UE Functional Nanoparticles

Level
Baccalaureate +5

ECTS
3 credits

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

Semester
Automne

- **Teaching language(s):** English
- **Open to exchange students:** Yes
- **Code d'export Apogée:** PAX9NCAK

Presentation

Description

The applications of nanoparticles in research and innovation are multiple and cover large fields. The aim of this course is to present the main areas of application of nanoparticles in current research. In addition, the specific properties of selected types of particles will be discussed as well as surface functionalization strategies required for realizing the presented applications. The course is structured into three modules differentiated by the types of application.

Objectives

Optoelectronic and energy applications

- Novel types of semiconductor nanocrystals: ternary quantum dots, carbon/graphene nanodots, metal halide perovskite nanocrystals
- Photovoltaics and photodetectors
- Thermoelectricity
- LEDs, lasing, single-photon emitters
- Gas sensors

2. Biological applications

- drug delivery - therapy
- Imaging
- bio-sensors, chemo-sensors

3. Catalysis applications

- Porous materials
- Metal nanoparticle applications
- Photocatalytic applications
- Hybrid materials

Course parts

UE Functional Nanoparticles - CMTD	Lectures (CM) & Teaching Unit (UE)	24h

Recommended prerequisites

Basically, the prequisites are the contents of the corresponding courses in M1 Nanochemistry

Period : Semester 9

Useful info

Campus

› Grenoble - University campus