

Semiconductor Lasers Ii By Eli Kapon

Judging from the impact it has on our everyday lives, the semiconductor laser has emerged as perhaps the most important laser device currently in use. This volume presents information on recent advances in materials and structures.

Nonlinear Optics Of Semiconductor Lasers.

This index eliminates that need to search through multiple back-of-the-book indexes to find where a subject is addressed. The A-to-Z listing will help users find important handbook content in volumes where they may not have thought to look.

Book Review Index

Optics Letters

Patents

Photorefractive Effects, Materials, and Devices

Semiconductor Lasers and Laser Dynamics

The Optical Society of America (OSA) and SPIE – The International Society for Optical Engineering have awarded Govind Agrawal with an honorable mention for the Joseph W. Goodman Book Writing Award for his work on Nonlinear Fiber Optics, 3rd edition. Nonlinear Fiber Optics, 3rd Edition, provides a comprehensive and up-to-date account of the nonlinear phenomena occurring inside optical fibers. It retains most of the material that appeared in the first edition, with the exception of Chapter 6, which is now devoted to the polarization effects relevant for light propagation in optical fibers. The contents include such important topics as self- and cross-phase modulation, stimulated Raman and Brillouin scattering, four-wave mixing, modulation instability, and optical solitons. A proper understanding of these topics is essential for scientists and engineers interested in various aspects of lightwave technology. Such an ambitious objective increased the size of the book to the extent that it was necessary to create a separate but complimentary book, Applications of Nonlinear Fiber Optics, which is devoted to applications in the domain of lightwave technology. This revised edition of Nonlinear Fiber Optics should serve well the needs of the scientific community including graduate students in Optics, Physics, and Electrical Engineering, engineers in the optical communication industry, and scientists working in fiber optics and nonlinear optics. * Only book dealing with Nonlinear Fiber Optics * Comprehensive up-to-date coverage of the entire field * Problems at the end of each chapter suitable for a course * Focus on fundamental aspects * Can be used by graduate students doing research in or taking courses in nonlinear optics and optical communications

Most of the material in this volume is new. The first three chapters deal with three important fiber-optic components--fiber-based gratings, couplers, and interferometers--that serve as the building blocks of lightwave technology. In view of the enormous impact of rare-earth-doped fibers, amplifiers and lasers made by using such fibers are covered in Chapters 4 and 5. The last three chapters describe important applications of nonlinear fiber optics and are devoted to pulse-compression techniques, fiber-optic communication systems, and soliton-based transmission schemes. This volume should serve well the need of the scientific community interested in such fields as ultrafast phenomena, optical amplifiers and lasers, and optical communications. It will also be useful to graduate students as well as scientists and engineers involved in lightwave technology. * Training resource for engineers involved with lightwave technology * Covers the importance of nonlinear effects in designing WDM lightwave systems * Up to date information for researchers

This volume presents state-of-the-art information on several important material systems and device structures employed in modern semiconductor lasers. The first two chapters discuss several III-V, II-VI, and VI-VI compound semiconductor material systems employed in diode lasers whose emission spectra cover the range from the blue to the mid-infrared. Subsequent chapters describe the elaboration of special laser structures designed for achieving narrow spectral linewidths and wavelength tunability, as well as high power emission devices. The last chapter covers the development of surface emitting diode lasers, particularly vertical cavity structures. In all five chapters, the underlying device physics as well as the state-of-the-art and future trends are discussed. This book introduces the non-expert to the design and fabrication issues involved in the development of these important laser devices. In addition, it reviews the current status of the different material systems and cavity configurations for the benefit of readers engaged in research in this field. Useful background material related to the fundamentals of lasing in semiconductors can be found in the companion volume, Semiconductor Lasers I: Fundamentals. Covers important recent advances in materials, design, fabrication, and device structure of semiconductor lasers - aspects not covered in previously existing literature Introduces the non-expert to the subject Useful for professionals engaged in research and development Numerous schematic and data-containing illustrations Written by leading experts in the field

The Laser Guidebook

A Permuted Bibliography, 1958-1966

Fundamentals of Optical Waveguides

New Physics and Applications

Physics and Technology : Engineering 823.31, a Three-day Short Course, October 5-7, 1987 : Lecture Notes

Photonic circuitry is the first-choice technological advancement recognized by the telecommunications industry. Due to the speed, strength, and clarity of signal, photonic circuits are rapidly replacing electronic circuits in a range of applications. Applied Photonics is a state-of-the-art reference book that describes the fundamental physical concept of photonics and examines the most current information available in the photonics field. Cutting-edge developments in semiconductors, optical switches, and solitons are presented in a readable and easily understandable style, making this volume accessible, if not essential, reading for practicing engineers and scientists. Introduces the concept of nonlinear interaction of photons with matters, photons, and phonons Covers recent developments of semiconductor lasers and detectors in the communications field Discusses the development of nonlinear devices, including optical amplifiers, solitons, and phase conjugators, as well as the development of photonic components, switches, interconnects, and image processing devices

