

**GOVERNMENT OF INDIA
MINISTRY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF SCIENCE AND TECHNOLOGY
Nano Mission Secretariat**

Call for proposals for "Thematic Projects in Three identified areas"

The Nano Mission Council, has identified 3 areas as of now in Nano R&D in which proposals are now invited from Institutions that have active research in Nano S&T. The three areas identified are as follows:

- i. **Nanotechnology in Agriculture** – Includes areas like Nano based soil and water management; control systems for precision agriculture; control of diseases and insect-pests in crops and animals; post-harvest, value addition and value chain in crops, animals and fisheries; development and deployment of sensors for instruments & farm equipment, storage and marketing; fertilizers, micronutrients and pesticides; food and fibre quality; packaging and marketing.
- ii. **Nano for Energy & Environment** – Fundamental studies and applications towards Design, Development and Engineering Nanomaterials for clean Energy- and Environment; Multi-electron intercalation chemistry – Systems beyond Li-ion chemistry in rechargeable storage devices – for example, Magnesium, Aluminium & Zinc-based systems. Conversion and alloy electrodes – Fundamental understanding and Applications; Solid-electrolyte interface in high energy storage systems to address degradation issues; Metal – halide and metal-sulphur chemistry and related studied aspects; Metal-air rechargeable systems; Static storage devices based on flow systems; Novel aspects of fuel cells and hybrid energy storage devices involving supercapacitors; Energy conversion based on photochemical, electrochemical and photo-electrochemical processes. Thermoelectrics – new and novel materials; Environmental - Fundamental studies on environmentally important and relevant nanoscale phenomena and their applications.
- iii. **Quantum Materials with exciting Nano-science and novel applications** – includes emphasis on novel and exotic quantum phenomena at nanoscale in existing and to be discovered new materials; Novel phenomena in low-dimensional materials, topological materials like topological insulators. Dirac and Weyl semimetals, quantum spin liquids, superconductors and their hybrids with possible applications such as ultra-sensitive sensors etc. Building blocks of a topological quantum computer, heterostructures of 2D materials for the creation and control of Majorana fermions at the interface of a superconductor and topological insulator; Discovery and growth of novel high-quality quantum materials by different methods, new device architecture and novel quantum phenomena; Light-matter interaction: Nano photonics, Integration with other photonic structures. Ultrafast spectroscopy and nanometre spatial resolution; and Quantum Materials Theory.

In short, the Nano Mission wants to provide critical funding to competent groups (preferably from group of Institutions) to carry out very focused research in Nanoscience and develop nano-technology based applications aimed at delivering breakthroughs in Nano S&T and applications in a concerted manner.

Nano Mission invites proposals, preferably multi-institutional, multiple PI with One overall Coordinator in each area of the proposal, from Institutions active in research in Nano S&T aiming towards application of Nano Technology in the area.

The earlier funded Units, Centres and Thematic Units of Excellences by Nano Mission in various topical areas, were primarily aimed at strengthening and meeting target oriented R&D. The Present Units, in advanced and topical areas, will act as collaborating platforms for Scientists/Academicians where the funding will be provided to the leading groups to carry out focussed research and development. This is expected to lead to *significant enhancement in scientific knowledge along with their useful and novel applications.*

The proposals, should clearly mention how the scientific expertise of various members of the investigating team would complement and supplement each other for achieving the objectives. The proposals should especially highlight how existing equipments and research facilities in the institution provided by any funding agency or those available in other institution/s in the country will be used appropriately in the proposal.

Proposals may be submitted in the format given on the DST website under online.dst.gov.in. In Case of projects for creating Research Infrastructure along with projects, while the projects could be of three years duration, projects for building Research Infrastructure could be for 5 years.

The last date for receiving these proposals has now been extended till **30.08.2019**.