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Dissipative Particle Dynamics Simulations of Deformable Red Blood Cells in Small Blood Vessels IGOR PIVKIN, PETER RICHARDSON, GEORGE KARNIADAKIS, Brown University — Explicit simulations of the blood cellular components require computational methods capable of tracking time-varying fluid-solid interface. The Dissipative Particle Dynamics (DPD) is an inherently adaptive method and potentially very effective in simulating complex fluid systems. In DPD, the fluid and solid objects are represented as a collection of interacting points, each representing a group of atoms or molecules. The red blood cell model takes into account bending and in-plane energies as well as constraints of constant surface and volume. We will present results of simulations of the deformable red blood cells in a small blood vessel using DPD.

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