

Abstract Submitted  
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**The Electrophoretic-like Mechanism of Huge Current effect in Electronically Phase Separated Manganite Wires** LIFENG YIN, WEN-GANG WEI, JIAN SHEN, State Key Laboratory of Surface Physics and Department of Physics, Fudan University, Shanghai 200433, China — Electronically phase separated (La, Pr)CaMnO<sub>3</sub> manganite wires are found to exhibit huge current effect. As the current density increase, the resistivity of wires decrease dramatically, and the metal-insulator transition temperatures get enhanced. However, the Superconducting Quantum Interference Device measurements show that the magnetizations with current on and off are almost identical. It is further confirmed by magnetic force microscope measurements, i.e. the current only changes the shape of ferromagnetic domain, while not the volume of ferromagnetic domain. The results conform to a phenomenological model in which the inherent nanoscale insulating and metallic domains are rearranged through electrophoretic-like processes to open and close percolation channels.

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