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Sommario/riassunto

An authoritative guide to developing high-level photonic devices and systems via laser diodesAs the number of Internet users continues to skyrocket, so does the importance of photonics, which contributes to building an infrastructure for the Internet. Laser diodes have the tremendous potential to expand photonics technology if their operating principles are applied to photonic devices such as optical filters and optical functional devices.This volume provides a thorough explanation of laser diode physics to enable the reader to develop superior photonic devices. It teaches the fundamentals behind the creation of such devices as energy bands of semiconductors, optical transitions, optical waveguides, and semiconductor junctions. Also reviewed are the characteristics of laser diodes, optical filters, and optical functional devices, which have been developed based on the above physics. These

photonic devices are demonstrated in successful system applications, and several experimental results are clearly described. Further, this important work:. Bridges the large gap between journal papers and textbooks, giving readers a working understanding so they can comprehend the latest, most intricate journal papers and research in the field. Provides analytical tools for Fabry-Perot LDs, DFB-LDs, and VCSELs, including equations to follow. Delineates differences in specifications required for light sources and for optical filters and optical functional devices. Outlines actual experimental results for system applications of laser diodes, optical filters, and optical functional devices. Discusses challenges in the field to be overcome in the futureBy opening readers' eyes to the incredible potential of laser diodes, this book inspires future development in photonics technology. Laser Diodes and Their Applications to Communications and Information Processing can be utilized as an advanced undergraduate text or a graduate text. It is also extremely useful to researchers in the fields of physics and electronics, from those at the beginning of their careers to senior scientists.