

Meter-long YBCO Coated Conductors Using Batch-type Process in Oxide Precursor Based MOD Method

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Chemical solution deposition methods have many advantages of simplicity, fastness, uniformity, low cost process, and easy control of compositions, etc. Metal Organic Deposition is one of the best candidates of CSD methods and Lots of promising results have been reported worldwide. We fabricated long YBCO coated conductor using Oxide Precursor Based MOD Method. In this method, a low cost YBCO oxide powder was employed as a starting precursor for MOD process. Also Batch-type process, which is very fast, simple, and uniform compared to Reel-to-Reel Process, is used to make long coated conductors. Both calcinations and annealing heat treatment were done in Batch-type process. Meter long buffered metal tapes were reel-to-reel dip coated using oxide precursor based MOD solution and wound around the cylinder, which is spinning inside the furnace. The precursor films were obtained at 300°C for 16h with 2.2% ~ 4.2% humidified oxygen and then annealed at 790°C for 2h with 4.2% humidified low oxygen. The quality of films was investigated using X-ray diffraction (XRD) and scanning electron microscope (SEM) and those of superconducting characteristics were evaluated using the four-probe method.

keywords : Coated conductor, YBCO, Batch-type, MOD

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