

Abstract Submitted  
for the MAR16 Meeting of  
The American Physical Society

**Local current-voltage characteristic of thin film ferroelectric SrTiO<sub>3</sub>** ANDREW JOHNSON, Hope College, RYAN COTTIER, NIKOLETA THEODOROPOLU, Texas State University, JOSHUA VEAZEY, Grand Valley State University — Certain thin-film ferroelectric oxide-semiconductor heterostructures allow for reversible, local changes in conductivity, with potential applications including non-volatile memory devices. Force microscopy techniques were used to investigate the impact of the ferroelectric polarization state on local conductive properties of ferroelectric SrTiO<sub>3</sub> (STO) thin films deposited by molecular beam epitaxy onto both p- and n-type Si(001) substrates. Under certain conditions, local current voltage (I-V) curves exhibited pronounced hysteresis under forward bias. These characteristics are not, however, well-correlated with the polarization state of the ferroelectric STO. Alternative explanations for the current hysteresis are presented. This work was generously supported by the Hope College Department of Physics Frissel Research Fund, and the National Science Foundation under NSF-MRI Grant No. CHE-1126462. Support by the NSF-Career grant, DMR-1255629 is gratefully acknowledged. Portions of this work were conducted in the CMP group facilities at Michigan State University; we would like to gratefully acknowledge R. Loloee and the MSU physics department for their support.

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Date submitted: 06 Nov 2015

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