

MSE 822 Fractography and Fracture Analysis

CHs: 3

Pre-requisites: Nil

Course Objectives:

- At the end of the course student should have good knowledge about the following:
 - Modes of failures and types of crack opening.
 - Characterization techniques to study different fractured surfaces.

Course contents:

- Engineering aspects of Failure and Failure Analysis, Failure Modes,
- Characterization of fractured surface, Chemical Analysis, Microscopic Analysis,
- Failure prevention and case histories, Mechanical and Metallurgical causes of Failure.
- Fatigue failure, Creep Failure, Brittle fracture,
- Corrosion induced failure and Pitting as stress concentration.

Course Outcomes:

- The student at the end of the course should be able to examine different fractographs and suggest the following:
 - Initiation point of fracture
 - Mode of loading during fracture.
 - Suggest the remedies to avoid future failures.

Recommended Text/Reference Books:

- Failure Analysis of Engineering Materials, (Charlie K Brooks)
- Metal Failures, (Arthur J McEvily)
- Mechanical Failure Avoidance, (Charles E Witherell)

Handbook of Case Histories in Failure Analysis, Volume 1 & 2, ASM