Introduction to crystal growth by epitaxy

Fontcuberta i Morral Anna

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<tr>
<th>Cursus</th>
<th>Sem.</th>
<th>Type</th>
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<tr>
<td>Science et génie des matériaux</td>
<td>MA2, MA4</td>
<td>Opt.</td>
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Language: English
Credits: 2
Session: Summer
Semester: Spring
Exam: During the semester
Workload: 60h
Weeks: 14
Hours: 2 weekly
Lecture: 2 weekly
Number of positions: 2 weekly

Summary
This is an interactive course explaining:
1. The main physical and chemical concepts to understand epitaxy of crystalline thin films.
2. What determines the morphology, composition and structure of a material grown per epitaxy.

Content
1. Structure and energy of epitaxial interfaces.
3. The role of surfactants in epitaxial growth
5. Epitaxy techniques
6. Epitaxy of nanostructures

Keywords
epitaxy, thin films, heterostructures, quantum wells, quantum dots, nanowires.

Learning Outcomes
By the end of the course, the student must be able to:
• Argue the physical and chemical processes giving place to the growth of materials
• Apply the knowledge acquired for processes of epitaxy of new materials

Transversal skills
• Use a work methodology appropriate to the task.
• Give feedback (critique) in an appropriate fashion.
• Communicate effectively, being understood, including across different languages and cultures.
• Collect data.
• Respect the rules of the institution in which you are working.
• Take responsibility for environmental impacts of her/his actions and decisions.
• Demonstrate the capacity for critical thinking
• Take feedback (critique) and respond in an appropriate manner.

Teaching methods
Ex cathedra, visits to laboratory
Expected student activities
Attend courses, oral presentations, reports

Assessment methods
Oral presentations, reports

Supervision
Office hours  Yes
Assistants   Yes
Forum        No

Prerequisite for
Semester projects, Master thesis, PhD