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Effect of the interfacial properties of a suspended drop on the bulk flow CHARLES EGGLETON, UMBC, ANDRÉS GONZALEZ, Universidad de los Andes, MUSTAPHA JAMAL, UMBC — A liquid drop suspended in a distinct fluid is simulated. An adsorbed monolayer of surfactant molecules on the interface dynamically alters the surface tension distribution when the suspending liquid is set in motion. When the external flow is stopped the drop retracts back to its equilibrium spherical shape. The behavior of the surfactant monolayer is modeled using the Langmuir surface equation of state. Initial equilibrium surfactant concentrations ranging from zero to a highly packed monolayer are considered. External and internal flow field properties such as streamlines, the velocity field and the pressure field are analyzed at steady state and during the retraction of the drop in order to identify characteristic flow patterns as a function of initial monolayer surface concentration.

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