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Droplet Dynamics of a Flowing Emulsion System in a Narrow Channel[1] OLIVIA CYPULL, KLEBERT FEITOSA, James Madison University — The inner workings of glassy systems have long been a topic of interest for soft material scientists. Similarities between the jamming behavior of emulsions and the glass transition of glassy systems have prompted the conjecture that they might share the same underlying mechanism. Here we study a dense oil-in-water emulsion system forced to flow through a narrow microchannel. By matching the index of refraction of the two phases, the internal dynamics of the droplets could be imaged in a confocal microscope. At low flow speeds, the velocity along the edge of the microchannel was not significantly different than the average droplet velocity in the bulk, suggesting a nearly plug flow. By contrast the droplets near the edge experienced more movement perpendicular to the flow indicating the fluidization effect of the confining walls.

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