

## Reel-to-reel Electropolishing of Ni Alloy Tapes for IBAD Template

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Ni alloy tape is electropolished to be used as a metal substrate for fabrication of IBAD (Ion-Beam Assisted Deposition)-MgO texture template for HTS coated conductor. Electropolishing is needed to obtain a very smooth surface of Ni alloy tape because the in-plane texture of templates is sensitive to the roughness of metal substrate. The critical current of YBCO coated conductor depends on the texture of YBCO which depends on the texture of the IBAD MgO layer. And so the smoothness of the metal substrate is directly related to the superconducting properties of the coated conductor. In this study, we have prepared a reel-to-reel electropolishing apparatus to polish the Ni alloy tapes for IBAD. Various electropolishing conditions were investigated to improve the surface roughness. Hastelloy tape is continuously electropolished with high polishing current density ( $0.5 \sim 2 \text{ A/cm}^2$ ) and fast processing time (1 ~ 3 min). Polished hastelloy tapes have surface roughness(RMS) of below 1 nm on a  $5 \times 5 \mu\text{m}^2$  from AFM and SEM.

keywords : Electropolishing, IBAD, RMS Roughness, coated conductor

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