

549 M1020 陳兆勛教授

Fundamentals and Applications of Polymer Processing

(高分子加工原理與應用)

上課時間/地點: (二)678 / (高分子 105)

This class is to lead the students to have better understanding the fundamentals and applications of polymer processing, which is the manufacturing activity of converting raw polymeric materials into finished products of desirable shape and properties. The goal is to define and formulate a coherent, comprehensive, and functionally useful engineering analysis of polymer processing, one that examines the field in an integral, not a fragmented fashion.

Course Outline:

- Chapter 1: Polymer Basics, Structural Characteristics, Characterization.
- Chapter 2: Thermodynamics of Solid, Molten, and Thermally Softened Polymer Systems
- Chapter 3: Applied Polymer Rheology.
- Chapter 4: Heat Transfer in Polymer Systems.
- Chapter 5: Mass Transfer in Polymer Systems.
- Chapter 6: Chemical Reaction Kinetics in Polymer Systems.
- Chapter 7: Polymer Processes: Extrusion
- Chapter 8: Injection-Molding systems.
- Chapter 9: Mold Flow Analysis
- Chapter 10: Interrelation of Polymer Processing, Polymer Structure and Polymer Properties

Ref:

1. Polymer Process Engineering, Richard G. Geriskey. Chapman & Hall.
2. Fundamentals and Applications of polymer Processing,
高分子加工原理與應用: 國立編譯館主編-劉大俊著
3. Principles of Polymer Processing, Zehev Tadmor and Costas G. Gogos.

Grading:

- Homework 10%
- Midterm 30%
- Report 60%