电子书推荐 2022 年第 1 期（总第 6 期）

半导体所图书馆

1、

Flexible and Wearable Electronics for Smart Clothing

Editor(s):Gang Wang, Chengyi Hou, Hongzhi Wang

First published:28 February 2020

Print ISBN:9783527345342 |Online ISBN:9783527818556 |DOI:10.1002/9783527818556

About this book

Provides the state-of-the-art on wearable technology for smart clothing

The book gives a coherent overview of recent development on flexible electronics for smart clothing with emphasis on wearability and durability of the materials and devices. It offers detailed information on the basic functional components of the flexible and wearable electronics including sensing, systems-on-a-chip, interacting, and energy, as well as the integrating and connecting of electronics into textile form. It also provides insights into the compatibility and integration of functional materials, electronics, and the clothing technology.

Flexible and Wearable Electronics for Smart Clothing offers comprehensive coverage of the technology in four parts. The first part discusses wearable organic nano-sensors, stimuli-responsive electronic skins, and flexible thermoelectrics and thermoelectric textiles. The next part examines textile triboelectric nanogenerators for energy harvesting, flexible and wearable solar cells and supercapacitors, and flexible and wearable lithium-ion batteries. Thermal and humid management for next-generation textiles, functionalization of fiber materials for washable smart wearable textiles, and flexible microfluidics for wearable electronics are covered in the next section. The last part introduces readers to piezoelectric materials and devices based flexible bio-integrated electronics, printed electronics for smart clothes, and the materials and processes for stretchable and wearable e-textile devices.

-Presents the most recent developments in wearable technology such as wearable nanosensors, logic circuit, artificial intelligence, energy harvesting, and wireless communication

-Covers the flexible and wearable electronics as essential functional components for

smart clothing from sensing, systems-on-a-chip, interacting, energy to the integrating and connecting of electronics

-Of high interest to a large and interdisciplinary target group, including materials scientists, textile chemists, and electronic engineers in academia and industry

Flexible and Wearable Electronics for Smart Clothing will appeal to materials scientists, textile industry professionals, textile engineers, electronics engineers, and sensor developers.

阅读全文：

https://onlinelibrary.wiley.com/doi/book/10.1002/9783527818556

2、

Handbook of Microwave Component Measurements: with Advanced VNA Techniques, Second Edition

Author(s):Joel P. Dunsmore PhD.,

First published:15 June 2020

Print ISBN:9781119477136 |Online ISBN:9781119477167 |DOI:10.1002/9781119477167

About this book

Handbook of Microwave Component Measurements Second Edition is a fully updated, complete reference to this topic, focusing on the modern measurement tools, such as a Vector Network Analyzer (VNA), gathering in one place all the concepts, formulas, and best practices of measurement science. It includes basic concepts in each chapter as well as appendices which provide all the detail needed to understand the science behind microwave measurements. The book offers an insight into the best practices for ascertaining the true nature of the device-under-test (DUT), optimizing the time to setup and measure, and to the greatest extent possible, remove the effects of the measuring equipment from that result. Furthermore, the author writes with a simplicity that is easily accessible to the student or new engineer, yet is thorough enough to provide details of measurement science for even the most advanced applications and researchers. This welcome new edition brings forward the most modern techniques used in industry today, and recognizes that more new techniques have developed since the first edition published in 2012. Whilst still focusing on the VNA, these techniques are also compatible with other vendor's advanced equipment, providing a comprehensive industry reference.

阅读全文：

https://onlinelibrary.wiley.com/doi/book/10.1002/9781119477167

3、

Laser‐based Mid‐infrared Sources and Applications

Author(s):Konstantin L. Vodopyanov

First published:1 June 2020

Online ISBN:9781119074557 |DOI:10.1002/9781119074557

About this book

An important guide to the major techniques for generating coherent light in the mid-infrared region of the spectrum

Laser-based Mid-infrared Sources and Applications gives a comprehensive overview of the existing methods for generating coherent light in the important yet difficult-to-reach mid-infrared region of the spectrum (2 – 20 μ m) and their applications.

The book describes major approaches for mid-infrared light generation including ion-doped solid-state lasers, fiber lasers, semiconductor lasers, and laser sources based on nonlinear optical frequency conversion, and reviews a range of applications: spectral recognition of molecules and trace gas sensing, biomedical and military applications, high-field physics and attoscience, and others. Every chapter starts with the fundamentals for a given technique that enables self-directed study, while extensive references help conduct deeper research.

