

Abstract Submitted  
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**Stability of thin liquid films: Influence of interfacial viscoelasticity**<sup>1</sup> GERALD FULLER, LIAT ROSENFELD, Stanford University — Lipid layer spreading and liquid film dewetting are important variables influencing numerous processes, including the stability of the tear film. The viscoelasticity of insoluble monolayers may govern thin liquid film dewetting phenomena. The purpose of this work is to gain insight into the effects of surface viscoelasticity elasticity by insoluble monolayers on dewetting of thin films of water with a particular attention paid to materials, such as meibum, that stabilize the tear film. For this purpose an experiment has been devised wherein monolayers of known surface pressure and surface rheology are introduced atop thin, liquid films that would normally spontaneously dewet. The results reveal that monolayers of viscoelastic surfactants are able to stabilize thin films against spontaneous dewetting. As the surface pressure and surface rheology of these layers is increased, their effectiveness is enhanced. Meibum is particularly effective in stabilizing thin films. These results suggest that the role of the meibum is to offer the tear film enhanced stability and not only to suppress evaporation.

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