

## 펄스 레이저 증착법에 의한 BST 박막 가변 Capacitors 제작

김성수, 송상우, 노지형, 김지홍, 고중혁\*, 문병무  
고려대학교, 광운대학교\*

### Fabrication of High Tunable BST Thin Film Capacitors using Pulsed Laser Deposition

Sung-Su Kim, Sang-Woo Song, Ji-Hyoung Roh, Ji-Hong Kim, Jung-Hyuk Koh\*, Byung-Moo Moon  
Korea Univ, \*Kwangwoon Univ

**Abstract :** We report the growth of  $Ba_{0.5}Sr_{0.5}TiO_3$ (BST) thin films and their substrate-dependent electrical characteristics. BST thin films were deposited on alumina(non-single crystal),  $Al_2O_3$ (100) substrates by Nd:YAG Pulsed Laser Deposition(PLD) with a 355nm wavelength at substrate temperature of 700 °C and post-deposition annealing at 750 °C in flowing  $O_2$  atmosphere for 1hours. BST materials had been chosen due to high dielectric permittivity and tunability for high frequency applications. To analyze the oxygen partial pressure effects, deposited films at 1, 10, 50, 100, 150, 200, 300 mTorr. The effects of oxygen pressure on structural properties of the deposited films have been investigated by X-ray diffraction(XRD) and atomic force microscope(AFM), respectively. Then we manufactured a inter-digital capacitor(IDC) patterns twenty fingers and 10 $\mu$ m gap, 700  $\mu$ m length and electrical properties were characterized.

The results provide a basis for understanding the growth mechanisms and basic structural and electrical properties of BST thin films as required for tunable microwave devices applications such as varactors and tunable filters

**Key Words :** BST, Inter-digital Capacitor, PLD