INFLUENCE OF CHARGE CARRIER THERMAL ACTIVATION ON THE TEMPERATURE DEPENDENCES OF DARK CURRENT, PHOTOCONDUCTIVITY, AND PHOTOLUMINESCENCE IN $In_{0.4}Ga_{0.6}As/GaAs$ HETEROSTRUCTURES WITH QUANTUM DOTS

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S u m m a r y

The $In_{0.4}Ga_{0.6}As/GaAs$ heterostructure with quantum-dot chains has been studied. Dark current measurements reveal the anisotropy of electrical properties of the structure in the temperature range 77–150 K. The wave-function damping length and the average hopping distance in the heterostructure are calculated. The energy diagram of the heterosystem is analyzed by using the lateral photocurrent and photoluminescence spectroscopies. The activation energies of electrons and heavy holes were determined from experimental data in the framework of a theoretical model proposed for the temperature dependence of the lateral photocurrent.