MAR15-2014-020202

Abstract for an Invited Paper
for the MAR15 Meeting of
the American Physical Society

Colloidal liquids and glasses: Insights from microscopy

ERIC R. WEEKS, Emory University

What would we learn if we could clearly see individual atoms deep inside materials? My group studies colloidal suspensions, which are solid micron-sized particles in a liquid. In many ways, these particles are analogous to atoms. At high particle concentration, the sample is a good model system for a glassy material, with the particles randomly packed together. We use an optical confocal microscope to view the motion of these colloidal particles in three dimensions to see how the motion is changed as the glass transition is approached. In particular, we will discuss two puzzles. First, we'll examine how rotational and translational diffusion of tracers differ as the glass transition is approached. Second, we'll study how how the behavior of glassy samples change when they are confined, and how this depends on the nature of the confining boundaries.