

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

Technology Bhawan,
New Mehrauli Road
New Delhi-110016
Dated: 13.11.2021

OFFICE MEMORANDUM

Subject: Monthly Summary to the Cabinet for the month of October, 2021.

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 31.10.2021 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. Dr. Rabindra Kumar Panigrahy, Sc. 'E', DST for uploading the Monthly Summary on DST's website. (rabindra.p@gov.in)
- xiii. PSO to Secretary, DST. (anuj.tripathi@nic.in)
- xiv. AD (OL), DST for Hindi Translation (kn.singh65@gov.in)

Department of Science & Technology
Monthly Report
October, 2021

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

Dr. Jitendra Singh, Hon'ble Minister of State (I/C) for Science & Technology and Earth Sciences inaugurated the New State of the Art Building, Office Block-I, constructed at Technology Bhawan campus for DST and DSIR on 14.10.2021. The project envisages construction of new buildings comprising of two new Office Blocks, a 500 seater Auditorium, Canteen, Reception, CISF Block, Post Office, Bank and other facilities as authorized under norms of Ministry of Urban Development (MoUD). The new office blocks have been constructed to accommodate DST, DSIR and some Autonomous Institutes under DST located at Delhi-NCR i.e. Science Engineering Research Board (SERB), Technology Information Forecasting and Assessment Council (TIFAC), Technology Development Board (TDB), Vigyan Prasar, Indian National Academy of Engineering (INAE) as they were functioning from rented premises. Office Block-2 of the complex was completed in July, 2021 and the same has since been occupied by SERB, TIFAC, Vigyan Prasar, INAE.

A. Science for Society

1. Indian National Science Academy is organizing a series of webinars/ discussions as a part of Amrit Mahotsava. The following two webinars were organised in October :-
 - (i) To commemorate Prof. Saha's birthday a webinar titled How the Saha Ionisation Equation was Discovered by Prof. Arnab Rai Choudhuri, FNA, FTWAS, FASc, FNASc was held on October 6, 2021.
 - (ii) The webinar titled Bibha Chowdhuri- India's High Energy Particle Physicist A 'Star' in Heaven by Dr Rajinder Singh of Physics Education & Science Popularisation Group at Institute for Physics, University of Oldenburg, was held on 22 October, 2021.
2. Engineers Conclave 2021 was organized jointly by Indian National Academy of Engineering (INAE), New Delhi and International Solar Alliance (ISA) on **October 26-27, 2021** as a virtual event. The two themes were "*Engineering challenges for de-carbonizing the Indian Economy*" and "*Achievements of Indian Engineering - Azadi ka Amrit Mahotsav*".
3. The Comprehensive Stroke Care Program, Department of Neurology and Nursing Division of SCTIMST in collaboration with the Directorate of Health Services, Kerala organised a webinar on "STROKE UNIT CARE - Training Program for Nurses" on 31st October 2021.
4. On the occasion of 'World Heart Day' celebrated on 29th September, IASST organised a day-long programme under the banner of 75th Year of India's Independence-"AzadiKeAmritMahotsava".
5. Poster competition on the theme 'Earth and Environment Aspect' for College and School students was organized by Birbal Sahni Institute of Palaeosciences on the theme of Earth and Environment on the occasion of Azadi ke Amrut Mahotasava and Platinum Jubilee Celebrations of BSIP.
6. On the occasion of 'wildlife week celebration 2021' a national webinar on wildlife conservation was held on 5th October 2021 by Indian Science Congress Association, Amravati chapter.

B. Technology Development

1. The Cognition & Behavioral Neurology subsection (CBNS), Dept of Neurology, Sree Chitra Tirunal Institute for Medical Sciences and Technology, (SCTIMST), Trivandrum launched of the ICMR-NCTB tool box on 06.10.2021. This multilingual test battery provides a standardized set of cognitive tests that are culturally appropriate and available in different languages for our country.

2. A total of 50 innovations related to Engineering domain were uploaded to the Innovations portal of National Innovation Foundation-India (NIF), Ahmadabad (www.innovation.nif.org.in) and design improvement of a new technology titled Water generator from atmospheric air was undertaken.
3. Technology to enhance biogas production of Fat-rich sludge from dairy industry developed.

