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Core-level study of high-temperature superconductivity iron arsenide ($\mathbf{Ba_{1-x}K_x)Fe_2As_2}$.[1] YI LI, HAIZHONG GUO, JIANDI ZHANG, Department of Physics and Astronomy, Louisiana State University, Baton Rouge, LA 70803, USA, DARWIN URBINA, Department of Physics, Florida International University, Miami, FL 33199, USA, H. DING, GENFU CHEN, N.L. WANG, Beijing National Laboratory for Condensed Matter Physics and Institute of Physics, CAS, Beijing 100080, China — We have used high-resolution x-ray photoemission spectroscopy (XPS) techniques to investigate the core-level x-ray photoemission spectra for high-temperature superconductivitor iron arsenide $(Ba_{1-x}K_x)Fe_2As_2$ ($T_C = 32$ K) and its parent compound $BaFe_2As_2$. One important issue for understanding the nature of the superconductivity in the compound is the determination of the electron-electron correlation in the system which in principle should be reflected by the appearance of core-level satellites. We have measured the temperature-dependence of Fe-$2p$ and $3s$ core-level spectrum in both parent and doped superconductor compounds and found that the core-level electronic structure is quite different from that observed in cuprates. The origin and nature of the core spectra in these iron-based materials will be discussed.

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