


REPORT ON 'SHORT TERM TRAINING PROGRAM ON NANOSCIENCE AND NANOTECHNOLOGY' during June 20-25, 2013

- 1 Name of the University/Department : **University Institute of Chemical Technology**
- 2 Full address of University/ Institute with Department : University Institute of Chemical Technology, North Maharashtra University, Jalgaon MS India 425 001
- 4 Name of the event : Short Term Training Program On Nanoscience And Nanotechnology
- 5 Place & Date of the event : UICT, NMU, Jalgaon June 20-25, 2013
- 6 Inaugurators : **Chief Guest**
Dr. D. G. Hundiwale,
Director, BCUD,
North Maharashtra University,
Jalgaon.
- Chairman of the function**
Prof. (Dr.) Satyendra Mishra
Director, UICT., NMU, Jalgaon
- Dr. Navinchandra G. Shimpi
Coordinator-STTP 2013
- 7 Academic Highlights including new development presented at STTP (200 words) : Annexure- I
- 8 Participants contribution to the STTP (100 words) : Annexure-II

Date : 25.06.2013


(Dr. Vijay R. Chaudhari)
Treasurer -STTP 2013

ANNEXURE-I

Academic Highlights including new development presented at the STTP-2013

Nanoscience and Nanotechnology is a vibrant, multidisciplinary field of research involving physics, chemistry, biology, medicine, and materials science (among other fields) that is flourishing in the 21st century. The impetus for nanotechnology comes from a renewed interest in Interface and Colloid Science, coupled with a new generation of analytical tools such as the atomic force microscope (AFM) and the scanning tunneling microscope (STM).

Nanotechnology has the potential to create new devices with wide ranging applications in

medicine, electronics, energy production, environment issues etc., and can be harnessed to address some of the world's most critical development problems. The growth potential of Nanoscience and Nanotechnology related research is expected to create new jobs at different occupational levels in coming years for researchers and scientists holding university and post-graduate degrees, and also for a wide range of technicians. In this context, education and training is essential to bring forward a new generation of researchers and other skilled workers with the interdisciplinary R&D approach that nanotechnology needs.

Considering the above aspects of Nanoscience and Nanotechnology, it becomes essential to abreast the academic faculties with its basic concepts, while simultaneously introducing the emerging trends, innovations and latest technological developments in this field. We hope that the present workshop will foster new ideas and concepts that will ensure active participation of faculties in promoting research in this field.

ANNEXURE-II

Following topics were highlighted during the STTP-Program

Theoretical Aspects

- Nanomaterials in Reaction Engineering Technology
- Basic Concepts of Nanoscience & Technology
- Electronic Aspects of Nanotechnology
- Nano-Biotechnology
- Nanotechnology and Energy Production / Conversion
- Surface Science of Nanomaterials
- Nanomaterials in Coatings
- Polymeric Nanomaterials
- Nanomedicine
- Thin Films

Practical Aspects-

- Software Based Visualization of Nanotechnology
- Nanomaterial Synthesis and Characterization
- Instrumentation

During the STTP Program-

In fourteen hours theory course, eight class room lectures have been delivered by the following eminent speakers

1. Prof. Dr. Satyendra Mishra, Director, UICT, NMU, Jalgaon
2. Prof. Dr. J.B. Naik, Head, Dept. of Chem. Engg UICT, NMU, Jalgaon
3. Dr. BR Sankhpal, VNIT-Nagpur
4. Dr. R. D. Kulkarni, Head, Dept. of Paint, UICT, NMU, Jalgaon
5. Prof. Dr. D.G..Hundiwale, Director, BCUD, NMU, Jalgaon
6. Dr. Ramphal Sharma, Dr. BAMU, Aurangabad
7. Dr. V.L. Maheshwari, School of Life Science, NMU, Jalgaon

Sixteen hours laboratory course involved:

- ❖ Synthesis of
 1. TiO₂ Nano material by sol-gel method
 2. CaCO₃ Nano material by solvothermal method
 3. Synthesis of Nano Sphere of Netaglinide for treatment of diabetes by single emulsion (o/w) method
 4. Synthesis of placebo nanoparticles of ethyl cellulose by solvent evaporation o/w single emulsion method.

❖ Demonstration of Characterization techniques:

1. Thermo Gravimetric Analysis (TGA)
2. Lyophilizer
3. Dissolution Apparatus
4. High Pressure Homogenizer
5. High Speed homogenizer
6. Motic Microscope
7. Working Function of stability chamber to check drug formulation stability
8. Disintegration test apparatus
9. Differential Scanning Calorimetry (DSC)
10. Particle Size Analyzer and Zeta Potential
11. X-Ray Diffractometer
12. UV-Visible Spectrophotometer
13. Spectrofluoremeter
14. Freeze Drier
15. Spray Drier
16. Fourier Transform Infra Red (FTIR) Spectrometer

Participation:

Total 25 participants from all over the state were present for STTP-2013.