

4H-SiC에 증착된 BST 박막의 열처리 효과에 따른 구조적, 전기적 특성

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Effect of post annealing on the structural and electrical properties of $Ba_{0.5}Sr_{0.5}TiO_3$ thin films deposited on 4H-SiC

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Abstract : We have investigated that the effect of post annealing on the structural and electrical properties of $Ba_{0.5}Sr_{0.5}TiO_3$ thin films. The BST thin films were deposited on n-type 4H-silicon carbide(SiC) using pulsed laser deposition (PLD). The deposition was carried out in oxygen ambient 100mTorr for 5 minutes, which results in about 300nm-thick BST films. For the BST/4H-SiC, 200nm thick silver was deposited on the BST films by e-beam evaporation. The X-ray diffraction patterns of the BST films revealed that the crystalline structure of BST thin films has been improved after post-annealing at 850°C for 1 hour. The root mean square (RMS) surface roughness of the BST film measured by using a AFM was increased after post-annealing from 5.69nm to 11.49nm. The electrical properties of BST thin film were investigated by measuring the capacitance-voltage characteristics of a silver/BST/4H-SiC structure. After the post-annealing, dielectric constant of the film was increased from 159.67 to 355.33, which can be ascribed to the enhancement of the crystallinity of BST thin films.

Key Words : BaSrTiO, 4H-SiC

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