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The surface magnetization study of Cr_2O_3 by spin polarized low energy electron microscopy SHI CAO, University of Nebraska-Lincoln, NING WU, Institute for Advanced Materials, Devices and Nanotechnology, Rutgers, The State University of New Jersey, XIN ZHANG, University of Nebraska-Lincoln, ALPHA N'DIAYE, GONG CHEN, ANDREAS SCHMID, NECM, Lawrence Berkeley National Laboratory, WILL ECHTENKAMP, University of Nebraska-Lincoln, VALERIA LAUTER, Spallation Neutron Source, Oak Ridge National Lab, CHRISTIAN BINEK, PETER DOWBEN, University of Nebraska-Lincoln — The boundary magnetization at the surface of a Cr_2O_3 single crystal has been demonstrated by using spin-polarized low-energy electron microscopy (SPLEEM), indicating net surface spin polarization. This work shows that the placement of Cr_2O_3 single crystal in the single domain state, will result in net Cr_2O_3 spin polarization at the boundary, even in the presence of a gold overlayer. There are indications that the spin-polarized low-energy electron microscopy (SPLEEM) contrast for the two polarizations states is different. In addition, the boundary magnetization protected by the symmetry exists despite of the surface roughness/softness which was studied by the non-spin neutron reflectometry and low energy electron diffraction. Unoccupied surface oxygen sites and chromium sites are possible mechanism contributing to the surface "softness," which will be discussed.

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