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**Holographic Data Storage** - Hans J. Coufal - 2012-09-03  
An outstanding reference book on an exciting topic, reaching out to the 21st century's key technologies. The editors, together with leading experts in the field from both academic research and industry, bring together the latest knowledge on this technique. The book starts with an introduction on the history and fundamentals, multiplexing methods, and noise sources. The following chapters describe in detail recording media, components, channels, platforms for demonstration, and competing technologies such as classical hard disks or optical disks. More than 700 references will make this the ultimate source of information for the years to come. The book is intended for physicists, optical engineers, and executives alike.

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**Optical and Digital Image Processing** - Gabriel Cristobal - 2013-02-12  
In recent years, Moore's law has fostered the steady growth of the field of digital image processing, though the computational complexity remains a problem for most of the digital image processing applications. In parallel, the research domain of optical image processing has matured, potentially bypassing the problems digital approaches were suffering and bringing new applications. The advancement of technology calls for applications and knowledge at the intersection of both areas but there is a clear knowledge gap between the digital signal processing and the optical processing communities. This book covers the fundamental basis of the optical and image processing techniques by integrating contributions from both optical and digital research communities to solve current application bottlenecks, and give rise to new applications and solutions. Besides focusing on joint research, it also aims at disseminating the knowledge existing in both domains. Applications covered include image restoration, medical imaging, surveillance, holography, etc "a very good book that deserves to be on the bookshelf of a serious student or scientist working in these areas." Source: Optics and Photonics News

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**Comprehensive Nanoscience and Technology** - - 2010-10-29  
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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**Nanoelectronics and Information Technology** - Rainer Waser - 2012-05-29

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**Crystal Optics: Properties and Applications** - Ashim Kumar Bain - 2019-05-29

Reviews the properties and applications of photo-elastic, acousto-optic, magneto-optic, electro-optic, and photorefractive materials This book deals with the basic physical properties and applications of photo-elastic, acousto-optic, magneto-optic, electro-optic, and photorefractive materials. It also provides up-to-date information on the design and applications of various optoelectronic devices based on these materials. The first chapter of Crystal Optics: Properties and Applications covers the basic concepts of crystal optics, such as index ellipsoid or optical indicatrix, crystal symmetry, wave surface, birefringence, and the polarization of light. Chapter 2 reviews the physical phenomena of crystal optics in isotropic and crystalline materials. It describes in detail research information on modern photoelastic materials and reviews the up-to-date photoelastic device applications. Chapter 3 develops the underlying theory of acousto-optics from first principles, formulating results suitable for subsequent calculations and design. The fourth chapter describes the basic principles of magneto-optic effects and mode of interaction with magnetic materials. The fifth chapter provides an understanding of the physical phenomenon of the linear and quadratic electro-optic effects in isotropic and crystalline materials. The last chapter collects many of the most important recent developments in photorefractive effects and materials, and pays special attention to recent scientific findings and advances on photorefractive materials and devices. -Features up to date information on the design and applications of various optoelectronic devices -Looks at the basic concepts of crystal optics, including the polarization of light, effects of reflection and transmission of polarization and light polarizing devices, and more -Pays special attention to design procedures for the entire range of acousto-optic devices and various applications of these devices -Provides research information on modern magneto-optic materials and reviews the up-to-date magneto-optic device applications?up to terahertz (THz) regime Crystal Optics: Properties and Applications is an excellent book for the scientific community working in the field, including researchers, lecturers, and advanced students.

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full-parallax case Reviews systems and the image processing algorithms required to convert the raw image data to the format required by digital printers Develops the physical theory of the holographic grating and the hologram Provides an up-to-date review of illumination sources, including LED and laser diode sources Written by leaders in dynamic holography, this handbook provides complete coverage of real-time colour holographic processes, including applications. The book covers not only the optics and theory behind such holographic systems, but also laser technologies, recording devices, data acquisition and processing techniques, materials for reproduction, and current and developing applications.

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