. All 14 DSS (Army) officers of 500.79 course participated in the training session.
9. 08 Officer Trainees of 500.79 course were given two weeks training on UAV based High Resolution Mapping.
10. A one-week online training session on UAV based High Resolution Mapping, was organised was by GIS Technology Centre. A total of 34 participants from IIS&M, MPGDC, UKGDC and EUP GDC participated in the training.
11. Online one day orientation Programme was organized for Govt. of M.P, Haryana and Uttarakhand under SVAMITVA scheme. The programme attended by 30 officials including Joint Secretary, Ministry of Panchayati Raj (MOPR).
12. A meeting of PPMC constituted by DST, was organised by IIT Kanpur on 27th May. 2020. The technical programs and new courses proposed by National Centre for Geodesy, IIT Kanpur were discussed. Main emphasis was on capacity building in the field of Geodesy and the proposal for establishing VLBI system in India. IIT Kanpur assured that IIT will extend all the support to SoI in the field of CORS and capacity building.
13. Meeting held between Surveyor General of India and Sh. Sanjeev Chopra Director, LBSNAA on possible collaborations and association in different training modules related with Surveying, Mapping and Geo-spatial Technology.
15. A webinar was organized by Gujarat Council on Science and Technology (GUJCOST), Department of Physics, Saurashtra University and Department of Science and Technology, Government of Gujarat on 'Bhautikiyatra; A travel through Scientific Indian Minds' from 21-29 May, 2020. The webinar is a journey through wonder of physics and was attended by 1600 Undergraduate, Postgraduate Students and Research Scholars.
16. Online training programme for brick kiln owners and firemen facing various challenges due to migration of man power during COVID 19 was conducted by Punjab State Council for S&T (PSCST) on May 27, 2020. Training was attended by 60 Brick kiln owners and firemen from across the state.
17. Karnataka State Council for Science and Technology (KSCST) organized online session on 'Awareness on Intellectual Property Rights (IPR) and Innovation' on 27-28 May 2020. More than 200 Faculty members and Postgraduate students of Acharya Institute of Technology, and Padamsri Institute of Technology, Bangalore attended the session.

G. Scientific Infrastructure Building

1. Different project activities in Facility for Antiproton and Ion Research (FAIR) and Thirty Meter Telescope (TMT) projects continued. Data was taken and analysed remotely in the Mini-CBM Set-up at FAIR. Mechanical assembly for cryostat and detector electronics for NUSTAR experiment shipped to Germany and was also tested successfully. Design, development, prototyping etc. of different in-kind components of TMT continued.

2. **State SDI Principal Investigators' Virtual Meet – 15 May 2020**

State SDI Principal Investigators from Punjab, Arunachal Pradesh and Odisha met virtually with officials from NSDI for drawing up a strategy for developing SDI applications by overcoming data gaps through recently launched projects. High resolution foundation data are proposed to be generated, maintained and shared with Line Departments for adding further details for planning and decision-making at panchayat and ward levels.

3. **6th High Level Forum (HLF) Virtual Meet of UN Global Geospatial Information Management (UNGGIM) Committee of Experts – 26 May 2020**

As a follow up of the NSDI participation in the 6th HLF Virtual Meet of the UNGGIM, the Guidelines and the Best Practices Document on the overarching “Integrated Geospatial Information Framework (IGIF)” and the “Strategic Pathways 4 – Data” shared with the National and State SDI Agencies associated with NSDI for their evaluation and adoption in the implementation of NSDI Data Nodes.

4. **SOI's SAHYOG app deployed by State SDI Teams and outputs sharable through standards-based web services**

Newly customized SAHYOG app developed by Survey of India (SOI) has been shared with State SDI Teams for its use in geospatial data acquisition in States and Districts, and making those sharable from the respective State Geo-portals. State SDI Agencies have been equipped with required expertise and skills for geospatial data sharing and consumption over the web.

5. Call on Integrated Call on Material Acceleration Platform (IC-MAP) is to accelerate the discovery of high performance low cost clean energy materials for energy harnessing, energy storage and energy efficiency for diverse sectors such as power, building, transportation, storage, construction etc.

6. A review meeting of the Network Mode Project - **Evaluation of DST-Fund for Improvement of S&T infrastructure in universities & higher educational institutions (FIST) Program** was held through VC mode .

7. A Local Project Advisory Committee (LPAC) Meeting of project Long-term development and sustenance of database of scientific equipment supported under extramural R&D projects was held through VC mode.

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

Nineteen projects (10 fresh proposals and Nine ongoing) with an amount of Rs 15.35 Crores were supported during May 2020 under FIST Program for Scientific Infrastructure Building.

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

a. Discussion Meeting on Futuristic Restructuring of PURSE was organized in May 2020.

b. Four ongoing projects under PURSE with a support amount of Rs 8.81 Crores were supported in May 2020 for strengthening the research infrastructure in performing Universities.

10. **Sophisticated Analytical and Technical Help Institutes” - (SATHI)**

The 7th meeting of Sophisticated Analytical and Technical Help Institutes (SATHI) -“SATHI Ki Baat” held on 21 May 2020 by involving IIT Delhi, IIT Kharagpur and BHU- Varanasi to review the work progress of recently supported SATHI centres.

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

SAIF Centres at Mahatma Gandhi University, Kottayam, Indian Institute of Technology -Patna and Indian Institute of Engineering Science and Technology, Shibpur were among the 5 New SAIF Centres opened 5 years ago. Upon completion of initial 5 years tenure after due procedure, Orders were issued for extension of activities at these centres till 30 September 2020.

H. National Technology Day celebration focusing on rebooting the economy through S&T:

1. Ministry of Science & Technology celebrates May 11 every year as National Technology Day to commemorate achievements of innovations and technological excellence in the country. Keeping in mind the need of the hour to formulate a comprehensive action plan to reboot the economy during this time of crises, TDB on behalf of the Ministry of Science & Technology and in association with Confederation of Indian Industry (CII) organized a high-level digital conference on **Rebooting the Economy through Science, Technology and Research Translations titled ‘RESTART’** to celebrate the National Technology Day on 11th May, 2020.
2. Union Minister for Science & Technology, Health and Family Welfare and Earth Sciences, Dr. Harsh Vardhan was the Chief Guest for the occasion.
3. On this occasion, Dr. Harsh Vardhan also inaugurated a virtual exposition of companies whose technologies have been supported by TDB. Various organizations and companies showcased their products in the exposition through a digital B2B lounge.
4. The conference has brought together Scientists, Technocrats, Government officials, Diplomats, WHO officials and dignitaries from national and international Industry, Research Institutions and Academic Institutions on a single platform to share their insights on the role played by S & T in the global healthcare crisis and to find solutions to address the current challenge.

II. Important policy matters held up on account of prolonged inter-ministerial consultations: