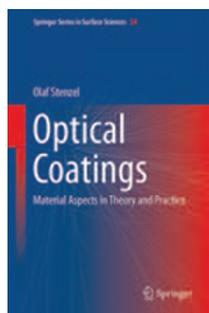


New titles at a glance

Optical Coatings: Material Aspects in Theory and Practice

By Olaf Stenzel

SPRINGER. 378PP. £90



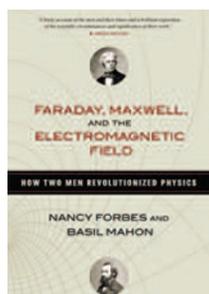
Optical coatings consisting of multiple thin films are an essential part of many optical systems, where they are commonly employed to optimize the transmission and reflection properties of an optical device. This

text describes popular coating designs and materials, including high-index oxides, porous low-index materials, dielectric mixtures for graded-index coatings and coatings with periodic surface structures. It also discusses the experimental measurement and determination of important parameters relevant to coatings. Advice for optimizing coatings for a specific application is also presented, along with the basics of thin-film theory, which governs coating behaviour.

Faraday, Maxwell, and the Electromagnetic Field: How Two Men Revolutionized Physics

By Nancy Forbes and Basil Mahon

PROMETHEUS. 320PP. £23



The fascinating story of how two giants of nineteenth century physics, Michael Faraday (1791–1867) and James Clerk Maxwell (1831–1879), developed the theory that explains the behaviour of electromagnetic fields is revealed in this

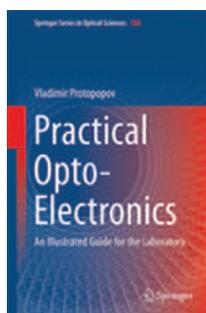
book. The narrative describes how Faraday's highly imaginative experiments with wires carrying electrical currents provided valuable insights into the electromagnetic field. These observations were then explained by one of the most brilliant mathematical minds of his time, Maxwell, who devised a unified theory that showed precisely how electricity and magnetism are related to each other. The text explains in an accessible and engaging

manner how the theory led to the prediction of the existence of electromagnetic waves and the hunt to detect them.

Practical Opto-Electronics: An Illustrated Guide for the Laboratory

By Vladimir Protopopov

SPRINGER. 393PP. £90



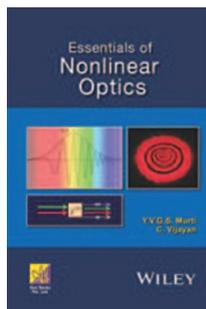
Designed as an illustrated guide for the laboratory, this text introduces many of the key devices found in optical and optoelectronic systems. The book describes the role of many common types of optical elements, light sources and

photoreceivers. It discusses techniques and devices for modulating optical signals, aligning and positioning beams, and controlling the polarization of light signals. The design, use and principles of useful instruments, such as interferometers, spectrometers and monochromators, are also described.

Essentials of Nonlinear Optics

Y. V. G. S. Murti and C. Vijayan

WILEY. 200PP. £67



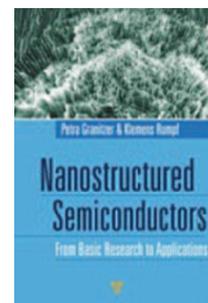
Nonlinear interactions between matter and intense optical fields play an important role in many useful photonic devices and technologies, especially in the areas of optical communications, imaging, quantum

optics and materials processing. This text provides an introduction and overview of the principles and processes involved in many common nonlinear interactions. Topics covered include nonlinear wave mixing, phase conjugation, self-focusing, self-phase modulation, nonlinear absorption and optical limiting, switching, and bistability. The design and use of engineered materials having a high nonlinearity is also discussed in detail, as are potential applications.

Nanostructured Semiconductors: From Basic Research to Applications

Edited by Petra Granitzer and Klemens Rumpf

CRC PRESS. 700PP. \$150



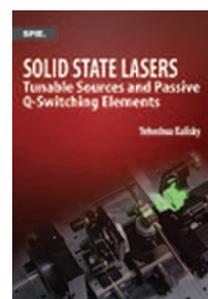
This book provides a detailed discussion regarding the fabrication of nanostructured semiconductors and their application in various fields, including optics, acoustics and biomedicine. It presents

recent developments in the area with an explanation of the mechanisms and principles involved in harnessing hybrid nanostructured, nanoscale and low-dimensional materials. Topics such as synthesis by self-assembly, etching and characterization of such materials are also discussed in depth. Materials and architectures covered include germanium and silicon nanocrystals, porous silicon, quantum dots and nanowires.

Solid State Lasers: Tunable Sources and Passive Q-Switching Elements

By Yehoshua Y. Kalisky

SPIE. 254PP. \$44



The development of laser sources that operate over a wide range of wavelengths and can generate short-duration pulses is of considerable importance for many applications, including materials processing and pump-probe

spectroscopy. This book describes the active materials and resonator designs used to create such sources. It commences with a discussion of atomic spectroscopy and the properties of chromium (Cr^{3+} and Cr^{4+}) ions, and then proceeds to discuss specific laser systems. Important pulse generating techniques, such as passive switching and mode locking are explained. The book then finishes with a discussion of diode-pumped systems.