

Composite Materials

Introduction: Classification and characteristics of composite materials, Mechanical behavior of composite, Constituents, Reinforcement materials, Fiber – Additive applications and advantages of composites. Processing: Initial form of constituent materials, manufacturing procedures for fiber reinforced plastics, quality control and testing of composites. Mechanical behavior: Stress – Strain relations of anisotropic materials, engineering constants for orthotropic and isotropic materials, plane stress conditions, stress-strain relation for a lamina of arbitrary orientation, strength of an orthotropic lamina. Behavior of Laminated Composites: Classical lamination theory evaluation of laminate stiffness experimental determination of strength of laminates, essential design consideration.

Text Books:

1. Mechanics of composite materials - R.M. Jones, Mc-Graw Hill.
2. Fiber Reinforced Composite – materials manufacturing and design - P. K. Mallick, Marcel Decker, New York.