

MAR05-2004-000746

Abstract for an Invited Paper  
for the MAR05 Meeting of  
the American Physical Society

**Microrheology and the jamming transition in colloidal suspensions<sup>1</sup>**

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We study concentrated colloidal suspensions, a model system which has a jamming transition (the colloidal glass transition). We use an optical confocal microscope to view the motion of these colloidal particles in three dimensions. 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. This allows us to directly study the microscopic behavior responsible for the macroscopic viscosity divergence of glasses. In particular we use small magnetic particles to locally “poke” on the colloidal samples, a form of active microrheology. We find a yield force (below which there is no motion), which grows as the glass transition is approached. Above this force, the magnetic particle moves, disturbing the surrounding colloidal particles. The results are interpreted in the framework of microrheology.

<sup>1</sup>This project is funded by NASA (NAG3-2728).