

## DST celebrates 48<sup>th</sup> foundation day

The Department of Science & Technology (DST) dedicates 48 years of its service for inclusive development through science & technology. Initiated in 1971 DST has created a mark in promoting new areas of Science & Technology and played a crucial role as the nodal department for organising, coordinating and promoting S&T activities in the country.

The Department has started several initiatives to harness the new and emerging areas of science technology and innovation for the benefit of society and to cater to its changing needs. We celebrate some of the initiatives on the 48<sup>th</sup> foundation day:

### National Mission lays foundation for Artificial Intelligence research ecosystem

National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS) was launched by the Union Cabinet to be implemented by Department of Science & Technology. With a total outlay of Rs. 3660 crore for five years, the Mission lays the foundation for globally relevant Artificial Intelligence research ecosystem. It addresses the ever increasing technological requirements of the society.



**DST boosting research & development**

**YEAR ENDER**

- Smart Grids R&D Conclave
- Upward revision of research fellowships
- National Mission on Interdisciplinary Cyber-Physical Systems launched
- National Super Computing Mission in action

IndiaDST [www.dst.gov.in](http://www.dst.gov.in) @IndiaDST

### Supercomputing mission: A big boost for India's R&D

The National Supercomputing Mission is a visionary program to enable India to leapfrog to the league of world class computing power nations. It connects national academic and R&D institutions with a grid of over 70 high-performance computing facilities at an estimated cost of Rs 4,500 crore with support from Ministry of Science and Technology and Ministry of Electronics and Information Technology (MeitY). The mission envisages empowering academic

and R&D institutions spread over the country by installing a vast supercomputing grid comprising of more than 70 high-performance computing facilities.



### **India's centres that compute materials for the future**

DST pooled together existing expertise residing in different institutions all over India to build a network of Centre for Computational Materials Science (CCMS) facilities spread across some of the best institutions in different states of India:

Centre for Computational Material Science at IISC

Computational Materials Science at JNCASR, Bengaluru

SN Bose National Centre for Basic  
Sciences Unit of Excellence on Computational Materials Science



### **An innovation movement sparks from remote India's wonderlands**

Million Minds Augmenting National Aspiration and Knowledge (MANAK) awards are inspiring school level innovators from remote India's wonderlands. It selects best 60 innovations from among 2.88 lakhs similar ones from 1.5 lakhs schools all over India and recognizes and supports them. The 60 awardees showcase their awards at a National level exhibition.





## Augmenting science writing skills



Augmenting Writing Skills for Articulating Research (AWSAR) scheme encourages young scientists to write popular articles on their research pursuits. The aim of the scheme is to disseminate Indian research stories among the masses in an easy to understand and interesting format for the common man. Under this initiative, PhD Scholars and Post-Doctoral Fellows (PDFs) in Science and Technology (S&T) streams are being encouraged to write at least one popular science article during the tenancy of their fellowship, and to participate in a national competition.

## DST supported technologies ensure safe and sustainable water for all

### DST's initiatives pledge safe & sustainable water for all

- Water Technology Initiative Programme supports technologies for safe drinking water at affordable cost
- Indo-UK Collaboration focuses on water quality research to understand water resources & develop solutions for water pollution
- Research Initiative supported for developing technologies for Real Time River Water and Air Quality Monitoring
- Laterite based Arsenic Removal Filters & Arsenic and Metal Removal by Indian Technology (AMRIT) developed
- River Bank Filtration System set up in Uttarakhand using Natural Aquifer Material
- Mobile Water Purification Unit deployed rapidly in drought hit region
- Dielectric Barrier Discharge (DBD) based plasma system developed for portable water purification



The Department of Science & Technology (DST) has developed knowledge network for evolving customized technological solutions for water challenges suited to specific social context

and fulfill the goals of the National Water Mission of optimising water utilisation and increasing water use efficiency by 20%.

Some of these technologies are real-time river water quality monitoring tech, Laterite based Arsenic Removal Filters, AMRIT: Arsenic & Metal Removal by Indian Technology, Mobile water purification deployment in drought hit region, Technology for Filtration at River Bank in Uttarakhand and Low cost electrode tech for water purification

### **The Nanotech leap**

Dynamic interdisciplinary team at the state-of-the-art nanofabrication facilities (Fabs) brought together by the efforts of the Principal Scientific Advisor (PSA) to the Govt. of India, Ministry of Electronics and Information Technology (MeitY), and the Department of Science and Technology (DST), is passionately working on various nano- tech outputs.

