

Abstract Submitted
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Surfactant spreading on a thin liquid film: testing models with experiments¹ MICHAEL SHEARER, NC State University, ELLEN PETERSON, Carnegie-Mellon University, ANTOINE LE BOUIL, University of Rennes, KAREN DANIELS, NC State University — We report on recent experiments with NBD-PC lipid spreading on a thin layer of glycerin, in which small concentrations of molecules are visualized using fluorescence. The varying profile of the film surface is simultaneously captured using a laser line. In lubrication models, insoluble surfactant is passively transported by the free surface. This assumption is plausible in the regime of small surfactant concentrations, for which the spreading molecules form a monolayer, but is questionable for larger quantities. We record the time-dependent distribution of surfactant for various initial concentrations down to a monolayer, making direct comparisons between the experimental results and predictions from simulations of the model system of partial differential equations.

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