MAR07-2006-000464

Abstract for an Invited Paper
for the MAR07 Meeting of
the American Physical Society

**How confinement modifies the colloidal glass transition**[1]

ERIC R. WEEKS, Emory University

We study concentrated colloidal suspensions, a model system which has a glass transition. These are suspensions of small solid particles in a liquid, and exhibit glassy behavior when the particle concentration is high; the particles are roughly analogous to individual molecules in a traditional glass. We view the motion of these colloidal particles in three dimensions by using an optical confocal microscope. This allows us to directly study the microscopic behavior responsible for the macroscopic viscosity divergence of glasses. In particular, we study how confinement changes the particle dynamics. We confine a colloidal suspension between two parallel walls, and find that in thin sample chambers the particle motion is greatly slowed. This suggests that confinement causes the onset of the glass transition to happen "sooner," at particle concentrations which are not normally glassy.

[1]Supported by the National Science Foundation under Grant No. DMR-0239109.