Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Avalanches in the Metal-Insulator transition in Vanadium Oxide nano-scaled junctions AMOS SHARONI, GABRIEL RAMÍREZ[1], IVAN K. SCHULLER, Unviersity of California, San Diego — We present transport measurements on sub-micron devices of VO_2. Instead of the usual smooth metal insulator transition, we observe for the first time multiple resistive steps. The temperature driven transition between the two phases occurs through a series of avalanches of different amplitude, ranging over 2 decades of resistance. The data is analyzed assuming a generic normalized probability distribution. Results are similar to those obtained in martensitic transitions or Barkhausen noise in ferromagnets, implying universality of first order phase transition. We will discuss the distribution of resistance avalanches as a function of temperature caused by the percolative nature of resistive transition. In particular we will focus on the effect of the VO_2 junction dimensions and the transport measurement conditions (such as applied current and temperature ramp rate) on the results. Work supported by the US –Department of Energy.

[1]On leave from Unversidad del Valle, Cali, Colombia.

Amos Sharoni
Unviersity of California, San Diego

Date submitted: 25 Nov 2007 Electronic form version 1.4