

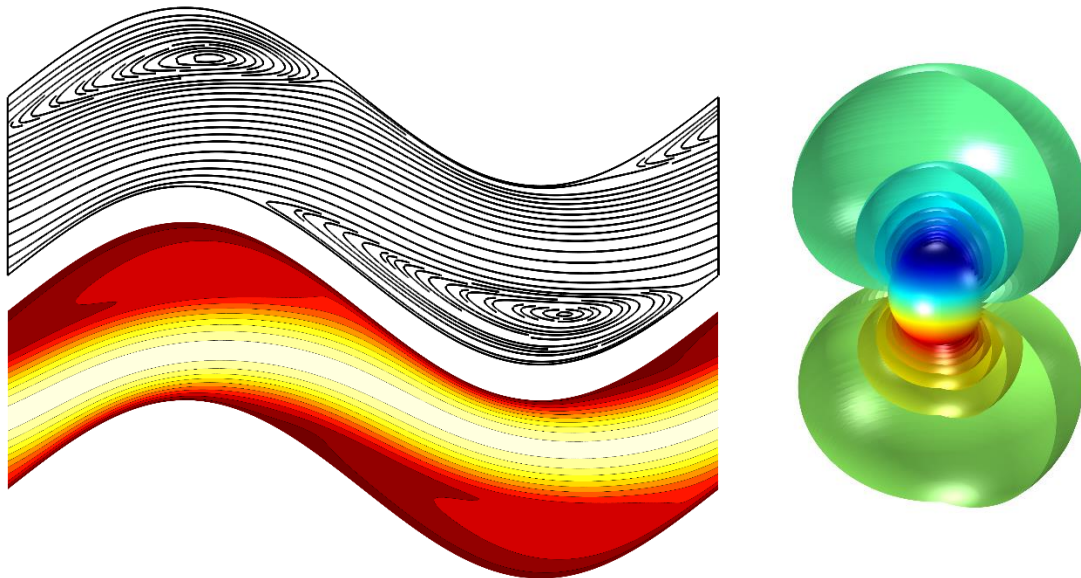


Tutorium (4CP; 16 – 22 April, 2020)

CFD-based simulation and optimization of microfluidic components

In the past decades, the field of microfluidics has undergone a rapid development, with a number of emerging application areas such as lab-on-a-chip technology. In contrast to their macroscopic counterparts, flows in microfluidic devices are mostly laminar. This opens up unprecedented possibilities of designing and optimizing these devices *in silico*, since the physical phenomena can be modeled and simulated based on first-principal theoretical descriptions such as the Navier-Stokes equations instead of heuristic models such as turbulence models.

The tutorial *CFD-based simulation and optimization of microfluidic components*, offered by the Institute of Nano- and Microfluidics to graduate Mechanical Engineering students, will equip you with the basic methodology needed to design and optimize microfluidic components numerically. Based on the commercial CFD solver COMSOL Multiphysics, selected microfluidic components such as mixers and valves will be simulated and optimized. The tutorial includes a brief introduction to the applied software. Familiarity with basic concepts of CFD is a prerequisite. The course is limited to a maximum of five students and will take place from **16 to 22 April, 2020 (five weekdays)**. If you are interested, please contact Maximilian Schür (Tel.: 06151/1624273; E-Mail: schuer@nmf.tu-darmstadt.de). Places are allocated on a first-come, first-served basis.



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