ABSTRACT

Antimony (Sb) III-V semiconductors alloys become promising candidates for the design of optoelectronic applications devices (solar cells, optical fiber, infrared photodetectors) due to their fundamental physical properties such as a flexible band gap energy and an insensitivity to temperature. The incorporation of Sb atom into III-V matrix for example GaAsN leads to reduce the value of their band gap energies in order to cover the telecomm 1.55 μm wavelength. The electronic band structure of the studied GaAsNSb will be calculated using the band anticrossing model
(BAC). The dependence of Sb incorporation on the transition energies and carrier effective masses will be discussed. Additional, we will develop the band alignment of GaAsNSb/GaAs quantum well (QW). We will study the absorption coefficient at the fundament transition equal to 1.5 micometers.
Key-Words: III-V semiconductors alloys; Band structure; BAC model; GaAsNSb/GaAs QW; Absorption coefficient.