Laser-based Mid-infrared Sources and Applications provides up-to-date information on the state-of the art mid-infrared sources, discusses in detail the advancements made over the last two decades such as microresonators and interband cascade lasers, and explores novel approaches that are currently subjects of intense research such as supercontinuum and frequency combs generation. This important book:

- Explains the fundamental principles and major techniques for coherent mid-infrared light generation
- Discusses recent advancements and current cutting-edge research in the field
- Highlights important biomedical, environmental, and military applications

Written for researchers, academics, students, and engineers from different disciplines, the book helps navigate the rapidly expanding field of mid-infrared laser-based technologies.

阅读全文：

https://onlinelibrary.wiley.com/doi/book/10.1002/9781119074557

4、

Molecular‐Scale Electronics: Concept, Fabrication and Applications

Editor(s):Xuefeng Guo, Dong Xiang, Yu Li

First published:10 July 2020

Print ISBN:9783527345489 |Online ISBN:9783527818914 |DOI:10.1002/9783527818914

About this book

Provides in-depth knowledge on molecular electronics and emphasizes the techniques for designing molecular junctions with controlled functionalities

This comprehensive book covers the major advances with the most general applicability in the field of molecular electronic devices. It emphasizes new insights into the development of efficient platform methodologies for building such reliable devices with desired functionalities through the combination of programmed bottom-up self-assembly and sophisticated top-down device fabrication. It also helps to develop an understanding of the device fabrication processes and the characteristics of the resulting electrode-molecule interface.

Beginning with an introduction to the subject, Molecular-Scale Electronics: Concept, Fabrication and Applications offers full chapter coverage on topics such as: Metal Electrodes for Molecular Electronics; Carbon Electrodes for Molecular Electronics; Other Electrodes for Molecular Electronics; Novel Phenomena in Single-Molecule Junctions; and Supramolecular Interactions in Single-Molecule Junctions. Other chapters discuss Theoretical Aspects for Electron Transport through Molecular Junctions; Characterization Techniques for Molecular Electronics; and Integrating Molecular Functionalities into Electrical Circuits. The book finishes with a summary of the primary challenges facing the field and offers an outlook at its future.

* Summarizes a number of different approaches for forming molecular-scale junctions and discusses various experimental techniques for examining these nanoscale circuits in detail

* Gives overview of characterization techniques and theoretical simulations for molecular electronics

* Highlights the major contributions and new concepts of integrating molecular functionalities into electrical circuits

* Provides a critical discussion of limitations and main challenges that still exist for the development of molecular electronics

* Suited for readers studying or doing research in the broad fields of Nano/molecular electronics and other device-related fields

Molecular-Scale Electronics is an excellent book for materials scientists, electrochemists, electronics engineers, physical chemists, polymer chemists, and solid-state chemists. It will also benefit physicists, semiconductor physicists, engineering scientists, and surface chemists.

阅读全文：

https://onlinelibrary.wiley.com/doi/book/10.1002/9783527818914

5、

Nitride Semiconductor Technology: Power Electronics and Optoelectronic Devices

Editor(s):Fabrizio Roccaforte, Mike Leszczynski

First published:3 August 2020

Print ISBN:9783527347100 |Online ISBN:9783527825264 |DOI:10.1002/9783527825264

About this book

The book "Nitride Semiconductor Technology" provides an overview of nitride semiconductors and their uses in optoelectronics and power electronics devices. It explains the physical properties of those materials as well as their growth methods. Their applications in high electron mobility transistors, vertical power devices, LEDs, laser diodes, and vertical-cavity surface-emitting lasers are discussed in detail. The book further examines reliability issues in these materials and puts forward perspectives of integrating them with 2D materials for novel high-frequency and high-power devices.

In summary, it covers nitride semiconductor technology from materials to devices and provides the basis for further research.

