

Matériaux

En bref

> **Langue de cours:** Français

Présentation

Prérequis

General chemistry

Objectifs d'apprentissage

This module will enable students to broaden their physical chemistry skills and knowledge in the field of materials science. The principles of synthesis (polymerization, sol gel, etc ...) and the characterization of the materials will also be treated.

Description du programme

- Theoretical aspect of the chemical reactions involved.
 - Materials science and physical and chemical characterization: highlight on the structure-property relationship.
 - Global vision of the potential of materials: From a domestic utility to an application in high technology.
-

Compétences et connaissances scientifiques et techniques visées dans la discipline

Theoretical aspects:

Structure of solids and defects

Major families of materials will be studied: organic polymers, inorganic and ceramic materials, hybrid organic-inorganic materials and metals.

Organic polymers: polycondensation, chain polymerization. Characterization. Mechanical properties. From oil to polymer

Inorganic materials, ceramics, glasses: Chemical synthesis, physical and chemical synthesis. The sol gel process.

Inorganic-organic hybrid materials. Synthesis. Characterization. Structure-property relationship. Fuel cells.

Metals via materials science

Practical teachings:

Synthesis of an adhesive

Synthesis of an organic polymer

Synthesis of a functionalized hybrid material

Modalité de contrôle des connaissances

Evaluation	Type	Duration	% final note
Final test	Written	1 h	30
Continuous examination	Report and MCQ	-	70

Bibliographie

Handout with holes

Equipe pédagogique

Damien HERAULT

Innocenzo De Raggi

Total des heures

30h

CM	Cours Magistral	16h
TD	Travaux Dirigés	6h
TP	Travaux Pratiques	8h

Infos pratiques

Nom responsable UE

Responsable pédagogique

Damien Herault

✉ damien.herault@centrale-med.fr