Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Structural and Magnetic Characterization of Fe-doped $La_{2/3}Ca_{1/3}MnO_3$ Films[1] OSCAR LUIS ARNACHE OLMOS, Universidad de Antioquia, AXEL HOFFMANN, MSD, Argonne National Laboratory, DORIS A. GIRATA LOZANO, Universidad de Antioquia — We have investigated pure and ^{57}Fe-doped $La_{2/3}Ca_{1/3}MnO_3$ thin films, which were prepared via high O_2-pressure (500 mTorr) by magnetron DC sputtering on (100) $LaAlO_3$, (100) $SrTiO_3$ and (100) MgO substrates. The ^{57}Fe-doped samples contained 1% and 3% ^{57}Fe per Mn. The structural and magnetic properties of the films and targets were characterized using X-ray diffraction(XRD) and reflectivity, Mössbauer spectroscopy and magnetometry measurements. XRD shows that films are single phase and epitaxially oriented, and have negligible structural changes upon ^{57}Fe-doping. The Mössbauer spectra measured at room temperature exhibit one doublet with an isomer shift of 0.320 ± 0.003 mms^{-1}, indicating the presence of the Fe^{3+} ion at room temperature in the sample, which is a typical value of the high-spin of Fe^{3+} with octahedral coordination. The quadrupole splitting value was 0.210 ± 0.006 mms^{-1}. This clearly indicates that Fe is incorporated into the structure by substituting Mn. We will furthermore discuss the influence of ^{57}Fe-doping on magnetic and magnetotransport properties.

[1]Work supported by COLCIENCIAS and DOE.

Oscar Luis Arnache Olmos
Universidad de Antioquia

Date submitted: 17 Nov 2006 Electronic form version 1.4