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Physical properties of epitaxial n-type $La_{0.7}Ce_{0.3}MnO_3$ films. HSIUNG CHOU, C. Y. WU, C. B. WU, Department of Physics and Center for Nanoscience and Nanotechnology, National Sun Yat-sen University — Electronic doped Colossal Magnetoresistance (CMR) Materials have been long for spintronic applications. Since the n-type CMR material can exist only in a metastable state rather than in a thermodynamic equilibrium state [1], *in situ* growth of epitaxial films is regarded as an efficient way for forming single n-type CMR films. In this study, $La_{0.7}Ce_{0.3}MnO_3$ (LCeMO) films were grown on $LaAlO_3$ and $SrTiO_3$ substrates at various growth conditions. Earlier reports of LCeMO films exhibits a single T_p, the metal-insulator like transition temperature, at 250K. It is found in our studies, all films shows higher T_p and T_C between 260 and 300K. Hall measurements indicate, only specific growth conditions within a narrow growth window can approach to the metastable state and results in n-type LCeMO films. Because the Ce and La are next to each other in the periodic table, it is not easy to identify the composition of films by either the energy dispersion spectrum or the Rutherford backscattering spectrum. We are unable to tell the exact compositions of our films. The phase separation that usually occurred when the films approaches to a thermodynamic equilibrium state does not happen for our films. The detail of our results will be reported in the presentation. Reference [1]: H. Chou, C. B. Wu, S. G. Hsu, and C. Y. Wu, Phys. Rev. B **74**, 174405 (2006).

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