Master Thesis Proposal

Transient coating for facilitated cleaving and implantation of soft polymer fibers

Introduction

Optogenetics enables targeted excitation or inhibition of neurons via light with higher spatiotemporal resolution than electrical stimulation. Combining optical stimulation with electrodes for recording allows for the investigation of neuronal populations.

The EIC Pathfinder project Move2Treat (https://move2treat.org/) focuses on the development of soft, multifunctional, fiber-based neural devices for investigating how movement is generated in the brain and spinal cord. Reliably obtaining a good cross-section of a soft polymer fiber poses a challenge for fiber characterization and implant functionality. This work aims to develop a transient coating technique to improve fiber cleaving and facilitate fiber implantation.

Flexible polymer waveguide, Scholz, 2020

Objectives

Developing a reliable fiber cleaving technique for soft polymer fibers via transient coating

Your tasks

- Literature research
- Develop and evaluate fiber coating method with scanning electron microscopy (SEM)
- Evaluate functionality of fiber coating for implantation using a brain phantom
- Writing the thesis

Your profile

- You are interested in the fields of neurotechnology and materials
- You can work in a concentrated, focused, and structured way
- You are creative and adapt easily to challenges

Logistics

- Location: Institute for Machine-Brain Interfacing Technology (IMBIT)
- Earliest start date: April 2025 (can be discussed)
- Maximum thesis duration: 6 months

Contact

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