Bachelor Thesis / Semester Project / Master Thesis

Elastic Scaffolds Fabricated by Nano-3D-Printing for Biomedical Applications

Aim of Study
This project aims at developing compliant lattice architectures for soft-tissue engineering.

Your Tasks
- Analysis of the state of the art: scientific literature
- Development of protocols
- Evaluation of eECM designs
- Final report and presentation

Your Skills
We are looking for a highly motivated student with basic knowledge in chemistry. Your preferred background is mechanical engineering, chemistry or materials science. Students with other but related background are also encouraged to apply.

Background
There are numerous methods for fabricating bio-mimetic 3D lattices for the use in tissue engineering. One of the most promising micro-fabrication techniques 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. However, current materials used for DLW are stiff and brittle after cross-linking (E-Mod over 1 GPa). This project is therefore dedicated to explore the possibility of using more compliant material systems.

Project Partners & Location
This project is part of the Zurich Heart Project: http://www.zurichheart.ethz.ch

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

Contact
Jan Rys: rysj@ethz.ch
CLA J 17.2
+41 44 632 77 83
www.mechmat.ethz.ch