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Effects of Electric Field on the magnetic structure of multiferroic (Sm,Bi)FeO3 films WILLIAM RATCLIFF, COLIN HEIKES, NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland 20899, USA, XIAOHANG ZHANG, ICHIRO TAKEUCHI, Department of Materials Science and Engineering, University of Maryland, College Park, MD 20424 — BiFeO3 is a multiferroic, which is ordered at room temperature. In this compound, the magnetic and ferroelectric domains are coupled and magnetic domains can be switched with an electric field [1]. It has recently been found that doping Sm onto the Bi site drives the system from rhombohedral to orthorhombic ordering [2]. Near the phase boundary, application of an electric field can drive the material between the two structures. We found that the magnetic structure [4] is different across the boundary. In this talk, I share recent neutron diffraction results on the magnetic structure of (Sm,Bi)FeO3 thin films under electric field. [1] T. Zhao, A. Scholl, F. Zavaliche, K. Lee, M. Barry, A. Doran, M. P. Cruz, Y. H. Chu, C. Ederer, N. A. Spaldin, R. R. Das, D. M. Kim, S. H. Baek, C. B. Eom, and R. Ramesh, Nature Materials **5**, 823 (2006). [2] Daisuke Kan, Ching-Jung Cheng, Valanoor Nagarajan, Ichiro Takeuchi **110**, 014106 (2011) [3] Daisuke Kan, Lucia Palova, Varatharajan Anbusathaiah, Ching Jung Cheng, Shigehiro Fujino, Valanoor Nagarajan, Karin M. Rabe, Ichiro Takeuchi, Adv. Funct. Mater. **20**, 1108 (2010). [4] Shingo Maruyama, Varatharajan Anbusathaiah, Amy Fennell, Mechthild Enderle, Ichiro Takeuchi, William D. Ratcliff, APL Mater. **2**, 116106 (2014).

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