

Abstract Submitted
for the DFD10 Meeting of
The American Physical Society

Conditions for microthread formation in viscous coflows ELENA DE CASTRO HERNANDEZ, JOSE MANUEL GORDILLO, Grupo de Mecanica de Fluidos, ESI, Universidad de Sevilla, SPAIN — We have performed numerous experiments with coaxial coflowing fluids in microfluidic devices at low Reynolds numbers and have compare them against BEM numerical simulations, finding excellent agreement. The conditions determining the generation of liquid threads with diameters below 1% the diameter of the injection tube have been analyzed in detail and the crucial role of the inner to outer viscosity ratio for the generation of such tiny jets has been elucidated. Thanks to our numerical results, we deduce a simple model that predicts, as a function of the control parameters, the conditions under which this type of liquid jets are generated as well as the diameters of the resulting drops.

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Date submitted: 05 Oct 2010

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