

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**Liquid-air interface instability due to an in-plane electric field**

MIKHAIL PEVNYI, JAKE FONTANA, PETER PALFFY-MUHORAY, Liquid Crystal Institute - KSU — We report observations of an instability at the free surface of a liquid due to an in-plane electric field. The horizontal air-liquid interface in a partially filled sample cell between vertical electrodes exhibited first oscillations, then increasingly turbulent fluctuations as the strength of the horizontal electric field was increased. This behavior was observed in toluene and chloroform; the applied AC field was sinusoidal with  $f=60\text{Hz}$ . The dynamics of the interface was probed via dynamic light scattering. We present our experimental observations, as well as a simple model and numerical simulations of the interface dynamics under the influence of the applied electric field.

Michele Moreira  
Liquid Crystal Institute - KSU

Date submitted: 19 Nov 2010

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