

Investigation of Radiation Recombination Channels in Long-Wavelength InAs/InAsSb/InAsSbP LED Heterostructures

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Abstract. This work presents the results of the investigation of optical properties of long-wavelength ($\sim 5 \mu\text{m}$ at 300 K) InAs/InAsSb/InAsSbP LED heterostructures. These heterostructures are used in various applications in mid-wavelength infrared range, such as environmental monitoring, etc. Electroluminescence was used to study the optical characteristics of the structures in the temperature range 4.2–300 K. Various radiative recombination channels in LED heterostructures were considered, including those associated with the InAs substrate and those related to the active layer, the latter competing depending on the temperature. The obtained results can be useful when designing optoelectronic devices with weak temperature dependence of the emission wavelength.

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