

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Shear Induced Dynamics of Polydisperse Jammed Emulsion Systems JOAQUIM CLARA RAHOLA, ERIC R. WEEKS, Department of Physics, Emory University, Atlanta, GA, 30322 — We study polydisperse decane-in-water emulsions at droplet volume fractions ranging from $\phi = 0.65$ to $\phi = 0.9$. At such concentrations emulsions are jammed and thus droplet rearrangements are limited. To induce droplet displacements, an oscillatory strain is applied. We use confocal microscopy to track the trajectories of the droplets in real time and space. Almost all the droplets move periodically, but due to the polydispersity many of them move non-affinely as they are pushed around by other droplets. In these glassy suspensions, the motions of nearby droplets are correlated within a characteristic distance. This length is independent of particle volume fraction while it exhibits an increasing trend with increasing strain amplitude. Moreover, despite the disordered structure of our system, droplets' motions are correlated over ranges longer than the average particle diameter.

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Date submitted: 16 Dec 2008

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