Technische Universität Braunschweig

Bachelor- / Student- / Master thesis

pvz Zentrum für Pharmaverfahrenstechnik

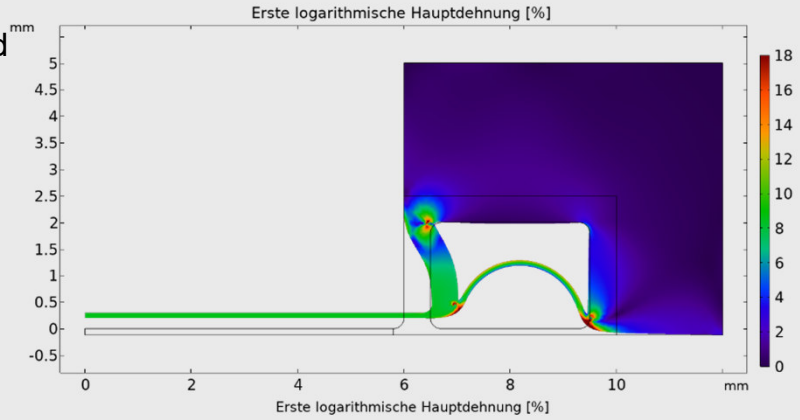
Institut für Mikrotechnik

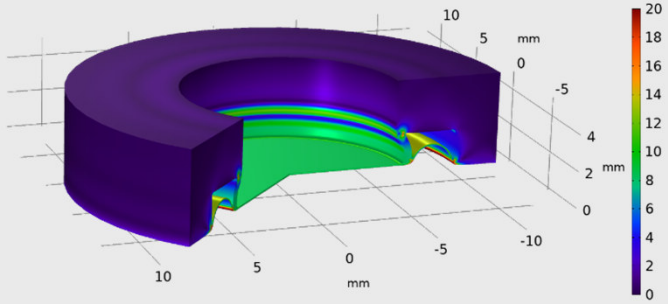
Mechanical Simulation of a 3D-Printed Stretch Unit for In-vivo-like Cell Cultures

Description

Epithelial gut cells in a living body are permanently stimulated by fluid-flow-induced shear stress and mechanical strain. In the EpiStretch project, we develop a device that will contribute to infection studies on cells with in-vivo-like biomechanical conditions.

The aim of this student work is to simulate the mechanical strain and movement of an elastic membrane in a cell culture device and apply the model to optimize the device design.





You will:

- Gain knowledge about state-of-art implementation of stretch in cell cultures for live-cell-microscopy and contribute to a recent interdisciplinary research project
- Apply **mechanical simulation models (Finite Element Method)** to characterize cell stretching systems, compare different device design approaches and validate results with experimental data.

You should:

- Be self-motivated, creative and able to work independently
- Optimal: Have a background in Mechanics and Finite Elements

Start: by arrangement
Contact: **David Jaworski**
d.jaworski@tu-braunschweig.de

Institute of Microtechnology | Alte Salzdahlumer Str. 203 | 38124 Braunschweig