

Abstract Submitted
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Vapor mediated droplet interactions - self-sensing droplet machines (Part 1) NATE CIRA, ADRIEN BENUSIGLIO, MANU PRAKASH, Stanford University Department of Bioengineering — Reducing contact angle hysteresis is one strategy for making droplets mobile. Typically this involves carefully preparing a near-ideal surface. Here we show that a class of two-component droplets is self-motile on any high energy surface. Surprisingly, these binary droplets have characteristics of both completely and partially wetting fluids which precludes any hysteresis. This allows us to easily create mobile droplet systems with simple everyday materials like glass slides and sharpie. We build on the fundamental mechanisms and models we developed for this system and present multiple fluidic machines which take advantage of interactions between the droplets to autonomously execute complex tasks such as sorting and pattern formation. Time permitting we will run a live experiment to highlight the phenomena being discussed.

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