

AN INVESTIGATION OF GaN THIN FILMS ON AlN SAPPHIRE SUBSTRATE BY SOL-GEL SPIN COATING METHOD

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ABSTRACT

In this research, the gallium nitride (GaN) thin films were deposited on aluminium nitride on sapphire (AlN/Al₂O₃) substrate by sol-gel spin coating method. Simple ethanol-based precursor with the addition of diethanolamine solution was used. The structural and morphology properties of synthesized GaN thin films were characterized by using X-rays diffraction (XRD), field-emission scanning electron microscopy (FESEM), atomic force microscopy, and energy dispersive X-rays spectroscopy. XRD results revealed that the deposited GaN thin films have wurtzite structure and with GaN(002) preferred orientation. FESEM images show that GaN thin films with uniform and packed grains were formed. Based on the obtained results, it can be concluded that wurtzite structure GaN thin films were successfully deposited on AlN/Al₂O₃ substrate by using inexpensive and simplified sol-gel spin coating technique.

Keywords: Gallium nitride, sol-gel spin coating, wurtzite structure, thin film