

Faculty of Electrical and Computer Engineering, Laboratory for Measurement and Sensor System Technique

The *Laboratory of Measurement and Sensor System Technique (MST)* offers a position as

Research Associate: Adaptive Laser Microscopy

+++ 3D Localization Microscopy +++ Adaptive Optics +++ Control Techniques +++ Microfluidics +++

The position offers the chance to obtain further academic qualification (Ph.D. / Dr.-Ing. / Dr. rer. nat. / habilitation).

The Laboratory MST is conducting research on advanced laser measurement systems for complex flow analysis in microfluidics with applications in process engineering and biotechnology. We investigate camera-based approaches with advanced techniques for real-time aberration correction like spatial light modulators and artificial neural networks. In the present project, we aim to study the dynamics of the flow inside bubbles during hydrogen electrolysis in the context of the transformation to renewable energies.

Your tasks:

- setup a laser microscope with a double-helical point-spread function that enables 3D analysis of complex flow patterns in microfluidics
- investigate strategies for aberration correction: iterative correction vs. a closed-loop control system with a deformable mirror and a Hartman-Shack wavefront sensor
- make experiments with bubble formation during hydrogen electrolysis
- facultative: apply a multiple-input deep neural network for aberration correction / investigate new control strategies for closed-loop correction with deformable mirror

We offer:

- a diverse, ambitious, and burning research issue
- an interdisciplinary and international research team
- creative possibilities and room for self-development and own research interests
- visits of international conferences
- cooperation with excellent partners from the application field
- modern laboratories with state-of-the-art equipment

Your requirements: Above-average university degree in physics, electrical engineering, mechatronics, information technology or similar studies; ability for working autonomously and goal-driven within a team; great commitment, analytical thinking and taking joy in practical work and basic research are expected. Prior knowledge in wave optics, holography is advantageous.

Please address topical questions to Lars Büttner (e-mail lars.buettner@tu-dresden.de, phone +49 351 463 35314). Submit your comprehensive application including the usual documents preferably as a single pdf file by mail to: grp-mst-sekretariat@msx.tu-dresden.de