

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Connecting structure and rheology in sheared colloidal suspensions JONATHAN MCCOY, ITAI COHEN, Cornell University — We investigate the shear properties of colloidal suspensions confined between parallel plates. When the distance between the plates is very small, i.e. approaching the size of the colloidal particles, a number of dramatic phase behaviors are observed under shear, including buckling, banding, jamming, and crystallization. This strongly confined regime is difficult to access using standard rheological techniques. Our experiment explores connections between microstructural behaviors and macroscopic flow by combining confocal microscopy and force measurement techniques in a custom-built thin-film shear cell. Here, we will focus on the interplay between confinement, slip, and order.

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Date submitted: 21 Nov 2008

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