Simulation of the Inhomogeneous Change in InGaN Quantum Wells LasersOn the characteristic of the threshold current and the intensity of the output light

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Abstract Quantum Wells Semiconductor Laser is one of the most important fiber optic and optical fiber sources in the complex. Because of its high productivity, its modulation is compact and its compact size, and the precise analysis of semiconductor laser operator parameters is very important for nanometric design of high-speed optical connections. In this project, the effect of injecting impurities on quantum well diodes for InGaN materials on optical properties such as carrier density, differential efficiency, and slope efficiency with a specific width have been investigated. A model for quantum wells with impurity structures has been proposed. In order to validate and validate the proposed model, simulation studies and numerical results analysis have been implemented in MATLAB software environment. The simulation results are a proof of the fact that both in terms of the output radiation power and in terms of the efficiency of the proposed structure, they have more optimal results compared to the quantum well-quantum wells without impurities due to the decrease of the threshold current along with the increase of photons.

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