C. International Cooperation

1. **India Sweden Innovation Day 2021:**India Sweden Innovation Day 2021 was organized on 26th October 2021 by the Embassy of India in Sweden. The event took place in both physical and virtual modes. Hon'ble Minister of State for Science & Technology & Earth Sciences Dr. Jitendra Singh and Hon'ble Swedish Minister for Business, Industry and Innovation Mr. Ibrahim Baylan from Sweden inaugurated the event. Both the Ministers expressed satisfaction with the ongoing cooperation between India and Sweden and encouraged the participants for more active engagements in the field of science and technology.
2. **Visit of the Colombian delegation to India:**Meeting of Department of Science and Technology (DST) and Department of Biotechnology (DBT) high officials with Colombian delegation was held on 1st Oct 2021 regarding the future collaboration in various scientific areas.
3. **12th Governing Body Committee of the Indo German Science and Technology Centre (IG-STC):**The 12th Governing Body Committee meeting of Indo German Science and Technology Centre (IGSTC) together with the German Federal Ministry of Education and Research (BMBF) and the Department of Science and Technology (DST) was held on 27th October 2021 under the chairmanship of Indian co-chair Head, International Cooperation Division, DST and German co-chair, Ms. Kathrin Mayer, BMBF.
4. **India-Canada High-official meeting:**A meeting with IC IMPACTS was held on 16 Oct 2021 at the virtual platform of Zoom regarding the up-gradation of collaboration between DST and IC IMPACTS.
5. **India-Philippines Joint Call:** Announced a joint call in following areas(1) Virology, (2) Applications of Artificial Intelligence on diverse areas such as Agriculture, Health, and Smart Cities, (3) Blockchain Technologies on Government Services/Processes, and (4) Additive Manufacturing of new materials (metal and ceramics). The closing date is January 17, 2021.

D. Human Capacity Building

1. Under the “Vigyan Ustav” programme various State/UT Science & Technology Councils have organized the programmes in October on theme “Human Resource Development” as a part of celebration of “Azadi ka Amrit Mahotsav”.
2. About 1680 participants, benefitted from online training programmes, workshop and webinars conducted by NIDM, New Delhi supported by DST on issues related to climate change.
3. **Vigyan Jyoti:** Several activities have been conducted under Vigyan Jyoti during October. A summarized view is given below:

C-STEM Classes:3 Sessions of kit-based C-STEM Workshops on Physics and Chemistry have been conducted in the month of October in Hindi as well as English with an aim to enhance the understanding and concept clarity of Class X students through practical learning approach. One session of Interactive quiz was also conducted.

Visit to Knowledge Partner (KP):Vigyan Jyoti Scholars of JNV Barmervisited Central Arid Zone Re-

search Institute, Jodhpur and ISRO's Regional Remote Sensing Centre-West Jodhpur. A Visit to Science City, Ahmedabad was conducted for Vigyan Jyoti scholars of JNV Gandhinagar.

Special Lectures: A series of Lectures was conducted by IIT Kanpur for Vigyan Jyoti students. During the lecture series prominent scientists/faculties/administrators shared their experience and various career options available in Science and Technology.

Special Online Classes: During this month, 12 online classes have been conducted for Class XII VJ Scholars.

4. Gender Advancement for Transforming Institutions (GATI):

Workshops were organized for GATI Pilot institutions:

- a. GATI Pilot Institutions have participated in workshop organized by *Queen Mary University of London (QMUL)*. Where QMUL and Indian Institutions have shared experiences on gender advancement.
- b. GATI Phase 1 meeting organized by *The University of Manchester* for Indian Institutions.
- c. *Aston University* has organized Questionnaire workshop for GATI Pilot Institutions.

5. Million Minds Augmenting National Aspirations and Knowledge (Manak)

- The online nominations for INSPIRE Awards-MANAK were requested from 15th July, 2021 till October 24th 2021 for the FY 2021-22.
- Approximately 7,04,000 nominations have been received through E- Management System (www.inspireawards-dst.gov.in).

