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MBE synthesis and characterization of charge ordered $La_{1/3}Sr_{2/3}FeO_3$ thin films REBECCA SICHEL-TISSOT, ROBERT DEVLIN, Drexel University, PHILIP RYAN, JONG-WOO KIM, Argonne National Laboratory, ALEX DAGG, University of California, Riverside, STEVEN MAY, Drexel University — $La_{1/3}Sr_{2/3}FeO_3$ (LSFO) is a transition metal oxide which exhibits strongly correlated electronic behavior. When cooled below 180-190K, an electronic phase transition occurs during which the resistivity abruptly increases. LSFO was deposited on (001) $SrTiO_3$ substrates using molecular beam epitaxy (MBE). The transition temperature T* = 183 K was measured from a sharp increase in the resistivity and confirmed by the appearance of x-ray reflections with wavevectors of q = n/3[111]. Oxygen loss from the film over a period of 8 months was observed to have significant effects on the structural and electronic properties, but was shown to be reversible by annealing in oxygen. This work is supported by the Office of Naval Research under grant number N00014-11-1-0664. Work at the Advanced Photon Source is supported by the U.S. Department of Energy (DOE), Office of Basic Energy Sciences under contract DE-AC02-06CH11357.

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