

Department of Science & Technology

Monthly Report

August, 2023

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

A. Important Milestones

- **The Anusandhan National Research Foundation Act, 2023** has been enacted on 14th August, 2023 to set up a foundation for providing high level strategic direction for Research, Innovation and Entrepreneurship in the fields of Science, Engineering and Technology and scientific and technological interfaces of humanities and social sciences.
- **National Quantum Mission (NQM)**

Under the chairpersonship of the Principal Scientific Advisor to the Government of India, the National Quantum Mission of the Department conducted a meeting on 25th August 2023 to assess and map the current capabilities of Quantum Sensing and Metrology within the country. The purpose behind this exercise was to develop concrete R&D Action Plans for the advancement of Quantum Technology in India.

- **ASEAN-India Working Group on Science & Technology (AIWGST)**

A meeting of ASEAN-India Working Group on Science & Technology (AIWGST) and the Governing Council of the ASEAN-India Science & Technology Development Fund (AISTDF) was convened on August 7, 2023. Through the ASEAN-India Science and Technology Development Fund (AISTDF) and the Plans of Action for Peace, Progress, and Shared Prosperity, the collaboration extends to areas such as the blue economy, healthcare, climate action, and sustainable development. Secretary of the Department of Science and Technology (DST) and Chair of India ASEAN Working Group underscored the importance of India's technology partnership with ASEAN for the prosperity of both present and future generations.

- **Launch of New Program 'WISE-SCOPE'**

The Department has launched a new program 'WISE-SCOPE' fellowship with an aim to provide opportunity to women scientists to address societal challenges through their S&T expertise. The Department announced a call to submit proposals under 'WISE-SCOPE' on the occasion of Independence Day.

B. Science for Society

Innovation Yatra

- With the objective of celebrating Atmanirbharta under Azadi Ka Amrit Mahotsav through rural innovations of the country, Innovation Yatra of 11 days was organised by National

Innovation Foundation (NIF) -India in association with Ministry of Culture, Government of India. The yatras originated at 4 points - Gandhinagar, Dehradun, Guwahati and Bhubaneswar and travelled across 13 States sensitising common people. The innovation yatras witnessed a huge turnout of over 12,000 people in its journey of 7500 km. It touched creative minds of students, farmers, tribals, shopkeepers, weavers, herbal healers, teachers and SHGs among various others. Approximately 35 different technologies incubated at National Innovation Foundation-India were disseminated along with many on-field demonstrations. Over 1000 ideas, innovations and traditional knowledge was documented during this entire journey.

Workshop on Sustainable Livelihood

- Institute of Advanced Study in Science and Technology (IASST) hosted a workshop on sustainable livelihood with mushroom cultivation on 8th August, 2023.

Workshop on 'Data Analytics and Machine Learning

- Indian Science Congress Association, Chennai Chapter organized a five-day workshop on 'Data Analytics and Machine Learning' from 21st August to 25th August, 2023.

Training on Basics of Remote Sensing and GIS

- North-East Center for Technology Application and Reach (NECTAR) organised the second batch of training on Basics of Remote Sensing and GIS from 24th July, 2023 to 4th August, 2023. Under the training program theory and practical sessions were held on GIS software, Image Processing and Open-source software.

Training on Agricultural Innovations

- National Innovation Foundation (NIF) facilitated three distinct training programs, including on-farm trials on agricultural and horticultural innovations for the farmers of Ratnagiri, Dharashiv and Pune districts of Maharashtra.

Industry Sensitization Programmes

- Technology Information, Forecasting and Assessment Council (TIFAC) conducted an awareness cum sensitization workshops at Coir Cluster, Coimbatore and Tools and Die cluster Hosur, Tamil Nadu on 21.08.23 and 22.08.2023.
- **Vigyan Prasara** actively participated in public outreach related to the launch and successful landing of the Chandrayaan 3 mission in various languages including Hindi, English, Malayalam and Tamil. Vigyan Prasara also published two books titled 'ShankurSakshate' & 'NirbachitoJonabigyanProbondhoSonkolon'.

