Fraunhofer
IPMS

THE FRAUNHOFER INSTITUTE FOR PHOTONIC MICROSYSTEMS IPMS AND ITS 350 EMPLOYEES WORK ON NANOELECTRONIC, MECHANICAL AND OPTICAL COMPONENTS AS WELL AS THEIR INTEGRATION INTO THE TINIEST "INTELLIGENT" PARTS AND SYSTEMS.

YOU WANT TO DEMONSTRATE YOUR HIGH INNOVATIVE POTENTIAL AND IMPRESS US WITH YOUR IDEAS? EFFECTIVELY IMMEDIATELY, WE ARE OFFERING ONE:

BACHELORTHESIS "CHARACTERIZATION OF MICROFLUIDIC MEMS-DEVICES" (IPMS-2018-129)

Flow-regulation and –generation on a micrometer length scale are of high scientific and industrial interest in the ongoing trend of system miniaturization. The Fraunhofer IPMS thereby uses a patented class of lateral electrostatic bending actuators to develop a set of silicon based Micropumps and Microvalves devices. With the first prototype devices being released from the in-house cleanroom, the experimental determination of performance parameters of these devices presents the aim of this work. The starting point is the familiarization of working with a microfluidic characterization bench. With liquid volumes in the Nano-Liter range other measurement techniques may be required besides the usage of a standard flowmeter.

Key aspects:

- The determination of actuation-mode and frequency dependent flow-rate curves
- Characterization of the generated differential pressure generated by the micropumps
- Determination of the maximum flowrate curve under the influence of an imposed backpressure
- Electrical Standard Characterization of chip-devices
- Determination of the thermodynamic efficiency
- Comparison of measured with analytical models and existing simulation data

What you bring:

- Basic knowledge in the field of microsystems would be an advantage
- Basic knowledge in the field of fluid mechanics and / or microfluidics would be an advantage
- Basic knowledge of working in a laboratory and knowledge of metrology techniques
- Independent, goal-oriented and structured way of working
- Enjoyment of working in an interdisciplinary team

What you can expect:

You will find a large network of experts working in an open and collegial environment within the excellent Fraunhofer research and development infrastructure.
We offer an exciting, up-to-date thesis position in which you can benefit from our experienced team. Our excellent industry-related research and development infrastructure provides you access to a large network of experts. You will become part of an inspirational international work environment based on trust, creativity and team spirit. We bestow upon you the responsibility for your thesis project, ensuring you space for autonomous work.

Work is planned to be carried out in our office in Cottbus. The thesis is awarded over a German partner university according to the higher education laws of the respective federal state.

If you have any questions regarding this position, please do not hesitate to contact us:

Mr. Sebastian Uhlig
phone: +49(0)355-694407 310
http://www.ipms.fraunhofer.de

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