Deterministic Lateral Displacement: Investigation of Particle Concentration

Simulation of particle flow inside a microfluidic particle separation device. Investigation of the effects of the particle concentration on the purity of the particle separation, and quantification of the divergence from the Deterministic Lateral Displacement theoretical predictions.

The Deterministic Lateral Displacement (DLD) is used in microfluidics to separate solid particles of different size within a fluid. Each particle follows a path which is chosen deterministically based on its size. The goal of this project is to quantify how the path followed by each particle changes with respect to the concentration of the particles in the fluid.

The simulated system will be modeled using Dissipative Particle Dynamics (DPD), a particle-based method for simulating hydrodynamic phenomena.

References: DLD, DPD.

PREREQUISITES
Programming skills (C++ / MATLAB / Python / …)
Interest in learning new software packages (LAMMPS)

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