

A12

THE ROLE OF GROWTH TEMPERATURE ON THE INDIUM INCORPORATION PROCESS FOR MOCVD GROWTH OF InGaN/GaN HETEROSTRUCTURES

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ABSTRACT- This work presents the effect of growth temperature on the evolution of indium incorporation and growth process of InGaN/GaN heterostructures grown using Taiyo Nippon Sanso Corporation (TNSC) metal organic chemical vapor deposition (MOCVD) SR4000-HT system. The InGaN/GaN heterostructures were epitaxially grown on 3.8 μm and 40 nm thick undoped-GaN (ud-GaN) and GaN nucleation layer respectively over a commercial 2" c-plane flat sapphire substrate (FSS). The InGaN layers were grown at different temperature setting ranging from 860°C to 820°C in a step of 20°C. The details structural, surface morphology and optical properties were investigated using X-ray diffraction (XRD), field emission scanning electron microscope (FE-SEM), atomic force microscopy (AFM) and ultraviolet-visible (UV-Vis) spectrophotometer respectively.

Keywords: InGaN, III-nitride semiconductor, MOCVD.