

## Fabrication of Biaxially Textured IBAD-MgO Film for Superconducting Wire

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Ion beam assisted deposition (IBAD) technique was used to produce biaxially textured polycrystalline MgO thin films for high critical current YBCO coated conductor. Firstly, hastelloy tapes as a metal substrate were continuous electropolished with very smooth surface for IBAD-MgO deposition. roughness of Hastelloy tape was measured RMS value below 2 nm and local slope of less than 1°. Diffusion barrier layer ( $\text{Al}_2\text{O}_3$ ) and seed layer ( $\text{Y}_2\text{O}_3$ ) were deposited on the polished hastelloy tapes. MgO layer was biaxially deposited on amorphous seed layer by IBAD. We had observed in-situ RHEED pattern to measure the biaxial texture of IBAD-MgO film surface. After epi-MgO deposition, characterizations of multi layers was studied using XRD and SEM. In-plane full width at half-maximum (FWHM) of IBAD-MgO template is about 11°

keywords : IBAD-MgO, coated conductor, hastelloy, FWHM, RHEED

### *Acknowledgement*

This research was supported by a grant from Center for Applied Superconductivity Technology of the 21st Century Frontier R&D Program funded by the Ministry of Science and Technology, South Korea.