

Fabrication of a 10m Long SmBCO Coated Conductor and Measurements of the Field Dependent Critical Current Densities

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We fabricated the SmBCO coated conductor 10m long and 9mm wide using bi-axially textured Ni tape. The standard buffer layers, $\text{CeO}_2/\text{YSZ}/\text{CeO}_2$, were used. A $2\mu\text{m}$ thick SmBCO film was deposited by the 'Co-evaporation using Drum in Dual Chamber (CDDC)' system, followed by *in situ* deposition of an Ag protection layer. The whole length of SmBCO film was deposited in a single batch process, which took 7hr. We checked the distribution of critical currents (I_c) by I-V measurements in all the section comprising the tape.

We measured the critical current densities (J_c 's) of SmBCO coated conductor in various magnetic fields at 77K and compared with published results of YBCO coated conductor. In the field lower than 2T, J_c of SmBCO was three times smaller than that of YBCO. In the field higher than 2T, J_c of SmBCO was larger than that of YBCO.

keywords : coated conductor, SmBCO, SBCO, critical current, magnetic field.