Sensors, Internet of Things, microfluidics, photonics, and nanomaterials for solutions in agriculture, healthcare, safe drinking water, and energy harvesting

Point-of-care Diagnostics: Electrochemical biosensors, 'lab-on-palm'



*Disposable test strips*

## **Women entrepreneurs take off with pride**

Women Entrepreneurship and Empowerment Foundation (WEE) India's first of its kind initiative by IIT Delhi and Department of Science and Technology, to strengthen women entrepreneurship eco- system has played a crucial role in changing the mindset of several young women. It has made them new and powerful women entrepreneurs through their innovative training methods, positive motivations and unique ideas.



Entrepreneur Pooja Kaul, at a donkey rearing farm



Neha Upadhyay founder of GUNA with women farmers at Ladakh

## **Bringing the best of Global Science and Scientists to India**

Visiting Advanced Joint Research (VAJRA) Faculty Scheme was initiated to bring best global science and scientists to India including NRIs. The scheme is exclusively for overseas scientists and academicians with emphasis on Non-resident Indians (NRI) and Persons of Indian Origin (PIO) / Overseas Citizen of India (OCI) to work as adjunct / visiting faculty for a specific period of time in Indian Public funded academic and research institutions.



## Encouraging Women in higher education

**DST empowers women through 'Women Scientists Programmes'**

- ⊗ KIRAN: Opportunities for women with career breaks in R&D, societal implementation & IPR
- ⊗ Women Entrepreneur Quest & Women Technology Park: Encourage S&T entrepreneurship
- ⊗ Vigyan Jyoti: Encourages girl students to pursue their careers in Science, Engineering and Technology
- ⊗ S&T for Women: Empowering grassroots women for technologies adoption
- ⊗ CURIE: Consolidation of University Research for Innovation and Excellence in Women strengthens R&D infrastructure of women-only Universities
- ⊗ Indo-U.S. Fellowship for Women in STEMM
- ⊗ National Award for Women Development through Application of Science & Technology

International Women's Day - 8<sup>th</sup> March

IndiaDST | www.dst.gov.in | @IndiaDST

To address gender imbalance, a new scheme **Vigyan Jyoti** has been started under KIRAN programme to attract and encourage young women scientists.

It aims to encourage and inspire girl students to pursue higher education and become self-reliant and also offers exposure for girl students coming from rural background to help understand how to plan their journey from school to college and thereafter from research to a job of their choice in the field of science.

## Boosting Innovation and Start-up Activity

**National Initiative for Developing and Harnessing Innovations (NIDHI)**  
Scouting, Mentoring & Scaling up Innovations

*A DST flagship programme to address the complete chain of innovation ecosystem*

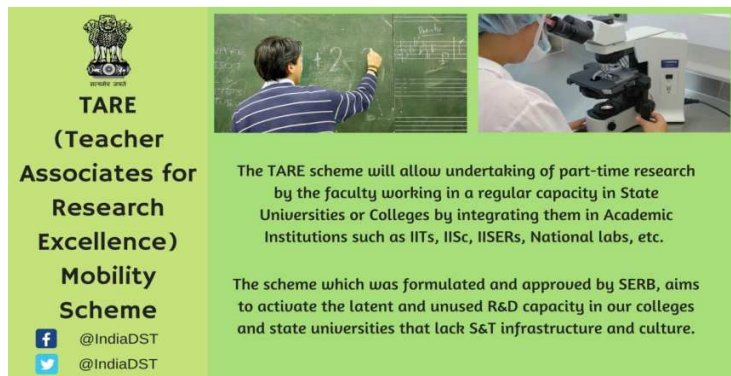
- ▶ NIDHI-Promoting and Accelerating Young and Aspiring innovators & startups (NIDHI - PRAYAS) - Support from Idea to Prototype
- ▶ NIDHI- Entrepreneur-In-Residence (NIDHI-EIR) - Support system to reduce risk
- ▶ NIDHI-Accelerator - Fast tracking a start-up through focused intervention
- ▶ NIDHI Centres of Excellence (NIDHI-CoE) - A World class facility to help startups go global
- ▶ NIDHI-GCC - Grand Challenges and Competitions for scouting innovations

IndiaDST | www.dst.gov.in | @IndiaDST

In-line with National Mission's on Innovation and Startup India, National Initiative for Developing and Harnessing Innovations (NIDHI) program nurtures knowledge-based and technology-driven innovative ideas into successful startups.

NIDHI focuses on building a seamless and innovation driven entrepreneurial ecosystem by providing fellowships to the students opting for entrepreneurship and support for different stages of innovative ideas,.

### **Teacher Associates for Research Excellence (TARE) Mobility Scheme**



The graphic features the Indian national emblem at the top left, followed by the text 'TARE (Teacher Associates for Research Excellence) Mobility Scheme'. Below this, there are two images: a student writing on a chalkboard and a person using a microscope. The text describes the scheme's purpose and its approval by SERB.

