

Abstract Submitted
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The Influence of Boundary Roughness on the Dynamics of Confined Colloidal Suspensions near the Glass Transition¹ DANIEL J. REAL, KAZEM V. EDMOND, ERIC R. WEEKS, Emory University — We study the relationship between boundary conditions and particle motion in confined, concentrated colloidal suspensions. Studies of polymer fluids in confinement have shown that changes in mobility are strongly dependent upon the polymer/surface interaction. We model this interaction by observing the effects of textured surfaces on colloidal particle mobility in confined dense suspensions (near the glass transition). We use high-speed confocal microscopy to directly image and track the colloidal particles in thin, wedge-shaped sample chambers made from textured glass. We texture the glass in a controlled, reproducible manner by spincoating and sintering colloidal suspensions onto glass slides. We expect the texturing to frustrate the formation of layers seen in smooth-walled confinement, resulting in decreased translational diffusion as compared to the smooth wall case. By studying these dynamics we gain a better understanding of the glass transition and its dependence on interfacial dynamics versus finite size effects.

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