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**Mighty morphing monolayers: How oscillatory flow can influence phase morphology** JONATHAN LEUNG, AMIR HIRSA, Rensselaer Polytechnic Institute — Co-existing phase domains are commonly observed in many insoluble monolayers at the air-water interface. Here, vitamin K1, which has been shown to have two very distinct co-existing phase domains, is studied on a flowing system using Brewster angle microscopy. The flow geometry consists of an open-top rectangular cavity in which the flow is driven by the periodic oscillation of the floor in its own plane at large Reynolds numbers (approximately 500). The oscillation of the floor allows for the dilation and compression of any monolayer on the surface while still maintaining an essentially flat interface. An unforced monolayer (no flow) undergoes an extensive relaxation at very large time scales (1 or more hours) resulting in a significant decrease in the area of the condensed versus expanded domains. The effect of oscillatory flow (150 oscillations) is to retard the ‘natural’ long time scale relaxation of the monolayer.

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