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Domain and rim growth kinetics in stratifying foam films YIRAN ZHANG, SUBINUER YILIXIATI, VIVEK SHARMA, University of Illinois at Chicago — Foam films are freely standing thin liquid films that typically consist of two surfactant-laden surfaces that are ˜5 nm – 10 micron apart. Sandwiched between these interfacial layers is a fluid that drains primarily under the influence of viscous and interfacial forces, including disjoining pressure. Interestingly, a layered ordering of micelles inside the foam films (thickness <100 nm) leads to a stepwise thinning phenomena called stratification, which results in a thickness-dependent variation in reflected light intensity, visualized as progressively darker shades of gray. Thinner, darker domains spontaneously grow within foam films. During the initial expansion, a rim forms near the contact line between the growing thinner domain and the surrounding region, which influences the dynamics of domain growth as well as stratification Using newly developed interferometry digitial imaging optical microscopy (IDIOM) technique, we capture the rim evolution dynamics. Finally, we also develop a theoretical model to describe both rim evolution and domain growth dynamics.

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