Abstract Submitted
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Removing pinhole shorts during large scale ferroelectric switching through ionic liquid interfaces[1] ANTHONY WONG, University of Tennessee, ANDREAS HERKLOTZ, NINA WISINGER, Oak Ridge National Laboratory, PHILIP RACK, University of Tennessee, THOMAS WARD, Oak Ridge National Laboratory — Ferroelectrics are a classification of materials that spontaneously polarize, accumulating charge at interfaces, and have non-linear hysteretic polarization curves. Switching fields required for ferroelectric materials are often very high, requiring thin insulating layers and high applied voltages. This commonly leads to electric pinholes and limits the areal sizes that can be polarized at a time. Ionic liquids have recently received heavy interest for the formation of electronic double layers which lead to huge electric fields at interfacial regions with low applied biases, and without the thickness constraint associated with conventional capacitors. We will show recent results which demonstrate that ionic liquid gating may offer the ideal solution to switch large regions of a ferroelectric film without limitations associated with pinhole defects. This has great importance to practical applications and fundamental interface studies that require large sample regions to be uniformly polarized.

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