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## Optical characterisation of vertical-external-cavity surface-emitting lasers (VECSELS)

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### Keywords

vertical-external-cavity surface-emitting laser (VECSEL), DBR, quantum well, semiconductor laser, photoluminescence, reflectance

### Abstract

The purpose of this paper is to outline the principles of optical characterisation of the new kind of semiconductor devices: vertical-external-cavity surface-emitting lasers (VECSELS). Realisation of high efficiency semiconductor devices requires high accuracy of epitaxial process. Gain characteristic of VECSEL structure is strongly affected by the precise placing of the quantum wells within the multilayer structure. Detailed optical characterisation of particular parts of the structure allows growth errors to be identified and gives insight into the lasing behaviour. In this work, we present an approach taking advantage of two spectroscopic techniques, photoluminescence and reflectance measurements, to study properties of VECSEL structure based on InGaAs/GaAs active region, designed for emission wavelength at 980 nm.



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