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Electrical characterization of 5.4 MeV alpha particle irradiated, low doped n-type Gallium Arsenide.

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Abstract content
   (Max 300 words)
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Gold Schottky diodes were fabricated on n-type GaAs with a free carrier density of 1E15. The diodes had excellent rectification properties with an ideality factor of 1.03 signifying the dominance of the thermionic emission process in charge transport across the barrier. The diodes were irradiated with alpha particles up to a fluence of 2.56×⊠10⊠ˆ10 ⊠cm⊠ˆ2. Deep level transient spectroscopy (DLTS) performed on these contacts in the 15-300K range revealed the prominent well known radiation induced defects E1-E3. Laplace deep level spectroscopy split the E3 defect into two components, revealing the metastable E3 component with an activation enthalpy of 0.38eV. Current-voltage (I-V) and Capacitance-voltage (C-V) measurements revealed degraded diode characteristics after irradiation, with the reverse saturation leakage current and the free carrier density being the most susceptible.

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