MSE-649

Crystal growth by epitaxy

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Cursus	Sem.	Type
Materials Science and Engineering		Opt.

Language of teaching	English
Credits	2
Session	
Exam	Multiple
Workload	60h
Hours	**28**
Lecture	14
Exercises	12
Practical work	2
Number of positions	

Frequency

Every year

Remark

Will not be given during this academic year

Summary

This is an interactive course explaining the main physical and chemical concepts to understand epitaxy of crystalline thin films and what determines the morphology, composition and structure of a material grown per epitaxy both in the bulk and as nanostructure.

Content

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.

In the main body of the course contains the main scientific concepts that explain high quality epitaxy. We will also describe the main techniques used by industry and scientific laboratories for the epitaxial growth of materials and devices. Finally, the translation of the epitaxy of macroscopic crystals will be translated to the growth of nanostructures and novel materials.

Keywords

molecular beam epitaxy, thermodynamic diagrams, surface reconstruction

Learning Prerequisites

Required courses

thermodynamics

Assessment methods

oral/written

Resources

Moodle Link

- https://go.epfl.ch/MSE-649