

Si(111) 위에 Ion beam 처리 후 AlN layer를 완충층으로 이용하여
성장시킨 GaN의 특성

(The characteristics of AlN buffered GaN on ion beam modified Si(111)
substrates)

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The growth of GaN on Si is of great interest due to the several advantages : low cost, large size and high-quality wafer availability as well as its matured technology. The crystal quality of GaN is known to be much influenced by the surface pretreatment of Si substrate[1]. In this work, the properties of GaN overlayer grown on ion beam modified Si(111) have been investigated. Si(111) surface was treated RIB with 1KeV-N_2^+ (at 1.9×10^5) to dose ranging from 5×10^{15} to 1×10^{17} prior to film growth. GaN epilayers were grown at 1100°C for 1 hour after growing AlN buffer layers for 5~30 minutes at 1100°C in Metal Organic Chemical Vapor Deposition (MOCVD). The properties of GaN epilayers were evaluated by X-Ray Diffraction(XRD), Raman spectroscopy, Photoluminescence(PL) and Hall measurement. The results showed that the ion modified treatment markedly affected to the structural, optical and electrical characteristic of GaN layers.

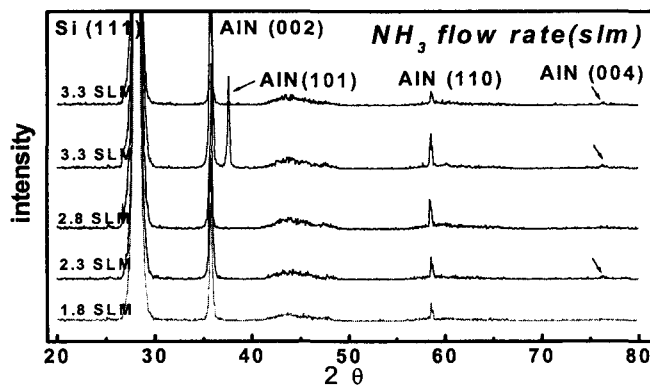


Fig1. XRD peak of AlN buffer layer depending on NH_3 flow rate

[1] Eui Kwan Kho, Young Ju Park, Eun Kyu Kim, Chan Soo Park, Suk Hun Lee, Jung Hee Lee, Sung Ho Choh, J. Crystal Growth 218 (2000) 214-220