

Mineralogy

SWAYAM Prabha Course Code: C10

PROFESSOR'S NAME	Dr. Santanu Kumar Bhowmik, Dr. Sujoy Ghosh
DEPARTMENT	Geology & Geophysics
INSTITUTE	IIT KHARAGPUR
COURSE OUTLINE	<p>Crystallography – Concept of Symmetry, Symmetry Operations, 32 crystal classes, crystal systems, 2-D, 3-D lattices, Miller Indices, Crystal Zone, Zone axis, Crystal Forms, Concept of stereographic projection</p> <p>Optical Mineralogy: Concept of polarized light, RI of minerals, Becke line test, optical indicatrix, concept of double refraction, birefringence, optic axis, principal section of indicatrix, uniaxial and biaxial minerals, interference colours of minerals, Michel Levy chart, interference figures (uniaxial and biaxial minerals), optic sign determination of uniaxial and biaxial minerals;</p> <p>Mineralogy: Elements, bondings, crystal structures and ionic radii, application of Pauling's Rules, isostructural minerals, polymorphism, energetics and mineral stability, solid solutions, exsolutions and ordering, twinning, crystal growth and defects, point, line and planer defects, calculation of mineral formulas, classification, structure, chemistry and paragenesis of Neso-, Cyclo-, Soro-, Ino-, Phyllo- and Tecto-silicates (Feldspar, Feldspathoids, Micas, Pyroxenes, Amphiboles, Olivine and Garnet), Oxide group (Spinel), Carbonates (Calcite, Dolomite, Aragonite), Phosphate</p>

COURSE DETAILS			
Sl. No	Module ID/ Lecture ID	Lecture Title/Topic	Lecture Duration
1	C10-Mod1	Introduction	0:35:00
2	C10-Mod2	Concepts of symmetry in crystals – Part 1	0:19:32
3	C10-Mod3	Concepts of symmetry in crystals – Part 2	0:52:13
4	C10-Mod4	Concept of symmetry in crystals – Part 3	0:51:02
5	C10-Mod5	Fundamental basis of classification of crystal systems	0:55:14
6	C10-Mod6	Concept of translational symmetry, 2D/Plane Lattices, 3D/Bravis Lattices	0:52:16
7	C11-Mod7	Nomenclature of Crystal Face and Crystallographic Direction, Concepts of Miller Indices, Crystal Zones, Zone axis, Calculations	1:01:30
8	C11-Mod8	Part-1: Stereographic Projection; Part-2: Crystal Forms	
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