阅读全文：

https://onlinelibrary.wiley.com/doi/book/10.1002/9783527825264

6、

Semiconductor Basics: A Qualitative, Non‐mathematical Explanation of How Semiconductors Work and How They Are Used

Author(s):George Domingo

First published:10 August 2020

Print ISBN:9781119702306 |Online ISBN:9781119597124 |DOI:10.1002/9781119597124

About this book

An accessible guide to how semiconductor electronics work and how they are manufactured, for professionals and interested readers with no electronics engineering background

Semiconductor Basics is an accessible guide to how semiconductors work. It is written for readers without an electronic engineering background. Semiconductors are the basis for almost all modern electronic devices. The author—an expert on the topic—explores the fundamental concepts of what a semiconductor is, the different types in use, and how they are different from conductors and insulators. The book has a large number of helpful and illustrative drawings, photos, and figures.

The author uses only simple arithmetic to help understand the device operation and applications. The book reviews the key devices that can be constructed using semiconductor materials such as diodes and transistors and all the large electronic systems based on these two component such as computers, memories, LCDs and related technology like Lasers LEDs and infrared detectors. The text also explores integrated circuits and explains how they are fabricated. The author concludes with some projections about what can be expected in the future. This important book:

Offers an accessible guide to semiconductors using qualitative explanations and analogies, with minimal mathematics and equations

Presents the material in a well-structured and logical format

Explores topics from device physics fundamentals to transistor formation and fabrication and the operation of the circuits to build electronic devices and systems

Includes information on practical applications of p-n junctions, transistors, and integrated circuits to link theory and practice

Written for anyone interested in the technology, working in semiconductor labs or in the semiconductor industry, Semiconductor Basics offers clear explanations about how semiconductors work and its manufacturing process.

阅读全文：

https://onlinelibrary.wiley.com/doi/book/10.1002/9781119597124

7、

Photodetectors: Devices, Circuits and Applications

Author(s):Silvano Donati

First published:15 December 2020

Print ISBN:9781119769910 |Online ISBN:9781119769958 |DOI:10.1002/9781119769958

About this book

Explore this comprehensive introduction to the foundations of photodetection from one of the leading voices in the field

The newly revised Photodetectors: Devices, Circuits and Applications delivers a thoroughly updated exploration of the fundamentals of photodetection and the novel technologies and concepts that have arisen since the release of the first edition twenty years ago. The book offers discussions of established and emerging photodetection technologies, including photomultipliers, the SPAD, the SiPM, the SNSPD, the UTC, the WGPD/TWPD, the QWIP, and the LT-GaAs. New examinations of correlation measurements on ultrafast pulses and single-photon detectors for quantum communications and LiDARs have also been added.

Each chapter includes selected problems for students to work through to aid in learning and retention. A booklet of solutions is also provided. The book is especially ideal for students and faculties of Engineering, with an emphasis on first principles, design, and the engineering of photodetectors. Issues in the book are grouped through the development of concepts, as opposed to collections of technical details.

Perfect for undergraduate students interested in the science or design of modern optoelectronics, Photodetectors: Devices, Circuits and Applications also belongs on the bookshelves of professors teaching PhD seminars in advanced courses on photodetection and noise, as well as engineers and physicists seeking a guide to an optimum photodetection solution.

阅读全文：

https://onlinelibrary.wiley.com/doi/book/10.1002/9781119769958

8、

Silicon Containing Hybrid Copolymers

Editor(s):Chaobin He, Zibiao Li

First published:9 March 2020

Print ISBN:9783527346646 |Online ISBN:9783527823499

|DOI:10.1002/9783527823499

About this book

Combines chemistry and material science in order to provide a complete overview of the design, synthesis, and applications of organo-silica

This book offers comprehensive and systematic coverage of the latest developments in functional hybrid silicon copolymers, their applications, and how they were developed in relation to previous works in the preparation of various functional groups terminated silicone materials.

Silicon Containing Hybrid Copolymers begins with a chapter that introduces readers to organo-silicon materials. It then presents a chapter on reactive functionally terminated polyorganosiloxanes, and contains a section on the methods and advances of functionalized polyhedral oligomeric silsesquioxanes (POSS) and copolymers. Nanostructured self-assemblies from silicon containing hybrid copolymers are discussed?as are superhydrophobic materials derived from hybrid silicon. Other chapters examine silicone copolymers for healthcare and personal care applications; construction of organic optoelectronic materials by using polyhedral oligomeric silsesquioxanes (POSS); and 3D printing silicone materials and devices. The book also includes an overview of material toughening and fire retardancy in regards to hybrid POSS nanocomposites. This title:

-Focuses on design and synthesis strategies, providing a valuable resource for researchers in academia and industry

-Presents recent applications, with emphasis on the underlying strategies and the influence from previous designs, in fields such as healthcare and consumer care

-Combines synthetic pathways with design specific considerations to provide the reader with greater control over the design process

Silicon Containing Hybrid Copolymers is an ideal book for materials scientists, polymer chemists, and bioinorganic chemists.

