

- (a)  $\Delta E_g = 1.9\text{eV}$ : emitting light with  $0.65 \mu$  wavelength (visible red light).
- (b) Large  $\Delta E_v$  ( $0.24\text{eV}$ ): preventing the leakage hole-current from low band to high band.
- (c) Low interface recombination velocity with GaAs: improving the minority carrier lifetime.
- (d) Insensitive to the traces of oxygen and humidity inside MOCVD reactor.
- (e) Free of DX centre : no native deep donor trap defect.
- (f) High doping capability without creating deep levels defect.
- (g) High etching selectivity to GaAs : making process easy.

Fig 1.1 The band diagram and the advantages of the InGaP/GaAs material system.

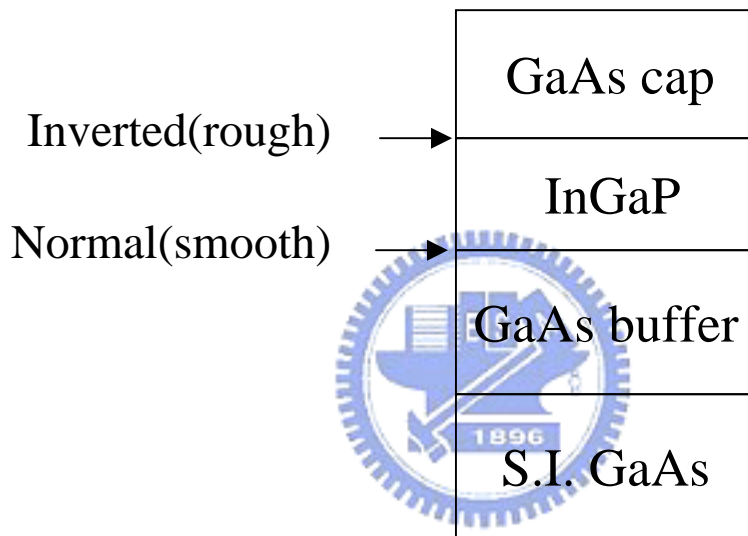


Fig 1.2 The schematic diagram of the GaAs/InGaP/GaAs heterostructures.

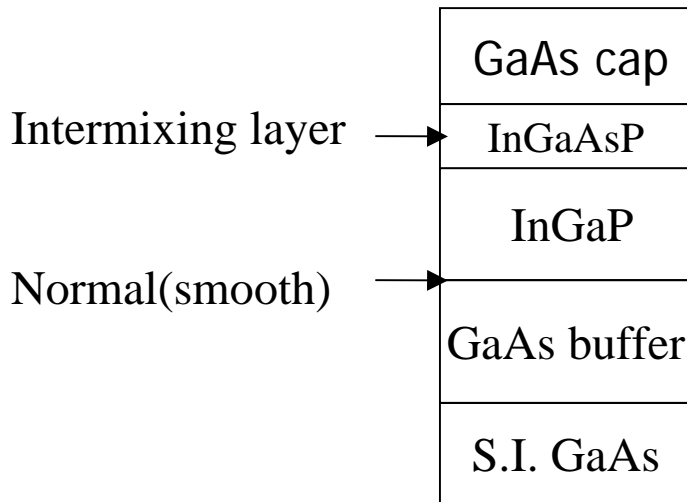


Fig 1.3a The diagram of the GaAs/InGaP/GaAs heterostructure with an inserted InGaAsP layer.

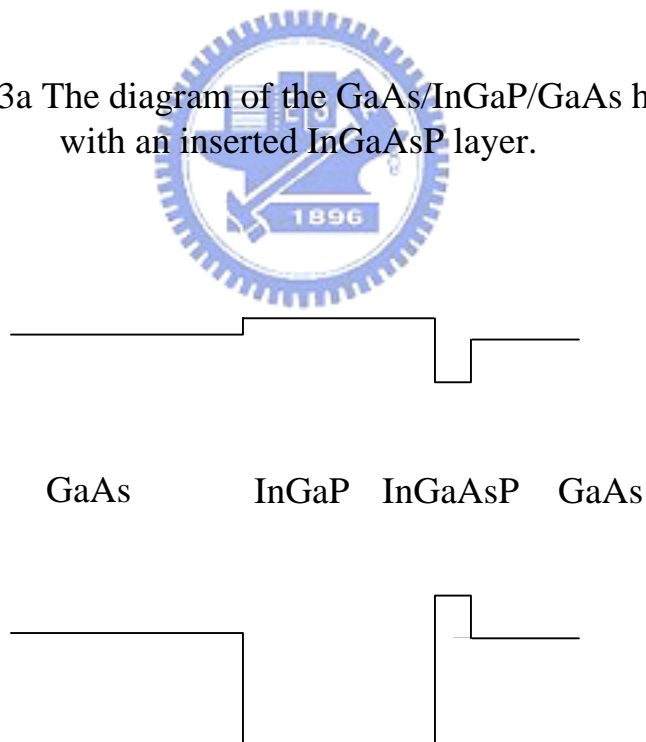


Fig. 1.3b The corresponding band diagram of Fig 1.3a.