

Abstract Submitted  
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**Qualitative Observations of Droplet Impact on Superhydrophobic Surfaces with Micro-ribs for Three Fluids** JOHN PEARSON, DANIEL MAYNES, BRENT W. WEBB — Droplet impingement experiments on superhydrophobic surfaces with micro-ribs and a hydrophobic coating were performed using three fluid types: water, a 50/50 water/glycerine mixture, and ethanol. Also tested, for comparison, were patterned uncoated, smooth coated, and smooth uncoated surfaces. For surfaces with rib and cavity features, the droplet spread and retraction were observed to be asymmetric and at high Weber numbers the spread along the rib direction is greater than the spread transverse to the ribs. The onset of peripheral splashing was observed to be contact angle dependant and preferential along the ribs. The occurrence of two-pronged and oscillating jets during droplet retraction for water/glycerine tests was observed when the surface was micropatterned. The oscillating and splitting jets were stronger on the superhydrophobic surfaces than on the surfaces with patterning but no hydrophobic coating. Further, an interesting spread pattern with four liquid droplets clustered at about  $30^\circ$  from the perpendicular direction was observed for all fluid types on both coated and uncoated patterned surfaces.

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