Short Communication

Comparison of Defects in Hydride Vapor Phase Epitaxy-Grown GaN Films under Different V/III Ratios and the Influence on the Electrical and Optical Properties

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doi: 10.20964/2020.12.33

Received: 4 August 2020 / Accepted: 22 September 2020 / Published: 31 October 2020

In this paper, GaN films were grown by hydride vapor phase epitaxy under different ratios of NH₃ to GaCl (V/III ratio). Secondary ion mass spectrometry measurements of [Si], [O], [C] and [H] were carried out to analyse the changes in impurities. Molten KOH - NaOH eutectic etching was applied to reveal changes in the dislocation density. With increasing V/III ratio, [O] and the dislocation density decrease, while [Si] increases. Further the influence of the V/III ratio on the electrical and optical properties was examined by Hall and photoluminescence measurements.

Keywords: GaN, Defects, V/III Ratios, Electrical properties, Optical properties

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