

Abstract Submitted
for the DFD11 Meeting of
The American Physical Society

Oscillatory flow measurements in the vicinity of pinned-contact capillary surfaces JOSEPH OLLES, AMIR HIRSA, Rensselaer Polytechnic Institute — By coupling two pinned-contact droplets through a short tube, various devices have been demonstrated, including fast-focusing liquid lenses, pumps, and adhesion devices. The double droplet system (DDS) can be achieved on the millimeter scale with essentially spherical interfaces due to capillarity. A one-dimensional model based on the center of mass motion has been corroborated by experiments, but CFD simulations of the flow within the DDS (Ramalingam and Basaran, Phys. Fluids 2010) have yet to be experimentally validated. With PIV, we study the fluid flow in and around a DDS that is surrounded by an immiscible liquid. The flow near the corner and capillarity effects of the pinned-contact surfaces will be explored for different volumes of the DDS, oscillating frequencies, and driving amplitudes.

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Date submitted: 04 Aug 2011

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