

PLD를 이용한 (100) LaAlO₃ 기판위의 ZnO 에피택셜 박막 성장

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Epitaxial Growth of ZnO Thin Films on (100) LaAlO₃ Substrate by Pulsed Laser Deposition

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Abstract : We report epitaxial growth of ZnO thin films on (100) single-crystalline LaAlO₃ (LAO) substrates using pulsed laser deposition (PLD) at different substrate temperatures (400~800°C). The structural and electrical properties of the films have been investigated by means of X-ray diffraction (XRD), atomic force microscope (AFM), transmission line method (TLM). The poly-crystalline of *a*- and *c*-axis oriented ZnO film was formed at lower deposition temperature (*T_s*) of 400°C. At higher *T_s*, however, the films exhibit single-crystalline of *a*-axis orientation represented by ZnO[$\bar{1}11$] || LAO <001>. The electrical properties of ZnO thin films depend upon their crystalline orientation, showing lower electrical resistivity values for *a*-axis oriented ZnO films.

Key Words : ZnO thin films, Epitaxial growth, Pulsed laser deposition, X-ray diffraction, TLM