

Abstract Submitted
for the DFD05 Meeting of
The American Physical Society

A Nonlinear Study of Electric Field Induced Pattern Formation in Thin Liquid Films EMILY TIAN, Wright State University — Modern lithographic technologies rely on creating patterns in thin films. Among the methods of achieving particular morphologies is the application of electric fields. In this talk, the morphology of the interface of a thin liquid film confined between two electrodes separated by an air gap is investigated by means of a weakly nonlinear stability analysis. In the long-wavelength limit, an interface evolution equation is derived which incorporates the effects of electrical stress and surface tension. The thickness ratio of the air gap to the liquid crucially determines pattern formation, which here consists of liquid columns and holes.

Emily Tian
Wright State University

Date submitted: 02 Aug 2005

Electronic form version 1.4