



# Thin films and extreme conditions M1



Niveau d'étude  
BAC +4



ECTS  
3 crédits



Composante  
Faculté des  
Sciences

## En bref

- **Date de début des cours:** 1 sept. 2021
- **Langue(s) d'enseignement:** Anglais
- **Méthode d'enseignement:** En présence
- **Organisation de l'enseignement:** Formation initiale
- **Ouvert aux étudiants en échange:** Non

- 9. Diffusion barriers
- 10. Photo optical devices
- 11. Vacuum technology
- 12. High pressure synthesis
- Synthesis of compounds with unusual valence and coordination states

Volumes horaires\* :

CM : 17

TD : 8

## Présentation

### Description

This course consists of a series of different lectures in the field of synthesis and characterization of thin films for technological applications or academic research. It is completed by an introduction into synthesis techniques of compounds stabilized under high pressure or only available under special conditions.

1. Physics of Low-dimensional systems
2. Quantum confinement
3. Quantum Wells, 1D Quantum-wire, 0D Quantum dots
4. Electron confinement and Density of States (DoS) formalism
5. Epitaxial films
6. Microstructure
7. Dislocations and grain boundaries
8. Coatings and applications

### Objectifs

The understanding of the role of point defects in solid on the transport properties and the structural stability.

To apply the concept of Brouwer diagram to control the conductivity in oxides.

Electronic and ionic conductivity in metallic oxides

Understanding concepts of ceramic semiconductors

### Contrôle des connaissances

Contrôle continu

### Syllabus

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2. Quantum confinement



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8. Coatings and applications
9. Diffusion barriers
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12. High pressure synthesis

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## Informations complémentaires

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## Infos pratiques

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### Contacts

Responsable pédagogique

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### Lieu(x)

➤ Montpellier - Triolet