

Abstract Submitted  
for the MAR09 Meeting of  
The American Physical Society

**Resistive switching in  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$**  CARLOS ACHA<sup>1</sup>, MARCELO J. ROZENBERG<sup>2</sup>, Departamento de Fisica - FCEyN - Universidad de Buenos Aires — We report on the nonvolatile and polarity dependent resistance switching of metal-  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$  (YBCO) ceramic superconductor interfaces that also extends macroscopically to the bulk YBCO. We show that electric pulses mainly modify the connectivity of the ceramic grains of the bulk material, affecting the geometrical conducting factor near the interface and controlling the superconducting percolating path in the bulk. Relaxation processes of the resistivity after applying the pulses, not associated with heating effects, are also observed. We also report on the temperature sensitivity of resistance hysteresis switching loops, where both the difference between high and low resistance states and the voltage needed to produce the switching decrease with increasing temperature. The origin of this switching effect may be related to electric field-induced oxygen ion migration, which modifies the oxygen content at grain boundaries and controls the electric transport of ceramic superconductors.

<sup>1</sup>member of CONICET and of the Asociacion Fisica Argentina

<sup>2</sup>also at Laboratoire de Physique des Solides, CNRS-Universite de Paris-Sud, Orsay, France

Carlos Acha  
Departamento de Fisica - FCEyN - Universidad de Buenos Aires

Date submitted: 21 Nov 2008

Electronic form version 1.4