

Abstract Submitted  
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**Coalescent coalescence** NICOLAS BREMOND, HUGO DOMÉJEAN, JÉRÔME BIBETTE, ESPCI ParisTech/LCMD — Pulling apart two neighboring emulsion drops favors their coalescence. This counterintuitive phenomenon is then responsible for the propagation of coalescence among a concentrated emulsion. Indeed, the shape relaxation during the coalescence phase can induce a separation with the neighboring drops, a situation that is potentially destabilizing. We report an experimental investigation on such catastrophic phenomenon by using a microfluidic device where a calibrated two-dimensional emulsion is created and destabilized. The velocity of propagation as well as the probability of the coalescence are reported as a function of the size and the spatial distribution of the drops. We then propose a scenario for phase inversion of a concentrated emulsion based on this mechanism and discuss its efficiency by taking into account the existence of a drop size distribution.

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