6. Scholarship For Higher Education (SHE):

- 586 SHE scholars received scholarship (Total Amount Rs.3,94,80,000/-) for pursuing B.Sc./M.Sc. Degree course in basic and natural sciences.
- Institute mode released - 2 Beneficiary (Mentorship) – Amount Rs. 1,40,000/-

7. INSPIRE Fellowship:

- 141 INSPIRE Fellows received INSPIRE fellowship (Total Amount Rs.3,32,03,375/-) for Continuing their doctoral degree programme.
- 112 INSPIRE Fellows were converted from JRF to SRF

E. R & D Advances

1. National Innovation Foundation-India (NIF), Ahmedabad preclinical study of an indigenous medication had significantly reduced cataract gradation than diabetes control group conducted on rat model. It was noticed that lens dearrangement was significantly more in control group than treated with indigenous medication. The medication had significantly reduced Malondialdehyde [MDA] indicating lessening of oxidative stress on lens. Further, medication was found to enhance anti-oxidant activity through analysis of Superoxide dismutase activity thereby suppressing progression of cataract.
2. A team of scientists of Institute of Nano Science & Technology (INST), Mohali, for the first time, developed a reactor that produces a substantial amount of hydrogen using sustainable sources like sunlight and water, which is a cost-effective and sustainable process.
3. Scientist from INST, Mohali has developed a highly stable and non-toxic security ink from nano-materials that spontaneously emit light (luminescent) due to its unique chemical properties to combat the counterfeiting of branded goods, bank-notes, medicine, certificates, currency. The developed ink has huge potential to combat counterfeiting. A common man can find out easily that the document/product is original or fake.

4. Institute of Advanced Study in Science and Technology (IASST), Guwahati "Tea & banana waste used to develop non-toxic activated carbon" which is useful for several purposes like **industrial pollution control, water purification, food and beverage processing and odour removal**.
5. Prof. T. Govindaraju, Jawaharlal Nehru Centre for Advance Scientific Research (JNCASR), Bangalore has received the prestigious Shanti Swarup Bhatnagar Prize for Science and Technology, 2021 for his ground-breaking concepts and discoveries, which have significant potential for diagnosis and treatment for Alzheimer's, lung cancer among other health problems. His innovative work on small molecules, peptides, and natural products offers both diagnostics as well as therapeutics, leading to personalised medicine.
6. Dr. Kanishka Biswas, JNCASR, Bangalore has received the prestigious Shanti Swarup Bhatnagar Prize in Chemical Science for Science and Technology (2021) for his discoveries in the field of solid-state inorganic chemistry and thermoelectric energy conversion.
7. The following research achievements reported by Wadia Institute of Himalayan Geology (WIHG), Dehradun:-
 - (i) Documented the equivalent black carbon (EBC) concentration (up to $1.27 \pm 0.57 \mu\text{g m}^{-3}$) at Tapovan in Gangotri Glacier, suggesting possible EBC transport through up-valley wind or possible long-range transboundary transport;
 - (ii) Established scaling relations amongst various parameters such as the seismic moment, stress drop, source radius, moment magnitude, and radiated energy for Kinnaur (H.P.) earthquake, which can be used for seismic hazard and risk reduction-related studies; (iii) Established that the Indian Summer Monsoon (ISM) influences highly (>72% to annual river flow) to the surface water in the Teesta river basin (eastern Himalaya), while the western disturbances (WD) control dominantly (>70% average annual river flow) to the surface water in the Indus river basin (western Himalayas). The contribution of ISM- and WD-led precipitation to the Bhagirathi river basin is 60% and 40%, respectively.
8. Excess iron causes oxidative damage of biomolecules, leading to tissue injury, primarily liver failure. In a recent work by Bose Institute, Kolkata, remediating effects of Morus alba L. (MAME) on iron-overload-induced oxidative stress and liver injury in mice have been explored. The study revealed the antioxidant and free radical scavenging properties of MAME. GC-MS analysis revealed the presence of various bioactive phytochemicals in MAME that may be responsible for ameliorating effects of excess iron. Hence MAME can be envisaged as an effective iron chelator in the treatment of iron-overload-induced liver injury and fibrosis.
9. As a part of the mandate of SAIF scheme, the SAIF Centre at Central Drug Research Institute (CDRI) Lucknow organized a National Workshop on "Small Molecule Analysis by NMR Spectroscopy & Mass Spectrometry" during 06th - 08th October, 2021.
10. CCP Division supported establishment of Phase II of Task Force project under NMSHE on **Himalayan Agriculture** to Indian Council of Agriculture Research (ICAR), New Delhi. The project aims to work on important aspect of Himalayan ecosystem with a focus on database creation, Monitoring for Ecological Vulnerability, Modeling and Simulation, Adaptation Policy Research, Pilot Studies for Revalidation of Climate Resilient Technologies and Capacity building of Farmers and other stakeholders.
