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Two-phase liquid-liquid flows generated by impinging liquid jets
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— Two-phase flows in intensified small-scale systems find increasing applications in (bio)chemical analysis and synthesis, fuel cells, polymerisation, and separation processes (solvent extraction). Current nuclear spent fuel reprocessing separation technologies have been developed many decades ago and have not taken account recent advances on process intensification which can drive down plant size and economics. In this work, intensified impinging jets will be developed to create dispersions by bringing the two liquid phases into contact through opposing small channels. A systematic set of experiments has been undertaken, to investigate the hydrodynamic characteristics, to develop predictive models, and enable comparisons with other contactors. Drop size distribution and mixing intensity will be investigated for liquid-liquid mixtures as a function of various parameters using high speed imaging and conductivity probes.

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