

금 나노입자가 배열된 STO기판에서 성장된  
Y-Ba-Cu-O박막의 Flux pinning 특성

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**Flux pinning properties of Y-Ba-Cu-O thin films grown on STO substrates with assembled Au nanoparticles**

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**Abstract** : For many large-scale applications of high-temperature superconducting materials, large critical current density( $J_c$ ) in high applied magnetic fields are required. A number of methods have been reported to introduce artificial pinning centers(APCs) in  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$  (YBCO) films for enhancement of their  $J_c$ . We report measurements of critical current in  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$  films deposited by PLD on  $\text{SrTiO}_3$  substrates decorated with Au nanoparticles. Au nanoparticles were synthesized on STO substrates with self assembled monolayer. Microstructural analysis of the obtained YBCO films was performed by using cross-section transmission electron microscopy(TEM). Phase and textural analysis was done using X-ray diffraction. The surface morphology and surface roughness(Ra) of the layers was measured by atomic force microscopy(AFM)

**Key Words** : flux pinning, Au particle, YBCO