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Effect of temperature annealing on 4H-SiC Schottky barrier diodes after alpha-particle irradiation at high fluences

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Abstract content
 (Max 300 words)
 Formatting & Special chars

Aim of the work is to study the effect of room temperature annealing on the deep level emanated after bombarding 4H-SiC Schottky diodes with 5.4 MeV alpha-particles at fluence of 9.2×10^{11} particles-cm⁻². The investigation was carried out by means of current-voltage and capacitance-voltage characteristics in 300 K temperature, and deep level transient spectroscopy in temperature range of 25 – 350 K. The dependence of ideality factor, Schottky barrier height and free carrier concentration were investigated as a function of radiation fluence was determined. Ideality factor increases with radiation fluence. But, Schottky barrier height and free carrier concentration decrease with radiation fluence. The activation energy and apparent capture cross section of the new defect introduced were determined to be 0.37 eV and 5.5×10^{-16} cm², respectively. This new defect annealed out at room temperature after one week.

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No

Level for award (Hons, MSc, PhD, N/A)?

PhD

Main supervisor (name and email) and his / her institution

Prof W. E. Meyer

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