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Forced Spreading and Coalescence of Viscous Drops SHELLEY ANNA, PILGYU KANG, Carnegie Mellon University, SHAHAB SHOJAEI-ZADEH, Benjamin Levich Institute, CHRISTINE APPLEBY, Carnegie Mellon University — This study investigates the dynamics of spreading and coalescence of sessile droplets on a surface, a process important in applications such as inkjet printing, spray coating, and flooding of fuel cells. We use a simple microfluidic device to control the spreading and merging processes. Droplet shape, diameter and maximum height are monitored as functions of time. We compare the dynamics with existing scaling models modified to incorporate time dependent volume, and we extend these models to describe the scaling behavior of the liquid bridge growing between merging droplets on a surface. The experiments agree well with the expected scaling incorporating capillary, gravity, and viscous forces.

Shelley Anna
Carnegie Mellon University

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