

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Phase Field Modeling of Ferroelectric Thin Films with Space Charge RAJEEV AHLUWALIA, Institute of Materials Research & Engineering, Singapore, NATHANIEL NG, Institute of High Performance Computing, Singapore, HAIBIN SU, FREDDY BOEY, Nanyang Technological University, Singapore — The time-dependent Ginzburg-Landau (TDGL) equations and phase field modeling have been used to describe various phenomena in ferroelectric materials, such as domain nucleation and evolution, and hysteresis. This work applies the TDGL model to explain the behavior of perovskite ferroelectric thin film with space charge. Results show that the presence of space charge at the surface significantly influences the switching process and domain structures in ferroelectric thin films. The role of space charge on size effects is also studied.

Rajeev Ahluwalia
Institute of Materials Research & Engineering, Singapore

Date submitted: 23 Nov 2007

Electronic form version 1.4