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Influence of Interface Engineering on the Magnetization in $La_{0.67}Sr_{0.33}MnO_3/SrTiO_3$ Heterostructures[1] S.G.E. TE VELTHUIS, YAO-HUA LIU, Materials Science Division, Argonne National Laboratory, Argonne IL, USA, V. LAUTER, Spallation Neutron Source, Oak Ridge National Laboratory, Oak Ridge TN, USA, H. BOSCHKER, G. KOSTER, G. RIJNDERS, Faculty of Science and Technology and MESA+ Institute for Nanotechnology, University of Twente, The Netherlands — Rich new phenomena have been observed at the interfaces between of complex oxides with different electronic and magnetic properties. In particular electronic reconstruction may occur at epitaxial oxide interfaces because of the broken transitional symmetry, leading to new properties, some of which are in fact less desirable. At the $La_{0.67}Sr_{0.33}MnO_3$(LSMO) - $SrTiO_3$(STO) interface, it is thought electronic reconstruction, driven by the potential build-up at the interface, results in a degradation of the magnetization of LSMO. To explore this, we have studied LSMO/STO heterostructures with interfaces engineered to avoid this interfacial magnetization suppression [1]. In our case, this engineered interface refers to a $La_{0.33}Sr_{0.67}O$ monolayer replacing a $La_{0.67}Sr_{0.33}O$ monolayer at each interface. Depth-dependent magnetization profiles in the heterostructures, determined using polarized neutron reflectometry, show that indeed the interfacial magnetization of LSMO improves with interface engineering. [1] H. Boschker et al., Adv. Funct Mater 22, 2235 (2012).

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S.G.E. te Velthuis
Materials Science Division, Argonne National Laboratory

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