阅读全文：

https://onlinelibrary.wiley.com/doi/book/10.1002/9783527823499

9、

Ferroic Materials for Smart Systems: From Fundamentals to Device Applications

Author(s):Jiyan Dai

First published:3 January 2020

Print ISBN:9783527344765 |Online ISBN:9783527815388 |DOI:10.1002/9783527815388

About this book

Presents state-of-the-art knowledge?from basic insights to applications?on ferroic materials-based devices

This book covers the fundamental physics, fabrication methods, and applications of ferroic materials and covers bulk, thin films, and nanomaterials. It provides a thorough overview of smart materials and systems involving the interplays among the mechanical strain, electrical polarization, magnetization, as well as heat and light. Materials presented include ferroelectric, multiferroic, piezoelectric, electrostrictive, magnetostrictive, and shape memory materials as well as their composites. The book also introduces various sensor and transducer applications, such as ultrasonic transducers, surface acoustic wave devices, microwave devices, magneto-electric devices, infrared detectors and memories.

Ferroic Materials for Smart Systems: Fabrication, Devices and Applications introduces advanced measurement and testing techniques in ferroelectrics, including FeRAM and ferroelectric tunnelling based resistive switching. It also looks at ferroelectricity in emerging materials, such as 2D materials and high-k gate dielectric material HfO2. Engineering considerations for device design and fabrication are examined, as well as applications for magnetostrictive devices. Multiferroics of materials possessing both ferromagnetic and ferroelectric orders is covered, along with ferroelastic materials represented by shape memory alloy and magnetic shape memory alloys.

-Brings together physics, fabrication, and applications of ferroic materials in a coherent manner

-Discusses recent advances in ferroic materials technology and applications

-Covers dielectric, ferroelectric, pyroelectric and piezoelectric materials

-Introduces electrostrictive materials and magnetostrictive materials

-Examines shape memory alloys and magneto-shape-memory alloys

-Introduces devices based on the integration of ferroelectric and ferromagnetic materials such as multiferroic memory device and ME coupling device for sensor applications

Ferroic Materials for Smart Systems: Fabrication, Devices and Applications will appeal to a wide variety of researchers and developers in physics, materials science and engineering.

阅读全文：

https://onlinelibrary.wiley.com/doi/book/10.1002/9783527815388

10、

Layered 2D Advanced Materials and Their Allied Applications

Editor(s):Inamuddin, Rajender Boddula, Mohd Imran Ahamed, Abdullah M. Asiri

First published:8 May 2020

Print ISBN:9781119654964 |Online ISBN:9781119655190 |DOI:10.1002/9781119655190

About this book

Ever since the discovery of graphene, two-dimensional layered materials (2DLMs) have been the central tool of the materials research community. The reason behind their importance is their superlative and unique electronic, optical, physical, chemical and mechanical properties in layered form rather than in bulk form. The 2DLMs have been applied to electronics, catalysis, energy, environment, and biomedical applications.

The following topics are discussed in the book’s fifteen chapters:

- The research status of the 2D metal-organic frameworks and the different techniques used to synthesize them.
- 2D black phosphorus (BP) and its practical application in various fields.
- Reviews the synthesis methods of MXenes and provides a detailed discussion of their structural characterization and physical, electrochemical and optical properties, as well as applications in catalysis, energy storage, environmental management, biomedicine, and gas sensing.
- The carbon-based materials and their potential applications via the photocatalytic process using visible light irradiation.

