

Study on Superconducting Properties in YBCO Thick Films by Screen Printing Method

N. H. Jeong^{*a}, K. J. Kim^a, S. C. Han^a, Y. H. Han^a, C. W. Lee^b, and T. H. Sung^a

^a *Korea electric power research institute, Daejeon, Korea*

^b *Department of Advanced Materials Chemistry, Korea University, Jochiwon, Choongnam, Korea*

We have studied the forming behavior of YBCO and secondary phases in the heat-treatment process of Cu-sheathed YBCO thick films. The thick films were prepared by a screen-printing method with BaCO_3 and Y_2O_3 powders on Cu tapes. Heat treatment was performed in the range of 900 – 980 °C in the tube furnace of atmosphere for 60 sec, 90sec, 120 sec, 180 sec and 300 sec. We observed the microstructure and phases of thick films by using optical microscope, X-ray diffraction (XRD) and SEM image analysis. During the heat treatment procedure, partial melting occurred rapidly in the printed layers by liquid reaction between CuO and precursor powders on Cu tapes. As a result, the textured YBCO layer was confirmed.

keywords : microstructure, Cu-sheath, YBCO thick films, screen printing