# 이온주입된 Si(111)에 AlN 완충층을 이용하여 성장시킨 GaN 박막의 특성
# The characteristics of AlN buffered GaN on ion implanted Si(111)

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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 implanted Si(111)and bare Si(111) have been investigated. Si(111) surface was treated ion implantation with 60KeV and dose $1\times10^{16}/cm^2$ prior to film growth. GaN epilayers were grown at 1100℃ for 1 hour after growing AlN buffer layers for 15-30 minutes at 1100℃ with metal organic chemical vapor deposition (MOCVD). The properties of GaN epilayers were evaluated by X-Ray Diffraction (XRD), Scanning electron microscope (SEM) Photoluminescence (PL) at room temperature and Hall measurement. The results showed that the GaN on ion implanted Si(111) markedly affected to the structural, optical and electrical characteristic of GaN layers.

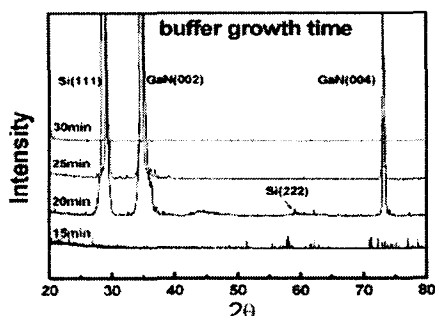


Fig1. XRD peaks of GaN layers depending on AlN buffer thickness

[1] Y. S. Cho, J. Jhin, Y. J. Park, S Cho, E. K. Koh, E. K. Kim, G. Kim, D. Byun and S.-K. Min, Japan J. of Applied Physics. Vol. 41, Part 1. No. 6B, 4267-4270 (2002)