

Memory effect in InGaN/GaN-based LED structures

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Object of study. *The Taiwan Oasis Technology Co., Ltd blue glow CD ($\lambda_{\max} = 468$ nm at room temperature) based on InGaN solid solution was studied. The purpose of the study. The problem of the influence of InGaN/GaN LED defects on electrical and optical characteristics has become most acute in connection with the development of programs for the creation of solid-state energy-saving lighting. An analysis of the literature has shown, on the one hand, the participation of defects in the rapid development of the degradation process, accompanied by a decrease in the efficiency of the structure, on the other hand, defects can lead to the observation of a switching phenomenon similar to modern RERAMS. Thus, studying the behavior of defects stimulated by pulsed current in InGaN/GaN-based LEDs is an urgent task. The purpose of this work is to study the effect of pulsed current on the electrical characteristics of InGaN/GaN-based LEDs. Methods and approaches used. The article discusses the reverse and forward volt-ampere characteristics of structures before and after the pulse action, measured switching on and off of the sample. The main results. A stable switching between high-conducting (resistive) and low-conducting (light-emitting) states was found, accompanied by a change in current transfer mechanisms. The movement of mobile defects and the formation of conductive filaments (channels) in the region of spatial charge is considered as the main switching mechanism.*

Keywords: LED, quantum well, current transfer, conductive filament effect.

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