

UE Polymers 2 chemistry and physico-chemistry



Level
Baccalaureate
+4



ECTS
3 credits



Component
UFR PhITEM
(physique,
ingénierie, terre,
environnement,
mécanique)



Semester
Printemps

- > **Teaching language(s):** English
- > **Open to exchange students:** Yes
- > **Code d'export Apogée:** PAX8NCAE

Presentation

Description

This course gives an overview of the polymer field from the synthesis of polymers to characterization, properties, and applications of synthetic and natural polymers. All major polymerization methods, their reaction mechanisms and kinetic aspects are considered: step growth polymerization, chain growth polymerization with ionic and radical variations, insertion polymerization. A lecture portion is integrated with a laboratory component, in which experiments are conducted that are directly connected to the class work. Analysis of polymer solution properties and characterization techniques are presented : thermodynamics, polymer/solvent interactions, average molecular weight determination via osmometry, light scattering, viscosimetry and SEC.

This course is divided in two parts covering selected aspects of polymer chemistry and physical chemistry. The chemistry part aims to help students better understand contemporary polymer science focusing on syntheses and materials properties of polymers. It covers copolymer synthesis, discussing control of copolymer composition and relevant recent research such as controlled radical polymerization, supramolecular polymers and bio-based polymers. The course will also provide detailed information for polymerization techniques and polymer characterization tools.

Course parts

CMTD

Lectures (CM) & Teaching Unit (UE)

18h

Period : Semester 8

Useful info

Campus

- › Grenoble - University campus
- › Grenoble - Saint-Martin d'Hères