

# University of Mumbai

Press Note

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Mumbai - University of Mumbai has received a grant of Rs. 20 crores from the UGC for its Nanotechnology Centre. Recently, UGC expert committee evaluated the progress of Nanotechnology Centres being established at the Universities of Mumbai, Calcutta and Madras. As per the comments of the committee members, University of Mumbai's Nano-fabrication and Nano-characterization facilities are the best, and would be the envy of many an academic institution in the country. Nanotechnology is viewed as the future technology which would bring revolution similar to the recently witnessed IT revolution or Industrial revolution of the past. It is a disruptive technology and the Nations investing in Nanotechnology today would rule the world in future.

Main characteristic of Nanotechnology is of achieving control in fabricating structures of dimensions ten thousand times smaller than the diameter of human hair. At such small dimensions, materials have exotic properties never seen before. Nanotechnology therefore would pervade every manufacturing process and industry making use of these exotic properties for developing new products as well as improving productivity multifold. University of Mumbai is now poised to undertake research and training to develop human resources required for this future technology. It has invested about Rs. 55 crores for the high-end equipments for Nanotechnology research. Focus of research at Mumbai University is on nano-device fabrication, bio-nanotechnology, green technology, alternative energy technology and sustainable development. It has created class-100 clean room area for nano-device fabrication. It has installed equipment like, Transmission Electron Microscope, Atomic Force Microscope, Scanning Tunnelling Microscope, X-ray Photoelectron Spectrometer to name the few. Large number equipments on spectroscopy, chromatography and tribology will be useful for complete characterization of nanomaterials. It has developed facilities for high end synthesis, Molecular Beam Epitaxy, Electron Beam deposition, Pulsed Laser Deposition to name the few. It has facility for developing Organic LEDs (OLEDs) and Organic solar cells. Facilities are created for thin film solar cell development and Hydrogen energy systems. Facilities would also be used for developing bio-sensors and bio-electronics based devices. The centre would also undertake the development of novel diagnostic methods, nano-medicines and targeted drug delivery methods for healthcare.

## **Vision Statement :**

To enable a Revolution in Nano-sciences and Nano-technology;  
to develop New Products, Processes and Services in Partnerships  
with Industry, Institutions, Government, and Society at large;  
and to be one of the World Leaders with commitment to  
Responsible Care and Sustainable Development.

The Centre for Nanosciences and Nanotechnology, University of Mumbai (CNUM) has undertaken R&D and Training Programmes to meet some of the challenges of nanotechnology development. University of Mumbai will focus on a) R&D in Nanosciences and Nanotechnology leading to industry-ready technology and b) Development of human resources to implement the technology.

## **The Centre for Nano-sciences and Nanotechnology will:**

- i. Endeavour to attain a position of leadership among the top few centers in the world, by recruiting top most scientists, engineers and technologists, with trans-disciplinary infusion of ideas; and attract student body from all over the country and overseas.
- ii. Promote excellence by undertaking research of international caliber and national relevance in collaboration with industry by establishing an Innovation Park; increased collaboration and partnership with other national and international institutions and universities, which will have bearing on quality of life and sustenance of growth of industry.
- iii. Advise/ assist industry, government and society towards a sustainable pattern of consumption and production with advent of nano-sciences and technology,
- iv. Impart relevant education, research and innovation in nano-sciences and nanotechnology, with inputs from faculty attached to other University Departments, Institutes and Colleges with expertise in basic and applied sciences and technology in service to the Indian nation,
- v. Frame a more diversified, complete and flexible curriculum with more fully developed co-curricular activities; develop modular and web-based courses at diploma, degree and post graduate, doctoral and post-doctoral level, incorporating social justice.

The total cost of the project for the Centre for Nano-science and Nanotechnology was estimated at Rs.100.00 crores. The Centre will house sophisticated equipment worth Rs. 70 crores for Nano-synthesis and Nano-characterization. Non-recurring expenditure for building, infrastructure, etc. is estimated at Rs. 15 crores. Recurring expenditure for faculty, staff, fellows, consumables, etc shall be Rs.15 crores for 3 years.

It is thought that Nanotechnology will impact significantly the industries related to Energy, Health-care, Chemical & Materials (Materials Science) and Electronics. UoM has decided to focus on Materials Science for industrial applications as its thrust area. In the next Five Years, UoM will focus on

- a. R&D in Nano-sciences and Nanotechnology, with thrust area of Materials Science leading to industry-ready technology and
- b. Development of human resources to implement the technology

**The Programmes planned are:**

- a. Catalyzing University for increased R&D output
- b. Innovation Park for industries,
- c. Nanotechnology Education initiative
- d. South-south cooperation in Nanotechnology and
- e. Green Nanotechnology

There will be strong links with industry through Innovation Park programme where faculty members would partner with industries for innovations. In the next five years the Centre has targeted to produce 100 PhDs, 120 MSc students, 60 M Tech students in the field of Nanotechnology, in next five years. We also have targeted to get about 50 projects from industry in the next five years. The Programme also includes development of Social Sciences and other departments. The estimated cost of Rs.100.00 crores for the next five years, have been budgeted for the proposed programmes

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Deputy Registrar (PR)