

Abstract Submitted
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Coffee-ring and uniform deposits from sessile nanofluid droplet evaporation¹ FEI DUAN, XIN ZHONG, Nanyang Technological University — Nanofluid droplet evaporation process has been investigated for the final deposits of particles for coffee-ring or uniform deposition. The 3-4 nm graphite nanoparticles are selected for preparing the nanofluids with surfactant or without the surfactant. The evaporation in term of contact angle, contact line, volume, spreading, etc, shows that the nanoparticles enhance the pinning effect and the evaporation rate, despite that the enhancement can be weakened as the nanoparticle concentration is higher in the samples without surfactant. In the sample with the surfactant, the variations of baseline, contact angle, volume and evaporation rate are abnormal at a certain surfactant concentration. Further discussion is conducted for the transition. The role of the surfactant influences the drying patterns from coffee ring to uniform deposition. The simulation is developed to help to understand the effect.

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