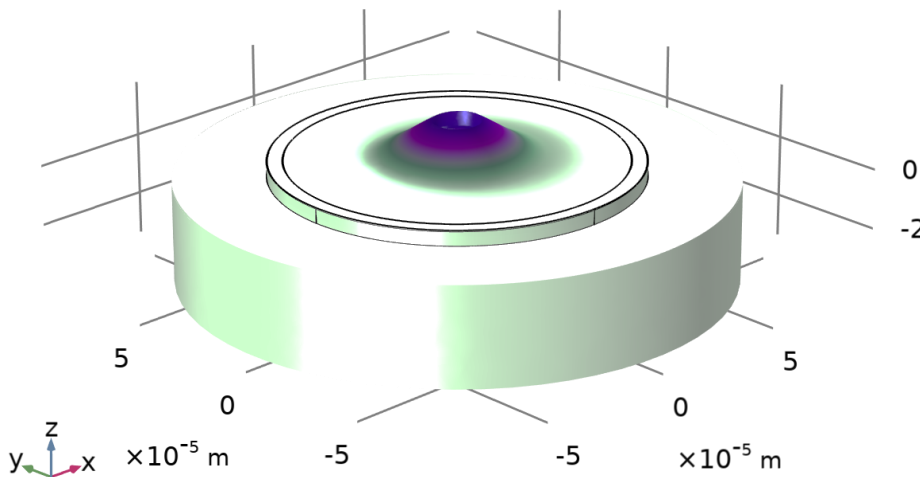


Master-/ Bachelor Thesis

Design optimization of piezoelectric micromachined ultrasonic transducer (pMUT)



Motivation

Piezoelectric materials are used in a variety of devices as both sensors and actuators. pMUT generally show, compared to bulk resonators, improved bandwidth, flexible geometries and reduced voltage requirements. These flexible geometry advantage also means, that for an optimal use of the material, intelligent designs are essential.

Task

In this work, existing designs and process steps for printed PVDF-TrFE pMUT should be put under test. After some introductory simulations, the design optimization should take place. Different materials, electrode and cavity geometries and fabrication methods should be considered. In the end, the properties of the different approaches should be evaluated.

Prerequisites

Interest in functional layers, willingness to experiment, systematic and independent way of working and flexibility in solving problems. Basic knowledge of the piezoelectric effect is an advantage. Experience in Comsol Multiphysics would be beneficial, but is not mandatory.

Research area

Printed piezoelectric layers

Type of work

Simulation
(Fabrication)

Field of Studies

Electrical engineering
Physics
Or similar

Starting date

Immediately

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