Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Characterizing Interfacial Bipolar Resistive Switches at Low Temperatures STEPHEN TSUI, Department of Physics, California State University San Marcos — Bipolar resistive switching has continued to be a topic of interest for many years because of the phenomenon's potential for memory device applications. Typically, a voltage pulse is applied to a metal-oxide sandwich structure, which drives the sample into a nonvolatile high or low resistance state depending upon the pulse polarity. A great deal of research has already been performed on a diverse array of materials with several different characteristics. However, few systematic investigations have been carried out at low temperature, which may have application to "cryo-memory." In this work, we compare the room temperature and low temperature behaviors of switches formed at the interfaces between a silver electrode and CeO_2, Al_2O_3, and $Pr_{0.7}Ca_{0.3}MnO_3$, respectively. We investigate the performance of the switching in response to temperature change and characterize the electronic transport at the interfaces in order to identify the dominant physical processes at these various temperatures.

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Date submitted: 19 Nov 2010 Electronic form version 1.4