

Abstract Submitted
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Phase separation in strained ultrathin $\text{La}_{0.67}\text{Sr}_{0.33}\text{MnO}_3/\text{SrTiO}_3(100)$ films¹ IN HAE KWAK, SARAH TOTH, AM-LAN BISWAS, Department of Physics, University of Florida, Gainesville, FL 32611 — Atomically smooth and ultrathin $\text{La}_{0.67}\text{Sr}_{0.33}\text{MnO}_3$ (LSMO) films were grown on TiO_2 terminated $\text{SrTiO}_3(100)$ (STO) substrates using pulsed laser deposition. The lattice mismatch between LSMO and STO generated uniform tensile strain on the LSMO film, and it significantly changed the electrical and magnetic properties of LSMO/STO thin films. Compared to the fully spin polarized ferromagnetic metallic state of bulk LSMO below a Curie temperature near 350 K, we observed a decrease in Curie temperature and the insulator to metal transition temperature as the thickness of LSMO was reduced down to 5 unit cells. Furthermore, the reduction of the saturation magnetization as the film thickness is reduced indicates phase separation in ultrathin LSMO/STO films. Therefore, it is possible to obtain a phase separated state close to room temperature in uniformly strained LSMO thin films.

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