**TARE**  
**(Teacher Associates for Research Excellence) Mobility Scheme**

The TARE scheme will allow undertaking of part-time research by the faculty working in a regular capacity in State Universities or Colleges by integrating them in Academic Institutions such as IITs, IISc, IISERs, National labs, etc.

The scheme which was formulated and approved by SERB, aims to activate the latent and unused R&D capacity in our colleges and state universities that lack S&T infrastructure and culture.

@IndiaDST  
@IndiaDST

In order to improve the quality of faculty, this scheme exposes teachers to research in established public funded institution such as IITs, IISc, IISERs, NITs, CSIR, ICAR, ICMR labs and other central institutions and central universities, located preferably closer to the institution where the faculty member is working.

### **Attracting Young Talent to Science**

In order to attract students at an early age to study science and to promote creative thinking and innovation, nearly 4.5 lakh students were offered Inspire Award.

**1,50,000** students of intermediate level were provided internship in 708 Inspire Science Camps.

**49,293** INSPIRE Scholarships have been offered to very bright students (top 1% of +2 Board examination) for pursuing study in various science related courses like Physics, Chemistry, Biology, Mathematics, etc. at the undergraduate and up to postgraduate stage.

**4000** INSPIRE Fellowship have been offered to young students in the last three years for carrying out their doctoral degree programme in all areas of basic and applied sciences including Medicine, Agriculture, Veterinary, etc.

**715** young researchers have been provided an attractive opportunity as an INSPIRE Faculty for developing independent scientific profiles.

### **Advanced Manufacturing Technology (AMT) Programme**

Aligning with the 'Make in India' initiative of the Government, the Department has initiated a programme to promote development of advance manufacturing technologies in the country.



AMT program has supported technologies like design tools and process innovations, modelling & simulation platforms, Digital Manufacturing, Flexible scale manufacturing, Additive manufacturing Smart Manufacturing Advanced Robotics (AR) & Industrial Internet of Things (IIOT) wearable low power electronics including energy harvesting & sensor Networks etc.

### DST initiates Artificial Intelligence training in women universities











Seven women universities under the Consolidation of University Research for Innovation and Excellence in Women Universities (CURIE) program of the Department of Science and Technology, are now being supported to develop Artificial Intelligence (AI) related infrastructure for research also to provide short term training, part time courses, electives to students studying in diverse fields like agriculture, science, medicine, law and engineering.



### Core group of SEED, DST connecting science to society

Core Groups of SEED Division of DST provide support for scalable and affordable technological advancement in rural areas for areas like housing, lighting, clean fuel, rural engineering, agricultural and animal husbandry, food processing and build local capacities in remote rural areas. Around 26 NGOs are supported to develop relevant skills, innovations, products and grass-roots technologies.

**TARA: Innovating for Rural Livelihoods & Social Enterprises**

SEED Division of DST has taken initiative under the Technology Advancement for Rural Area (TARA) scheme to provide location specific technological solutions on specific challenges in rural areas. These innovative technologies are developed & scaled up by Core Support Groups involving local community. ([www.dsttara.in](http://www.dsttara.in))

 <p>Line Sowing Marker for Crop Sowing in Hills -Himalayan Environmental Studies and Conservation Organisation, Dehradun</p>	 <p>Egg Incubator for Marginal Farmer -Vigyan Ashram, Pabal, Pune</p>	 <p>Solar Tunnel Dryer -Sardar Patel Renewable Energy Research Institute, Vallabh Vidyanagar, Gujarat</p>
 <p>Compact Biogas System -Appropriate Rural Technology Institute, Pune</p>	 <p>Induced Breeding for Production of Fish Spawn -Vivekananda Institute of Biotechnology, Nimphith, WB</p>	 <p>Solar Water Heater for Mountain Area -Himalayan Research Group, Shimla</p>
 <p>Multi Fibre Extraction Machine -Centre for Technology &amp; Development, Delhi</p>	 <p>Motorized Winch for Chinese Fishing Net -Mitrniketan, Thiruvananthapuram</p>	 <p>Micro Solar Dome -NB Institute for Rural Technology, Tripura</p>
 <p>Technology for Testing Soil &amp; Leaves -Shri AMM Murugappa Chettiar Research Centre, Taramani Chennai</p>	 <p>Solar Dehydration Technology -Society for Energy Environment and Development, Hyderabad</p>	 <p>Fuel Efficient Wood Burning Stoves -Technology Informatics Design Endeavour, Bangalore</p>
 <p>Design and Development of Dehusking Machine for Minor Millets -Madhya Pradesh Vigyan Sabha, Bhopal</p>	 <p>Cardamom Washing Machine -Peermade Development Society, Idukki, Kerala</p>	 <p>Waste to Weave Technologies -Development Alternatives, New Delhi</p>

 IndiaDST
  [www.dst.gov.in](http://www.dst.gov.in)
 @IndiaDST