Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Characterization of M-plane GaN film grown on β-$LiGaO_2$ (100) by plasma-assisted molecular beam epitaxy CHIA-HSUAN HU, IKAI LO, CHENG-HUNG SHIH, WEN-YUAN PANG, YING-CHIEH WANG, Department of Physics, National Sun Yat-Sen University, Kaohsiung, Taiwan, MITCH M.C. CHOU, Department of Materials and Optoelectronic Science, National Sun Yat-Sen University, Kaohsiung, Taiwan — Lithium gallate ($LiGaO_2$) has an orthorhombic crystal structure that can be described as a wurtzite-like structure. The ***M***-plane basis of GaN wurtzite structure is nearly matched to the selected lattice axes of pseudo-hexagonal $LiGaO_2$. ***M***-plane GaN thin films have been grown on β-$LiGaO_2$ (100) substrates by plasma-assisted molecular-beam epitaxy in our group. Pure ***M***-plane GaN crystal films have been verified by the measurements of x-ray diffraction, micro-Raman scattering, polarization-dependent photoluminescence and atomic force microscopy. The measurements of x-ray diffraction and micro-Raman scattering exhibited the evidences of large compressive stress on the ***M***-plane GaN thin films. Based on experimental results, we showed that the large compressive stress is the major source leading to the peeling of ***M***-plane GaN thin film off substrate after thermal recycles.

Wen-Yuan Pang
Dept of Physics, National Sun Yat-Sen University, Kaohsiung, Taiwan

Date submitted: 23 Nov 2010 Electronic form version 1.4