Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Dynamics of Unjammed Emulsions RODRIGO GUERRA, THOMAS KODGER, DAVID WEITZ, Harvard University — Light scattering and NMR densitometry measurements of quiescent emulsions have shown that amorphous packings of soft, repulsive droplets unjam at osmotic pressures 10^5 times larger than the typical droplet thermal energy density: $\frac{3\,k_B T}{4\pi R^3}$. This transition corresponds to the pressure at which the thermal fluctuations of individual droplet positions match the yield strain of the packing and drive the fluidization of the material. We use confocal microscopy to investigate the microscopic dynamics of this fluid-like phase and find them to be fundamentally different from those of conventional glass-forming liquids; cage-breaking dynamics are not evident from droplet mean squared displacements and the effective viscosity of the emulsion, though 10^5 larger than the background fluid, appears largely insensitive to the confining pressure.

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Date submitted: 15 Nov 2013 Electronic form version 1.4