

Abstract Submitted  
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**The effect of structuring on the stability of electrolyte films**

CHRISTIAAN KETELAAR, VLADIMIR AJAEV, Southern Methodist University  
— We investigate the stability of a thin liquid film of an electrolyte on a structured surface with a periodic array of gas-filled grooves. The electrostatic component of disjoining pressure is incorporated into the system of lubrication-type equations to derive a nonlinear evolution equation for film thickness. Electric charges are present at the liquid-gas interface at the top of the film, as well as the solid-liquid interface segments between the grooves and the menisci separating the gas phase in the grooves from the liquid film. We analyze how the length of the groove, the slip length at the groove menisci, and the electric charges at the interfaces affect the stability of the electrolyte film. In particular, we identify the conditions when a stable electrolyte film on a charged surface becomes destabilized by the effect of the structuring.

Christiaan Ketelaar  
Southern Methodist University

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