- The Mumbai Chapter of the National Academy of Sciences, India (NASI) organized a ‘**Workshop on Oral Health & Hygiene**’ on 21st Aug. 2023.
- Programme Advisory and Monitoring Committee (PAMC) meeting under the Technology Interventions for Disabled and Elderly (TIDE) programme was held at the National Institute for Advance Studies during 28-29th August 2023 to evaluate the ongoing and completed projects under the TIDE programme and to discuss appropriate policy and budgetary provisions for patenting and further developing the top three innovations awarded at annual district-level Children's Science Exhibitions.

C. Technology Development

- **Technology Development by International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Hyderabad**

Technology Transfer of Cathode Active Material for Lithium Ion Batteries

- ARCI Hyderabad, being a translational materials research lab, has developed along with Altmin a novel process to make one of the key cathode materials, which is a safe and low-cost material suitable for tropical conditions. ARCI has entered into agreements with AltminPvt. Ltd., Hyderabad for technology transfer and have launched a 10 MW pilot plant for producing Cathode Active Material (CAM) - first of its kind in India at Balapur, Hyderabad. The facility is poised to make 100 kilos of CAM per day, marking India's foray into the local production of CAM meant for the manufacturing of advanced chemistry Li-ion battery cell. The maiden product under the partnership would be Lithium Ferrous Phosphate (LFP) that has huge market demand for making electric vehicle batteries.
- International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Hyderabad reported that a large quantity (0.3 kg) of spinel CuMnNiO_4 nanoparticles was synthesized by co-precipitation method in different batches. Also, under the TRC-DST sponsored project, two different configurations of circular and hexagonal arrangement of PCM capsules with 10 kWh storage capacity were designed by using computational simulation model.

National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS):

- The Mission Office, NM-ICPS alongwith the experts from Mission Governing Board(MGB) /Scientific Advisory Committee (SAC), reviewed progress of activities, at the **Technology Innovation Hubs (TIHs)** set-up under NM-ICPS at Indian Institution of Technology, Delhi, Indian Institute of Technology, Tirupati and Indian Institute of Technology, Bombay.

Grants of Patents facilitated by National Innovation Foundation (NIF)

- National Innovation Foundation (NIF) helped in the grant of total 5 patents. Design improvement of one new technology i.e. ‘Walker for elder persons’, was undertaken. An

indigenous medication in treatment of endoparasite was validated specifically against nematod viz., Trichuris and Strongyloides. Two indigenous medications were evaluated against ephemeral fever, a viral ailment affecting large ruminants in livestock.

- Centre for Nano and Soft matter Sciences (CeNS) and International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Hyderabad facilitated in granting 1 and 5 national patents, respectively.

- **X-ray polarimeter designed and developed at Raman Research Institute**

Raman Research Institute (RRI) reported that POLIX -a X-ray polarimeter completely designed and built at RRI is scheduled to be launched shortly on ISRO's XpoSat. In August, the Integrated Satellite Tests (IST) and Pre-shipment review (PSR) were successfully conducted.

D. Human Capacity Building

- **Implementation of Vigyan Jyoti Scheme**

Under Vigyan Jyoti Scheme, 53 orientation sessions, 16 career counselling sessions, 57 role model sessions, 34 visits to Knowledge Partners, 20 Tinkering Workshops, 14 Science Camps and 59 subject Specific lectures were organised for students of Jawahar Navodaya Vidyalayas (JNVs) across the States.

- **Training Programme on Good Laboratory Practices (GLP)**

A Training Course for Quality Assurance (QA) Personnel of GLP Test Facilities was conducted during August 21-23, 2023 in New Delhi with the focus on the newly published OECD Principles of GLP Document Numbers 22, 23 and 24.

- **National Geospatial Policy Expert Committee Meeting**

On the 11th and 12th of August 2023, the National Geospatial Policy Expert Committee held its meeting at IIT, Kanpur to discuss strategies to enhance capacity building in teaching, research and development, and geospatial technology use by encouraging the use of open source GIS and the networking of government, academic, scientific, and industrial organizations.

