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Surface Characterization of Cleaved Bilayer La1.2Sr1.8M2O7
BRIAN SELL, UC Davis / LBNL, MASAMITSU WATANABE, LBNL / Riken / Spring8, NORMAN MANNELLA, Stanford / LBNL, STEPHENIE RITCHEY, UC Davis / LBNL, MARK WEST, LBNL, HONG ZHENG, ANL, JONH MITCHELL, ANL, SIMON MUN, LBNL, SEE-HUN YANG, IBM Almaden, CHARLES FADLEY, UC Davis / LBNL — The properties of the layered colossal magnetoresistive manganites are due to a complex competition between the electronic, magnetic and lattice degrees of freedom. These properties are furthermore extremely sensitive to the composition of the sample. If these materials are to be incorporated in nanoscale layered spintronic structures, the surface and interface properties may vary from that in the bulk, as suggested recently by Freeland et al., who have observed a ferromagnetically dead layer near the surface of $La_{2-2x}Sr_{1+2x}Mn_2O_7$, with x=0.4, after exposure to atmosphere. We have studied the *in situ*-cleaved surface of this material, using angle-resolved core-level photoemission. Our results suggest a segregation of Sr to the surface. We will also comment on the use of resonant Bragg scattering from such materials as a method for more precisely determining their layer-by-layer composition and magnetization. Work supported by DOE Off. of Science, Basic Energy Sciences, Mat. Sci. Div.

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