

Abstract Submitted
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Interfacial instabilities of reactive fingering ANDONG HE, Institute for Computational and Experimental Research in Mathematics, Brown University, ANDREW BELMONTE, Department of Mathematics, Penn State University — We consider viscous flows in a Hele-Shaw cell in which two immiscible fluids chemically react and form a complex substance at the interface. The interface is modeled as an elastic membrane whose bending rigidity depends on the local curvature. A dispersion relation is derived using the energy variation method. Several types of instabilities are categorized and how various physical parameters affect the stability is investigated. Our model is able to explain the anomalous fingering instability from experimental observations reported by other authors.

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