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$La_{0.7}Sr_{0.3}MnO_3/PbZr_{0.2}Ti_{0.8}O_3$ interfaces examined by synchrotron x-rays JINLING ZHOU, West Virginia University, USA, VU THANH TRA, National Chiao Tung University, Taiwan, SHUAI DONG, Southeast University, China, ROBBYN TRAPPEN, West Virginia University, USA, MATTHEW A. MARCUS, CATHERINE JENKINS, Lawrence Berkeley National Laboratory, USA, CHARLES FRYE, EVAN WOLFE, West Virginia University, USA, RYAN WHITE, National Institute of Standards and Technology, USA, SRINIVAS POLISETTY, West Virginia University, USA, JIUNN-YUAN LIN, National Chiao Tung University, Taiwan, JAMES LEBEAU, North Carolina State University, USA, YING-HAO CHU, National Chiao Tung University, Taiwan, MIKEL BARRY HOLCOMB, West Virginia University, USA — Magnetoelectric coupling is a coupling effect between the magnetic and electric orders of matter. Magnetoelectric interfaces between La0.7Sr0.3MnO3 (LSMO)/PbZr0.2Ti0.8O3 (PZT) thin films have been investigated by valence sensitive x-ray absorption spectroscopy. Mn valence depth profile was obtained by taking advantage of the depth sensitivity of the measurement methods. The interfacial Mn valence was found to be smaller than in the bulk, where PZT polarization played a role. Mn valence gradually increased to a relatively constant value as PZT transits from monodomain to polydomain along the PZT thickness gradient. Mn valence consistently became larger/smaller when PZT was poled away from/towards LSMO. These research results are consistent with the charge modulated interfacial magnetoelectric coupling mechanism and may shine light on creating magnetoelectric coupled interfaces.

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