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Resistance Switching in Epitaxial  $Pr_{0.7}(Sr_{1-x}Ca_x)_{0.3}MnO_3$  Films T. VENKATESAN, W. LV, C. XIN, A. ROY BARMAN, S. DHAR, NanoCore, National University of Singapore, Singapore 117576, Y. CHEN, D. LIAN, Department of Microelectronics and Physics, Peking University, 100871 Beijing, P.R. China, G. XIONG, NanoCore, National University of Singapore, Singapore 117576;Department of Microelectronics and Physics, Peking University, 100871 Beijing, P.R. China, NANOCORE TEAM, PEKING UNIVERSITY COLLABORATION — Epitaxial  $Pr_{0.7}(Sr_{1-x}Ca_x)_{0.3}MnO_3$  (PSCMO) thin films exhibit hysteretic resistance switching (RS) behavior at room temperature that demonstrate resistance changes from high resistance state (HRS) to low resistance state under an applied voltage and back to HRS in zero field. Dramatic changes of RS direction from anticlockwise to clockwise loops of I - V data were observed in the same films when measurements were performed at temperatures lower than that of the metal-insulator transitions of the samples. Observations of RS behaviors obtained in the epitaxial PSCMO thin films provide clear evidence that besides thermally activated vacancy diffusion leading to conducting filaments, another field mediated process should be considered for understanding the driving mechanism of RS phenomenon in oxides.

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