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In-plane magnetic anisotropy and domain transition in phase separated ($La_{0.4}Pr_{0.6})_{0.67}Ca_{0.33}MnO_3$ thin films on orthorhombic $NdGaO_3$ substrates[1] HYOUNG JEEN JEEN, AMLAN BISWAS, Department of Physics, University of Florida, Gainesville, FL 32611 — Phase separated manganites are a model system to study the interplay among crystal structure, transport and magnetism of materials, since it is believed that the free energies of the insulating and metallic phases are similar, but their crystal structures, magnetic and electronic properties are quite different. Thus, strain effects may play a critical role in determining the magnetic properties in manganite thin films. However, it is still unclear how the ferromagnetic metallic phase evolves in the temperature region where the insulator to metal transition occurs. We will present extensive studies of magnetic properties of phase separated $(La_{0.4}Pr_{0.6})_{0.67}Ca_{0.33}MnO_3$ (LPCMO) thin films. Atomically smooth LPCMO thin films were grown on $NdGaO_3$ substrates by pulsed laser deposition technique. The observed change in coercive field as a function of temperature is similar to that of the coercivity as a function of grain size observed in fine ferromagnetic particles. Also, an in-plane magnetic anisotropy is observed from the magnetization hysteresis loops at different angles and temperatures.

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