

Abstract Submitted  
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**Basics of advection-diffusion: still blurry ?** MATHIEU SOUZY, Goscience Rennes, UMR 6118, HENRI LHUISSIER, BLOEN METZGER, Aix-Marseille Universit, IUSTI-CNRS UMR 7343, TANGUY LEBORGNE, Goscience Rennes, UMR 6118 — We investigate experimentally the most basic case of advection diffusion: a lamella of fluorescent scalar advected by a simple shear flow. This simple configuration illustrates the advection-diffusion coupling which leads to an initial advection-dominated decay of the transverse dimension of the blob,  $s(t)/s_0 \sim t^{-1}$ , followed by a diffusion-dominated broadening  $s(t)/s_0 \sim t^{\frac{1}{2}}$ . The minimum transverse dimension of the blob, *i.e* the Batchelor scale, is directly observed and systematically investigated at different Pcllet number. A coarsening protocol is used to determine the minimal spatial resolution needed to resolve at all times the evolution of the concentration distribution. We also investigate the coalescence between two nearby lamellae and its implication on the evolution of the concentration distribution.

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