

Fabrication of 12 m Long Buffer Layers on Ni Tapes by Sputtering and Thermal Evaporation

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We fabricated 12 m long buffer layers on Ni tapes. Ni tapes were biaxially textured. Buffer layers consist of triple layers such as CeO₂(top layer), YSZ(middle layer) and CeO₂(bottom layer). The bottom layer was deposited by thermal evaporation. The middle layer was deposited by reactive sputtering using metallic targets and the top layer was deposited by rf-sputtering. The surface morphology of buffered Ni tapes was dense and crack free. The FWHM of YSZ buffer layer was less than 12°. Sm₁Ba₂Cu₃O_{7-δ} was deposited on the buffered Ni substrate. The size of Ni substrate was 7mm wide and 10mm long and the thickness of superconducting layer was 100nm. T_c was 92K. Critical current was 7.5A and Critical current density was 1.1MA/cm².

keywords : High T_c superconductor, coated conductor, reactive sputtering, thermal evaporation.