GaSb is an interesting material both from a device as well as a fundamental point of view. The material can be used in long wavelength technologies, high-frequency electronic devices and optoelectronic devices. By adding N or Bi to the binary semiconductor, the band gap can be tuned and the lattice parameter matched to other III-V compounds. Undoped, GaSb is of p-type regardless of growth method and the residual hole density varies between 10^{16} to 10^{17} cm^{-3} depending on the growth method. As low contents of N or Bi are added to GaSb, the hole density increases by two orders of magnitude. Using positron annihilation spectroscopy, the native defects in GaSb and its alloys are studied and the relationship between the growth method, defect concentration and N/Bi concentration is explained.

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