

Abstract Submitted
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On the true nature of chemical reaction-driven tip-streaming

HANS C. MAYER, ROUSLAN KRECHETNIKOV, University of California at Santa Barbara — In the course of recreating the experiments of J. Fernandez and G.M. Homsy [Phys. Fluids 16, 2548 (2004)] on chemical reaction-driven tip-streaming in a pendant drop, we identified the true source of this ‘amazing’ phenomenon and thus provided physical interpretation to the unexplained observations in the aforementioned work. This finding added a new parameter dimension to the problem and led to its more complete parametric study. In particular, we studied the effect of the key physical parameters (chemical reaction rate, surfactant properties, etc.) on the emission frequency and size of drops, emitted in both the oscillating and steady tip-streaming modes. Altogether, the conducted study made the experiments more controllable and understanding of the phenomena less “elusive.”

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