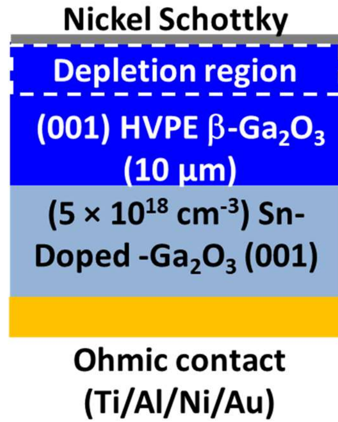

Figure 1: Schematic of the diode structure with Ni-Schottky on Si-doped HVPE grown sample and Ti/Al/Ni/Au layer deposited on the n+ substrate to form the Ohmic contacts.

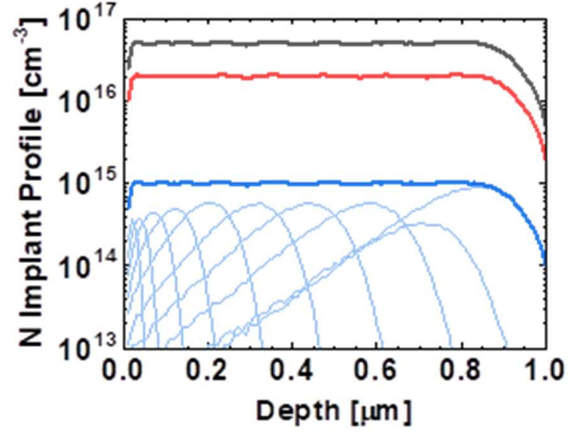

Figure 2: Implantation profiles simulated using SRIM and implemented by implanting with multiple energies and doses into Si-doped HVPE grown β-Ga_2O_3.

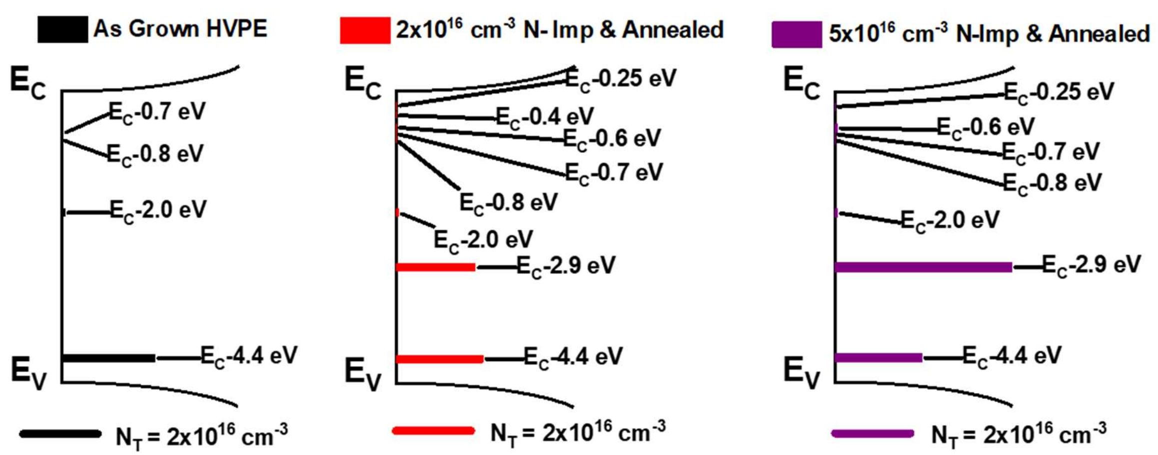

Figure 3: Summary of the energy positions and concentrations for trap states detected by DLTS and DLOS in β-Ga_2O_3 grown via HVPE (As Grown) and the samples implanted at 2×10^{16} cm^{-3} and 5×10^{16} cm^{-3} after annealing, revealing the monotonic increase in concentration of the state at E_C-2.9 eV with implant dose. The DLTS-measured states closer to conduction band are due to residual implantation damage, and match prior work by our group on proton radiation results, except for the E_C-0.8 eV state which is due to a low concentration of residual Fe impurities that were incorporated during growth, as we have shown in prior studies. Not shown is the trap distribution for the sample having an N implant concentration of 1×10^{15} cm^{-3}, whose concentration for the E_C-2.9 eV state is far lower, as expected. Details of this and the observed hole emission behavior in the DLOS data from this apparent N-related state will be discussed at the conference.