ETH
Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

MECHMAT

BACHELOR THESIS / SEMESTER PROJECT / MASTER THESIS

3-D PRINTED NANO-BARRIERS FOR BIOMEMS

AIM OF STUDY

This project aims at developing nano-porous barriers to study cell interaction.

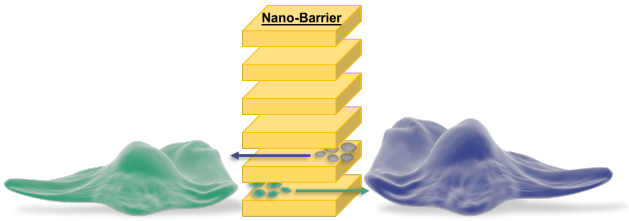

Figure 1 : Experimental setup to study cell interaction.

YOUR TASKS

- Analysis of the state of the art: scientific literature
- Design of nano-barriers
- Fabrication of nano-barriers using nano-3d-printing
- Final report and presentation

YOUR SKILLS

We are looking for a highly motivated student with basic knowledge of working in chemistry labs and/or clean rooms. Your preferred background is mechanical engineering, materials science or chemical engineering. Students with other but related background are also encouraged to apply.

BACKGROUND

There are numerous methods for fabricating porous systems however most lack the ability to control trajectories in all spatial dimensions. One of the most promising micro-fabrication techniques providing full spatial control is the so-called femtosecond direct laser writing (DLW) method. In DLW a photosensitive polymer is exposed to very high intensity light and gives the ability to write patterns directly in space without the need to rely on complex reticles. By combining DLW with standard BioMEMS devices it is possible to study cell interaction under controlled condition.

PROJECT PARTNERS & LOCATION

This project is carried out in collaboration with biologists from the Università Politecnica delle Marche in Ancona, Italy. All the lab work will be executed at the Binnig and Rohrer Nanotechnology Center (BRNC) located at IBM Zurich.

CALENDAR

The earliest starting date is the 1st of September 2016.

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CONTACT

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