Implementation of Innovation in Science Pursuit for Inspired Research (INSPIRE) Scheme

- **INSPIRE Awards - Million Minds Augmenting National Aspirations and Knowledge (MANAK)**

A meeting of INSPIRE Awards (MANAK) for State Nodal Officers (SNOs) was held on August 10, 2023, in New Delhi for the implementation of the scheme, wherein a total of 30 states and UTs participated.

- District Nodal Officers Meetings were held in Punjab, Haryana, Himachal Pradesh, Jammu & Kashmir, Navodaya Vidyalaya Sangathan, Jharkhand and Odisha.
- Teachers Meeting were held in Uttar Pradesh (25), Kerala (4), Maharashtra (1), Gujarat (1) in which around 4100 teachers participated.
- Mentoring Workshops were organized at Delhi, Uttar Pradesh, Haryana, Madhya Pradesh, Punjab and Chandigarh (For State Awardees) during the month of August.

- **INSPIRE Fellowship:**

An amount of ₹10.04 crore was released towards ongoing fellowships for 180 INSPIRE Fellows.

- **INSPIRE Faculty Fellowship:**

An amount of ₹ 8.27 crore has been approved for the sanction of first instalment grant to 41 INSPIRE Faculty Fellow during this month.

- Indian National Academy of Engineering (INAE) organised the 6th INAE-NAEK, South Korea Workshop on “Perspective on Space Development” in Delhi. Eminent speakers from Academic Institutions and R&D Organizations from India and Korea delivered technical lectures on the **Development of Satellite and Space exploration and policy** during the workshop.

E. International Cooperation

- **United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM)**

The representatives of the Department participated in the Thirteenth Session of United Nations Committee of Expert on Global Geospatial Information Management (UN-GGIM), held in New York from August 2 to 4, 2023. UN-GGIM is the United Nations' apex intergovernmental mechanism for making joint decisions and directing national, regional, and global policy frameworks and development objectives toward nationally integrated geospatial information management.

- This annual meeting of designated national representatives and senior executives from Member States' national geospatial information authorities, as well as geospatial information experts from international organizations, the UN system, and relevant stakeholders. UN-

GGIM addresses global concerns in geospatial information creation, availability, and application, notably in development agendas and policymaking.

- **11th BRICS Science, Technology, and Innovation (STI) Ministerial Meeting**

The representatives of the Department participated in the 11th BRICS Science, Technology, and Innovation (STI) Ministerial Meeting held on August 4, 2023. Ministers or their deputies responsible for Science and Technology attended this meeting from all BRICS countries. The significant outcomes of the meeting included the adoption of two key documents: the BRICS Science, Technology, and Innovation Declaration for 2023 and the BRICS Calendar of Science, Technology, and Innovation activities for 2023-2024.

- **Meeting of the Steering Committee of the Innovation BRICS Network (iBRICS)**

The 1st Meeting of iBRICS was held virtually on August 23, 2023, hosted by Brazil. The Enabling Framework for iBRICS encompassed four objectives: fostering dialogue and mutual knowledge, capacity-building, cross-incubation, and soft-landing. India presented its National Initiative for Developing and Harnessing Innovations, which includes components such as business incubators, accelerators, capacity-building programs, and entrepreneurship initiatives. During the meeting, India stressed the importance of focusing on grassroots innovation.

- **Meeting with the Islamic Republic of Iran**

The Ambassador of the Islamic Republic of Iran in New Delhi met with the Secretary of the Department for discussing bilateral science and technology relationship. During the meeting, both parties explored potential collaborations and deliberated on tentative dates for the next joint committee meeting to further strengthen their scientific and technological cooperation.

- A Japanese delegation, led by Dr. SakuTsuneta, Deputy Chairman of the Committee on National Space Policy, Japan, and Director-General of The National Astronomical Observatory of Japan, met with officials of the Department **to discuss India's potential participation in the Thirty Meter Telescope project at Mauna Kea, Hawaii, USA.** This collaboration could open up exciting opportunities for India in the field of astronomy and space research.

