

Abstract Submitted
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Miscible fingering in two-dimensional suspension flows¹ RUI LUO, SUNGYON LEE, University of Minnesota-Twin Cities — We study the emergence of miscible fingering in quasi-two-dimensional suspension flows. We experimentally demonstrate the existence of fingering with two distinct wavelengths, by injecting silicone oil into the mixture of the same oil and non-colloidal particles inside a highly confined channel. Here, the channel gap thickness is comparable to the diameter of the particles, so that suspended particles form a monolayer inside the cell. Our experiments demonstrate that the transition in the fingering regimes depends on the local particle area fraction. To qualitatively describe our experimental observations, we seek a kinetic theory that implements long-range hydrodynamic interactions.

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