

Room-temperature electro-optic properties of strained SrTiO₃ films grown on DyScO₃

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Abstract: The electro-optic response of epitaxially strained SrTiO₃ grown on bulk DyScO₃ substrates is measured as a function of applied in-plane bias (both magnitude and direction) and light polarization. The effective electro-optic coefficients are bias-field dependent. Hysteresis is observed at room temperature, indicative of residual polarity, which is believed to be due to long-lived alignment of nanopolar regions possibly due to defects. A simple model incorporating non-180 °-nanoscale domains can account for most of the experimental observations. (C) 2009 American Institute of Physics. [DOI: 10.1063/1.3042238]