The Study of the BiO_6 Octahedra Structure in Superconducting $Ba_{0.6}K_{0.4}BiO_3$ Single Crystal by Extended X-ray Absorption Spectroscopy

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We have observed the temperature dependences of Bi L_{III} edge spectra by extended X-ray absorption spectroscopy for a high quality single crystal and a powder of the $Ba_{0.6}K_{0.4}BiO_3$ superconductor. $Ba_{0.6}K_{0.4}BiO_3$ has the cubic structure and metallic states. The deformation of the BiO_6 octahedra, which is due to the anomalies of the Bi-O and Bi-Ba bond length, was showed by the double-shell fit. It was clearly found that these anomalies are owing to the different in the strength of Bi-O bonds. The temperature dependences of both bond lengths and the Debye-Waller factor σ^2 of the Bi-O and Bi-(Ba,K) bond are discussed to illustrate local structure features of the $Ba_{0.6}K_{0.4}BiO_3$

keywords : BKBO, EXAFS, Bi-O