

MSc/BSc Project

Microplastic contamination of natural soils studied by computer simulation

Contamination by microscopic plastic particles has become one of the foremost issues for the global environment. The SFB Microplastics at the University of Bayreuth involves more than 20 research groups to study the creation, the biological effects and the transport of microplastic in the environment.

This project deals with the transport of microplastic particles in natural soils. Its goal is to understand the physical mechanics which drive or hinder the infiltration and the transport through the porous soil matrix. It will heavily use methods of computational fluid dynamics such as Lattice-Boltzmann, Immersed-Boundary and Volume-of-Fluid. Due to the large separation of length scales, the project is very challenging from a numerical point of view. For parametrisation and validation we will work closely with our experimental partners in Bayreuth and Cologne.

Roughly one third of the project will be concerned with developing an appropriate simulation code in C++. In the remaining two thirds, the student will carry out large-scale simulations on local, national and European supercomputer facilities.

For applications or further information please contact stephan.gekle@uni-bayreuth.de or see our website biofluid.physik.uni-bayreuth.de

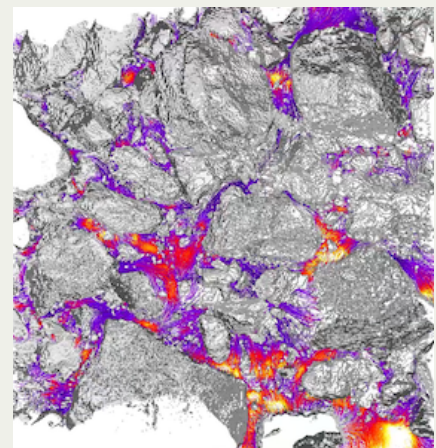


Fig. 1: Lattice-Boltzmann simulation of flow through a porous soil.