

Abstract Submitted
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Intrinsically Pulsating Electrohydrodynamic Cone-Jets MENG-HAN CHIANG, SHENREN XU, CHUAN-HUA CHEN, Duke University — When the flow rate of an electrohydrodynamic cone-jet is self-regulated, the jet typically pulsates intrinsically due to the imbalance between the liquid supplied to the cone and that discharged through the jet. We used high-speed microscopic imaging and oscilloscopic current measurements to characterize these intrinsic pulsations. The measured kHz-range pulsation frequency compares favorably to a model we developed drawing an analogy between pulsating cone-jet on a supported meniscus and that on an isolated charged drop. The scaling law is expected to be applicable to electrohydrodynamic drop formation and miniaturized electrospray systems.

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