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Electrical characterization of irradiated n-GaN

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We investigate the electrical parameters of n- GaN irradiated at room temperature with 5.4 MeV alpha-particles from an americium-241 (Am-241) radio-nuclide source under dark conditions. The radiation damage was studied using current–voltage (I–V) and capacitance –voltage (C–V) characteristics for a total irradiation time of 14 hours at a dose rate of and the corresponding dose range of . Diode parameters such as the Schottky barrier height, ideality factor, saturation current, free carrier concentration and reverse leakage current were monitored from the I–V and C–V measurements that were recorded by a computer programme developed using National Instrument’s LabView software. The irradiation results reveal an increase in the ideality factor, series resistance, saturation current and reverse leakage current over the dose range investigated. The free carrier density and the Schottky barrier height were found to decrease with increasing dose. Our results suggest that the observed effects are as a result of the radiation damage to our sample.

Level (Hons, MSc, PhD, other)?

Hons

Consider for a student award (Yes / No)?

Yes

**Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?**

Yes

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