

Abstract Submitted
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Generation of Single, Monodisperse Compound Droplets¹ JAMES BLACK, PRASAD BHAVE, Georgia Institute of Technology, OUMAR TOURÉ, Polytech Clermont-Ferrand, G. PAUL NEITZEL, Georgia Institute of Technology — Compound, nanoliter-scale droplets consisting of an aqueous inner phase surrounded by an oil encapsulant are of interest in a lab-on-a-chip process that levitates the droplets between a pair solid surfaces using thermocapillarity. The application requires a droplet with an oil layer of sufficient thickness to permit the use of the levitation method, although not so thick as to impede effective combining and mixing of the contents of merged droplets. An apparatus was designed to produce single compound droplets of variable water/oil volume ratio and uniform size. Experiments were performed to characterize the effect of apparatus and fluid parameters on the volume ratio in the generation of droplets of silicone-oil-encapsulated water.

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