

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Study of Magnetic and Electric Properties in La_{2/3}Sr_{1/3}MnO₃ Thin Film¹ ISABEL ARANGO, JOHN ORDOEZ, ALBA AVILA, WILSON LOPERA, MARIA GOMEZ, None, THIN FILM GROUP TEAM², DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING COLLABORATION³ — La_{2/3}Sr_{1/3}MnO₃ (LSMO) is the most interesting compound of the manganite perovskite family due to its Curie temperature above 300K that makes its remarkable properties desirable for practical applications. However, it is well known that ferromagnetic properties weaken when dimensions are reduced. We have grown LSMO thin films by sputtering DC in pure oxygen atmosphere on SrTiO₃ (STO) and LaAlO₃ (LAO) substrates at temperature of 830 C. From x-ray diffraction analysis, we have found the Bragg peaks of LSMO thin films around (002) reflection, indicating a textured growth. We have characterized the morphology of the samples by atomic force microscopy. LSMO thin film was patterned using standard UV photolithography. Dependence of resistivity with temperature shows a behavior typical of ferromagnetic system with metal-insulator transition above 300 K. The electrical properties of the structured will be contrasted with thin film. We carried out isothermal resistance and magnetization versus applied magnetic field loops to characterize the samples. We study the dependence of magnetic transport properties with film thickness of 25nm and path size (5 micron) for potential applications like magnetic sensors.

¹Thanks to "CENM.

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Date submitted: 13 Nov 2015

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