

# UE Molecular electronics and magnetism



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:** PAX8NCAF

## Presentation

### Description

This course is an introductory course on molecular electronics and magnetism accessible for both chemists and physicists. Accordingly, it will be given by a physicist and a chemist to browse the two aspects of the subject. It will present in an illustrated and accessible fashion the principles of quantum electron transport in molecular and nanoscale devices and offer an overview of this active field of Nanosciences. It will insist on the effect of inserting magnetically active molecules in such set-ups.

#### Contents :

- Physical/Chemical basis (distinct lecture for the two publics to bring them to a common language)
- Mesoscopic transport
- Magnetic anisotropy in Transition Metal and Lanthanide complexes
- One-electron transistor
- Transport through a quantum box
- Single Molecule Magnets (SMM)
- Grafting and probing SMM on surfaces
- Article analysis

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## Course parts

CMTD	Lectures (CM) & Teaching Unit (UE)	22h
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## Recommended prerequisites

Basis in coordination and supramolecular chemistry. Basis in electronic transport.

**Period :** Semester 8

## Useful info

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### Campus

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