

No.Misc/MS/Cabinet/2022-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: 16.12.2022

OFFICE MEMORANDUM

Subject: Monthly Summary to the Cabinet for the month of November, 2022.

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 30.11.2022 for information.

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

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(Anil Kumar Pandey)
Deputy Secretary to the Govt. of India

To,

All Members of the Council of Ministers

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, NITI Aayog, 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
November, 2022

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

A. Science for Society

1. The Department of Science and Technology (DST), in association with National Innovation Foundation (NIF) has organized a three day Kashmir Expo – Start-ups for livelihood focused on generating start-ups from the region.
2. National Innovation Foundation-India (NIF), Ahmedabad facilitated granting of 5 patents to (Tractor operated double rotor rotavator; Improved samovar for preparing different types of beverages; Herbal Compositions for Treatment or Prevention of Ephemeral Fever; Topical herbal composition for wound healing and methods thereof; and Herbal Formulation for the Treatment of Tuberculosis)grassroots innovators.
3. Technology Information, Forecasting & Assessment Council (TIFAC), New Delhi facilitated granting two patents on “A bioreactor for culturing of living cells or tissues” in the name of Indian Institute of Technology (Banaras Hindu University), Varanasi and “De Novo designed novel antimicrobial and antiseptic peptides and its application against plant pathogens” in the name of Bose Institute, Kolkata.
4. The Science and Engineering Research Board (SERB) and Indian National Academy of Engineering (INAE) jointly organized Innovation Contest and Showcasing 2022 in association with NIT Arunachal Pradesh to benefit the participants from North Eastern Engineering Institutions, Universities and NITs so that using their knowledge they can set up their start-up or develop a business model based on product or service innovation to make it scalable, replicable and self-reliant in NE region. 120 participants from all-over North-East region took part in the contest organised at NIT Arunachal Pradesh in offline mode.
5. A two-day scientific conference and workshop on Defining Ethics and Welfare in Preclinical Research was organized by Sree Chitra Tirunal Institute for Medical Sciences and Technology - (SCTIMST), Trivandrum.
6. As a part of the Government of India's celebration of the Janjatiya Gaurav Divas (National Tribal Day), the Department of Science and Technology (DST) has organized a two-day National Conclave on "Science & Technology Empowerment of Tribal Community" during 11th and 12th November 2022 at Indian Institute of Technology Guwahati, Assam. The conclave was organized in collaboration with North East Centre for Technology Application and Reach (NECTAR), IIT Guwahati, Assam Science & Technology and Environment Council (ASTECC), Institute of Advanced Study in Science and Technology (IASST), and Vigyan Prasar. The Hon'ble Union Minister of State

of Science and Technology & Earth Sciences, Dr. Jitendra Singh announced the launching of a special programme for **Particularly Vulnerable Tribal Groups (PVTGs)** in the conclave.

B. Technology Development

1. International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Hyderabad developed at lab-scale, a highly uniform solar absorber coating for flat plate collector application, with a high optical absorption property (95%) by an indigenously developed automated spray coating system.
2. Asymmetric super-capacitor was fabricated by ARCI using a Spent Li-ion battery material and the device was demonstrated in-house, to power an electrochromic device.

C. International Cooperation

1. DST participated in the United Nations Climate Change Conference COP-27 which was held in Sharm El-Sheikh, Egypt, from November 6–10, 2022. DST coordinated a special technical side-event on “Technology Need Assessment” and “Climate Change Impacts on the Himalayan Cryosphere, North-Western Himalaya, India”, and also participated in the panel discussion on another sessions.
2. TIFAC prepared the “Decarbonization Roadmap for Indian Industries – A Journey Towards Net Zero Ensuring Sustainability” after thorough consultations with different Industries. TIFAC also prepared a Film on “TIFAC’s initiative – Decarbonization path for Indian Industries.
3. A meeting was held by the Hon’ble Minister of State (I/c) for Science & Technology and Environmental Sciences with H.E. Mr Petri Honkonen, Minister of Education and Culture, Finland on 14th November 2022 to review the ongoing bilateral cooperation. Both Ministers welcomed the growing partnership between India and Finland, including the Digital Partnership in Future ICT, Future Mobile Technologies and Digital Education as announced by Prime Ministers H.E. Shri Narendra Modi and H.E. MsSanna Marin during a Virtual Summit on 16 March 2021.
4. A DST delegation led by the Secretary, DST visited Israel. During this visit, the 10th Governing Board (GB) meeting of India Israel R&D Technological Innovation Fund (I4F) 2022 was held on 14th November 2022 under the Co-Chairmanship of Secretary DST & Dr. Amiram Appelbaum, Israel Innovation Authority (IIA) at Tel Aviv. The I4F initiative funds industries from India and Israel to facilitate collaborative and adoptive R&D to develop innovative products ready for commercialisation leading to socio-economic benefit. During the meeting, the GB recommended 03 project proposals for developing a non-invasive integrated patient care monitor (NIM), Smart Agricultural Solution and a Dental 3D Versatile Printing Platform.

