Course Title: Nanochemistry

Course Code: CH-810

Credit Hours: 3-0

Prerequisite: Nil

Course Objectives

Nano technology will be treated from the nano chemistry stand point. In this direction two major areas will be covered, namely inorganic nano partical production and processing as well as carbon nano tubes through selective disintegration of hydrocarbons. A contemporary area of emphasis is the incorporation of nanomaterials into synthetic resins to produce components for the micro electronics industries.

Course Outcomes

The outcomes of this course will explain ways and means which could be adopted to overcome the limitation associated with nanomaterials, and also provide learning resource for MS research in this vital area.

Course Contents

a. Introduction to nano technology
b. Process and synthesis
c. Particles
d. Nano particles
e. Carbon nanotubles
f. C60 (Bucky balls) single walled (SWNTs) nanotubes
g. Multi wall nanotubes (MWNT)
h. Carbon clusters
i. Structures
j. Properties and applications in industry
k. Nano structured materials (nano composites)
l. Nano polymers including catalysts, organic, inorganic (Clays, fillers etc.) and biomedical materials
m. Nano machines
n. Nano wires
o. Nano devices
p. Application of organic, inorganic nano structures in micro electronics and optoelectronics

Recommended Books

1. Organic and Inorganic nanostructures ARTECH HOUSE, Boston London ISBN 1-58053-818-5.
2. Handbook of Nanostructured Materials & Nanotechnology Hari Singh Nalwa., , Acacemic Press (1996).
3. Carbon Nanomaterials Yury Gogotsi, , Taylor and Francis (1961).