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IMPACT OF MACROSCOPIC PARTICLE COMPOSITION ON GAN EPITAXIAL GROWTH MORPHOLOGY AND LUMINESCENCE

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We describe macroscopic defects on InGaN/GaN multiple quantum well structures caused by accidental contamination with dust particles during the metalorganic vapour phase epitaxy. Gallium nitride and InGaN/GaN heterostructures are promising materials for many optoelectronic devices, such as light emitters, high-power and high-frequency electronics, detectors of ionizing radiation, scintillators. During the preparation of these structures, great attention is paid to optimization of the growth parameters and to reduce the density of dislocations and point defects in this material. However, only a small number of studies were performed on macroscopic defects due to particles fallen from the reactor chamber or scratches from substrate polishing. Understanding the impact of each of the contaminating elements is not only important for sample diagnostics, but it also provides insight into the complex physical and chemical processes during epitaxy.We focus on the influence of macroscopic defects on photoluminescence of GaN/InGaN multiple quantum well structures and present a Raman spectroscopy study of macroscopic defect containing regions of the samples.

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