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**Non-polar GaN structures on $\gamma$-$LiAlO_2$ grown by plasma-assisted molecular beam epitaxy** LI-WEI TU, H.M. HUANG, M.Z. HSU, L.K. WANG, Y.L. CHENG, Dept. of Physics and Center for Nanoscience and Nanotechnology, National Sun Yat-Sen Univ., M.C. CHOU, Dept. of Materials Science & Optoelectronic Engineering, National Sun Yat-Sen Univ., C.L. HSIAO, Center for Condensed Matter Sciences, National Taiwan Univ., Q.Y. CHEN, Dept. of Phy. and Center for Nanoscience and Nanotechnology, Natl. Sun Yat-Sen U./Dept. of Phy. and Texas Center for Superconductivity, U. of Houston, H.W. SEO, Dept. of Physics, Univ. of Arkansas, W.K. CHU, Dept. of Physics and Texas Center for Superconductivity, Univ. of Houston — A-plane lithium aluminate (LAO) in $\gamma$-phase crystal structure, $\gamma$-$LiAlO_2$ (100), was used as the substrate which was grown by Czochralski pulling method. With a lattice mismatch of [0001]GaN||[010]LAO $\sim$ 0.3% and [11$\underline{2}$0]GaN||[001]LAO $\sim$1.7%, $\gamma$-$LiAlO_2$ (100) has a much smaller lattice mismatch with the GaN (1$\underline{1}$00) than the conventional substrates. M-plane GaN epilayer was successfully grown by plasma-assisted molecular beam epitaxy. X-ray diffraction theta/two-theta scan shows a diffraction peak due to m-plane GaN. Raman scattering confirms Raman modes from the GaN (1$\underline{1}$00) structure. Cathodoluminescence yields a peak at 363 nm at room temperature. Nanostructures were explored also. Comparisons to structures grown on the c-plane will be presented.

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