

Abstract Submitted
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Droplet size distribution along the near-field interface of immiscible turbulent jets¹ ERIC IBARRA, FRANKLIN SHAFFER, OMER SAVAS, UC Berkeley — This work examines the droplet distributions of submerged, immiscible, turbulent jets in the near field. Experiments consists of silicone oil jets of two viscosities submerged in a water tank. The jet Reynolds numbers are in the range of $Re \sim 3,500 - 27,000$. Shadowgraphy is used to investigate the droplet sizes at the edge of the jets which are quantified using Hough transformation. The droplet size distributions are observed to be bi-modal. The form of these distributions draw attention to prevalence of observed small satellite droplets being formed from the rupture of sheared ligaments in the flow. Results suggest that the radii of the small satellite droplets are independent of Re , while the average size of the large droplets is governed by the Weber number. High speed videos showing droplet shearing from large, submerged hydrocarbon jets into seawater will be presented.

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