

Center for Fluid Mechanics Seminar

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Drop Coalescence in Stokes Flows

Stability to coalescence of two drops pressed together by an external force or flow is controlled by the drainage of a thin liquid film that separates drop interfaces. Our recent results indicate that for deformable drops with surfactant-free interfaces, the external flow can qualitatively affect film drainage dynamics. In some cases the flow can prevent drop coalescence, and in others it induces exponential drainage of the film. These results are in contrast with previous analyses that assumed that under low-capillary-number conditions an external flow merely provides the pushing force. We also show that generally accepted assumptions regarding long-time dynamics of drops pressed together in the absence of an external flow are not valid, and we derive a correct asymptotic behavior.

**September 23, 2003
Barus & Holley, Room 190
4:00pm**