As part of Nano Mission programme, the Department of Science and Technology (DST) has approved support for upscaling an antiviral nano-coatings developed by Professor Ashwini Kumar Agrawal of Indian Institute of Technology, Delhi for use as appropriate material for producing anti-COVID-19 Triple Layer Medical masks and N-95 respirator in large quantities. Silver is known to have strong antimicrobial activity against bacteria, viruses, fungus, and so on.

**Nano-Science & Technology Mission (NSTM)**

The Government of India launched the Nano Mission in 2007 under the Department of Science and Technology. The Ministry of Science and Technology allocated up to 1000 crores to this mission in order to fulfill its following objectives:

- Basic Promotion of Nanotechnology
- Infrastructure Development
- Establishment of R&D in Nanoscience Applications
- Establishment of Development Centre for Nanosciences
- Human Development in Nanotechnology
- International Collaborations

India has been able to rank amongst the top 5 countries in the world for Scientific Publications in Nanoscience & Technology due to the efforts led by the Nano Mission.

The Nano Mission has established national dialogues to promote R&D in the development of standards for nanotechnology and for laying down a National Regulatory Framework Road-Map for Nanotechnology (NRFR-Nanotech).

**Nanotechnology**

- Nanotechnology (also called nanotech) is the technology that involves the manipulation of matter on atomic, molecular and supramolecular scales. This includes particles of a scale 1 to 100 nanometers.
- The invention of the Atomic Force Microscope (AFM) made it possible for nanotechnology to become reality. Nanotechnology has come a long way since then and now affects many industries. It is an interdisciplinary field converging many streams of engineering and science.
- This technology grew beyond boundaries in this century, because of its quantum size and variety of applications in medical science, space, telecommunications, food processing and environmental protection fields.
- Nanotechnology promotional activities are carried out as a part of the Nano Science and Technology Initiative (NSTI).

**Nano-Science & Technology Initiative (NSTI)**

- To create the background and infrastructure for R&D in nano-science & technology, Nano-
Science & Technology Initiative (NSTI) have been rolled out in the time period of 2001 to 2006 by Department of Science and Technology (DST). Across India, 19 Centres of Excellence have been established for research, development and applications of nanotechnology.

**Approval for the Second Phase of NSTM**

- The Union Cabinet gave its clearance for the continuation of the NSTM in its second phase in the 12th plan period at a cost of Rs. 650 crores. Announcing the Cabinet decision, an official statement noted that as a result of the efforts led by the mission, India has moved from the fourth to the third position in the world in terms of scientific publications in nano-science and technology.
- The Nano mission, in this new phase, will make greater effort to promote application-oriented R&D so that some useful products, processes and technologies also emerge. It will be steered by a ‘Nano Mission Council’ chaired by an eminent scientist.

**COVID-19 Nano Coating**

The Department of Science and Technology and the Science and Engineering Research Board (SERB) called for a Short-term Research Grant for Nano Coating COVID-19 in April 2020.

This rapid project was necessary for the emerging health care requirements in order to combat the COVID-19 Pandemic. The goals of the project are to focus on the following areas:

1. **Antiviral Nano-coatings**
   - It will be coated/used on the appropriate material for producing anti-COVID-19 Triple Layer Medical masks and N-95 respirator or better masks in large quantities.

2. **All components of Personal Protective Equipment (PPE)**
   - PPEs are used for safeguarding the health of all health care workers against COVID-19.
   - The department will deal with industrial partners for scaling up production.

Project duration should be for a maximum of up to 1 year with a maximum budget limit of Rs. 25-30 lakhs (including overheads) for developing the Nano-coating and new nano-based material for the components of PPE, which can be transferred to the partnering Industry or a Start-up.

**ICONSAT 2020**

The International Conference on NanoScience and NanoTechnology (ICONSAT) is a series of biennial international conferences held in India under the aegis of the Nano Mission, Department of Science and Technology (DST).

**Objectives of ICONSAT**
• Bringing out Cutting-Edge Nano Technology for the development of Physics, Chemistry and Material domains.
• Integration of 5Ms – Mechanical, Material, Machines, Manufacturing and Manpower with the help of NanoScience and NT.
• Integration of NT with Sustainable Development.
• Emphasizing the need to create a network of experts in nano-science and to collaborate the knowledge across sectors like energy, agriculture, transport, health and so on.
• Providing a potential platform for young researchers and students from within the country and abroad to keep pace with the latest development in the emerging areas of Nano Science and Technology.

The International Conference on NanoScience and NanoTechnology (ICONSAT) 2020 was organized during 5th-7th March at Kolkata (West Bengal)