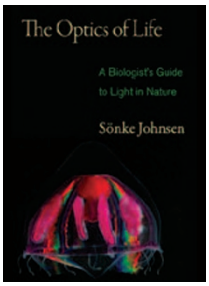
New titles at a glance

The Optics of Life: A Biologist's Guide to Light in Nature

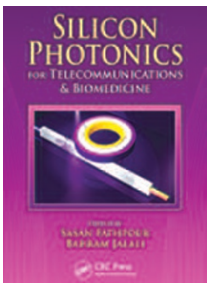
by Sönke Johnsen
PRINCETON UNIV. PRESS. 376PP. US$45



Light plays an important role in vision, neurobiology, mating, camouflage and photosynthesis. This book introduces the basic properties of light and how it interacts with matter, explaining phenomena such as absorption, scattering, fluorescence and polarization. Written by an associate professor of biology at Duke University in the USA, the book uses many examples from the natural world to illustrate photonic concepts in biology and provides guidance on how to make optical measurements. The idea is to provide an accessible and concise overview of the fundamentals to biologists and researchers who are unfamiliar with the field.

Silicon Photonics for Telecommunications and Biomedicine

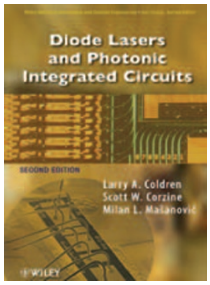
edited by Sasan Fathpour and Bahram Jalali
CRC PRESS. 444PP. £63.99



Focusing on the important obstacles that must be overcome in order to make silicon photonics a viable commercial reality, this book provides a concise introduction to major developments in the field with an emphasis on applications in data communications and biology. A collection of experts from around the world provide explanations of the fundamental principles and fabrication approaches employed with silicon photonics. After a historical review, the text discusses topics such as optical waveguides, optical parametric effects, stress and the piezoelectric tuning of silicon's optical properties. It also covers silicon-based optical resonators, growth techniques, hybrid lasers on silicon and energy harvesting.

Diode Lasers and Photonic Integrated Circuits, Second Edition

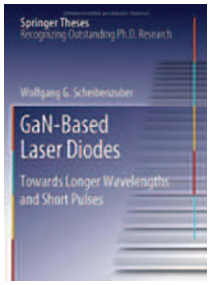
by Larry A. Coldren, Scott W. Corzine and Milan L. Mashanovitch
WILEY, 744PP. US$135.00



Diode lasers are important sources of light for optical communication, storage and sensing. This text features timely updates to the technology employed in laser diode design, fabrication and performance. As well as describing popular semiconductor laser types such as GaN lasers, quantum dot lasers and distributed feedback lasers, coverage also extends to a wide variety of integrated photonic devices such as detectors, modulators and semiconductor optical amplifiers. Applications in data storage and optical communications are discussed together with important measurement and characterization methodologies such as eye diagrams and bit-error rates.

GaN-Based Laser Diodes: Towards Longer Wavelengths and Short Pulses

by Wolfgang Scheibenzuber
SPRINGER. 95PP. £90



The emergence of highly efficient short-wavelength blue and ultraviolet laser diodes based on the III–V compound semiconductor GaN has not only enabled high-density optical data storage, but is also expected to play an important role in the display industry. Moreover, biophotonic applications such as exciting fluorescent dyes and proteins, materials research and quantum optics can also benefit from these versatile and cost-efficient laser light sources. This book describes the device physics of GaN-based laser diodes, together with recent efforts to achieve longer emission wavelengths and short-pulse emission.

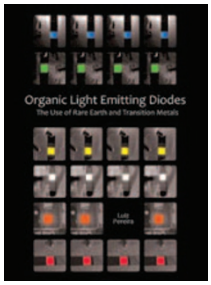
Femtosecond Laser Micromachining: Photonic and Microfluidic Devices in Transparent Materials

edited by Roberto Osellame, Giulio Cerullo and Roberta Ramponi
SPRINGER. 483PP. £153

Femtosecond laser processing of transparent materials is a powerful and versatile technology for fabricating a wide variety of microsystems in fields such as photonics and microfluidics. Femtosecond laser processing is a maskless technology — unlike conventional lithography — which allows for the rapid realization of prototype three-dimensional structures. This book focuses primarily on the micromachining of transparent materials. The authors summarize the state-of-the-art of this rapidly emerging topic and present contributions from experts in the field, ranging from the principles of nonlinear material modification to fabrication techniques and applications in photonics and optofluidics.

Organic Light Emitting Diodes — The Use of Rare Earth and Transition Metals

by Luiz Pereira
PAN STANFORD. 350PP. US$149.95



The organic light-emitting diode is becoming an increasingly important source of light for the display and lighting industries. These electroluminescent devices have potential applications ranging from efficient and planar lighting to displays with superior brightness and colour gamut. This book addresses the development, design, fabrication and capabilities of organic light-emitting diodes based on rare-earth and transition metal complexes, focusing in particular on europium, terbium, ruthenium and rhenium.