OPTICA APPLICATA online
A quarterly of the Institute of Physics, Wroclaw University of Technology
open access
Wroclaw University of Technology
INSTITUTE OF PHYSICS

Optica Applicata 2009(Vol.39), No.4, pp. 967-974

Photoluminescence characterization of AlGaAs/GaAs test superlattices used for optimization of quantum cascade laser technology

Anna Wojcik-Jedlinska, Micha Wasiak, Kamil Kosiel, Maciej Bugajski

Keywords

photoluminescence spectroscopy, quantum cascade lasers, unipolar devices, semiconductor lasers

Abstract

In this paper, we present the application of photoluminescence spectroscopy as a diagnostic method for evaluation of correctness and homogeneity of AlGaAs/GaAs test superlattices used in the development of quantum cascade laser technology. The structures investigated are used for the growth rate calibration of quantum-cascade-laser structures. The influence of various structural parameters on the observed photoluminescence signal is studied experimentally and theoretically. On the basis of this discussion we analyse spatial uniformity of the epitaxial material over the wafer and diagnose accuracy of the deposition process.