

Local measurements of Preisach density in polycrystalline ferroelectric capacitors using piezoresponse force spectroscopy

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Abstract: Polarization switching in polycrystalline ferroelectric capacitors is explored using piezoresponse force microscopy (PFM) based first-order reversal curve (FORC) measurements. The band excitation method facilitates decoupling the electromechanical responses from variations in surface elastic properties. A simulated annealing method is developed to estimate the Preisach densities from PFM FORC data. Microscopic and macroscopic Preisach densities are compared, illustrating good agreement between the two.