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Domain walls and boundaries on the Surface of BaFe2As2 (001)
XIAOBO HE, GUORONG LI, V.B. NASCIMENTO, JIANDI ZHANG, RONGYING JIN, E. WARD PLUMMER, Department of Physics & Astronomy, Louisiana State University, Baton Rouge, LA, 70803, A.S. SEFAT, M.A. MCGUIRE, B.C. SALES, DAVID G. MANDRUS, Materials Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, TN, 37831 — Phase separation and domains of the same phase are integral building blocks of functionality in complex materials. We have used scanning tunneling microscopy/spectroscopy (STM/STS) to investigate the surface geometric and electronic structure of parent compound BaFe2As2 (001) of the iron-based superconductor. Here, we describe our observations of domains of the antiferromagnetic structure with zigzag boundaries, which are found in the p(1x1) As terminated metallic phase. Bias dependent STM measurements on these boundaries at 80K clearly show that the boundaries are mainly due to the electronic contribution in the local density of states.

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