

# Dynamics of soft particles in soft channels

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Soft deformable particles are found in many things we eat, use, and are made of, including examples such as blood cells and polymers. For micron-sized particles, entropy, elasticity, particle shape, and interparticle interactions all strongly influence particle dynamics. In fluid flow, particle inertia and deformation can be exploited to control the non-uniform local particle concentrations and manipulate the suspension rheology. In particular, the rheology of cells in soft, elastic blood vessels is relevant to cardiovascular and blood-borne diseases. For blood flow, the breakup of red blood cell aggregates and the deformation of a blood cell reduces blood viscosity by more than an order of magnitude. Using mesoscopic simulation methods, we investigate how particle deformability affects flow, and the effects of particle inertia and deformation on the suspension rheology, and also how channel “softness” can affect the suspension behavior.