

## 4H-SiC 기판 위에 성장된 ZnO 박막의 온도에 따른 구조적 특성 분석

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### Effect of Deposition Temperature on Structural Properties of ZnO Thin Films on 4H-SiC Substrate

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**Abstract :** We demonstrate epitaxial growth of ZnO thin films on 4H-SiC(0001) substrates using pulsed laser deposition (PLD). ZnO and SiC have attracted attention for their special material properties as wide band gap semiconductors. Especially, ZnO could be applied to optoelectronic applications such as light emitting devices and photo detectors due to its direct wide bandgap ( $E_g$ ) of  $\sim 3.37\text{eV}$  and large exciton binding energy of  $\sim 60\text{meV}$ . SiC shows a good lattice matching to ZnO compared with other commonly used substrates and in this regard SiC is a good candidate as a substrate for ZnO.

In this work, ZnO thin films were grown on 4H-SiC(0001) substrates by PLD using an Nd:YAG laser with a 355nm wavelength. The crystalline properties of the films were evaluated by x-ray diffraction (XRD)  $\theta$ - $2\theta$ , rocking curve and pole figure measurements using a high-resolution diffractometer. The surface morphology of the films was studied by atomic force microscopy (AFM)

**Key Words :** ZnO, 4H-SiC, Pulsed laser deposition (PLD)