

Abstract Submitted
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Microfluidics with compound “bubble-drops” SAIF A. KHAN, SUHANYA DURAISWAMY, National University of Singapore — “Bubble-drops” are compound fluid particles comprising a gas bubble and liquid drop that flow as a single fluid object through another immiscible liquid in a microchannel network. These fluid particles represent discrete multiphase ‘quanta’, and expand the sphere of application of droplet microfluidics to inter-phase phenomena. We present here a simple method to generate monodisperse bubble-drop trains in microfabricated channel networks. The difference in drag force exerted on flowing bubbles and drops by the immiscible carrier liquid implies different translational speeds, thus providing the driving force for bubble-drop formation. We outline the criteria for stable generation and analyze factors influencing bubble-drop dynamics. We will also highlight several applications in chemical and biological synthesis and screening.

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