

Abstract Submitted
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Experimental and numerical study of a complex cross-junction microchannel¹ EMILIA NOWAK, MARK SIMMONS, University of Birmingham, LYES KAHOUADJI, RICHARD CRASTER, OMAR MATAR, Imperial College London, DAMIR JURIC, JALEL CHERGUI, LIMSI, CNRS, France, SEUNGWON SHIN, Hongkin University, South Korea — Microfluidic devices occur in various fields such as inkjet printing, DNA chips, lab-on-a-chip technology, micro-propulsion and droplet-based microfluidics. Here, we examine drop and plug formation of immiscible liquids in a cross-shaped microchannel via high-speed imaging, shadowgraphy and PIV that allows interface topology and flow field tracking. We also present comparisons with direct numerical simulations using the new solver, BLUE, for massively parallel simulations of fully three-dimensional multiphase flows in complex solid geometries.

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