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**Fluid entrainment in confined colloid-polymer mixtures** RODRIGO LEDESMA AGUILAR, Northumbria University, SITI AMINAH SETU, Universiti Teknologi Malaysia, ROEL P.A. DULLENS, Oxford University, AURORA HERNANDEZ MACHADO, IGNACIO PAGONABARRAGA, University of Barcelona, DIRK G.A.L. AARTS, University of Oxford — We present experimental results of the flow of two-phase colloid polymer mixtures in microfluidic channels. The weak-length scale separation between the contact-line slip length and the thickness of the channels determines the maximum of speed stable moving fronts, which can be controlled by changing the bounding geometry. Channels beyond a velocity-dependent maximum thickness trigger the formation drop-emitting jets controlled by thermal fluctuations. A hydrodynamic model, supported by numerical simulations, reveals that the fluid dynamics is dominated by viscous and capillary forces at length-scales comparable to a slip-region near the contact line. Our findings show that length-scale overlap can be used as a new fluid-control mechanism in strongly confined systems.

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