Thin film growth of GaN on ZnO templates by MOCVD method for Optoelectronics Applications

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Abstract
This study aims to obtain a single crystal GaN that eligible for Optoelectronic applications. In this research GaN thin films were grown by MOCVD method on ZnO template using the precursors TMGa and N_2. The GaN thin films was grown, and its surface morphology was characterized by SEM, the nature of its structure by XRD, compositions by EDS and electrical properties by measuring the Hall-Van der Pauw. The results showed GaN thin films that have been grown on ZnO templates. Quality of GaN film surface morphology increases with the growth temperature increases from 640^oC to 700 ^oC, which is characterized by the small size of the grains. The results of surface properties characterization, properties and structure of the electrical properties indicates the quality of the best GaN films obtained at the growth temperature 680^oC with 63.55 cm^2/Vs mobility and concentration of charge carriers 63.16x10^{18} cm^{-3}. The value is in the parameter values range of GaN films that was commonly reported and classified as n-type semiconductor

Key words: MOCVD, GaN thin films, Optoelectronic