UE Molecular Photophysics

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:** PAX8NAAI

Presentation

Description

1. INTRODUCTION

2. BASIC PHOTOPHYSICAL PROCESSES

2.1. Creating excited states by light absorption
2.2. Properties of excited states
2.2.1. Geometry
2.2.2. Acid-base properties
2.2.3. Redox properties
2.2.4. Dipolar moment
2.3. Deactivation of the excited electronic states
2.3.1. Non-radiative transitions
2.3.2. Radiative transitions
2.3.3. Parameters
2.3.4. Experimental measurement

3. QUENCHING OF EXCITED STATES

3.1. Kinetics of Stern-Volmer

3.2. Energy transfer reaction (electronic)
3.2.1. Radiative energy transfer
3.2.2. Non-radiative energy transfer by resonance
3.2.3. Non-radiative energy transfer by exchange
3.3. Electron transfer reactions
2.3.1. Energy aspect
3.3.2. Kinetic aspect
3.3.3. Application of electron transfer to conversion and storage of solar energy
3.4. Excimers and exciplexes
3.5. Time-resolved spectroscopy method

4. PHOTONICS OF SOLIDS AND NANOPARTICLES
4.1. Introduction
4.2. Exciton formation
4.3. Applications of photonics of solids
5. PHOTOCHEMICAL AND PHOTOCHROMIC REACTIONS
5.1. Photochemical reactions
5.1.1. The biradical reactions
5.1.2. Pericyclic reactions
5.2. Photochromic reactions

Course parts

UE Molecular Photophysics - CM	Lectures (CM)	9h
UE Molecular Photophysics - TD	Tutorials (TD)	4,5h
UE Molecular Photophysics - TP	Practical work (TP)	12h

Period : Semester 8

Useful info

Campus

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