SYMMETRY AND STRUCTURE IN THE SOLID STATE

CHEMISTRY AND BIOCHEMISTRY

PROF. T.N. GURU ROW
Department of Chemistry
IISc Bangalore

TYPE OF COURSE : New | Core | PG
INTENDED AUDIENCE : Research students, Scientists
PRE-REQUISITES : Basic Mathematics

COURSE OUTLINE:
Symmetry, point groups and space groups, crystal lattices. Scattering, diffraction, reciprocal lattice, powder diffraction. Single crystal methods. Data collection and processing synchrotron radiation, phase problem in crystallography. Patterson and direct methods, Rietveld refinement, intermolecular interactions electron density analysis. Basics of neutron diffraction, electron diffraction.

ABOUT INSTRUCTOR:
T. N. Guru Row Professor and Dean (Science Faculty) Solid State and Structural Chemistry Unit Indian Institute of Science, Bangalore. [B.Sc(Hons) Physics, Bangalore University, Bangalore, India.] [M.Sc :Solid state physics, Bangalore University, Bangalore, India.] [Ph.D :Indian Institute of Science, Bangalore, India.]

COURSE PLAN:
Week 01 : Basics of symmetry, 2 Point groups
Week 02 : Space groups, Equivalent points, Wycoff notation
Week 03 : Basics of diffraction, Laue’s conditions and Bragg’s Law
Week 04 : Reciprocal lattice concepts, data collection and reduction
Week 05 : Phase problem
Week 06 : Patterson Synthesis
Week 07 : Direct methods
Week 08 : Single crystal and powder XRD
Week 09 : Refinement protocols
Week 10 : Bond lengths, angles and conformation
Week 11 : Intermolecular interactions
Week 12 : Applications in Pharmaceutical and materials industry

EXAM DATE : 28 Apr 2019

INDUSTRIES APPLICABLE TO : Pharmaceutical and Materials Industry