

THE ROLE OF PHOTOLUMINESCENCE EXCITATION SPECTROSCOPY IN INVESTIGATION OF QUANTUM CASCADE LASERS PROPERTIES

A. WÓJCIK-JEDLIŃSKA, K. GRADKOWSKI, K. KOSIEL, M. BUGAJSKI

Institute of Electron Technology, al. Lotników 32/46, 02-668 Warszawa, Poland

Received Dec. 10, 2006; accepted Dec. 13, 2006; published Dec. 15, 2006

ABSTRACT

The properties of quantum cascade laser (QCL) structures have been investigated by optical technique based on spontaneous emission measurements: photoluminescence excitation (PLE) spectroscopy. Three types of test structures used for obtaining final QCL device were examined, i.e., single sequence of coupled quantum wells, which form an active region of the device, 30 sequences of this active region separated by 25 nm thick AlGaAs barriers and finally complete, undoped structure consisting of 30 of sequences repeated active regions and superlattice injectors. The results has been compared with numerical simulations. The role of such measurements has also been discussed.