

Abstract Submitted  
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**Particle enrichment and instability on a receding fluid interface**<sup>1</sup> SUNGYON LEE, University of Minnesota, BENJAMIN DRUECKE, bdruecke@umn.edu, ALIREZA HOOSHANGINEJAD, Cornell University, JENNA BROWN, Fort Lewis College — We investigate the displacement of a suspension of non-colloidal particles by an immiscible fluid inside a highly confined vertical Hele-Shaw cell. We find that the particles move slower than the invading fluid and accumulate on the interface, which can cause an interfacial instability reminiscent of the classic Saffman-Taylor instability. However, unlike the classic viscous fingering patterns, the invading fluid preferentially penetrates into regions surrounding clusters of high particle concentration, resulting in the formation of thin particle-laden filaments perpendicular to a receding interface. Although this effect is enhanced by the presence of many particles in a cluster, we show that the instability can also occur in the case of a single particle for a narrower range of parameters. In this talk, we present experimental results and discuss the competition between viscous drag and interfacial energy giving rise to this instability.

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