COURSE DETAIL

POLYMER CHEMISTRY

Country
Singapore

Host Institution
National University of Singapore

Program(s)
National University of Singapore

UCEAP Course Level
Upper Division

UCEAP Subject Area(s)
Chemistry

UCEAP Course Number
152

UCEAP Course Suffix
A

UCEAP Official Title
POLYMER CHEMISTRY

UCEAP Transcript Title
POLYMER CHEMISTRY

UCEAP Quarter Units
6.00

UCEAP Semester Units

4.00

Course Description
Polymer science is the study of plastic materials of everyday life and the development of new materials that meet technological needs. This course covers classification and synthesis of polymers by different polymerization techniques; copolymerization reactions and industrial polymers; physical properties of polymers both in the solid state and in solution. The course also covers laboratory techniques in polymerization, determination of molecular weight and spectroscopic studies. Part one of the course covers the following topics: classification of polymers; thermoplastics and thermosets; polymerization mechanism; polymer structures; copolymers; tacticity; geometrical isomers; polymer synthesis; step-growth polymerization; chain growth polymerizations I Radical polymerization; chain growth polymerizations II Ionic polymerizations; coordination polymerizations & new methodologies and synthesis of special chain topologies (networks, graft, block). Part two of the course covers the following topics: polymer size and conformations; thermodynamics of mixtures; thermodynamics of polymer solutions; application of Flory-Huggins Theory to determine entropy of polymer dissolution; phase behavior of polymer solutions; characterization of polymer solutions - osmotic pressure and viscometry; light scattering and dynamic light scattering; size exclusion chromatography and mass spectrometry; solid state properties of polymers – glassy state; mechanical properties and processing of polymers; elastomeric and crystalline state of polymers.

Language(s) of Instruction
English

Host Institution Course Number
CM3252

Host Institution Course Title
POLYMER CHEMISTRY 1

Host Institution Course Details

Host Institution Campus

Host Institution Faculty
Host Institution Degree
Host Institution Department Chemistry
Course Last Reviewed

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