

Abstract Submitted
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Microscopic Dynamics of Quasi-2D Dense Colloidal Gels¹

MATTHEW LOHR, ARJUN YODH, University of Pennsylvania — In this work, we investigate the microscopic dynamics of quasi-2D dense attractive colloidal systems. We confine bidisperse polystyrene spheres between glass coverslips in a suspension of water and 2,6-lutidine; as we increase the temperature of the sample into a critical regime, lutidine wets the colloids, creating a strong attractive interaction ($> 4kT$). We specifically study suspensions in the “dense gel” regime, i.e., at a volume fraction high enough that the attractive particles form a spanning cluster, yet just low enough that there exists some structural heterogeneity larger than the individual particle size. We track the particle locations via bright-field video microscopy and analyze the dynamics of the system in order to compare them to lower-volume-fraction gel states and higher-volume-fraction glassy states. In doing so, we pinpoint the similarities and differences in the mechanisms for dynamic arrest in low-density colloidal gels and high-density colloidal glasses.

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