



IMBIT //
Intelligent Machine-Brain Interfacing
Technology



Optophysiology Lab
Prof. Dr. Ilka Diester
&
Microsystems for Biomedical
Imaging Lab
Asst. Prof. Çağlar Ataman

100% E13 PhD Position in Neuroscience and Microsystems Engineering

Multi-photon microscopy for neural imaging in freely-moving rodents

Research Area

Neuroscience
Optical microsystems
Multi-photon microscopy

Relevant Tasks

- Optical experiments
- Test setup development
- Device characterization
- Material characterization
- Optical simulations
- FEA simulations
- Clean room fabrication
- CAD/CAM
- 3D Micro/Nano printing
- Polymer fabrication
- Programming
- Analytical analysis / Theory
- Literature research
- Teaching

Eligible Departments

- Microsystems technology
- Mechanical engineering
- Process engineering
- Chemistry
- Physics
- Electronics and IT
- Computer science

Starting Date

Immediately

Contact Person

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Two-photon imaging is a nonlinear microscopy technique that allows high-contrast, functional large-depth 3D tissue imaging with excellent axial-sectioning capability. Within the context of live animal imaging, the technique is currently limited to head-fixed preparations, due to the bulky design of a typical 2-photon microscopes. Wide-field one-photon imaging, a technique commonly used in Prof. Diester's work, is possible in freely-moving animals but the resolution and penetration as well as contrast is limited. In this project, we will combine the best of the two worlds, and **develop a miniaturized two-photon microscope that can be used in freely-moving mice and rats.**

We are looking for a talented and motivated doctoral candidate, who is passionate about interdisciplinary research. Strong hands-on skills and experience in microsystem research are essential. Background in life-science microscopy and/or live-animal imaging are strongly desired. Successful candidates will be enrolled at IMTEK, and co-supervised by Prof. Diester and Asst. Prof. Ataman.

The University of Freiburg offers a competitive and international research environment at the epicentre of the beautiful Black Forest region. Here you will find a friendly and international work environment with state-of-the-art infrastructure, a rich social life of a traditional German University City, and picturesque surroundings offering perfect for outdoor experiences. The duration of the position is 3 years with 100% employment following the DFG guidelines.

Qualifications:

Candidates with an MSc degree (or equivalent) in electrical or microsystems engineering, alternatively physics or mechanical engineering with a background in optics are welcome. Proven proficiency in written and spoken English is a must; German is a strong plus.

Application procedure:

The application should be sent by e/mail and be attached as pdf-files, as below:

- CV: (Please name the document: CV_Family name)
 - CV
 - Two references that we can contact.
- Cover letter: (Please name the document as: Cover letter_Family name)
 - 1-2 pages where you introduce yourself and present your qualifications.
 - Previous research fields and main research results.
 - Future goals and research focus.
- Other documents (if available):
 - Copies of bachelor and/or master's thesis.
 - Attested copies and transcripts of completed education, grades and other certificates, eg. TOEFL test results.