

# Laser-ablated Epitaxial Multilayer Buffer Architecture on Biaxially Textured Metal Tape by Continuous reel-to-reel Processing for Long-length YBCO Coated Conductors

Rcok-Kil Ko, Kee-Chul Shin\*, Yu-Mi Park, Jun-Ki Chung,  
Soo-Jeong Choi, Kyu-Jeong Song, Dongqi Shi, Sang-Im Yoo\*\*, Chan Park

*Korea Electrotechnology Research Institute, Changwon, Kyungnam, Korea*

*\* Pusan National University, Pusan, Korea*

*\*\* Seoul National University, Seoul, Korea*

Biaxially aligned, hetero-epitaxial oxide multilayer buffer architectures of  $\text{CeO}_2/\text{YSZ}/\text{Y}_2\text{O}_3$  and  $\text{CeO}_2/\text{YSZ}/\text{CeO}_2$  were deposited by pulsed laser deposition (PLD) on cube textured Ni-W (3%) substrate in continuous reel-to-reel system for long-length  $\text{YBa}_2\text{Cu}_3\text{O}_7$  (YBCO) coated conductors. Different deposition condition was used for each layer, and the degree of texture of each layer was investigated using X-ray diffraction including  $\theta$ - $2\theta$  and pole figure analysis. Their surface morphology and microstructure were observed by scanning electron microscopy (SEM) and cross-sectional transmission electron microscopy (TEM). The FWHM of the X-ray  $\phi$ -scans and  $\omega$ -scans indicated that all the buffer layers closely replicate the in-plane and out-of-plane texture of metal tape. The film also exhibits a homogenous and dense surface morphology. The results of buffer architecture will be presented together with the experimental setup for the continuous reel-to-reel pulsed laser deposition.

keywords : Coated conductor, Multilayer buffer, Reel-to-reel, PLD

## 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, Republic of Korea.