

Abstract Submitted  
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**Viscous thread behavior in branching microchannels**<sup>1</sup> THOMAS CUBAUD, XIAOYI HU, MARTIN SAUZADE, Stony Brook University — We experimentally study the properties of viscous core-annular flows using miscible fluids in bifurcating microchannels. A viscous filament is first generated using a square hydrodynamic focusing junction by injecting a thick fluid into the central channel and a thin fluid from the side-channels. This method allows us to produce miscible fluid threads of various sizes and lateral positions in the channel, and enables the systematic study of thread transport and stability from low to moderate Reynolds numbers in branching microfluidic networks. We examine, in particular, the role of viscous buckling instabilities on thread behavior and the formation of complex viscous mixtures and stratifications at the small-scale.

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