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Thinning of Lamella in a Non-Newtonian Foam LUCIEN BRUSH, University of Washington, STEVEN ROPER, Northwestern University — Consider a surfactant-free lamella in an evolving foam. Asymptotic analysis in small capillary number is used to assess the effects of non-Newtonian properties of the liquid using power-law and Ellis models of viscosity, principally present in the transition region. For a foam in which the Plateau border radius of curvature and the lamellar length are of the same order of magnitude, the shear rate dependence of the viscosity changes the time scale for thinning but not the power law behavior of the thinning rate compared to Newtonian fluids. For a foam in which the area of fluid in the Plateau border and in the lamellar region are of the same order initially the effects of the non-Newtonian viscosity appear explicitly in the integrated form of the lamellar thinning law. Comparisons are made between a number of shear-thinning fluids, a shear-thickening fluid and a Newtonian fluid.

Lucien Brush
University of Washington

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