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Structural evolution of Colloidal Gels under Flow ARMAN BOROMAND, JOAO MAIA, Case Western Reserve University, SAFA JAMALI, Massachusetts Institute of Technology — Colloidal suspensions are ubiquitous in different industrial applications ranging from cosmetic and food industries to soft robotics and aerospace. Owing to the fact that mechanical properties of colloidal gels are controlled by its microstructure and network topology, we trace the particles in the networks formed under different attraction potentials and try to find a universal behavior in yielding of colloidal gels. Many authors have implemented different simulation techniques such as molecular dynamics (MD) and Brownian dynamics (BD) to capture better picture during phase separation and yielding mechanism in colloidal system with short-ranged attractive force. However, BD neglects multi-body hydrodynamic interactions (HI) which are believed to be responsible for the second yielding of colloidal gels. We envision using dissipative particle dynamics (DPD) with modified depletion potential and hydrodynamic interactions, as a coarse-grain model, can provide a robust simulation package to address the gel formation process and yielding in short ranged-attractive colloidal systems. The behavior of colloidal gels with different attraction potentials under flow is examined and structural fingerprints of yielding in these systems will be discussed.

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