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GaN Heteroepitail Layers Grown on Sapphire Substrate with Various Growth Temperature by MOCVD

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Stresses and strains in heterostructure have influence on semiconductor. We have investigated stresses and strains during metal organic chemical vapor-phase epitaxy of undoped GaN with various growth temperature. The samples were grown on sapphire (0001) substrate at low pressure of 300 torr via a typical two-step growth condition in horizontal MOCVD reactor for the final growth temperature range of 850℃ ~ 1050℃. Values of strain and stress determined by the double crystal x-ray diffraction rocking curves were used in the calculations. Biaxial stress ranges in the a-direction were -0.795 ~ 0.714 GPa. Biaxial stress are compared with room-temperature photoluminescence peaks shift.