Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Electronic Structure on (001) Surface of Co-doped $BaFe_2As_2$ Studied with Scanning Tunneling Spectroscopy[1] A. LI, D. R. JAYASUNDARA, Y. XUAN, J. P. O'NEAL, Y. CHEN, W. KIM, C. S. TING, S. H. PAN, University of Houston, Houston, Texas 77204-5002, R. JIN, E. W. PLUMMER, Louisiana State University, Baton Rouge, LA 70803-4001, R. JIN, A. S. SEFAT, M. A. MCGUIRE, B. C. SALES, D. MANDRUS, Oak Ridge National Laboratory, Oak Ridge, TN 37831 — Co-doping makes the pnictide compound $BaFe_2As_2$ superconducting. We cleave the single crystals of this compound in UHV and study their surfaces with a low temperature STM. In this talk, we present the scanning tunneling spectrums obtained on the (001) surface of the optimally doped $BaFe_2As_2$ single crystals (Tc = 23K) and compare these spectrums with the ones obtained on the surface of the parent compound. We have found that the major feature of the spectrums on the superconducting compounds is the opening of a superconducting gap of about 6 meV for the optimally doped one. We have also observed other detailed spectrum features. We will discuss the relation between spectrum features and the local environment and also present some theoretical fit to the superconducting energy gap spectrum.

[1]Funding support from Texas Center for Superconductivity at UH, Robert A. Welch Foundation, and from DOE-BES-DMSE

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Date submitted: 21 Nov 2008 Electronic form version 1.4