Abstract Submitted
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Structural and Electrical Properties of Electron-doped CaMnO3 Thin Films[1] ZOEY WARECKI, CACIE HART, GRACE YONG, PRAKASH SHARMA, CHRIS STUMPF, DAVID SCHAEFER, RAJESWARI KOLAGANI, Towson University — Perovskite metal oxides are a class of materials that are predicted to play as big a role in future electronic technologies as silicon does in today's semiconductor based electronic technologies. Research in thin films of manganites in the past has largely been focused on the hole-doped compositions that exhibit the phenomenon of colossal magnetoresistance. We are currently investigating the properties of thin films of electron-doped calcium manganese oxide. We use the technique of pulsed laser deposition to grow these thin films. The films are grown epitaxially on $LaAlO_3$ substrates, whose lattice parameters are larger than that of $CaMnO_3$, thus causing the films to be under tensile stress. By decreasing the film thickness we can increase the tensile strain. We have studied structural and electrical properties of $CaMnO_3$ films under tensile strain, by means of X-ray diffraction and temperature dependent resistivity measurements. Our results suggest that tensile strain causes $CaMnO_3$ to be more susceptible to the formation of oxygen vacancies, thus reducing electrical resistivity.

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