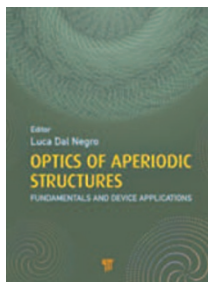


# New titles at a glance

## Optics of Aperiodic Structures: Fundamentals and Device Applications

Edited by Luca Dal Negro

PAN STANFORD. 509PP. \$150



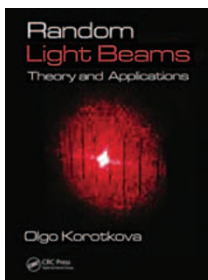
In recent years, the optical behaviour of media with aperiodic structures has attracted considerable scientific interest, especially from researchers working in the areas of nano-optics and

plasmonics. In particular, the realization of deterministic aperiodic structures generated by mathematical algorithms (for example, the Fibonacci sequence) offers unique opportunities for controlling the propagation, scattering and interaction of light with matter. The structural complexity of such media also influences their linear and nonlinear optical properties, opening up new opportunities for researchers in photonics. Details of the theory, experimental realization and potential applications in sensing, photovoltaics, filtering and light sources are all covered in this book.

## Random Light Beams: Theory and Applications

By Olga Korotkova

CRC PRESS. 366PP. £89



This book introduces the essential concepts needed gain a deep understanding of the generation and behaviour of random light beams. It starts by describing the theoretical concepts of deterministic paraxial beams,

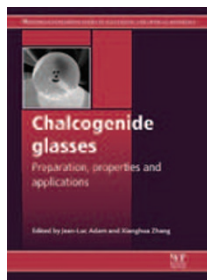
scalar stochastic beams and electromagnetic stochastic beams. It then discusses the propagation, interaction and scattering processes of random beams in various types of media. Applications and real-life scenarios involving random beams are also covered, with case studies provided for random beams in the human eye and negative-phase materials, imaging by twisted random beams, as well as applications in free-space optical

communications and active LIDAR systems with rough targets.

## Chalcogenide Glasses: Preparation, Properties and Applications

Edited by J.-L. Adam and X. Zhang

WOODHEAD PUBLISHING. 716PP. £200



Designed for researchers, material scientists and electrical engineers working in the photonics and optoelectronics industries, this book provides details of the fabrication processes, attributes

and applications of chalcogenide glasses. It is divided into two parts. Part 1 describes the preparation, structure, characterization and various properties (optical, thermal and ionic conductivity properties) of chalcogenide glasses. Part 2 is devoted to applications of chalcogenide glasses, including their uses in lasers and optical amplifiers, infrared sensors, devices for all-optical signal processing, phase-change switches and memories, and battery electrolytes.

## Coherent Laser Beam Combining

Edited by Arnaud Brignon

WILEY-VCH. 498PP. €139



The ability to combine coherent laser beams is important for applications requiring powerful beams, such as laser particle acceleration and laser fusion. This book explores various techniques

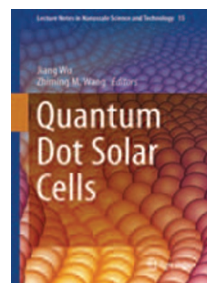
for accomplishing this task, placing a strong emphasis on the use of fibre lasers and amplifiers. Part A describes the combining principles of single-frequency dithering, LOCSET, hill-climbing algorithms and adaptive fibre-array schemes. It also discusses the prospects for combining beams that have pulse durations in the long-pulse regime (nano- to microseconds) and the femtosecond regime. Part B discusses passive

and self-organized phase locking and the roles that they can play in beam combining.

## Quantum Dot Solar Cells

Edited by Jiang Wu and Zhiming M. Wang

SPRINGER. 387PP. £117



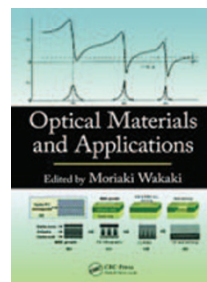
Quantum dots, also referred to as semiconductor nanocrystals, are receiving considerable interest from the photovoltaics community as a means for creating solar cells with

superior performance. This book aims to provide an introduction and overview of the area. It consists of tutorial chapters, written by a selection of experts, on the different designs of solar cells containing semiconductor quantum dots. Topics covered include quantum-dot intermediate-band solar cells, hot-electron quantum-dot solar cells, quantum-dot-sensitized solar cells, colloidal quantum-dot solar cells and quantum-dot cells featuring multiple-exciton generation.

## Optical Materials and Applications

Edited by Moriaki Wakaki

CRC PRESS. 317PP. £89



This book introduces the theory of the optical properties of solids, describing their properties in the ultraviolet, visible and infrared regions, and presenting the key equations governing the

behaviour. Nonlinear optical materials, solid-state laser materials and thin films are also discussed in detail with mention of their potential applications. The important emerging topics of nanophotonic materials and structured materials in one, two and three dimensions are described, including the formation of artificial structures with subwavelength dimensions. Finally, optical waveguides made from various materials are mentioned.