

Abstract Submitted
for the DFD16 Meeting of
The American Physical Society

Tailoring tails in Taylor dispersion: how boundaries shape chemical delivery in microfluidics: experiments¹ DANIEL M. HARRIS, MANUCHEHR AMINIAN, FRANCESCA BERNARDI, ROBERTO CAMASSA, RICHARD M. MCLAUGHLIN, UNC Chapel Hill, UNC JOINT FLUIDS LAB TEAM — We present the results of an experimental investigation of the spreading of an initial dye concentration in laminar shear flow through rectangular ducts. In particular, we demonstrate the critical role that the cross-sectional aspect ratio plays in defining the longitudinal asymmetry of the resulting tracer distribution. Thin ducts (aspect ratio $\ll 1$) generate distributions with sharp fronts and tapering tails, whereas thick ducts (aspect ratio ~ 1) produce the opposite effect. The experimental results are shown to be in strong agreement with recent theoretical predictions. Our findings could potentially be useful in a number of microfluidic applications, some of which will be discussed.

¹Funding from NSF grant Nos.: RTG DMS-0943851, CMG ARC-1025523, DMS-1009750, and DMS-1517879.

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Date submitted: 01 Aug 2016

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