

Abstract Submitted  
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**Surfactant-induced migration of a drop in Stokes flow** JAMES HANNA, PETIA VLAHOVSKA, Thayer School of Engineering, Dartmouth College — In Stokes flows, symmetry considerations dictate that a neutrally-buoyant spherical particle will not migrate laterally with respect to the local flow direction. We show that a loss of symmetry due to flow-induced surfactant redistribution leads to cross-stream drift of a spherical drop in Poiseuille flow. We derive analytical expressions for the migration velocity in the limit of small non-uniformities in the surfactant distribution, corresponding to weak-flow conditions or a high-viscosity drop. The analysis predicts that the direction of migration is always towards the flow centerline.

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