

Abstract Submitted  
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**Supramolecular Structural Forces in Stratifying Foam Films and  
Micelle Aggregation Number** SUBINUER YILIXIATI , YIRAN ZHANG ,  
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Chicago — Understanding and controlling the drainage kinetics of thin films is an  
important problem that underlies the stability, lifetime and rheology of foams and  
emulsions. Foam films containing micelles, colloidal particles or polyelectrolyte-  
surfactant mixtures exhibit step-wise thinning or stratification, due to the influence  
of non-DLVO forces, including supramolecular oscillatory structural forces. In this  
study, we use experiments and theory to investigate the drainage and stratification in  
vertical and horizontal thin foam films ( $<100$  nm) formed by aqueous sodium dodecyl  
sulfate (SDS) solutions. We determine how the concentration of surfactants and  
added salt influences the stepwise thinning process for micellar solutions, and how  
step size can be used for estimating micelle size and interactions. The concentration-  
dependent aggregation number extracted from our experiments match-up reasonably  
well with values obtained by other techniques including scattering and fluorescence.

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