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Synthesis and Characterization of Multifunctional Epitaxial Metal-oxide Films[1] JIE XIONG, JUNYI ZHAI, GUIFU ZOU, Los Alamos National Laboratory, HAIYAN WANG, Texas A&M University, LI YAN, MUJIN ZHUO, YINGYING ZHANG, Los Alamos National Laboratory, BOWAN TAO, YANRONG LI, University of Electronic Science and Technology of China, J.L. MACMANUS-DRISCOLL, University of Cambridge, QUANXI JIA, Los Alamos National Laboratory — Transition metal-oxides have attracted great attention due to their versatile properties. Multilayers, and/or artificial superlattices, are especially interesting since these architectures usually exhibit unique physical properties in comparison with single phase thin films. Furthermore, the lattice strains and the coupling in the multilayered systems can strongly affect the films' growth and their physical properties. We have grown and characterized different multilayered metal-oxide thin films using laser molecular beam epitaxy (MBE). Specifically, we have prepared $[(BiFeO_3)_n/(La_{0.7}Sr_{0.3}MnO_3)_n]_m$ and $[(BiFeO_3)_n/(BiMnO_3)_n]_m$ superlattices and strained $BiFeO_3$ $(BFO)_{0.5}$: $BiMnO_3$ $(BMO)_{0.5}$ films. We have systematically investigated the strain states on the magnetic properties of these multilayer films.

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