

Robust tunable lenses for industrial sensors

Background

We have developed adaptive lenses that can be used for various focusing tasks. They feature an integrated piezo actuator that allows for very quick response times (~ 1.5 ms) and compact device designs. An embedded pressure sensor is used to compensate for the piezo's hysteresis and allow for a controlled operation.

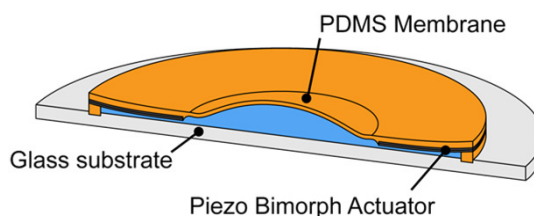


Fig. 1: Schematic setup of our fluid membrane lens with integrated piezo actuation.

Project description

We want to integrate our lens into a robust imaging sensor for a plug-and-play operation in an industrial environment. The project is a collaboration with two other research groups that are responsible for the control electronics and for a demo application in the field of quality control. Our group provides the optical functionality, i.e., an objective with the tunable lens. It should provide a reliable operation under varying environmental conditions and with visible and near-infrared wavelengths.

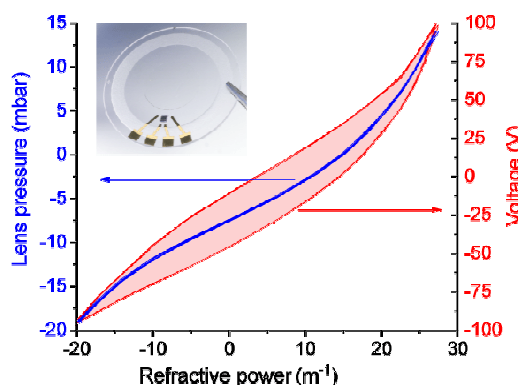


Fig. 2: Hysteresis compensation by pressure-controlled operation of the lens.

Tasks

- Prototyping of lenses with pressure sensors using established processes.
- Characterization of temperature dependency and robustness of the lenses and the pressure feedback. Test and measurement setups need to be developed.
- Optical design, fabrication and test of an optimized objective with adaptive lens inside.
- Starting date: September 1st 2017

Your profile

- Degree in microsystems engineering, optical engineering or comparable
- Project could be a 1.5 year Postdoc position with optional extension or the basis for a PhD thesis
- Experience with designing optical measurement setups
- Independent working style
- Hands-on experience in the lab

Please send your application electronically to

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