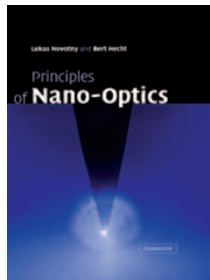


New titles at a glance

Principles of Nano-optics

by Lukas Novotny and Bert Hecht

CAMBRIDGE UNIVERSITY PRESS. 558PP. US\$53



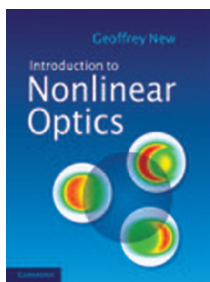
Nano-optics is an emerging field of study that is motivated by rapid advances in nanoscience and nanotechnology, which require adequate tools and strategies for fabricating,

manipulating and characterizing at this scale. The authors provide a comprehensive overview of the theoretical and experimental concepts necessary to understand and work in nano-optics. With a very broad perspective, they cover optical phenomena relevant to the nanoscale across diverse areas ranging from quantum optics to biophysics, introducing and extensively describing all of the significant experimental processes. Written for graduate students wishing to enter the field, the volume includes problem sets to reinforce and extend the discussions.

Introduction to Nonlinear Optics

by Geoffrey New

CAMBRIDGE UNIVERSITY PRESS. 274PP. US\$75



Providing a gentle introduction to the principles of nonlinear optics, this textbook is ideal for graduate students starting their research in this exciting area. After outlining the basic ideas of the

field, the book offers a thorough analysis of second-harmonic generation and related second-order processes, before moving on to third-order effects, the nonlinear optics of short optical pulses and coherent effects such as electromagnetically induced transparency. A simplified treatment of high-harmonic generation is presented at the end. Advanced topics such as the linear and nonlinear optics of crystals, the tensor nature of the nonlinear coefficients and

their quantum mechanical representation are confined to specialist chapters, allowing the reader to focus on basic principles before tackling these more difficult aspects of the subject.

Coherent Control of Four-Wave Mixing

by Yanpeng Zhang, Zhiqiang Nie and Min Xiao

SPRINGER. 400PP. €129.95



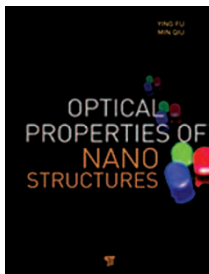
This publication discusses the frequency, temporal and spatial domain interplays of four-wave mixing (FWM) processes induced by atomic coherence in multilevel atomic systems. It covers six principal topics:

ultrafast FWM polarization beating due to interactions between multicolour laser beams and multilevel media; coexisting Raman-Rayleigh-Brillouin-enhanced polarization beating due to colour-locking noisy field correlations; FWM processes with different dual-dressed schemes in long, ultrathin atomic cells; temporal and spatial interference between FWM and six-wave mixing signals in multilevel electromagnetically induced transparency media; spatial displacements and splitting of the probe and generated FWM beams; and the observations of gap soliton trains, vortex solitons and stable multicomponent vector solitons in FWM signals. The publication is intended for researchers, advanced undergraduate and graduate students working in nonlinear optics.

Optical Properties of Nanostructures

by Ying Fu and Min Qiu

PAN STANFORD PUBLISHING. 330PP. US\$149.95



Nanotechnology is one of the most important areas of developing technology because of its potential for forming the basis of future generations of electronic and optoelectronic

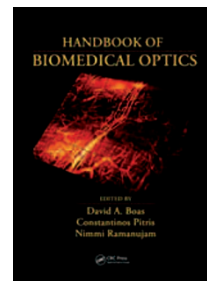
devices. This volume discusses electrons and photons in nanostructures using first-principles quantum-mechanical theories and fundamental concepts — providing a unified coverage of nanostructured electronic and optical components — behind nanoelectronics and optoelectronics, the material basis, physical phenomena, device physics, as well as designs and applications. Applications discussed include light-emitting diodes, lasers, photodetectors, photonic integrated circuits, photon storage, waveguides and modulators, and quantum optics. The volume's broad coverage of areas, ranging from basic structures to passive components and active devices, makes it a unique reference for scientists and students interested in this area.

Handbook of Biomedical Optics

by David A. Boas, Constantinos Pitris and

Nimmi Ramanujam

CRC PRESS. 831PP. £95.00



Biomedical optics holds tremendous promise for delivering effective, safe, non- or minimally invasive diagnostics and targeted, customizable therapeutics. This handbook provides

in-depth coverage of the field, including for applications such as biomedical research, diagnosis and therapy. It contains introductory material on optics and the optical properties of tissue, and describes the various forms of spectroscopy and its applications in medicine and biology, including the use of techniques that exploit intrinsic absorption and scattering contrast, dynamic contrast and fluorescence and Raman contrast mechanisms. The book also provides extensive coverage of tomography, ranging from the microscopic (optical coherence tomography) to the macroscopic level (diffuse optical tomography) and photoacoustic tomography, discusses cutting-edge translations to biomedical applications in both basic sciences and clinical studies, and highlights the use of light in the treatment of injury and disease.