

Job Opportunity

The Department of Microsystems Engineering (IMTEK), Microsystem Materials Laboratory (Prof. Dr. O. Paul) is offering a

PhD position in the field of multifunctional optrodes for applications in optogenetics

Your project

The project aims at the development of innovative, MEMS-based tools for optogenetic research providing light to targeted brain areas, using integrated laser diodes and polymeric waveguides, microfluidic components for localized administration of opsin, and electrodes for the detection of biopotentials. The optrodes will be applied in vivo in cooperation with Prof. I. Diester (University of Freiburg) while molecular tools are being developed by Prof. A. Möglich (University of Bayreuth) and Prof. M. Zurbriggen (University of Düsseldorf). For more information refer to the SPP Programme (<http://www.spp1926.org/>) and the Research Project "Red-light regulated actuators for spatiotemporal control of opsin expression and modulation of cell-cell interaction within prefrontal circuit during impulse control" (<http://www.spp1926.de/projects/iii-diestermoeglichrutherzurbriggen/>).

Your tasks

- **Development and fabrication** of multifunctional optrodes comprising light sources, waveguides, fluidic components and electrodes using MEMS-based processing
- **Characterization** of optrodes to be optimized by implementing dedicated packaging and encapsulation technologies for long-term applications
- **Development and realization** of peripheral systems for probe insertion, electrical and fluidic interfacing, and control of integrated light sources

Your profile

- University degree (Master/Diploma) in microsystems engineering, physics or related disciplines
- Personal identification with the project idea of miniaturized optical implants for optogenetic research and strong commitment to the project goals in cooperation with our project partners
- Accurate, well structured and self-reliant way of working, ability to plan and implement new optrode concepts in cooperation with an interdisciplinary team
- Sound knowledge in semiconductor physics and technology, experience with optoelectronics and especially GaN-based LEDs are beneficial
- Skills in MEMS processing, FEM modelling and LabView programming are advantageous

Application

Please send a single pdf file containing a motivation letter, your CV, a two-page summary of your Master thesis, the transcript of records and certificates, and the contact information for two references to ruther@imtek.de.

For further information please contact:

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