

Fabrication of SmBCO Coated Conductor using Batch Type Co-evaporation Method

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For 100m classes CC production, EDDC (Evaporation using Drum in Dual Chambers) was installed in KERI. It is a batch-type co-evaporation method and specially designed as following. It is composed of the evaporation chamber and the reaction chamber; the former for evaporating the composing elements of superconducting layer by induction heating method respectively and the latter for reacting the deposited elements with oxygen gas and resulting in SmBCO 123 phase. Compositional ratios of SmBCO was controlled by the deposition rates of Sm:Ba:Cu monitored by Quartz crystal microbalance. Metallic tapes were wound on the drum helically and halogen lamps were installed around the drum. The drum was 50 cm of diameter and 75 cm of length. We checked the distribution of temperature, deposition rates and compositional ratios along the axis of the drum. Using RaBiTS templates, we also investigated the critical current density distribution along the axis of the drum. It shows that EDDC system has a high possibility of fabrication uniform coated conductor; the deviation of critical current is within 20%.

Keywords: co-evaporation, batch type, RaBiTS, IBAD, coated conductor

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