

Optical Properties Of Nanostructured Random Media 1st Edition

Optical Properties of Advanced Materials
The British National Bibliography
Non-Linear Optical Properties of Matter
Complex Mediums
Design, Characterization and Application of Resonant Nano-aperture
Near-field Optical Probes
Functional Properties of Nanostructured Materials
Journal of Experimental and Theoretical Physics
Postconference Digest
Canadian Journal of Chemistry
Quantum Plasmonics
Contemporary Nonlinear Optics
Philosophical Transactions
Classical Mixing Approaches to Determine Effective Permittivity and Permeability of a Two-phase Mixture
Nanochemistry, Biotechnology, Nanomaterials, and Their Applications
Optics and Spectroscopy
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Colloid Journal of the Russian Academy of Sciences
Plasmonics
Conference Digest
Handbook of Nanoscale Optics and Electronics
Bulletin of the Russian Academy of Sciences
Solid-Liquid Interfaces
Comprehensive Nanoscience and Technology
Acta Physica Slovaca
Solid-State Random Lasers
Optics of Aperiodic Structures
Physics, Uspekhi
Nanophotonics
Surface-Enhanced Raman Scattering
Ultra-Short Pulsed Laser Engineered Metal-Glass Nanocomposites
Nonlinear Guided Waves and Their Applications
Nanotechnology
Photonic Crystal Materials and Nanostructures
Bottom-up Nanofabrication: Applications
Optics of Nanomaterials
Summaries of Papers Presented at the Quantum Electronics and Laser Science Conference
Nanocomposites for Photonic and Electronic Applications
Ultrafast Phenomena
Laser Optics 2006

Optical Properties of Advanced Materials

Random lasers are the simplest sources of stimulated emission without cavity, with the feedback provided by scattering in a gain medium. First proposed in the late 1960s, random lasers have grown to a large research field. This book reviews the history and the state of the art of random lasers, provides an outline of the basic models describing their behavior, and describes the recent advances in the field. The major focus of the book is on solid-state random lasers. However, it also briefly describes random lasers based on liquid dyes with scatterers. The chapters of the book are almost independent of each other. So, the scientists or engineers interested in any particular aspect of random lasers can read directly the relevant section. Researchers entering the field of random lasers will find in the book an overview of the field of study. Scientists working in the field can use the book as a reference source.

The British National Bibliography

Non-Linear Optical Properties of Matter

Complex Mediums

Proceedings of SPIE present the original research papers presented at SPIE conferences and other high-quality conferences in the broad-ranging fields of optics and photonics. These books provide prompt access to the latest innovations in research and technology in their respective fields. Proceedings of SPIE are among the most cited references in patent literature.

Design, Characterization and Application of Resonant Nano-aperture Near-field Optical Probes

Functional Properties of Nanostructured Materials

Journal of Experimental and Theoretical Physics

Contemporary Nonlinear Optics discusses the different activities in the field of nonlinear optics. The book is comprised of 10 chapters. Chapter 1 presents a description of the field of nonlinear guided-wave optics. Chapter 2 surveys a new branch of nonlinear optics under the heading optical solitons. Chapter 3 reviews recent progress in the field of optical phase conjugation. Chapter 4 discusses ultrafast nonlinear optics, a field that is growing rapidly with the ability of generating and controlling femtosecond optical pulses. Chapter 5 examines a branch of nonlinear optics that may be termed nonlinear quantum optics. Chapter 6 reviews the new field of photorefractive adaptive neural networks. Chapter 7 presents a discussion of recent successes in the development of nonlinear optical media based on organic materials. Chapter 8 reviews the field of nonlinear optics in quantum confined structures. Chapter 9 reviews the field of nonlinear laser spectroscopy, with emphasis on advances made during the 1980s. Finally, Chapter 10 reviews the field of nonlinear optical dynamics by considering nonlinear optical systems that exhibit temporal, spatial, or spatio-temporal instabilities. This book is a valuable source for physicists and other scientists interested in optical systems and neural networks.

