

Abstract Submitted
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Confocal Microscopy of Shear-Induced Dynamics in Jammed Emulsions¹ JOAQUIM CLARA-RAHOLA, ERIC R. WEEKS, Emory University - Physics Department — Emulsions are liquid droplets suspended in a second continuous fluid. We study polydisperse decane-in-water emulsions at droplet volume fractions of about 0.8. At such concentrations emulsions are jammed and the system exhibits the properties of a solid. Droplet rearrangements due to Brownian motion are limited in this jammed material. Thus, to induce droplet displacements at length scales above a particle diameter, an oscillatory strain is applied. We use confocal microscopy to track the trajectories of the droplets in real time and space. By taking advantage of this technique we quantify the affine and non-affine motion of the droplets due to the shear. Moreover, we study elastic and plastic droplet reconfigurations as well as the spatial extent of the rearrangements when the droplet volume fraction and polydispersity are varied.

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