

Modelling of a $\text{Cd}_{1-x}\text{Zn}_x\text{Te}/\text{ZnTe}$ Single Quantum Well for Laser Diodes

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Abstract: In this paper, the carrier density, temperature and quantum well width effect have been investigated for the optical gain for a $\text{Cd}_{1-x}\text{Zn}_x\text{Te}/\text{ZnTe}$ Zinc-blend strained quantum well structure. The device emits laser radiations in green–yellow–orange. Our results showed that the optical gain significantly increases with the increasing of the carrier density. It also increases with the decreasing of the Zn concentration, the well width and the temperature. In addition, the optimal threshold current density values were determined for three alloy compositions as 0.7, 0.8 and 0.9.

Keywords : Quantum wells diode laser gain CdZnTe optoelectronics