

## Growth and Characterization of Mg Doped Gallium Nitride (GaN) Thin Films via Sol-Gel Spin Coating Technique

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In this report, the magnesium (Mg) doped gallium nitride (GaN) thin film was deposited on AlN/Si template by using sol-gel spin coating method. Different Mg dopant concentrations were used. The precursor was prepared using gallium nitrate hydrate powder and dissolved with an organic solvent. The magnesium nitrate hydrate powder was used as a doping source. The coated thin film was nitridated under ammonia gas ambient with constant flow rate at 950°C. The effects of Mg concentrations on structural and surface morphology properties of the deposited thin films were investigated by using X-ray diffraction spectroscopy, field-emission scanning electron microscope spectroscopy and energy dispersive X-ray spectroscopy. In addition, the optical properties of the deposited thin films were determined by using Fourier transform infrared spectrometer. Hall effects measurements were performed to investigate the electrical properties.