

Gisela and Erwin Sick
Chair of Micro-Optics
Prof. Hans Zappe

Research Area

Endomicroscopy
Medical Imaging

Relevant Tasks

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

Eligible Departments

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

Requirements

Basic optics and FEA knowledge
CAD/CAM experience (Optional)
Good English skills

Starting Date

Immediately

Contact Person

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PhD Thesis Project

Advanced glass microsystems with 3D laser machining

Our laboratory recently acquired a state-of-the-art glass 3D micro-printer, capable of manufacturing free-form glass structures at micrometer-level precision matching that of standard microfabrication. Immediate adaptation of this tool for ongoing research activities is enhancing the functionality, throughput and yield of manufacturing processes. On the other hand, using this entirely new technology of microstructured glass will also lead to the establishment of completely new research directions, such as

- Fluid-driven circumferential scanning probes for cardiovascular imaging;
- Advanced multi-modal endomicroscopy probes;
- Area-efficient hermetic packaging of MEMS through laser welding;
- Transparent through-glass vias for advanced optofluidic packaging.

We are looking for a talented and motivated doctoral candidate to identify a selected few exciting research directions and explore both the potential and the limitations of the process in terms of precision, material selection and speed. Conception and realization of new process chains to introduce 3D structured wafers of selected materials into standard microfabrication lines for batch fabrication of microsystems with unprecedented sophistication is another goal of the project. In addition to the research activities, the prospective student is also expected to assist in the teaching activities of the laboratory and supervise MSc and HiWi students.

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 work environment with state-of-the-art infrastructure, and a rich social life of a traditional German university city. The duration of the position is 3 years with 100% employment.

Qualifications:

Candidates with a master's degree (or equivalent) in electrical or microsystems engineering, alternatively physics, chemistry 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.