

Gisela and Erwin Sick
Chair of Micro-Optics

Prof. Hans Zappe

Research Area

Optofluidic Devices

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

Ability to work independently

Basic knowledge of optics and micro fabrication would be desired

Starting Date

Immediately

Master's Thesis

Accelerated rotatable optofluidic prism demonstrator

With the extensive work in the field of Tubular Optofluidics (TOFU), the Gisela and Erwin Sick Chair of Micro-optics has demonstrated for the first time all-liquid tunable imaging systems in three dimensions. In the DFG-funded project TOFU2re, we aim to extend this work to develop an accelerated rotatable optofluidic prism with decreased overall power consumption and increased actuation speed, as shown in Fig.1. This device will show the possibility of realizing an all-liquid integrated miniaturized beam steering device for applications in laser scanning.

The candidate student is expected to develop micro fabrication processes as well as undertake a detailed study of the various usable liquids / dielectric material combinations. An analytical model of the electrical and fluidic response for supporting the selection and optimization of fluid combinations will be developed. At the end of the project, the student is expected to assemble a rotatable and tunable prism, and characterize the performance extensively. The work will be coordinated by an internal team of researchers who will support the project in terms of optical simulation, fabrication and characterization of the prototype devices. The project duration is 6 months.

If you are interested in further information, please contact Dr. Pengpeng Zhao.

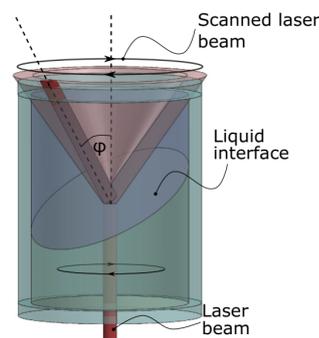


Fig.1 Visualization of the rotatable and tunable prism, allowing a deflection of an incoming laser beam.

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