## Abstract Submitted for the DFD09 Meeting of The American Physical Society

Droplet formation from the breakup of micron-sized liquid jets WIM VAN HOEVE, ARJAN VAN DER BOS, MICHEL VERSLUIS, JACCO SNOEIJER, Physics of Fluids, University of Twente, The Netherlands, MICHAEL P. BRENNER, School of Engineering and Applied Sciences, Harvard University, Cambridge, USA, DETLEF LOHSE, Physics of Fluids, University of Twente, The Netherlands, PHYSICS OF FLUIDS, UNIVERSITY OF TWENTE, THE NETHERLANDS TEAM, SCHOOL OF ENGINEERING AND APPLIED SCI-ENCES, HARVARD UNIVERSITY, CAMBRIDGE, USA TEAM — Droplet formation from the breakup of a liquid jet emerging from a micron-sized circular nozzle is investigated with ultra high-speed imaging at 1 million frames per second and within a lubrication approximation model [Eggers and Dupont, Phys. Rev. Lett. 262, 1994, 205-221]. The capillary time  $\tau_c = \sqrt{\rho r^3/\gamma}$  is extremely small – of the order of  $1\mu$ s. In the analyzed low Reynolds number regime the jet breakup is driven by surface tension forces only. Rayleigh breakup is not influenced by the surrounding air. The high- speed imaging results and those from the model calculation perfectly agree for various liquid viscosities and jet velocities, confirming a universal scaling law also for diminutive Rayleigh jets.

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