- 2D materials like graphene, TMDCs, few-layer phosphorene, MXene in layered form and their heterostructures.
- The structure and applications of 2D perovskites.
- The physical parameters of pristine layered materials, ZnO, transition metal dichalcogenides, and heterostructures of layered materials are discussed.
- The coupling of graphitic carbon nitride with various metal sulfides and oxides to form efficient heterojunction for water purification.
- The structural features, synthetic methods, properties, and different applications and properties of 2D zeolites.
- The methods for synthesizing 2D hollow nanostructures are featured and their structural aspects and potential in medical and non-medical applications.
- The characteristics and structural aspects of 2D layered double hydroxides (LDHs) and the various synthesis methods and role of LDH in non-medical applications as adsorbent, sensor, catalyst, etc.
- The synthesis of graphene-based 2D layered materials synthesized by using top-down and bottom-up approaches where the main emphasis is on the hot-filament thermal chemical vapor deposition (HFTCVD) method.
- The different properties of 2D h-BN and borophene and the various methods being used for the synthesis of 2D h-BN, along with their growth mechanism and transfer techniques.
- The physical properties and current progress of various transition metal dichalcogenides (TMDC) based on photoactive materials for photoelectrochemical (PEC) hydrogen evolution reaction.
- The state-of-the-art of 2D layered materials and associated devices, such as electronic, biosensing, optoelectronic, and energy storage applications

阅读全文：

https://onlinelibrary.wiley.com/doi/book/10.1002/9781119655190

电子书推介 2022 年第 2 期（总第 7 期）

半导体所图书馆

1、

非晶固态材料引论

作者： 郑兆勃 ISBN： 15031887

出版社： 科学出版社 出版日期： 1987-11

简介： 本书系统地介绍了非晶固态材料的物理性能及其理论研究方法．本书共分六章，分别阐述了非晶固态材料的特性、结构、形成特点、理论计算方法、振动性质及电子态等．本书尽量避免繁难的数学公式推导，着重于基本概念、性质及物理意义的论述，具有通论的性质．

阅读全文

2、

非晶半导体材料与器件

作者： 陈治明 ISBN： 7030022831

出版社： 科学出版社 出版日期： 1991-07

简介： 本书从工程角度论述了非晶半导体材料的制备、特性和分析方法和多种非晶半导体器件设计方法和制造技术。

阅读全文

3、

新型衬底上蓝/白光 LED 外延材料与芯片

作者： 李国强著 ISBN： 9787030398192

出版社： 科学出版社 出版日期： 2014-06

简介： 本书系统而完整地介绍了新型衬底材料上高效率 LED 材料与器件的研究进展，着重介绍了图形衬底、Si 衬底、金属衬底、新型氧化物衬底、自支撑

GaN 衬底和非极性衬底六种新型衬底上的 LED 外延制备方法，论述了上述新型衬底上 LED 所具有的优势与面临的难题，阐述了相关的科学与技术问题，并对新型衬底上的 LED 外延材料与芯片的发展趋势进行了展望。

阅读全文

4、

X 射线结构分析与材料性能表征

作者： 滕凤恩等主编 ISBN： 7030058976

出版社： 科学出版社 出版日期： 1997-12

阅读全文

5、

纳米结构与性能的理论计算与模拟

作者： 帅志刚，夏钶等 ISBN： 9787030428264

出版社： 科学出版社 出版日期： 2015-01

简介： 纳米科学与技术的核心在于受限尺度所带来光、电、磁、力学、生物等新效应，体现在电子在纳米尺度上的电荷与自旋的量子输运、光子纳米介质中的散射折射或透射、受限在纳米尺度的流体的新结构与输运等方面。纳米体系覆盖金属、半导体和绝缘体，从无机到有机，包括团簇、低维碳材料（零维的富勒烯、一维的纳米管、二维的石墨烯等）、量子点与量子线，以及自组装结构，还包括在纳米尺度上控制性能的光电

阅读全文

6、

碳纳米管与石墨烯器件物理

作者： (美)H.-S.菲利普·黄，(美)德基·阿金旺德著；郭雪峰，张洪涛译 ISBN： 9787030390554

出版社： 科学出版社 出版日期： 2014-01

简介： 本书共 9 章，内容包括：碳纳米管概论、石墨烯、碳纳米管、碳纳米管的平衡态性质、碳纳米管互连、碳纳米管场效应晶体管、碳纳米管应用等。

阅读全文

7、

有机纳米与分子器件. 上卷 | 2 版

作者： 刘云圻等著 ISBN： 9787030418197

出版社： 科学出版社 出版日期： 2014-08

简介： 本书共分 17 章，较全面地介绍了目前有机纳米与分子器件前沿领域的重要研究结果。主要包括分子材料、纳米材料的设计、合成，器件的物理基础和载流子传输理论，分子尺度器件，以及有机发光二极管、有机太阳能电池、有机场效应晶体管、生物传感器等分子材料器件。

