

Abstract Submitted
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Formation of partially wetting droplets in square microchannels¹

BIBIN M. JOSE, THOMAS CUBAUD, Stony Brook University — We experimentally study the formation and evolution of partially wetting droplets in microchannels made of glass and silicon. Droplets are steadily generated by focusing water in an external phase of silicone oil using square channels. To probe the influence of the capillary number on droplet and wetting dynamics in confined geometries, the oil viscosity is varied over four decades. At low capillary numbers, we observe the formation of contact lines and the nucleation of dewetting patches in the thin film surrounding elongated droplets. By contrast, small and lubricated droplets are produced at large capillary numbers. The dynamic wetting properties of microfluidic segmented flows are compared with measurements performed using a contact angle goniometer.

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