Abstract Submitted
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Numerical investigation of microbubble formation in liquid-liquid impact events[1] SEYEDSHAHABADDIN MIRJALILI, ALI MANI, Stanford University, Department of Mechanical Engineering — A numerical study of the problem of a droplet impacting another layer of the same liquid is performed with the primary motivation of understanding the steps that lead to the formation of multiple microbubbles in the Mesler entrainment mechanism. Simulations start before impact, where a thin gas layer is present and are continued to stages after impact, taking care of topological changes, and finally depicting the formation of the chandelier-like pattern of small bubbles observed in Mesler entrainment. A two dimensional boundary element approach similar to the work of M. Mani, Mandre and Brenner (JFM, vol. 647, p. 163, 2010) is undertaken with the appropriate assumption of inviscid, incompressible potential flow in the liquid bodies, thin structure lubrication flow in the gas layer, with modifications to allow for large interface deflection and topological changes assuming uniform pressure in the bubbles.

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