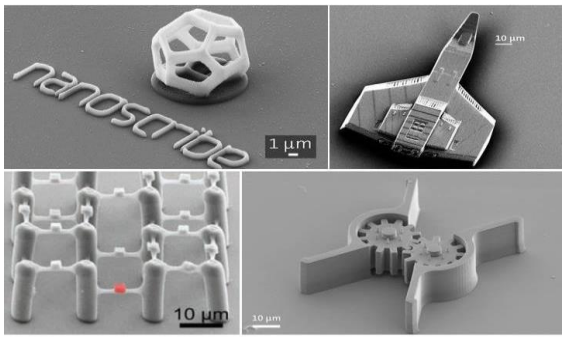
Project updated: 04.06.2021

Fabrication of 3D biodegradable micro reservoir using two photon photolithography (Nanoscribe)

Semester project

(Section: microengineering, material science)

Development of two photon photolithography (TPP) enable us to fabricate delicate 3D microstructure. However, there are only few commercial photo resin for TPP in the market. For example, there is no commercial photo resin with biodegradable property. Biodegradable property is a critical property to be considered for *in-vivo* implantable micro devices such as implantable drug delivery devices. This project first goal is the development and optimization of PEGDA based biodegradable photoresist for TPP fabrication. And then optimization of the two photon photolithography printing condition for the biodegradable photoresist. Final goal of this project is fabricate biodegradable micro reservoir for implantable drug delivery device.



Work description:

- Development and optimization of PEGDA based photo resin for TPP
- Optimization of printing parameter for TPP
- Fabrication of biodegradable micro reservoir

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Project updated: 11.06.2021

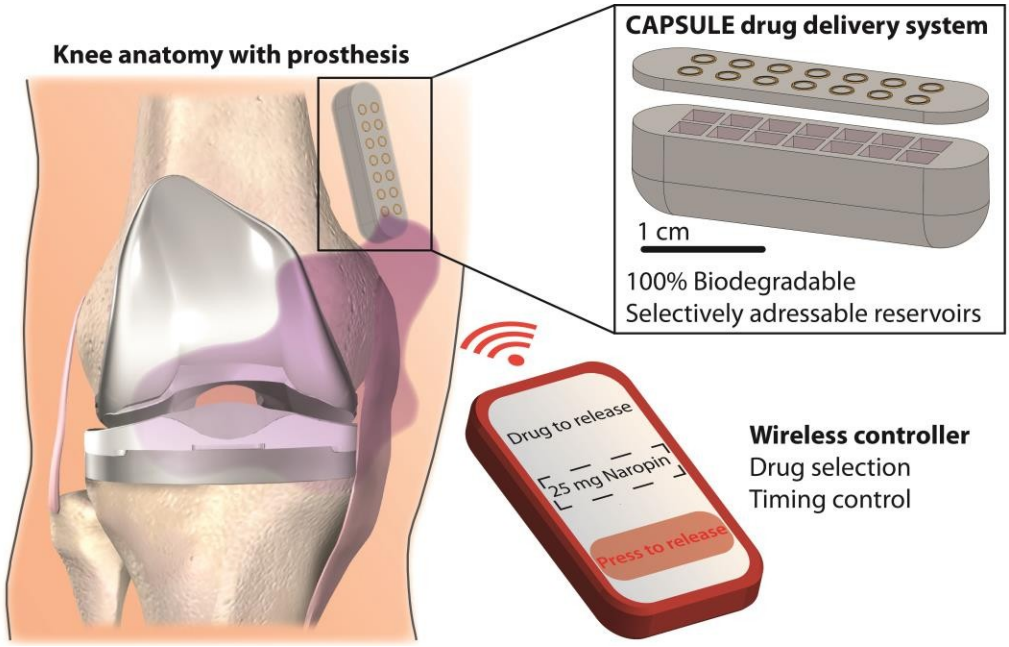
Bonding-in-liquid technique for biodegradable drug delivery capsules

Semester Project

(Sections: microengineering, material science)

Drug delivery systems (DDS) are engineered in order to improve therapeutic performance of oral pills and repeated injections. Fabricating DDS out of biodegradable materials enables these devices to be naturally eliminated by the body once their function completed. There exist several biodegradable polymers which naturally degrade by hydrolysis in a biological environment and which degradation rates can be easily tuned from a few weeks to several months.

The goal of this project is to develop a bonding-in-liquid technique for liquid encapsulation into biodegradable polymeric drug delivery capsules. Throughout this project, you will gain experience with polymer processing and knowledge about biodegradable materials and drug delivery systems. Hence, we are looking for a highly motivated student with a strong interest in biomedical engineering and material science.



Work description:

- Fabrication of biodegradable polymeric capsules
- Development of a bonding-in-liquid technique for liquid encapsulation

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