

## Microfabrication of waveguides for use in microbioreactors.

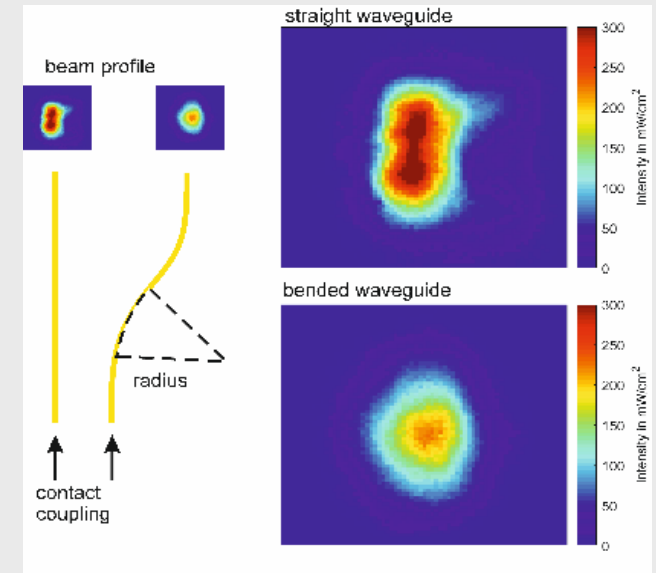
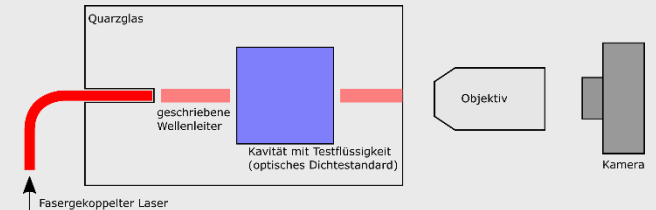
### Description

The IMT is working on an open microbioreactor (MBR) in the project "Open capillary wave micro-reactor for biopharmaceutical screening applications". The MBR has the advantage that due to the small volume of less than 8  $\mu\text{L}$  many cultivation approaches can be performed in parallel. However, all important parameters of the cultivation have to be recorded online by integrated sensors. Optical sensors play the main role in this process.

In this work, optical waveguides for measuring optical density in an MBR will be microfabricated and investigated using photolithography. In a first step, COMSOL Ray will be used to simulate and successively improve a model that can be used to measure optical density in a MBR. The transitions between different media are to be investigated as a matter of priority. The simulations can then be used to fabricate the structures and test them in an optical setup.

### Fields of activity

- Simulation using COMSOL
- Work in the cleanroom
- Optical characterization of test structures



**Start:** by agreement  
**Contact:** **Sven Meinen**  
 Tel.: 0531 391-9783  
 s.meinen@tu-braunschweig.de

