Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Effect of delayed coalescence of buffer layers on the properties of subsequently grown GaN thin films CHINKYO KIM, HYEOKMIN CHOE, Kyunghee University, YOUNGBOO MOON, Seoul National University, SHI-JONG LEEM, Korea University — The coalescence time of low-temperature-grown GaN buffer layers was controlled by varying NH_3 flow rates and the effect of delayed coalescence on the characteristics of subsequently grown GaN thin films was investigated by utilizing x-ray diffraction (XRD), atomic force microscopy (AFM) and Hall measurement. The buffer layers were grown by metal-organic vapor phase deposition (MOCVD) at 560 °C and the growth time for 90% coalescence of buffer layers was controlled by varying NH_3 from 2 slm to 11 slm. 2μm- thick GaN layers were deposited on the low-temperature-grown buffer layers. The carrier mobility, full width at half maximum (FWHM) of (002) Bragg peaks, and pit density measured for these samples showed that increased coalesced time of buffer layers improved the subsequently grown GaN film quality. This dependence on the coalescence time was attributed to increased grain size due to delayed coalescence during buffer layer growth.

Chinkyo Kim
Kyunghee University

Date submitted: 20 Nov 2006 Electronic form version 1.4