Erbium Fiber Amplifiers is a comprehensive introduction to the increasingly important topic of optical amplification. Written by three Bell Labs pioneers, the

book stresses the importance of the interrelation of materials properties, optical properties, and systems aspects of optical fiber amplifiers. All disc-based content for this title is now available on the Web. Key Features * Explains the theory of noise in optically amplified systems in an intuitive way * The book contains a discussion of components used in amplifier fabrication and of the attendant technologies used in real systems * The book provides basic tools for amplifier design as well as systems engineering, including the latest developments in WDM and soliton systems * The book discusses the fundamentals of rare earth ions for the reader desiring more depth in the topic * The book is for either the novice or experienced reader * The chapters have links between them to allow the reader to understand the relationship between the amplifier characteristics, noise, and systems applications * The book contains extensive references This book provides the information necessary for the reader to achieve a thorough understanding of all aspects of QW lasers - from the basic mechanism of optical gain, through the current technological state of the art, to the future technologies of quantum wires and quantum dots. In view of the growing importance of QW lasers, this book should be read by all those with an active interest in laser science and technology, from the advanced student to the experienced laser scientist. * The first comprehensive book-length treatment of quantum well lasers * Provides a detailed treatment of quantum well laser basics * Covers strained quantum well lasers * Explores the different state-of-the-art quantum well laser types * Provides key information on future laser technologies

The Nonlinear Optics of Semiconductor Lasers

The Materials Science of Semiconductors

Novel Quantum-wells GaAs-based Lasers for All Transmission Windows in Optical Communication

National Union Catalog

Official Gazette of the United States Patent and Trademark Office

Includes entries for maps and atlases.

Semiconductor Lasers IIMaterials and StructuresElsevier

"Fundamentals of Optical Waveguides" gives a complete theoretical basis of optical fibers and planar lightwave circuits, while being the first book to deal with the principles and applications of Arrayed Waveguide Grating multiplexers and Planar Lightwave Circuits. This comprehensive book enables researchers and graduate students working with optoelectronics to acquire and utilize the analysis techniques necessary for designing and simulating novel optical fibers and devices.

Novel In-plane Semiconductor Lasers

High-speed Semiconductor Laser Sources

Applied Photonics

Confined Electrons and Photons

Fundamentals

Optical fibers have revolutionized telecommunication, becoming the most widely used and the most efficient device for relaying information over long distances. While the market for optical fiber continues to grow, the next stage in the field of communication is the mass delivery of integrated services, such as home banking, shopping, internet services, and entertainment using video on demand. The economies and performance potential will determine the type of technology likely to succeed in the provision of these services. But it is already clear that optical fibers will play a crucial role in communication systems of the future. The opportunities provided by fiber Bragg gratings are of enormous importance for the further development of the fiber optic communication lines as cost-effective and efficient devices of the future. Fiber Bragg Gratings is the result of a growing demand for focused and reliable information on the subject. It brings together the fundamentals of fiber gratings, their specific characterizations, and numerous applications. In addition to researchers, scientists, and graduate students, it will be of interest to industrial practitioners in the field of fabrication of fiber optic materials and devices. It begins with the principles of fiber Bragg grating, from photosensitization of optical fibers, Bragg grating fabrication, theory, properties of grating, specific application, and concludes with measurement techniques. Addresses one of the most promising fields for future development in applied optics First book ever on the subject of fiber Bragg gratings Written by a pioneer in the field of optical communications Covers topics important to both research and industry Discusses theory, practical applications, and measurement

Diode lasers use nearly microscopic chips of gallium-arsenide or other exotic semiconductor material to generate coherent light in a very small package. Their compact size, reliability, and low cost means that they find applications in all aspects of modern technology-most importantly they drive modern optical telecommunication systems. Diode

The optical properties of semiconductors have played an important role since the identification of semiconductors as "small" bandgap materials in the thirties, due both to their fundamental interest as a class of solids having specific optical properties and to their many important applications. On the former aspect we can cite the fundamental edge absorption and its assignment to direct or indirect transitions, many-body effects as revealed by exciton

formation and photoconductivity. On the latter aspect, large-scale applications such as LEDs and lasers, photovoltaic converters, photodetectors, electro-optics and non-linear optic devices, come to mind. The eighties saw a revitalization of the whole field due to the advent of heterostructures of lower-dimensionality, mainly two-dimensional quantum wells, which through their enhanced photon-matter interaction yielded new devices with unsurpassed performance. Although many of the basic phenomena were evidenced through the seventies, it was this impact on applications which in turn led to such a massive investment in fabrication tools, thanks to which many new structures and materials were studied, yielding further advances in fundamental physics.