D. Human Capacity Building

1. DST partially supported organization of **National Symposium TROPMET 2022: "Advances in Weather and Climate Prediction and Climate Change Projections over South Asia: Applications in Water and Agriculture Sectors"** during 29th November – 2nd December 2022 held at Indian Institute of Science Education and Research (IISER), Bhopal. The event brought together scientists across various domains-climate, agriculture and related themes; government bodies, academicians, policymakers and disaster and related experts for discussions and knowledge sharing benefitting society at large.

2. Gender Advancement for Transforming Institutions (GATI):

DST organized a three-day summit for Indo-UK partners under the GATI pilot program. Indian Institutions and UK institutions shared their experiences and updates under the program followed by interactive sessions. The Interactive Sessions would help Indian institutions to establish the new program GATI in the Indian context.

3. **Women Scientists Scheme:** A two-day workshop on "Trademarks, Copyright, Industrial Designs & GIs" was organised under Women Scientist Scheme-C for women scientists during 17-18 November, 2022.

4. **Outreach activity:** DST has supported STREE 2020: National Conference & Expo on "Role of Women in Sustainable development of Atmanirbhar Bharat" during November 24-26, 2022.

5. **INSPIRE Scholarship:** An amount of **₹5,42,00,000/-** is approved towards **Scholarship** for **934** students in November, 2022 (**Institutional Mode**).

6. **INSPIRE Fellowship:** Total **33** INSPIRE Fellows were upgraded from **Junior Research Fellow (JRF) to Senior Research Fellow (SRF)**.

7. **INSPIRE Faculty Fellowship:** An amount of **₹10,15,00,000/-** is approved towards the first instalment grant for **55 INSPIRE Faculty Fellows**.

E. Scientific Research

1. A Memorandum of Understanding (MoU) was signed by DST with Ministry of Ayush on 25 November, 2022 for working out a strategy to explore cooperation, convergence and synergy to have evidence-based scientific intervention in the Ayush sector. The MoU has the following objectives:

- Explore the cooperation, convergence and synergy between M/o Ayush and Department of Science and Technology (DST) to have evidence-based scientific

intervention in the Ayush sector.

- Have a platform for the exchange of information between Ministry of Ayush and DST.
 - Application of modern science towards understanding the Ayush-related basic concepts and principles.
3. SERB and Deutsche Forschungsgemeinschaft (DFG), Germany took an initiative to bring together young researchers from India and Germany to promote long-term scientific engagements. A “Week of the Young Researcher” program among Indian and German Young Scientists for enhanced research collaboration to create next generation of collaborative research and science leadership was organized and the focus of the program was on seeding collaboration among early and mid-career researchers in the area of Chemical Sciences.
 4. National scenario of aerosol pollution with the long-term (2005-2019) trend, source apportionment, and future scenario (2023) for each of the Indian states were studied by Bose Institute (BI), Kolkata.
 5. Most galaxies in the Universe have a supermassive blackhole located at its centre. Moreover, the mass of these supermassive blackholes co-relate to the masses of the existing stellar population of the respective parent galaxy. A Scientist from Raman Research Institute (RRI), Bengaluru has attempted to establish relationships between a galaxy, its centrally located supermassive blackhole and the galactic gas by studying the spectral features of these objects across multiple wavelengths – X-ray, visible, Infrared, optical. The study involves use of a set of models with variations in masses of supermassive blackholes and the gaseous matter surrounding them. It aimed to understand the contributions made by individual sources for different relationships between their masses and luminosities.
 6. Star and Cluster Formation in the Sh2-112 Filamentary Cloud Complex were studied by S.N. Bose National Centre for Basic Sciences (SNBNCBS), Kolkata. It has been also found by SNBNCBS that the quantum switches placed in a quantum superposition of their alternative orders can transmit a qubit, without any error, with a probability higher than that achievable with the quantum switches individually.
 7. Salient features of research outcome of Wadia Institute of Himalayan Geology (WIHG), Dehradun include: (i)reconstructed the diet and habitat of Giraffidae, Equidae, Bovidae, Tragulidae, and Suidae belonging to the late Miocene succession of Middle Siwalik using stable carbon isotopic analysis on their molars and premolars; (ii) Assessed the soil erosion vulnerability of the Gaula river watershed (Kumaun Himalaya) using satellite data, compound factor (CF) and multi-criteria decision making (MCDM) based on Grey Relation Analysis (GRA) and Complex Proportion Assessment of Alternatives (COPRAS) models; (iii) Established that the Fluvial Landscape of Brahmaputra Foreland is a function of Sea Level Controlled Stratigraphy; (iv) Established a strong hydraulic connection between surface water and groundwater and recharge through flowpaths with higher permeability in the

Doon Valley of the Indian Himalaya, where Indian Summer Monsoon acts dominant replenishment input.

F. Scientific Infrastructure Building

1. **Fund for Improvement of S&T Infrastructure in Universities and Higher Educational Institutions (FIST) Program:** The FIST Advisory Board meeting was held on 24th November 2022, at IIT Delhi. The Board ratified and recommended 102 proposals for support under the FIST 2022 in the subject areas of Engineering, Life science, Chemical Sciences, Physical Sciences, Earth and Atmospheric Sciences, Mathematics Sciences and PG Colleges.

2. **Synergistic Training program Utilizing the Scientific and Technological Infrastructure (STUTI)**

Twelve STUTI PMUs have identified several DST supported Department/Institutes which have conducted 34 training programs across the country that imparted training to over 1135 researchers/students.
