

Fabrication of $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ (Y123) on the Cu Substrates

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Formation behavior and characterization of $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ (Y123) in the heat-treated Cu-sheathed YBCO thick films were studied. The thick films were prepared by screen printing method with BaCO_3 and Y_2BaCuO_x (Y211) [or Y_2O_3] powders on Cu tapes. Heat-treatment was performed at 930 °C in the tube furnace of air atmosphere for 60 sec ~ 300 sec. While the printed films were heat-treated, partial melting occurred rapidly in the printed layers through peritectic reaction between precursor powders and CuO which is oxidized from Cu substrate. Microstructures and phases formed in the thick films were investigated by using optical microscope, X-ray diffraction (XRD) and SEM/EDS analysis. We fabricated the YBCO superconducting phase successfully on the Cu substrates by the result of T_c measurement and XRD analysis.

keywords : YBCO thick film, Cu tapes, screen printing, partial melting