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Experimental Investigation of Mixing in a T-channel[1] SUSAN THOMAS, TIM AMEEL, University of Utah — Flow in a 20mm, square T-channel geometry was experimentally investigated and characterized for Reynolds numbers from fifty to six-hundred. The dynamic conditions and square channel geometry are relevant to microscale mixing. A T-shaped geometry is especially attractive because it is easy to fabricate and integrate into complex systems. In this study, PIV and LIF were used to track the evolution of three flow regimes with varying Reynolds number. Of particular interest to mixing was the development of an asymmetric flow instability at moderate Reynolds number. Additionally, LIF measurements in the outlet channel were used to characterize downstream mixing. The effect of asymmetric inlet velocities and temperature gradients was also investigated. Further, implications for microscale mixing were extracted.

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