

Abstract Submitted
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Surface flows and bulk mixing by coalescence of dissimilar drops: experiments and numerical simulations¹ MARK SIMMONS, EMILIA NOWAK, University of Birmingham, ZHIHUA XIE, CHRIS PAIN, OMAR MATAR, Imperial College London — Merging of dissimilar drops, being of different size and/or composition is an essential part of multiple promising applications enabling release and mixing of various species in bespoken way. However, till now there is still a lack of understanding of the effect of the various factor involved on the kinetics of coalescence and the rate of mixing of the contents of the drops. This study is aimed at providing a thorough understanding of the merging process immediately after the rupture of the thin liquid film separating the drops initially. The effect of such parameters as the difference in size and surface tension of the merging drops, as well as the viscosity of the surrounding liquid phase, is investigated. Numerical simulations provide a deeper insight into the liquid redistribution during the merging. Their results are in good agreement with the experimental data and will be discussed during the talk.

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Omar Matar
Imperial College London

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