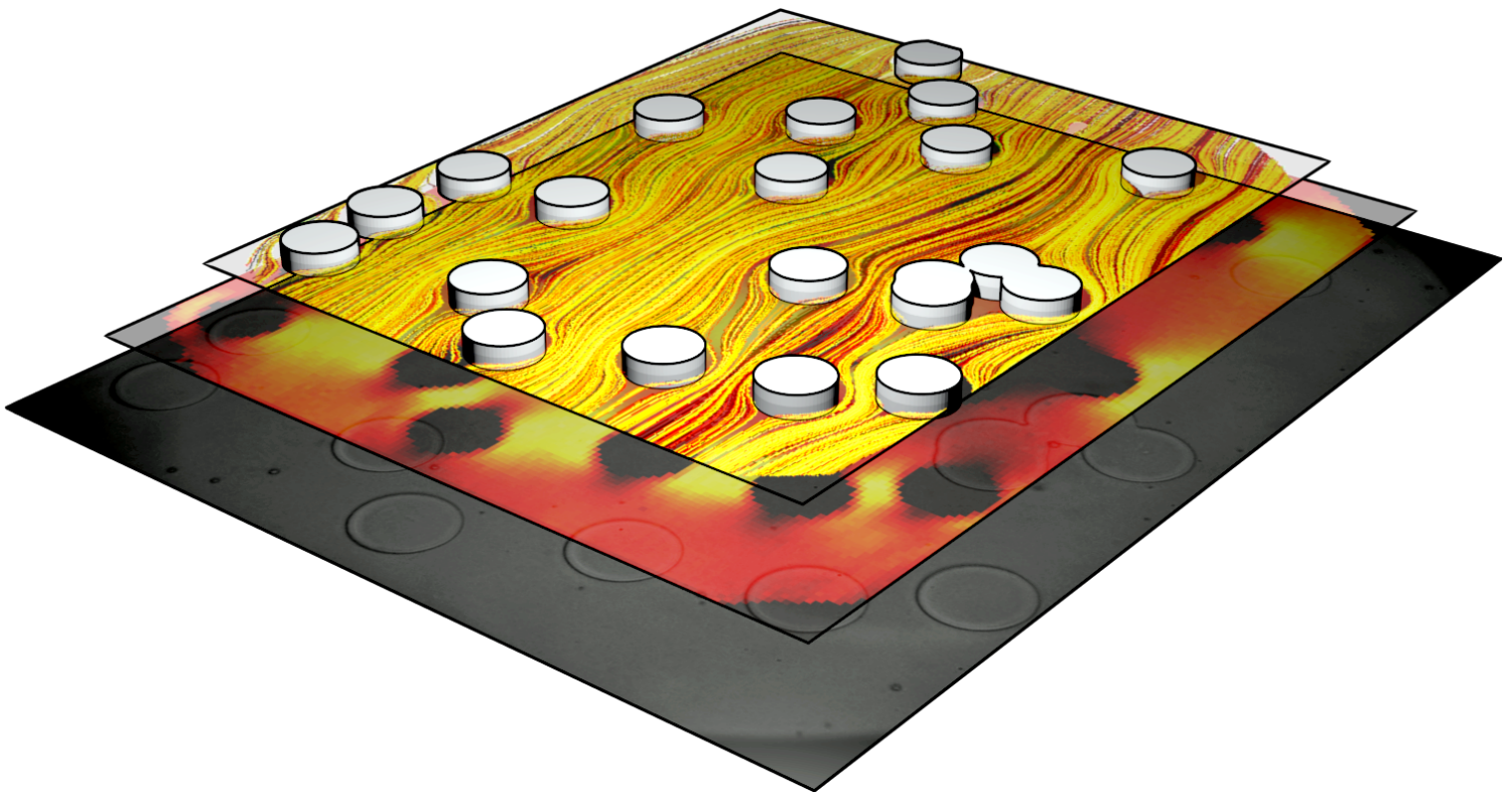


Microfluidic Porous Media: Structure, Transport and Micro-Turbulence

Christian Scholz

2. Physikalisches Institut, Universität Stuttgart



The astonishing diversity of natural and artificial porous media evidently calls for a description of physical phenomena in such structures. For example, it is far from trivial to predict transport properties of porous media given their complex microstructure. Such properties, however, are of great importance in environmental and material science, oil recovery or bio-medical applications.

In this talk, microfluidic measurements to quantify transport properties of artificially designed porous structures, such as the permeability, are presented. In those systems, the full information about the morphology of structures and the flow of liquids is available, which allows a direct verification of relations between structure and transport.

Besides the transport properties of Newtonian fluids through such structures, the occurrence of elastic turbulence for visco-elastic fluids enables an experimental investigation of turbulent flow, even at ultra-low Reynolds numbers.

