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Contrasting Drainage and Stratification in Horizontal Vs Vertical Micellar Foam Films EWELINA WOJCIK, SUBINUER YILIXIATI, YIRAN ZHANG , VIVEK SHARMA, Chemical Engineering, Univ of Illinois-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. In foam films formed with micellar solutions, the surfactant is present as interfacially-adsorbed layer at both liquid-air interfaces, as well as in bulk as self-assembled supramolecular structures called micelles. Ultrathin micellar films exhibit stratification due to confinement-induced structuring and layering of micelles. Stratification in micellar foam films is manifested as stepwise thinning over time, and it leads to the coexistence of flat domains with discretely different thicknesses. In this contribution we use Interferometry Digital Imaging Optical Microscopy (IDIOM) protocols to visualize and analyze thickness transitions and variations associated with stratification in micellar foam films made with sodium dodecyl sulfate (SDS). We contrast the drainage and stratification dynamics in horizontal and vertical foam films, and investigate the role played by gravitational, viscous, interfacial and surface forces.

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