

Abstract Submitted  
for the MAR13 Meeting of  
The American Physical Society

**Effect of the substitution of Y, Nd, Sm and Eu for La in  $La_{1.4}Ca_{1.6}Mn_2O_7$  on its structural and magneto-electrical properties at constant chemical pressure**<sup>1</sup> CABIR TERZIOGLU, SEVGI POLAT ALTINTAS, Department of Physics, Faculty of Arts and Sciences, Abant Izzet Baysal University, 14280 Bolu, Turkey — A systematic study of the electrical and magnetic transport properties of the layered manganite  $(La_{1-y}R_y)_{2-2x}Ca_{1+2x}Mn_2O_7$  (R=Y, Nd, Sm, Eu and x=0.3) is presented. The average A-site ionic radius  $\langle r_A \rangle$  is kept constant at 1.327 Å and the role of the magnetic moment of rare earth ion has been studied by characterizing physical properties of the layered manganites. These materials were prepared by solid state reaction route and were characterized comparatively by X-ray diffraction (XRD), AC susceptibility and electrical resistivity measurements. The electrical resistivity in the entire temperature range is found to fit well with the phenomenological percolation model, which is based upon the phase segregation of ferromagnetic clusters and paramagnetic insulating regions.

<sup>1</sup>This work is financially supported by the Abant Izzet Baysal University Scientific Research Projects Unit under contract number 2011.03.02.417.

Cabir Terzioglu  
Department of Physics, Faculty of Arts and Sciences,  
Abant Izzet Baysal University, 14280 Bolu, Turkey

Date submitted: 17 Nov 2012

Electronic form version 1.4