Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Dynamics of Sheared Polydisperse Emulsions XIN DU, KENNETH DESMOND, DANDAN CHEN, KAZEM EDMOND , ERIC WEEKS, Physics Dept., Emory University, WEEKS' LAB TEAM — Polydispersity is an important parameter in the jamming transition of soft materials which has not been well understood yet. In our work, we study the elastic response of a high volume fraction polydisperse emulsion to a periodic shear stress. The droplets' dynamics is imaged by confocal microscopy. Our results reveal that most of the droplets in the emulsion exhibit an elastic and periodic motion under the shear stress. However, the smaller droplets often move with anomalously large or small amplitudes compared to the mean motion. Some droplets also move nearly perpendicular to the mean flow field. The broad distribution of the amplitudes and phases of the smaller droplets' motions can be attributed to the motion the larger droplets and the distribution of the droplet sizes.

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Date submitted: 08 Nov 2011 Electronic form version 1.4