阅读全文

8、

有机纳米与分子器件. 下卷 | 2 版

作者： 刘云圻等著 ISBN： 9787030418203

出版社： 科学出版社 出版日期： 2014-08

简介： 本书共分 17 章，较全面地介绍了目前有机纳米与分子器件前沿领域的重要研究结果。主要包括分子材料、纳米材料的设计、合成，器件的物理基础和载流子传输理论，分子尺度器件，以及有机发光二极管、有机太阳能电池、有机场效应晶体管、生物传感器等分子材料器件。

阅读全文

9、

碳纳米管 : 从基础到应用 :[英文本] | Understanding carbon

nanotubes from basics to application 影印版

作者： A. Loiseau[等]编著 ISBN： 9787030209399

出版社： 科学出版社 出版日期： 2008-02

简介： 本书介绍了碳纳米管的基础，并包括最新的研究进展和技术应用前景，主要内容有：碳的多态现象和相的微结构，合成方法和生长机制，结构的电子显微分析，分光镜分析，电子结构，输运性质，纳米管及其合成材料的力学性能和表面特性。

阅读全文

10、

小尺寸半导体器件的蒙特卡罗模拟

作者： 叶良修编著 ISBN： 7030048261

出版社： 科学出版社 出版日期： 1997-02

简介： 本书系统介绍了半导体器件和半导体中载流子输运性质的蒙特卡罗模拟. 全书共六章，内容包括关于载流子的输运现象及在小尺寸器件中采用蒙特卡罗方法的优点的讨论；各种情形（单粒子模拟和多粒子模拟等）的蒙特卡罗模拟方法；各种能带情形下（非抛物性带、多谷带、价带等）的有关处理；随机事件的各种处理方法；关于器件蒙特卡罗模拟中各个侧面（包括器件模型、边界和界面问题、泊松方程求解等）的较详.....

阅读全文

11、

有机场效应晶体管

作者： 胡文平 ISBN： 9787030428264

出版社： 科学出版社 出版日期： 2015-01

简介： 有机场效应晶体管是有机电路的基本构筑译元，也是分析有机半导体传输性能的有力 T 具。基于有机场效应晶体管的显示器、电子纸、射频商标等产品

已经走人人们的视野，预示有机场效应晶体管具有巨大的应用前景。本书共分10章，系统、全面地介绍了有机场效应晶体管的发展历史，基本概念与原理，材料的选取、制备与表征，晶体管的构筑与实际应用等内容。

阅读全文

12、

半导体太赫兹源、探测器与应用

作者： 曹俊诚著 ISBN： 9787030334022

出版社： 科学出版社 出版日期： 2012-02

简介： 本书主要论述了半导体太赫兹（THz）辐射源与探测器的基本原理、模拟与设计、器件研制方法以及THz通信与成像应用等。

阅读全文

13、

超高速光器件

作者： (日)斋藤富士郎著；崔承甲译 ISBN： 7030101790

出版社： 科学出版社 出版日期： 2002-07

简介： 本书介绍了什么是“超高速”，“超高速”的历史变迁，半导体光器件的基本结构，超高速半导体激光器，锁模半导体激光器，超高速光调制器等内容。

阅读全文

14、

半导体激光器速率方程理论（上册）

作者： 郭长志 ISBN： 9787030478122

出版社： 科学出版社 出版日期： 2016-04

简介： 速率方程理论是从微观唯象观点，以唯象参数为工具，以粒子数守恒为依据的速率方程为分析手段的半导体激光器件物理理论，从全局上揭示半导体激

光器的激射阈值相变、模式的竞争、谱系结构等静态行为和激射延迟、过冲、振荡过渡等瞬态行为，大小信号调制的方式方法及其速率、动态频谱结构、动态单模化、光模注入锁定、激光的双稳态、自脉动、分叉、混沌、量子噪声和谱线展宽，载流子.....

