

Master Thesis:

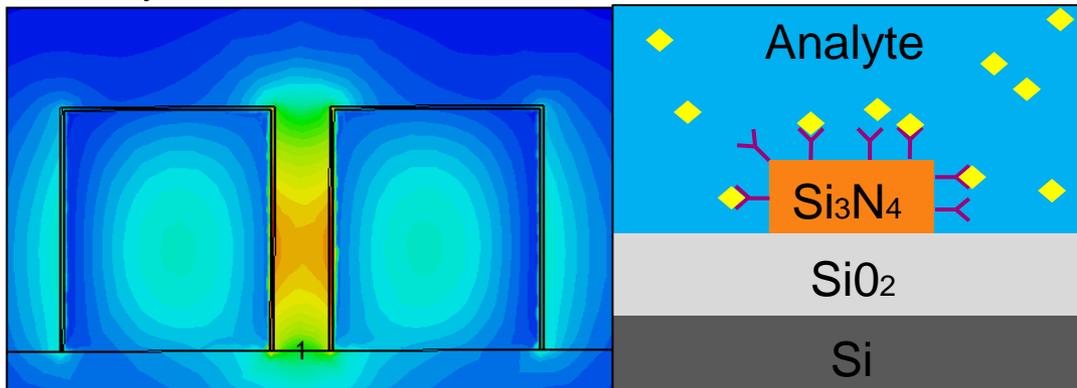
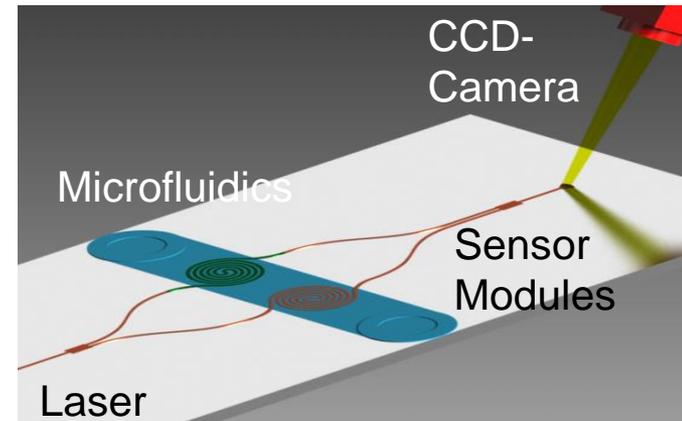
Waveguide-Based Biosensing with a Mach-Zehnder Interferometer (MZI)

Optical biosensors based on bio-functionalized waveguide structures enable label-free, ultra-sensitive detection of nanoparticles, viruses, and biomolecules.

To enable ultra sensitive detection, a large interaction length of the light with the biomolecules is needed. Therefore, it is important to fabricate waveguide geometries that maximize the interaction with the analyte and to functionalize them for specific binding of the molecules of interest. MZIs are robust sensing elements with many possibilities to maximize the sensitivity.

Your Task:

- Develop and simulate improvements of the sensing element
- Fabricate and characterize the sensor element in cleanroom
- Develop a functionalization protocol
- Characterize and test sensor element
- Demonstrate sensor functionality by measuring different analytes



For detailed information contact:

Dipl. Phys. Daria Kohler

Daria.Kohler@kit.edu

Tel. 0721-608-23845

Prof. Dr. Christian Koos

Christian.Koos@kit.edu

Tel. 0721-608-42481