

Characterisation of polycrystalline GaN on Si substrate with magnetron-sputtered buffer layer

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ABSTRACT

Recently some studies have been extended to investigate the polycrystalline GaN layer and demonstrated the operation of light emitting devices using these polycrystalline layers. This opens up the area of “Polycrystalline Semiconductor Photonics”. This paper gives the detailed investigation of polycrystalline wurtzite GaN grown on Si (100) substrates by metalorganic chemical vapor deposition with magnetron-sputtered AlN buffer layers. The polycrystalline GaN films with hexagonal structure were characterized by x-ray deflection measurements. Photoluminescence emissions were observed in blue to UV range without yellow luminescence. After thermal annealing of the GaN film, blue photoluminescence emission was enhanced.

Keywords: GaN, polycrystalline, silicon substrate