

Abstract Submitted
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Investigation of the Oxidation Growth Kinetics of La_{0.67}Ba_{0.33}MnO₃ and LaMnO₃ Perovskite Films using Atomic Force Microscopy (AFM) lithography MARC SCHNEIDER, MICHEAL EARLE, SANJAY ADHIKARI, MATT SNEIDER, KYLE HALL, RAJESWARI KOLAGANI, Towson University, DAVID SCHAEFER, Towson University — Manganese oxides doped with certain alkaline earth elements exhibit colossal magnetoresistance (CMR), which has great prospective applications in technological advancements. Our research is focused on the growth kinetics and electrical properties of LaMnO₃ and La_{0.67}Ba_{0.33}MnO₃. LaMnO₃, behaves as an anti-ferromagnetic insulator. However, if extra oxygen is incorporated in this material, an insulator-metal transition occurs and the transport characteristics of the material shift causing ferromagnetism. In this research AFM induced nano-lithography of the LaMnO₃ thin films is performed on samples of varying oxygen contents and compared to results of AFM induced nanolithography on La_{0.67}Ba_{0.33}MnO₃. The quality and reproducibility of nanostructures produced is heavily dependent on the bias voltage direction between the film and the AFM probe.

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