

Abstract Submitted
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Dynamics of viscous fluid jets containing solid particles at low Reynolds number¹ MICHAEL NORTON, TERESA BRUGAROLAS, JONATHAN CHOU, DAEYEON LEE, HAIM BAU, University of Pennsylvania — Using a high-speed camera and a glass capillary flow focusing device, we observe the effects of suspended, elongated particles (aspect ratios 1 - 10) on the dynamics of low Reynolds number water jets ejected into oil (containing surfactant) and the size distribution of the droplets resulting from the jet breakdown. We report on the interaction between the jets and the particles in both the absolutely unstable (dripping) regime and the convectively unstable (jetting) regime. In the former, particles induced coalescence of droplets. In the jetting mode, in addition to coalescence, the presence of particles in the jet caused variations in droplets' sizes both upstream and downstream of the droplet that houses a particle. In the jetting regime, particles circulating in the cone of the jet upstream of the nozzle excited periodic disturbances in the jet that induced variations in droplet sizes.

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