

Abstract Submitted
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Destabilization of highly viscous fluid threads in complex microgeometries¹ THOMAS CUBAUD, Stony Brook University — High-viscosity multiphase flows in microchannels encompass a broad range of fluid phenomena, including self-lubrication and viscous buckling instabilities. Here, a series of experiments is conducted to study the dynamic response of miscible fluid threads to a change in carrier flow velocity due to varying microgeometries. The structural stability of core-annular flows is systematically investigated in simple and complex microchannels, such as square, bifurcating, and corrugated channels, from low to high flow rates of injection and for a variety of fluid viscosities. Focus is on flow regimes of practical interest for the improvement of mixing and separation processes between fluids having large viscosity contrasts at the small scale.

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