

Effect of Surfactant on Sorting of Bidispersed Colloidal Particles from Evaporation of a Sessile Droplet

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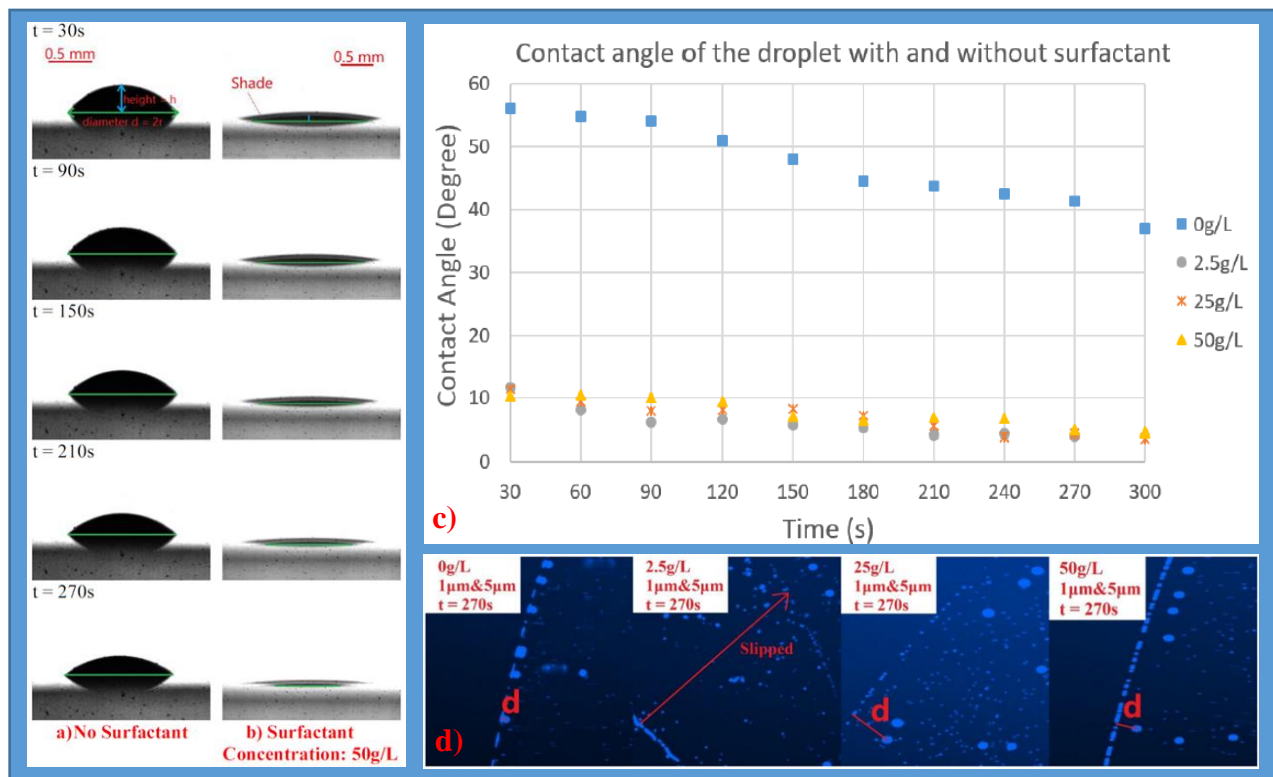


Figure 1: Time-varied droplet profile of a) droplet with no surfactant, and b) droplet with surfactant concentration of 50g/L. c) Time-varied contact angle with different surfactant concentration. d) Particle separation at the contact lines of droplets with surfactant concentrations of 0g/L, 2.5g/L, 25g/L, and 50g/L.

An evaporating droplet, containing bidispersed colloidal particles, forms a dual ring of deposit with particles sorted based on size under certain conditions. This project investigated the effect of surfactant (Sodium Dodecyl Sulfate) on the evaporation mode and the particle separation distance between larger and smaller particles. Significant decrease of contact angle was observed with addition of surfactant (see Figure 1a, 1b, and 1c). As a result of the smaller contact angle, the separation distance between smaller and larger particles were increased by surfactant addition.

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