

Abstract Submitted
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Self-Propelled Droplet Removal from Hydrophobic Fiber-Based Coalescers KUNGAN ZHANG, FANGJIE LIU, ADAM WILLIAMS, XI-AOPENG QU, Duke University, JAMES FENG, University of British Columbia, CHUAN-HUA CHEN, Duke University — Fiber-based coalescers are widely used to accumulate droplets from aerosols and emulsions, where the accumulated droplets are typically removed by gravity or shear. We report self-propelled removal of drops from a hydrophobic fiber, where the surface energy released upon drop coalescence overcomes the drop-fiber adhesion, producing spontaneous departure that would not occur on a flat substrate of the same contact angle. The self-removal takes place above a threshold drop-to-fiber radius ratio, and the departure speed is close to the capillary-inertial velocity at large radius ratios. [K. Zhang et al., Phys. Rev. Lett., in press.]

Chuan-Hua Chen
Duke University

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