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Characterization of GaN grown on tilt-cut γ -LiAlO₂ by molecular beam epitaxy WEN-YUAN PANG, IKAI LO, YU-CHI HSU, CHENG-HUNG SHIH, CHIA-HO HSIEH, Department of Physics, National Sun Yat-Sen University, Kaohsiung, Taiwan, MING-CHI CHOU, Department of Materials and Optoelectronic Science, National Sun Yat-Sen University, Kaohsiung, Taiwan — The non-polar GaN film is a potential candidate for high-efficient optoelectronic devices. This study reports on the characterization of GaN grown on tilt-cut γ -LiAlO₂ by plasma-assisted molecular beam epitaxy. The (100) γ -LiAlO₂ substrate was tilt-cut about the angle of 11 degree to in-plane. It was found that the GaN thin film tilts to match the atoms of (100) γ -LiAlO₂. The basal plan stacking fault and the interface between substrate and thin film have been investigated by transmission electron microscopy. In addition, the characteristics of GaN films for different growth temperatures were studied by X-ray diffraction, scanning electron microscopy, and photoluminescence measurements. From the full width at half maximum of X-ray rocking curve, we found that the quality of GaN film can be improved by tuning the growth temperature. The crystal structure, film surface, and optical properties of the samples will be discussed, as well.

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