Figure 1. (a) Representative CL spectra of $Ga_2O_3$ vertical SBD deconvolved with four Gaussian peaks at 2.85, 3.2, 3.6 and 3.9 eV. (b) and (c) Hyperspectral images (HSI) of an electrically stressed vs unstressed (d) and (e) $Ga_2O_3$ vertical device showing relative redistributions of 3.2 and 3.6 eV features with stress.
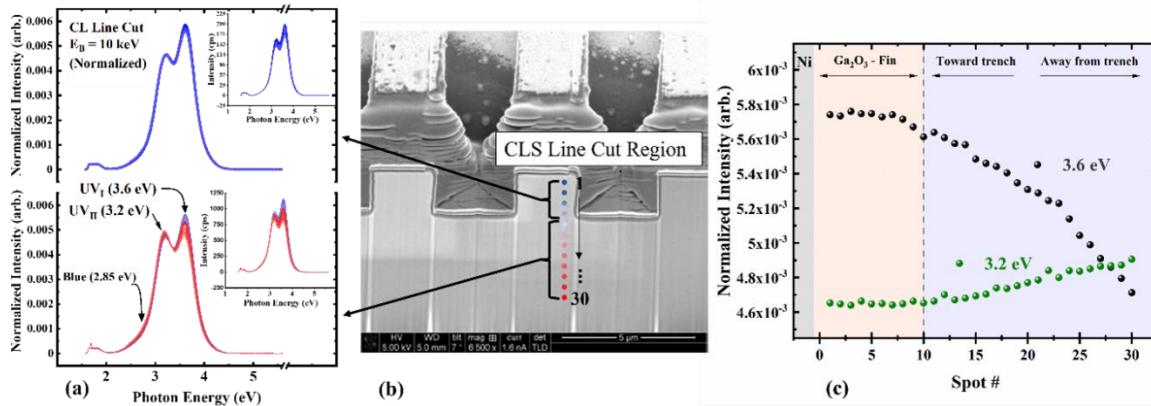


Fig.2 CL spectra along a vertical line cut of an electrically stressed $Ga_2O_3$ SBD showing (a) uniform peak intensities in fin region and increase in 3.6 vs 3.2 eV peaks approaching the trench corner from below as (b) SEI image shows. (c) Normalized 3.6 and 3.2 eV peak intensities plotted spatially along the line cut.
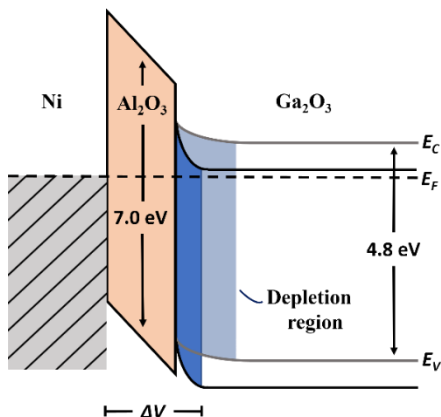


Fig. 3. Schematic representation of the Ni/Al$_2$O$_3$/Ga$_2$O$_3$ interface and band alignment showing a reduction in depletion width (shaded blue) due to accumulation of donor defects leading to an increase the electric field at the trench corners as the field falls across a narrow insulator-plus-depletion region. The band bending and change in $E_F$ are not drawn to scale.