

Abstract Submitted
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Polarization

switching dynamics in thin-film $\text{BaTiO}_3/\text{PbZr}_{0.2}\text{Ti}_{0.8}\text{O}_3$ bilayer capacitors

PAVEL SALEV, ALEXEI GRIGORIEV, The University of Tulsa — In this work, we compare polarization switching and dielectric properties of single- ($\text{PbZr}_{0.2}\text{Ti}_{0.8}\text{O}_3$ (PZT)) and bi-layer ($\text{BaTiO}_3/\text{PbZr}_{0.2}\text{Ti}_{0.8}\text{O}_3$ (BTO/PZT)) ferroelectric thin-film materials. The ferroelectric films were grown by radio-frequency magnetron sputtering on $\text{SrRuO}_3/\text{SrTiO}_3$ (001) substrates. Pt top electrodes ranging in diameter from 50 μm to 200 μm were fabricated on top of ferroelectric films. Electrical measurements of switching dynamics and dielectric response revealed a significant difference in polarization switching between single- and bi-layer capacitors. Average remnant polarization in the bilayer was reduced to 60 $\mu\text{C}/\text{cm}^2$ from 90 $\mu\text{C}/\text{cm}^2$ polarization in a single layer capacitor, and the switching speed was reduced significantly. In this presentation, we will discuss effects of interfaces and polarization coupling on polarization dynamics and on the dielectric response in ferroelectric multilayers.

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