Postconference Digest

The contributors to the book are world best experts in the optics of random media; they provide a state-of-the-art review of recent developments in the field including nonlinear optical and magneto-optical properties, Raman and hyper-Raman scattering, laser action, plasmon excitation and localized giant fields, imaging and spectroscopy of random media

Canadian Journal of Chemistry

Quantum Plasmonics

With the increasing demand for smaller, faster, and more highly integrated optical and electronic devices, as well as extremely sensitive detectors for biomedical and environmental applications, a field called nano-optics or nano-photonics/electronics

is emerging – studying the many promising optical properties of nanostructures. Like nanotechnology itself, it is a rapidly evolving and changing field – but because of strong research activity in optical communication and related devices, combined with the intensive work on nanotechnology, nano-optics is shaping up fast to be a field with a promising future. This book serves as a one-stop review of modern nano-optical/photonic and nano-electronic techniques, applications, and developments. Provides overview of the field of Nano-optics/ Photonics and electronics, detailing practical examples of photonic technology in a wide range of applications. Discusses photonic systems and devices with mathematical rigor precise enough for design purposes. A one-stop review of modern nano-optical/photonic and nano-electronic techniques, applications, and developments.

Contemporary Nonlinear Optics

Philosophical Transactions

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Classical Mixing Approaches to Determine Effective Permittivity and Permeability of a Two-phase Mixture

This book presents state-of-the-art contributions from a number of leading experts that actively work worldwide in the rapidly growing, highly interdisciplinary, and fascinating fields of aperiodic optics and complex photonics. Edited by Luca Dal Negro, a prominent researcher in these areas of optical science, the book covers the fundamental, computational, and experimental aspects of deterministic aperiodic structures, as well as numerous device and engineering applications to dense optical filters, nanoplasmonics photovoltaics and technologies, optical sensing, light sources, and nonlinear optics.

Nanochemistry, Biotechnology, Nanomaterials, and Their Applications

Optics and Spectroscopy

Optical Properties of Nanostructured Random Media

Proceedings of SPIE present the original research papers presented at SPIE conferences and other high-quality conferences in the broad-ranging fields of optics and photonics. These books provide prompt access to the latest innovations in research and technology in their respective fields. Proceedings of SPIE are among the most cited references in patent literature.

Nonlinear Optics of Random Media

Colloid Journal of the Russian Academy of Sciences

This book presents some of the latest achievements in nanotechnology and nanomaterials from leading researchers in Ukraine, Europe, and beyond. It features selected peer-reviewed contributions from participants in the 5th International Science and Practice Conference Nanotechnology and Nanomaterials (NANO2017) held in Chernivtsi, Ukraine on August 23-26, 2017. The International Conference was organized jointly by the Institute of Physics of the National Academy of Sciences of Ukraine, Ivan Franko National University of Lviv (Ukraine), University of Tartu (Estonia), University of Turin (Italy), and Pierre and Marie Curie University (France). Internationally recognized experts from a wide range of universities and research institutions share their knowledge and key results on topics ranging from energy storage to biomedical applications. This book's companion volume also addresses nanooptics, nanoplasmonics, and interface studies.

Plasmonics

Glasses containing metallic nanoparticles exhibit very promising linear and nonlinear optical properties, mainly due to the surface plasmon resonances (SPRs) of the nanoparticles. The spectral position in the visible and near-infrared range and polarization dependence of the SPR are characteristically determined by the nanoparticles' shapes. The focus of Ultra-Short Pulsed Laser Engineered Metal-Glass Nanocomposites is the interaction of intense ultra-short laser pulses with glass containing silver nanoparticles embedded in soda-lime glass, and nanostructural modifications in metal-glass nanocomposites induced by such laser pulses. In order to provide a comprehensive physical picture of the processes leading to laser-induced persistent shape transformation of the nanoparticles, series of experimental results investigating the dependences of laser assisted shape modifications of nanoparticles with laser pulse intensity, excitation wavelength, temperature are considered. In addition, the resulting local optical dichroism allows producing very flexibly polarizing optical (sub-) microstructures with well-specified optical properties. The achieved considerable progress towards technological application of this technique, in particular also for long-term optical data storage, is also discussed.

