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Study on Capacitance Performance of Gallium Nitride (GaN) Diodes in High Dose Electron Irradiation

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MATERIALS CHARACTERIZATION USING X-RAYS AND RELATED TECHNIQUES
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Abstract

Impact of 2 MGy and 10 MGy electron irradiation on gallium nitride (GaN) light emitting diodes (LEDs) has been studied. The device was a commercial product (Manufacturer: Vishay) type of GaN Blue LEDs (TLHB5400). The capacitance-voltage (C-V) characteristics of pre- and post-irradiation were measured. The result showed that the amount of capacitance and doping concentration decreases as the radiation dose increased. The deactivation of dopants atoms in the bulk increased due to higher irradiation dose hence increasing the radiation-induced defect which lead to the degradation of the device.

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