Innovative technologies, devices and materials

ECTS
5 crédits

Hourly volume
54h

Introducing

Objectives

At the end of this module, the student will have understood and be able to explain:

- plasma processes
- new technologies and materials for the microelectronics applications
- concepts of the physics of continuous media
- quantum phenomena such as diffusion, electron paramagnetic resonance, and quantum cryptography: entangled states, single-photon and pairs of entangled states source based on semiconductors quantum dots.

The student will be able to apply the quantum mechanics formalism to describe innovative devices at the nano-scale.

The student will be able to:
- choose the kind of scanning probe microscopy well adapted to a specific application/characterization
- analyze and interpret basic images of scanning probe microscopy.

Necessary prerequisites

Electromagnetism
Quantum Mechanics (I4GPPM11)
Mathematics: matrix calculus and differential equations
Physical Metallurgy (real crystal, diffusion, precipitation, nucleation and growth)
Basic knowledge of symbolic computational tool like Maxima.

Practical info

Location(s)

Toulouse