

# **SUGGESTED BOOKS AND REFERENCES**

FOR

CORE THEORY COURSE

OF

**M.TECH. PROGRAMME IN NANOSCIENCE & NANOTECHNOLOGY**

## **QUANTUM MECHANICS**

- Modern Physics - Beiser
- Quantum Mechanics - Bransden and Joachen
- Quantum Physics of Atoms, Molecules, Solids, Nuclei, and Particles, 2<sup>nd</sup> Edition by Eisberg, Robert; Resnick, Robert
- Quantum Physics – A. Ghatak
- Principles of Quantum Mechanics 2nd ed. - R. Shankar
- Quantum Mechanics - Vol 1&2 - Cohen-Tannoudji

## **PHYSICS AND CHEMISTRY OF SOLIDS**

- Introduction to Solid State Physics -C. Kittel
- Solid State Physics- A.J. Dekker
- Solid State Physics -R.K Puri and V.K.Babar
- Elements materials science -Van Vlack
- The Physics and Chemistry of Solids - Stephen Elliott & S. R. Elliott
- Physics and Chemistry of Interfaces- Hans-Jürgen Butt, Karlheinz Graf, Michael Kappl
- Materials Science & Engineering: An Introduction, 5<sup>th</sup> edition- William D. Callister, Jr

## **ELEMENTS OF PHYSICAL CHEMISTRY**

- Thermodynamics and Statistical Mechanics - A N Tikhonov, Peter T Landberg, Peter Theodore Landsberg
- Thermodynamics and Statistical Mechanics by John M. Seddon, J. D. Gale
- Thermodynamics by Zymansky
- Statistical Physics by K. Huang
- Statistical Mechanics-Landau & Lifshitz
- Physical Chemistry – Atkins Peter, Paula Julio
- Physical Chemistry, 1st Edition -Ball

## **SYNTHESIS AND CHARACTERIZATION OF NANOMATERIALS**

- Hari Singh Nalwa - Encyclopedia of Nanotechnology.
- Introduction to Nanotechnology - Charles P. Poole Jr. and Franks. J. Qwens

- Novel Nanocrystalline Alloys and Magnetic Nanomaterials- Brian Cantor
- Nanomaterials Handbook- Yury Gogotsi
- Springer Handbook of Nanotechnology - Bharat Bhusan
- Instrumental Methods of Analysis, 7<sup>th</sup> edition- Willard, Merritt, Dean, Settle
- Processing & properties of structural nanomaterials by Leon L. Shaw (editor)
- Chemistry of nanomaterials : Synthesis, properties and applications by CNR Rao et.al.
- Scanning Probe Microscopy: Analytical Methods (NanoScience and Technology)- Roland Wiesendanger
- Advanced X-ray Techniques in Research and Industries - A. K. Singh (Editor)
- X-Ray Diffraction Procedures: For Polycrystalline and Amorphous Materials, 2nd Edition  
- Harold P. Klug, Leroy E. Alexander
- Transmission Electron Microscopy: A Textbook for Materials Science (4-Vol Set)- David B. Williams and C. Barry Carter
- Physical Principles of Electron Microscopy: An Introduction to TEM, SEM, and AEM - Ray F. Egerton
- Fabrication of fine pitch gratings by holography, electron beam lithography and nano-imprint lithography (Proceedings Paper) Author(s): Darren Goodchild; Alexei Bogdanov; Simon Wingar; Bill Benyon; Nak Kim; Frank Shepherd
- Microfabrication and Nanomanufacturing- Mark James Jackson
- A Three Beam Approach to TEM Preparation Using In-situ Low Voltage Argon Ion Final Milling in a FIB-SEM Instrument E L Principe, P Gnauck and P Hoffrogge, Microscopy and Microanalysis (2005), 11: 830-831 Cambridge University Press

### **PROPERTIES OF NANOMATERIALS**

- Novel Nanocrystalline Alloys and Magnetic Nanomaterials- Brian Cantor
- Nanomaterials Handbook- Yury Gogotsi
- Encyclopedia of Nanotechnology- Hari Singh Nalwa
- Introduction to Nanotechnology - Charles P. Poole Jr. and Franks. J. Qwens
- Microwave Properties of Magnetic Films - Carmine Vittoria.
- Physics of Magnetism - S. Chikazumi and S.H. Charap
- Physical Theory of Magnetic Domains - C. Kittel
- Magnetostriction and Magnetomechanical Effects - E.W. Lee
- Springer Handbook of Nanotechnology - Bharat Bhusan
- Electronic transport in mesoscopic systems, Supriyo Datta

### **CARBON NANOTUBE AND ITS FUNCTIONALIZATION**

- Nanoscale materials -Liz Marzan and Kamat
- Synthesis functionalization and surface treatment of nanoparticles - Marie Isabelle Baraton
- Physical properties of Carbon Nanotube-R Satio
- Applied Physics Of Carbon Nanotubes : Fundamentals Of Theory, Optics And Transport Devices - S. Subramony & S.V. Rotkins
- Carbon Nanotubes: Properties and Applications- Michael J. O'Connell
- CARBON NANOTECHNOLOGY- Liming Dai
- Nanotubes and Nanowires- CNR Rao and A Govindaraj RCS Publishing