Semiconductor Lasers

Semiconductor Diode Lasers

Semiconductor Lasers: Materials and structures

Erbium-Doped Fiber Amplifiers

This book describes semiconductors from a materials science perspective rather than from condensed matter physics or electrical engineering viewpoints. It includes discussion of current approaches to organic materials for electronic devices. It further describes the fundamental aspects of thin film nucleation and growth, and the most common physical and chemical vapor deposition techniques. Examples of the application of the concepts in each chapter to specific problems or situations are included, along with recommended readings and homework problems. Since its invention in 1962, the semiconductor laser has come a long way. Advances in material purity and epitaxial growth techniques have led to a variety of semiconductor lasers covering a wide wavelength range of 0.3- 100 μ m. The development during the 1970s of GaAs semiconductor lasers, emitting in the near-infrared region of 0.8-0.9 μ m, resulted in their use for the first generation of optical fiber communication systems. However, to take advantage of low losses in silica fibers occurring around 1.3 and 1.55 μ m, the emphasis soon shifted toward long-wavelength semiconductor lasers. The material system of choice in this wavelength range has been the quaternary alloy InGaAsP. During the last five years or so, the intense development effort devoted to InGaAsP lasers has resulted in a technology mature enough that lightwave transmission systems using InGaAsP lasers are currently being deployed throughout the world. This book is intended to provide a comprehensive account of long-wave length semiconductor lasers. Particular attention is paid to InGaAsP lasers, although we also consider semiconductor lasers operating at longer wave lengths. The objective is to provide an up-to-date understanding of semiconductor lasers while incorporating recent research results that are not yet available in the book form. Although InGaAsP lasers are often used as an example, the basic concepts discussed in this text apply to all semiconductor lasers, irrespective of their wavelengths.

This book covers the device physics of semiconductor lasers in five chapters written by recognized experts in this field. The volume begins by introducing the basic mechanisms of optical gain in semiconductors and the role of quantum confinement in modern quantum well diode lasers. Subsequent chapters treat the effects of built-in strain, one of the important recent advances in the technology of these lasers, and the physical mechanisms underlying the dynamics and high speed modulation of these devices. The book concludes with chapters addressing the control of photon states in squeezed-light and microcavity structures, and electron states in low dimensional quantum wire and quantum dot lasers. The book offers useful information for both readers unfamiliar with semiconductor lasers, through the introductory parts of each chapter, as well as a state-of-the-art discussion of some of the most advanced semiconductor laser structures, intended for readers engaged in research in this field. This book may also serve as an introduction for the companion volume, Semiconductor Lasers II: Materials and Structures, which presents further details on the different material systems and laser structures used for achieving specific diode laser performance features. Introduces the reader to the basics of semiconductor lasers Covers the fundamentals of lasing in semiconductors, including quantum confined and microcavity structures Beneficial to readers interested in the more general aspects of semiconductor physics and optoelectronic devices, such as quantum confined heterostructures and integrated optics Each chapter contains a thorough introduction to the topic geared toward the non-expert, followed by an in-depth discussion of current technology and future trends Useful for professionals engaged in research and development Contains numerous schematic and data-containing illustrations

Quantum Well Lasers

Laser: Theorie, Typen und Anwendungen

Comprehensive index

Radio Engineering & Electronic Physics

A Master Cumulation

Vols. 8-10 of the 1965-1984 master cumulation constitute a title index.

Der fundierte Einstieg in Theorie und Anwendungen des Lasers. Das Buch enthält eine ausführliche Beschreibung und Daten aller Lasertypen mit Hinweisen auf die vielfältigen Anwendungen, die von der Materialbearbeitung, Holographie, Spektroskopie bis zur Medizin reichen. Neben den klassischen Lasern wie Rubin- oder CO₂-Laser werden in dieser Neuauflage auch aktuelle Entwicklungen wie z.B. Quantenkaskadenlaser, Dioden-gepumpte Festkörperlaser und Femtosekundenlaser behandelt.

New edition of a reference and tutorial introduction to the practical aspects of lasers--the functional characteristics vital to those who work with them. A few chapters describe basic principles; subsequent chapters are devoted to the various kinds of lasers, e.g. helium-neon, noble gas, helium-cadmium, carbon dioxide, chemical, copper and gold vapor, excimer, nitrogen, and others. Annotation copyright by Book News, Inc., Portland, OR

Fiber Bragg Gratings

Undersea Fiber Communication Systems

ASM Handbook

International Aerospace Abstracts

Materials and Structures

Description This book provides a detailed overview of the evolution of undersea communications systems, with emphasis on the most recent breakthroughs of optical submarine cable technologies based upon Wavelength Division Multiplexing, optical amplification, new-generation optical fibers, and high-speed digital electronics. The role played by submarine-communication systems in the development of high-speed networks and associated market demands for multiplying Internet and broadband services is also covered. Importance of This Topic This book will fill the gap between highly specialized papers from large international conferences and broad-audience technology review updates. The book provides a full overview of the evolution in the field and conveys the dimension of the large undersea projects. In addition, the book uncovers the myths surrounding marine operations and installations in that domain, which have remained known so far to only very few specialists.

Semiconductor Lasers II

Applications of Nonlinear Fiber Optics

Nonlinear Fiber Optics

Laser Literature

Fundamentals and Technology