Growth and characterizations of m-plane GaN and InN on gamma-LiAlO$_2$ substrate grown by plasma-assisted molecular beam epitaxy

LI-WEI TU, Z. L. LEE, Y. T. LIN, C. Y. HO, Y. L. CHENG, K. L. WU, Z. H. GONG, B. H. TSENG, M. C. CHOU, National Sun Yat-Sen University, Taiwan, Q. Y. CHEN$^1$, University of Houston, H. W. SEO, University of Arkansas, W. K. CHU, University of Houston — Non-polar nitrides are investigated in this report. Substrate used is gamma-phase LiAlO$_2$ (LAO) (100) grown by Czochralski pulling method. The in-plane lattice mismatch between the LAO (100) plane and the GaN (1-100) plane, is small with a lattice mismatch of $[0001]_{\text{GaN}} || [010]_{\text{LAO}} \sim 0.3\%$ and $[1120]_{\text{GaN}} || [001]_{\text{LAO}} \sim 1.7\%$. M-plane GaN epilayer and InN were successfully grown by ultra-high vacuum plasma-assisted molecular beam epitaxy system. Extensive characterizations have been carried out which include x-ray diffraction theta/two-theta scan, rocking curve measurement, scanning electron microscopy, cathodoluminescence, photoluminescence, and Raman spectroscopy. Details will be presented.

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