

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