

Textured Growth of NiO Buffer Layers on Ni Tapes for YBCO Coated Conductor Applications

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Biaxially textured NiO buffer layers grown by surface oxidation on textured Ni tape is a potential method for rapid and low cost production of coated conductors. We used two kinds of Ni substrates for the growth of NiO. the one is cube textured tape using RABiTS process and the other is textured like tilted single crystalline using RATiS process. Well textured NiO layers were obtained after heat treatments in mixture gas of N₂ and O₂ at 1100C. XRD pole figure showed very sharp FWHM. However SEM shoef very rough surface morphology. The surfaces of NiO buffer layers were polished and CeO₂ films were deposited followed by YBCO film coating, which was grown by thermal co-evaporation methods. The critical current density was in the range of 10⁵A/cm².

keywords : YBCO, coated conductor, NiO, surface oxidation