

Abstract Submitted
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Evidence of Phase Separation on the Surfaces of La_{0.8}MnO₃-?

Films MICHAEL DELEON, TREVOR TYSON, Department of Physics, New Jersey Institute of Technology, CATHERINE DUBOURDIEU, LUANA MARGOT, Laboratoire des Matériau et du Génie Physique, CNRS, JOSEPH DVORAK, Department of Chemistry, Brookhaven National Laboratory — Magnetic, transport, surface, and structural studies have been conducted on La_{0.8}MnO₃ films of thickness varying from 52 to 4127 Å. Bulk magnetization measurements reveal that maximum T_c is obtained by 450 Å, though, maximum saturation moment per manganese is not attained until the thickest films. Thinner films have a reduced T_c . Synchrotron x-ray diffraction measurements on the films exhibit relaxation of the lattice and the onset of additional structural phases with thickness. XMCD versus temperature measurements, which measures magnetization of the top 50 Å of the films, gives strong correlation of transition temperatures for some of the films. Differing behavior at the surface however leads to some interesting insights. Surface magnetization is reduced with thickness beyond 450 Å as measured at 100K. Additionally, multiple transition temperatures are measured at the surface for one of the films, indicative of some startling phase separation. Additional measurements on local, surface, and nano-structure as well as transport characteristics will be conducted in evaluating this surface behavior in comparison to the bulk film characteristics.

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