Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Avalanches in sub-micron V_2O_3 devices[1] SIMING WANG, Department of Physics and Center for Advanced Nanoscience, Materials Science and Engineering Program, University of California San Diego, GABRIEL RAMIREZ, Department of Physics and Center for Advanced Nanoscience, University of California San Diego, IVAN SCHULLER, Department of Physics and Center for Advanced Nanoscience, Materials Science and Engineering Program, University of California San Diego — Systematic resistance versus temperature measurements were performed on micron and sub-micron V_2O_3 devices. Instead of smooth R-T curves reported previously, multiple jumps in resistance are observed through the temperature driven metal-insulator transition. These jumps range over 3 orders of magnitude in resistance. A power law distribution of the jump sizes indicates that the metal-insulator transition in V_2O_3 occurs through a series of avalanches. The power law exponent in V_2O_3 devices is very close to that found in similar VO_2 devices.[2] This indicates that the phase transition in VO_2 and V_2O_3 are similar and occur through phase separation, percolation and avalanches. The effect of magnetic field on the avalanches in V_2O_3 will be discussed.

[1]This work has been supported by the US Department of Energy, Office of Basic Energy Sciences, and Division of Materials Sciences under Award FG03-87ER-45332.

[2]A. Sharoni, J. G. Ramirez, and I. K. Schuller, Phys. Rev. Lett. **101**, 026404 (2008).

Siming Wang
Dept of Physics and Center for Advanced Nanoscience,
Materials Science and Engineering Program,
University of California San Diego

Date submitted: 08 Nov 2011 Electronic form version 1.4