

Characteristics of Gallium Nitride (GaN) Films Grown By a Solution Coating Method Using Ga (mDTC)3 Precursor

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In this study, the properties of GaN thin films grown by a solution coating method using a Ga (mDTC)3 precursor solution are investigated. The precursor solution was prepared by dissolving $\text{Ga}(\text{NO}_3)_3 \cdot 8\text{H}_2\text{O}$ and $(\text{CH}_3)_2\text{NCSSNa} \cdot 2\text{H}_2\text{O}$ in a methanol and subsequently mixed with CHCl_3 under ultrasonification. The precursor solution was then deposited on Al_2O_3 c-axis substrates by a spin coating method to form a seed layer for GaN thin film growth. The spin-coated samples are treated using $\text{NH}_3 + \text{N}_2$ gas mixtures at 850°C for 10 min and went through a series of chemical reactions to yield GaN seed layer. The characteristics such as composition ratio, structural properties, and optical properties of GaN seed layers as well as epitaxial layers grown on top of seed layers are investigated by means of NMR, XRD, SEM, and XPS, respectively.

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