

## Spectroscopy of semiconductor heteroepitaxial structures based on InGaAs for the development of NIR photodetectors

A. M. Kosyakova<sup>1,2</sup>, V. S. Kovshov<sup>1,2</sup> and M. O. Mozhaeva<sup>1</sup>

<sup>1</sup> Orion R&P Association, JSC  
9 Kosinskaya st., Moscow, 111538, Russia

<sup>2</sup> Moscow Institute of Physics and Technology  
9 Institutskiy per., Dolgoprudny, Moscow Region, 141701, Russia

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*Studies and analysis of samples with heteroepitaxial structure based on InGaAs solid solution grown by molecular beam epitaxy on a GaAs substrate are presented. The composition and thickness of the layers of the structure were determined by photoluminescent spectroscopy at room temperature and scanning electron microscopy, respectively. Transmission spectra were measured on an IR Fourier spectrometer. An analytical model of the spectral characteristics of the studied structures has been developed. By solving the inverse problem, the structural parameters of the structure and the composition of the InGaAs active layer were determined by the fitting method. A comparative analysis of experimental and theoretical data showed a small spread of values for the thickness (less than 65 nm) and the composition of the absorbing layer (less than 0.04). The correctness and speed of the developed method of characterization of semiconductor structures without plate destruction is shown.*

**Keywords:** InGaAs, photoluminescence, IR spectroscopy, matrix photodetector, short-wave IR range, epitaxial heterostructures.

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