

Recent Developments and Opportunities in Mesoscale Modeling of Colloidal Suspensions

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Modeling suspensions of colloidal particles with realistic properties (e.g., irregular shape) at relevant scale is an active area of research. Bigger simulations making more faithful predictions under more realistic conditions have been enabled by a combination of methodological and algorithmic advances. I will first review recent developments in the modeling of hydrodynamic interactions in colloidal suspensions using hybrid approaches. I will then discuss new data-driven approaches for modeling complex particle interactions. Last, I will give a perspective on opportunities to extend these techniques to modeling of friction and adhesion.