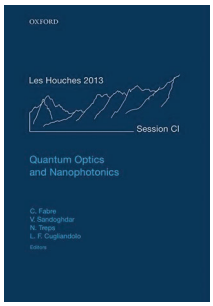
New titles at a glance

Quantum Optics and Nanophotonics

Edited by C. Fabre, V. Sandoghdar, N. Treps and L. F. Cugliandolo

OXFORD UNIV. PRESS 464PP. US$55.00

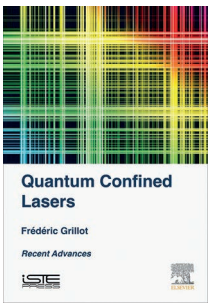


Comprising the lecture notes of the Les Houches Summer School 101 held in August 2013, this title provides chapters that lie at the intersection of basic quantum science and advanced nanotechnology. They introduce the topics of Casimir forces and vacuum energy, quantum information, near-field optics and plasmonics, transformation optics, temporal and spectral properties of quantum light, quantum optics with nitrogen–vacancy centres in diamond and quantum measurements. The book also covers the latest developments on both the classical and quantum properties of nano-objects. As it encompasses theory and experimental details, it is useful for both theoreticians and experimentalists.

Quantum Confined Lasers

By Frédéric Grillot

ELSEVIER 160PP. £72.50

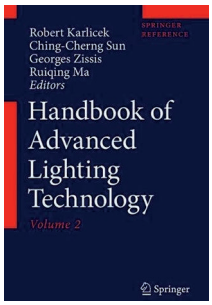


This text reviews the recent advances and current challenges in the field of quantum confined lasers. It features a comprehensive treatment of diode lasers starting from the basics to the most advanced concepts and technologies. A concise overview of the state of the art in semiconductor lasers is presented. The text includes timely challenges in diode lasers, related to the birth of future green optical telecommunication networks, the incorporation of photonics in consumer microelectronics, and the development of terahertz solutions for free-space communications and sensing. It also discusses promising technologies that could be used for medicine and silicon photonics, and applications in scanning, imaging, and screen and display technologies. It will be a valuable book for all researchers, scientists and R&D engineers engaged in the design and development of lasers and optoelectronics.

Handbook of Advanced Lighting Technology

Edited by Robert Karlicek, Ching-Cherng Sun, Georges Zissis and Ruiqing Ma

SPRINGER 1185PP. £356.50



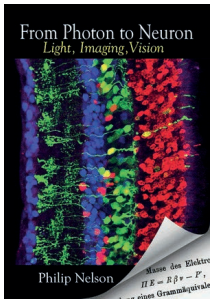
This book is an important reference on the subject of light-source science and technology, with a particular focus on solid-state light sources (light-emitting diodes (LEDs) and organic LEDs), the development of 'smart' or 'intelligent' lighting systems, and the integration of advanced light sources, sensors and adaptive control architectures to provide tailored illumination. The potential applications for smart lighting span the entire spectrum of technology, from domestic and commercial lighting, to breakthroughs in biotechnology, transportation and light-based wireless communication. Although most current research globally is in the field of solid-state lighting, there is renewed interest in the development of conventional and non-conventional light sources for specific applications. This book comprehensively reviews the basic physical principles and device technologies behind all light-source types and includes a discussion of the state-of-the-art technologies.

From Photon to Neuron

Edited by Philip Nelson

PRINCETON UNIV. PRESS 512PP. £91.95

This book provides an accessible introduction to the physics of light and a unified view of a broad range of optical and biological phenomena. It builds the necessary background in neuroscience, photochemistry and other disciplines, with applications to optogenetics, super-resolution microscopy, the single-photon response of individual

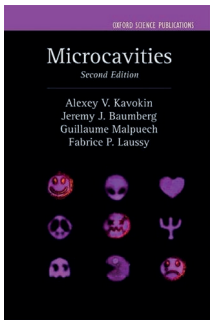


photoreceptor cells, and more. With its integrated approach, this volume can be used as the basis for interdisciplinary courses in physics, biophysics, sensory neuroscience, biophotonics, bioengineering, or nanotechnology. As the goal for students is to gain fluency in their chosen fields, the book includes a wealth of exercises, including many that guide them to create computer-based solutions. Supplementary online materials include real experimental data to use with the exercises. This book is suitable for students who are familiar with first-year undergraduate physics and maths, and its advanced chapters also makes it suitable for graduate courses.

Microcavities

By Alexey V. Kavokin, Jeremy J. Baumberg, Guillaume Malpuech and Fabrice P. Laussy

OXFORD UNIV. PRESS 608PP. US$85.00



Microcavities are semiconductor, metal or dielectric structures providing optical confinement in one, two or three dimensions. They have attracted attention owing to the discovery of a strong exciton–light coupling regime that allows the formation of superposition light–matter quasiparticles — exciton–polaritons. Several remarkable effects have been discovered in microcavities, including the Bose–Einstein condensation of exciton–polaritons, polariton lasing, superfluidity, and optical spin Hall and spin Meissner effects, among others. This title details the physics of microcavities from classical to quantum optics, and from a Boltzmann gas to a superfluid, as well as quantum polaritonic and polaritonic devices. It provides the theoretical background needed to understand the complex phenomena in coupled light–matter systems, and presents a broad overview of experimental progress in the physics of microcavities.