

Effect of Cerium Doping on Superconducting Properties of YBCO Film Prepared by TFA-MOD Method

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Superconductive YBCO thin films have been prepared by trifluoroacetate(TFA) metalorganic deposition(MOD) method. Non-stoichiometric precursor solutions with cation ratios of Y:Ba:Cu:Ce = 1:2+x:3:x (x = 0, 0.05, 0.1 and 1.5) have been prepared by amount of cerium. Precursor solution with nano size additive elements was also prepared for testing their effect as flux pinning site. Coated film was calcined at lower temperature under a moisture-containing oxygen atmosphere. Superconducting YBCO films have been obtained by performing conversion heat treatment at temperature of 760~800 °C under a moisture-containing Ar(1,000 ppm oxygen) atmosphere. It has been shown that critical current density (J_c) of YBCO film was varied with the amount of added Cerium. The effect of stoichiometric and additives on J_c in magnetic field and microstructure will be discussed.

Keywords : cerium, doping, YBCO, TFA-MOD

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