Abstract Submitted
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Exploring artificial layered heterostructures of LaM'O3/LaM"O3 (M'M"= NiCr, FeCr and NiV). J. LIU, M. KAREEV, University of Arkansas, Fayetteville, J.W. FREELAND, Advanced Photon Source, Argonne National Lab., A. KAREEV, University of Arkansas, Fayetteville, H.N. LEE, Oak Ridge National Lab., J. CHAKHALIAN, University of Arkansas, Fayetteville — Digital synthesis of atomically sharp interfaces between strongly correlated electron systems can provide a template to build completely new materials. Here we present our results on magnetism and electronic structure in LaM'O3/LaM"O3 (M'M"= NiCr, FeCr and NiV) superlattices by using polarized X-ray spectroscopies. Using laser MBE, the (111) and (100) oriented ultra-thin superlattices were grown with alternating layer thicknesses of 1 unit cell. In the bulk, LaMO3 (M=Cr,Fe,V) are antiferromagnetic insulators while LaNiO3 is a paramagnetic metal. The evolution of element specific magnetism and charge at the interface of LFO/LCO, LNO/LVO and LNO/LCO superlattices with temperature and an applied magnetic field will be discussed in detail. The superlattice results will be contrasted to the bulk magnetic properties of the constituent layers. The work has been supported by U.S. DOD-ARO under Contract No. 0402-17291.

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