MICRO-706 **Microfluidics for lab-on-a-chip**

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Cursus	Sem.	Type
Microsystems and Microelectronics		Opt.

Language of teaching	English
Credits	1
Session	
Exam	Term paper
Workload	30h
Hours	**14**
Courses	14
Number of positions	**30**

Frequency

Every 2 years

Remark

Next time: Spring 2022

Summary

The course covers the entire field of lab-on-a-chip technology, including microfluidic principles and various microfabrication approaches, and presenting concrete examples of devices for (bio)analysis, cell biology, tissue regeneration and microreactors.

Content

• Introduction to microfluidics and lab-on-a-chip technology – origins - scaling laws – applications
• Microfluidic principles: flow actuation; pumps; mixers; valves; etc.
• Introduction to fabrication techniques for the production of microfluidic devices, using “cleanroom materials” such as silicon and glass, as well as polymer materials.
• Surface modification: surface passivation; and immobilization of active and/or recognition elements
• (Bio)molecule analysis: sample preparation; molecular separation; integrated devices for biomolecule analysis
• Microreactors
• Microfluidics for cell biology: engineering device for experimentation on cells; tissue regeneration and organ-on-a-chip platforms

Keywords

Microfluidics, Lab-on-a-Chip, Bioanalysis, Microfabrication, Organ-on-a-Chip