Conference Digest

Handbook of Nanoscale Optics and Electronics

Bulletin of the Russian Academy of Sciences

Solid-Liquid Interfaces

Comprehensive Nanoscience and Technology

In the last decade, optically functionalized materials have developed rapidly, from bulk matters to structured forms. Now we have a rich variety of attractive advanced materials. They are applied to optical and electrical devices that support the information communication technology in the mid 21-th century. Accordingly, it is quite important to have a broad knowledge of the optical properties of advanced materials for students, scientists and engineers working in optics and related fields. This book is designed to teach fundamental optical properties of such advanced materials effectively. These materials have their own peculiarities which are very interesting in modern optical physics and also for applications because the concepts of optical properties are quite different from those in conventional optical materials. Hence each chapter starts to review the basic concepts of the materials briefly and proceeds to the practical use. The important topics covered in this book include: quantum structures of semiconductors, spintronics, photonic crystals, surface plasmons in metallic nanostructures, photonic metamaterials, liquid crystal materials, organic LED materials and magnet-optics.

Acta Physica Slovaca

Solid-State Random Lasers

Optics of Aperiodic Structures

Physics, Uspekhi

Nanocomposites for Photonic and Electronic Applications addresses a range of aspects of different nanocomposites and their possible applications to illustrate the techniques used to prepare and characterize them. In addition, the book discusses possible optical, electronic, biophotonic, photonic and renewable energy applications, presenting a panorama of current research in the field of nanostructures for photonic applications. This is an important reference source for academics and industry engineers who are looking to learn more about how nanocomposites can be used to make cheaper, more efficient products in the electronic and photonic fields. Explores the use of different types of amorphous and crystalline nanocomposites based on fluorides, tellurite, borates and lasers Discusses the applications of nanocomposites for photonics, biophotonics and renewable energy applications Assesses the advantages and disadvantages of using different types of nanocomposite in the design of different electronic and photonic products

Nanophotonics

Using combinations of in situ and ex situ experimental methods, fundamental and relevant phenomena such as adsorption and desorption of ions and molecules, restructuring of surfaces, thin film and nanocluster growth, and electrochemical

reactions on the micrometer scale are addressed. The overview includes a wide range of experimental techniques and examples of solid-liquid interfaces and aims at stimulating an expansion of this important type of interface science.

Surface-Enhanced Raman Scattering

Ultra-Short Pulsed Laser Engineered Metal-Glass Nanocomposites

Almost 30 years after the first reports on surface-enhanced Raman signals, the phenomenon of surface-enhanced Raman scattering (SERS) is now well established. SERS gained particular interest after single-molecule Raman spectroscopy had been demonstrated. This book summarizes and discusses present theoretical approaches that explain the phenomenon of SERS and reports on new and exciting experiments and applications of the fascinating spectroscopic effect.

Nonlinear Guided Waves and Their Applications

Nonlinear Optics of Random Media reviews recent advances in one of the most prominent fields of physics. It provides an outline of the basic models of irregular structures of random inhomogeneous media and the approaches used to describe their linear electromagnetic properties. Nonlinearities in random media are also discussed. The chapters can be read independently, so scientists and students interested in a specific problem can go directly to the relevant text.

Nanotechnology

Photonic Crystal Materials and Nanostructures

Nanomaterials are mainly categorized into three groups: fundamental building blocks, dispersions or composites of building blocks in randomly ordered matrices, and spatially resolved, ordered nanostructures. Today, nanomaterials that offer some unique optical properties may find application as pure materials or may be integrated into larger structures. This book presents examples of both pure and composite materials that include organic-inorganic nanocomposites and quantum dots embedded into different matrices for various applications in modern nanotechnology. This edition has been thoroughly revised and updated with the most recent developments in the field. The newly added introductory paragraphs will help students and young researchers in better understanding the chapters. The new sections on frequently used physical constants and units conversions as well as the updated bibliography add to the book's utility. This textbook is unique compared with its counterparts in the market in respect of its scope as it contains introductory sections to the important topics on nanomaterial optics. This feature broadens its readership from engineers and researchers working in the field of materials science and optics, to lecturers, graduate students, and beginners who want to deepen their knowledge in nanomaterial optics.

