

Abstract Submitted
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Evaporation Driven Microdroplet Pattern Formation in Surfactant X-77.¹ K.C. CHAN, SCOTT PIERCE, Albany State University, HEP-ING ZHU, OARDC/USDA, ALBANY STATE UNIVERSITY COLLABORATION, ATRU/OARDC, USDA COLLABORATION — The evaporation of sessile solution droplets of size 300-1000 μm on two different types of surface have been investigated using digital video microscopy. It is found that when the surfactant X-77 droplet is left to evaporate on a glass surface, the droplet evaporates without reducing its diameter while the fluid within the droplet flows from the center to the pinned edge causing it to swell. The final thin solution film eventually breaks away from the edge and shrink toward the center; simultaneously the edge coalesces into smaller droplets, forming islands on once the perimeter of the droplet. When the same experiment is repeated on hydrophobic surface, the droplet is found to shrink while its edge swells then forms islands. Depending on the concentration of X-77, ring or even a smooth round patch in the center instead of islands are formed. Solution concentration between 0.5- 10 % were used for the experiments. The dynamic transition from islands to ring to round drop again will be presented.

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