- **Representation at International Cartographic Conference (ICC)**

The representatives of Survey of India participated in the "31st International Cartographic Conference (ICC) and to the 19th General Assembly of the International Cartographic Association (ICA)" held on 14-08-2023 to 18-08-2023 at Cape Town, South Africa, attended by Dr. U. N. Mishra, DSG, Survey of India.

F. Scientific Research

- A team of scientists from **Aryabhata Research Institute of Observational Sciences (ARIES)** has developed an extensive database that connects giant solar eruptions to their birth places on the Sun, leading to many interesting results that show that giant solar eruptions bear imprint of their origins. The study has been reported in the prestigious *Astrophysical Journal Supplement Series*.
- **Birbal Sahni Institute of Palaeo sciences (BSIP)** reconstructed the Indian Summer Monsoon rainfall (ISMR) variability and the corresponding vegetation response, from the Western Ghats, India. The study covers the last 723 years (CE 1219–1942) and is based on high-resolution lacustrine sediment pollen proxy data.
- Twelve Indian scientists were supported by **Indian National Science Academy (INSA)** for attending the Non-ISC (International Science Council) sponsored conferences abroad.
- Researchers of **S. N. Bose National Centre for Basic Sciences (SNBNCBS)** studied the star-formation activity in H II region Sh 2-61 (hereafter S61). It is found that the ionized gas in S61 is surrounded by dust and a molecular shell. Many young stellar objects and three molecular clumps are observed at the interface of the ionized gas and surrounding gas.
- **Wadia Institute of Himalayan Geology (WIHG)** reported in a new study that the Parkachik Glacier in Ladakh is likely to have three lakes of different dimensions due to subglacial over-deepening -a characteristic of basins and valleys eroded by glaciers. This study provided the first comprehensive account of the glaciation of the YanktiKuti valley of the upper Kali Ganga catchment of the Kumaon Himalaya, Uttarakhand.
- Researchers of **Centre for Nano and Soft matter Sciences (CeNS)** reported the synthesis of a highly porous and fibrous nano structured alloy of Co–Mn–Sn via a controlled electrode position process.
- Researchers of **Bose Institute** have developed a metal free mild base regio- and stereo-selective strategy for the synthesis of 1-1 O-disaccharides and 1-3 thiodisaccharides from 2-benzoyl glycals with different acceptors at room temperature.

G. Publications by Research Institutes

- Agharkar Research Institute (ARI) published 6 papers and Aryabhata Research Institute of Observational Sciences (ARIES) published 8 research papers in refereed journals.
- Indian Institute of Geomagnetism (IIG) published 5 papers in SCI indexed journals.
- Birbal Sahni Institute of Palaeo sciences (BSIP) published 6 research papers in high-impact journals.
- Indian Institute of Astrophysics (IIA) published 7 papers in refereed journals.

- Centre for Nano and Soft matter Sciences (CeNS) published 10 articles in international journals.
- Institute of Advanced Study in Science and Technology (IASST) published 08 research articles in reputed national/international peer-reviewed journals.

H. **Scientific Infrastructure Building**

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

Under the FIST Programme, a total of 240 proposals of universities and educational institutes were considered for funding support by the Department for improvement of S&T infrastructure.

- **Sophisticated Analytical and Technical Help Institutes (SATHI) Programme**

Under the Programme, SATHI-IIT Delhi organised a training and sensitization program based on the Cryo-TEM facility as a national infrastructure for the northern part of the country.

- **Sophisticated Analytical Instrument Facilities (SAIFs) Programme**

A total of four meetings of the Facility Management Committee (FMC) related to SAIF centres at Karnataka University, Dharwad; M.G. University, Kottayam; IIESF, Shibpur; and STIC, CUSAT Campus, Kochi were conducted to review the technical and financial progress of SAIF Centres.

- **Promotion of University Research & Scientific Excellence (PURSE) Programme**

Under the Programme, thirteen Universities have been selected for release of financial grants.