Bottom-up Nanofabrication: Applications

Optics of Nanomaterials

This book presents the latest results of quantum properties of light in the nanostructured environment supporting surface plasmons, including waveguide quantum electrodynamics, quantum emitters, strong-coupling phenomena and lasing in plasmonic structures. Different approaches are described for controlling the emission and propagation of light with extreme light confinement and field enhancement provided by surface plasmons. Recent progress is reviewed in both experimental and theoretical investigations within quantum plasmonics, elucidating the fundamental physical phenomena involved and discussing the realization of quantum-controlled devices, including single-photon sources, transistors and ultra-compact circuitry at the nanoscale.

Summaries of Papers Presented at the Quantum Electronics and Laser Science Conference

This book, based on the lectures and contributions of the NATO ASI on "Functional Properties of Nanostructured Materials", gives a broad overview on its topic, as it combines basic theoretical articles, papers dealing with experimental techniques, and contributions on advanced and up-to-date applications in fields such as microelectronics, optoelectronics, electrochemistry, sensorics, and biotechnology.

Nanocomposites for Photonic and Electronic Applications

Ultrafast Phenomena

This book assembles both theory and application in this field, to interest experimentalists and theoreticians alike. Part 1 is concerned with the theory and computing of non-linear optical (NLO) properties while Part 2 reviews the latest developments in experimentation. This book will be invaluable to researchers and students in academia and industry, particularly to anyone involved in materials science, theoretical and computational chemistry, chemical physics, and molecular physics.

Laser Optics 2006

From the Introduction: Nanotechnology and its underpinning sciences are progressing with unprecedented rapidity. With technical advances in a variety of nanoscale fabrication and manipulation technologies, the whole topical area is maturing into a vibrant field that is generating new scientific research and a burgeoning range of commercial applications, with an annual market already at the trillion dollar threshold. The means of fabricating and controlling matter on the nanoscale afford striking and unprecedented opportunities to exploit a variety of exotic phenomena such as quantum, nanophotonic and nanoelectromechanical effects. Moreover, researchers are elucidating new perspectives on the electronic

and optical properties of matter because of the way that nanoscale materials bridge the disparate theories describing molecules and bulk matter. Surface phenomena also gain a greatly increased significance; even the well-known link between chemical reactivity and surface-to-volume ratio becomes a major determinant of physical properties, when it operates over nanoscale dimensions. Against this background, this comprehensive work is designed to address the need for a dynamic, authoritative and readily accessible source of information, capturing the full breadth of the subject. Its six volumes, covering a broad spectrum of disciplines including material sciences, chemistry, physics and life sciences, have been written and edited by an outstanding team of international experts. Addressing an extensive, cross-disciplinary audience, each chapter aims to cover key developments in a scholarly, readable and critical style, providing an indispensable first point of entry to the literature for scientists and technologists from interdisciplinary fields. The work focuses on the major classes of nanomaterials in terms of their synthesis, structure and applications, reviewing nanomaterials and their respective technologies in well-structured and comprehensive articles with extensive cross-references. It has been a constant surprise and delight to have found, amongst the rapidly escalating number who work in nanoscience and technology, so many highly esteemed authors willing to contribute. Sharing our anticipation of a major addition to the literature, they have also captured the excitement of the field itself in each carefully crafted chapter. Along with our painstaking and meticulous volume editors, full credit for the success of this enterprise must go to these individuals, together with our thanks for (largely) adhering to the given deadlines. Lastly, we record our sincere thanks and appreciation for the skills and professionalism of the numerous Elsevier staff who have been involved in this project, notably Fiona Geraghty, Megan Palmer and Greg Harris, and especially Donna De Weerd-Wilson who has steered it through from its inception. We have greatly enjoyed working with them all, as we have with each other.

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