## **NANOPARTICLES AND MICROORGANISMS, BIONANOCOMPOSITES**

- Bionanotechnology: Lessons from Nature by David S. Goodsell
- Nanomedicine, Vol. IIA: Biocompatibility by Robert A. Freitas
- Handbook of Nanostructured Biomaterials and Their Applications in Nanobiotechnology - Hari Singh Nalwa
- Nanobiotechnology; ed. C.M.Niemeyer, C.A. Mirkin.
- Nanocomposite Science & Technology Ajayan, Schadler & Braun
- BioMEMS (Microsystems) - Gerald A. Urban
- Introduction to Nanoscale Science and Technology (Nanostructure Science and Technology) -Massimiliano Di Ventra
- Nanosystems: Molecular Machinery, Manufacturing, and Computation - K. Eric Drexler
- Springer Handbook of Nanotechnology - Bharat Bhushan
- Nanobiotechnology; ed. C.M.Niemeyer, C.A. Mirkin.
- Nanofabrication towards biomedical application: Techniques, tools, Application and impact – Ed. Challa S., S. R. Kumar, J. H. Carola.
- Nanomedicine, Vol. I: Basic Capabilities
- Nanomedicine, Vol. IIA: Biocompatibility - Robert A. Freitas
- Dendrimers I, II, III, Ed. F. Vogtle
- Tissue Engineering-Bernhard O. Palsson , Sangeeta N. Bhatia
- Principles of Tissue Engineering - Robert Lanza, Robert Langer, and Joseph P

## **NANOSENSORS AND NANODEVICES**

- Sensors: Micro & Nanosensors, Sensor Market trends (Part 1&2) by H. Meixner.
- Between Technology & Science : Exploring an emerging field knowledge flows & networking on the nanoscale by Martin S. Meyer.
- Nanoscience & Technology: Novel structure and phenomea by Ping Sheng (Editor)
- Nano Engineering in Science & Technology : An introduction to the world of nano design by Michael Rieth.
- Enabling Technology for MEMS and nano devices -Balles, Brand, Fedder, Hierold.
- Optimal Synthesis Methods for MEMS- G. K. Ananthasuresh
- MEMS & MOEMS Technology and Applications- P. Rai Choudhury
- Processing Technologies- Gandhi
- From Atom to Transistor- Supriyo Datta

## **MOLECULAR NANOELECTRONICS**

- Nanoelectronics & Nanosystems: From Transistor to Molecular & Quantum Devices: Karl Goser, Jan Dienstuhl and others.
- Concepts in Spintronics – Sadamichi Maekawa
- Spin Electronics – David Awschalom
- From Atom to Transistor-Supriyo Datta

## **SEMICONDUCTOR NANOSTRUCTURES & NANO-PARTICLES**

- Encyclopedia of Nanotechnology- Hari Singh Nalwa
- Springer Handbook of Nanotechnology - Bharat Bhushan

- Handbook of Semiconductor Nanostructures and Nanodevices Vol 1-5- A. A. Balandin, K. L. Wang.
- Nanostructures and Nanomaterials - Synthesis, Properties and Applications - Cao, Guozhong

### **OPTICAL PROPERTIES OF NANOMATERIALS, NANOPHOTONICS AND PLASMONICS**

- Springer Handbook of Nanotechnology by Bharat Bhushan
- Encyclopedia of Nanotechnology- Hari Singh Nalwa.
- The Handbook of Photonics By Mool Chand Gupta, John Ballato
- Nanotechnology for Microelectronics and Optoelectronics - J. M. Martinez-Duart, Raúl J. Martín-Palma, Fernando Agullo-Rueda
- Nanoplasmonics, From fundamentals to Applications vol 1 & 2- S. Kawata & H. Masuhara
- Optical Properties of Photonic Crystals-K. Sakoda
- Applied Photonics by Chai Yeh
- Silicon Photonics: An Introduction by Graham T. Reed, Andrew P. Knights

### **NANOCOMPOSITES**

- Nanocomposites Science and Technology - P. M. Ajayan, L.S. Schadler, P. V. Braun
- Physical Properties of Carbon Nanotubes- R. Saito
- Carbon Nanotubes (Carbon , Vol 33) - M. Endo, S. Iijima, M.S. Dresselhaus
- The search for novel, superhard materials- Stan Veprjek (Review Article) JVST A, 1999
- Electromagnetic and magnetic properties of multi component metal oxides, hetero
- Nanometer versus micrometer-sized particles-Christian Brosseau, Jamal Ben, Youssef, Philippe Talbot, Anne-Marie Konn, (Review Article) J. Appl. Phys, Vol 93, 2003
- Diblock Copolymer, - Aviram (Review Article), Nature, 2002