

Design and Fabrication of Multifunctional Brain Electrodes

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Research Area: Engineering Design, Microfabrication, Material Innovation and Characterization

Project Description:

Brain stimulation has proven to be a successful clinical approach to treat neurological disorders. Resident neural precursor cells (NPCs) in the brain are electrosensitive cells that respond to electrical stimulation by expanding in number, migrating and differentiating. Activating NPCs holds promise for neural regeneration. In this context, we aim to develop soft, biocompatible brain electrodes with novel materials and fabrication strategies to be used in regenerative medicine applications to support neural repair. In the past few years, our lab in collaboration with Institute of Medical Science (IMS) and Department of Surgery at University of Toronto have come up with many electrode design solutions to be implanted in mouse brain. We are looking for passionate candidates to be part of our interdisciplinary research project and together to develop and optimize multi-model brain stimulation electrode that incorporate electrical stimulation, fluid delivery and sensing modules etc. As the end goal of this project, a functional multi-model electrode is developed with novel fabrication techniques. The research is performed in TSMART lab in collaboration with outstanding researchers in IMS and BME departments. By joining our team, you will have the opportunity to perform research in our state of the art research labs in Canada, expand your lab skills, and fortify your academic resume by having contribution in academic publications.

Interested candidates should contact Prof. Hani E. Naguib (naguib@mie.utoronto.ca) for more information.