

NSE 931 Advanced Synthesis and Fabrication Techniques

Credit Hours: 3

Prerequisites: Nil

Course Objectives:

- Introduction to key concepts/techniques for the synthesis and fabrication of nanomaterials
- Detailed understanding on various synthesis/fabrication procedures currently employed in the domain of nanomaterials

Course Contents:

- Key concepts/techniques on the synthesis and fabrication of nanomaterials
- Directed assembly of nanostructures
- Bio-mediated assembly of ordered nanoparticles superstructures
- Wet Chemical methods for the synthesis of nanomaterials
- Synthesis of nanomaterials through ex-foliation procedures
- Fabrication of thin films for solar cells and devices
- Synthesis and fabrication of nano composite materials
- Chemical modification of nanomaterials for solar cells/sensors/biomedical and related applications

Course Outcomes:

The student will get an in depth understanding on the fundamental concepts as well as detailed understanding on various synthesis and fabrication techniques used these days in the domain of nanomaterials. The student will be able to use this knowledge in practical applications.

Recommended Books:

- Inorganic materials synthesis and fabrication, John N. Lalena, David A. Cleary, Wiley Interscience, 2008.
- Nanostructures and nanomaterials, Synthesis, properties and applications, Imperial College Press, 2004.
- Molecular Chemistry of Sol-Gel Derived Nanomaterials, Robert Corriu and Nguyen Trong Anh, John Wiley & Sons, Ltd. 2009.