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Nota di contenuto	Cover; Half-title; Title; Copyright; Dedication; Contents; Preface; 1 Quantum mechanics of the electron; 2 Quantum mechanics of the photon; 3 Quantum mechanics of electron...photon interaction; 4 Laser oscillations; 5 Semiconductor band structure; 6 Electronic properties of semiconductors; 7 Optical properties of semiconductors; 8 Semiconductor heterostructures and quantum wells; 9 Waveguides; 10 Elements of device physics; 11 Semiconductor photodetectors; 12 Optical frequency conversion; 13 Light emitting diodes and laser diodes; Index
Sommario/riassunto	Optoelectronics, first published in 2002, is a practical and self-contained graduate-level textbook on the subject, which will be of great value to both advanced engineering students and practising

engineers. Sophisticated concepts are introduced in a practical and coherent way, including such topics as quantum mechanics of electron-photon interaction, quantisation of the electro-magnetic field, semiconductor properties, quantum theory of heterostructures and nonlinear optics. The book builds on these concepts to describe the physics, properties and performances of the main optoelectronic devices: light emitting diodes, quantum well lasers, photodetectors, optical parametric oscillators and waveguides. Emphasis is placed on the unifying theoretical analogies of optoelectronics, such as equivalence of quantisation in heterostructure wells and waveguide modes, entanglement of blackbody radiation and semiconductor statistics. The book concludes by presenting devices including vertical surface emitting lasers, quantum well infrared photodetectors, quantum cascade lasers and optical frequency converters.
