MICRO-707 **Microstructuring of glass**

Gijs Martinus, Parashar Virendra Kumar

Cursus	Sem.	Type
Advanced Manufacturing		Opt.
Microsystems and Microelectronics		Opt.

Language of teaching	English
Credits	1
Session	
Exam	Oral
Workload	30h
Hours	**16**
Courses	16
Number of positions	

Frequency

Every year

Remark

May 31 & June 1, 2021 - Online

Summary

The course will provide fundamental key aspects governing glass as a material and the microstructuring of glass using a variety of techniques, like dry and wet etching, mechanical and laser machining, as well as sol gel technology. Also concrete application examples will be discussed.

Content

1. Glass as a material
Definition, structure, composition, properties and kinds of glasses

2. Techniques for the microstructuring of glass
Wet etching, dry etching, ultrasonic drilling, powder blasting, laser structuring and photosensitive glass

3. Replication of glass microstructures
The sol-gel process (spin-on-glass), photosensitive spin-on-glass, the replication process (moulding, de-moulding, annealing)

4. Bonding of glass
Anodic bonding, fusion bonding, pressure-assisted bonding, chemical bonding

5. Applications of glass microstructures
a. Optical systems (Wave guides, gratings, lenses)
b. Bio-chemical systems (Bio-separation and microfluidics, biosensors)
c. Mechanical systems (Pressure sensors, inkjet printing heads)

Keywords

Glass, microstructuring, replication, sol-gel process, bonding

Learning Prerequisites

Recommended courses

- Introductory course to materials science or microfabrication technologies
- Basics of chemistry and physics