Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Theoretical Studies of Flow-Induced Coalescence L. GARY LEAL, Dept. of Chem. Eng. and Materials Dept., UCSB, FABIO BALDESSARI, Dept. of Chem Eng and MSERC, UCSB — Recent experimental studies of coalescence involving two equal size drops in a flow, both with and without a copolymer surfactant, have provided detailed data on the conditions for coalescence. This data presents a number of puzzles that are not explained by existing theoretical models of coalescence. In this presentation, we summarize our recent theoretical attempts to understand this data, via a combination of a small capillary number asymptotic theory for film drainage, exact boundary integral calculations of the two drop collision and coalescence process, and thin-film stability theory.

L. Gary Leal
Dept. of Chem. Eng. and Materials Dept., UCSB

Date submitted: 01 Dec 2004 Electronic form version 1.4