阅读全文

15、

半导体激光器速率方程理论（下册）

作者： 郭长志 ISBN： 9787030479020

出版社： 科学出版社 出版日期： 2016-06

阅读全文

16、

半导体激光器激光波导模式理论. 上册

作者： 郭长志 ISBN： 9787030457172

出版社： 科学出版社 出版日期： 2015-10

简介： 本书是关于用半导体和金属等材料实现光波导腔作用的设计理论。共分四章，第 1 章表述所需的理论基础、所需半导体和金属材料的光学性质及其理论、所需光波导腔可能的一般结构方案。第 2、3 章分别讨论集中反馈方式的突变和缓变光波导结构与其光模式的空间和频谱分布的关系及其控制作用和设计。第 4 章讨论分布反馈方式的水平腔和垂直腔光波导结构与其光模式的空间和频谱分布的关系及其控制作用

阅读全文

17、

半导体激光器激光波导模式理论. 下册

作者： 郭长志 ISBN： 9787030462619

出版社： 科学出版社 出版日期： 2015-11

简介： 本书系统讨论了缓变光波导结构与其光模式的空间和频谱分布的关系及其控制作用和设计。并讨论了分布反馈方式的水平腔和垂直腔光波导结构与其光模式的空间和频谱分布的关系及其控制作用和设计。

阅读全文

18、

微结构光纤光栅特性、制备工艺与传感应用研究

作者： 毕卫红等 ISBN： 9787030489159

出版社： 科学出版社 出版日期： 2016-06

简介： 本书从微结构光纤及其光栅的概念出发，较全面地论述了微结构光纤光栅的理论及技术，主要包括微结构光纤光栅的理论与特性、微结构光纤光栅的制备工艺及方法、微结构光纤光栅在传感中的应用等。

阅读全文

19、

全光开关原理

作者： 李淳飞著 ISBN： 9787030279323

出版社： 科学出版社 出版日期： 2010-07

简介： 本书分为 10 章，主要介绍以光控光的全光开关，其内容有：光开关概论、电控光开关、光学双稳光开关、非线性干涉仪全光开关、含光放大器的全光开关、纳米光子学全光开关等。

阅读全文

20、

压电电子学与压电光电子学

作者： 王中林 ISBN： 9787030428264

出版社： 科学出版社 出版日期： 2015-01

简介： 压电电子学和压电光电子学的基本概念和原理由王中林教授研究组分别于 2007 年和 2010 年首次提出。在人机界面、主动式传感器、主动式柔性电子学、微型机器人、智能电子签名、智能微纳机电系统以及能源技术等领域中，压电电子学和压电光电子学具有广阔的应用前景。本书介绍压电电子学和压电光电子学的物理原理、基本理论以及基本器件单元的设计、制造、测试和应用；共分 11 章

电子书推介 2022 年第 3 期（总第 8 期）

半导体所图书馆

Semiconductors and Semimetals（Book series）：

https://www.sciencedirect.com/bookseries/semiconductors-and-semimetals

电子书推介 2022 年第 4 期（总第 9 期）

半导体所图书馆

2022-4-2

分子材料：光电功能化合物 | Molecular-based materials: opto-electronic functional compounds2 版

作者： 游效曾著 ISBN： 9787030412348

出版社： 科学出版社 出版日期： 2014-07

阅读全文

激光物理学

作者： (美)萨金特Ⅲ(M.O.SargentⅢ)著；杨顺华，彭放译 ISBN：130312029

出版社： 科学出版社 出版日期： 1982-11

阅读全文

中国激光史概要

作者： 邓锡铭主编 ISBN： 7030022653

出版社： 科学出版社 出版日期： 1991-04

阅读全文

高功率激光装置的负载能力及其相关物理问题

作者： 郑万国等著 ISBN： 9787030401779

出版社： 科学出版社 出版日期： 2014-04

阅读全文

半导体激光器能带结构和光增益的量子理论（上册）

作者： 郭长志 ISBN： 9787030473400

出版社： 科学出版社 出版日期： 2016-03

阅读全文

半导体激光器能带结构和光增益的量子理论（下册）

作者： 郭长志 ISBN： 9787030473806

出版社： 科学出版社 出版日期： 2016-03
阅读全文

基于微纳米工艺技术的新型光纤模式干涉器件原理与应用
作者： 罗海梅,李新碗 著 ISBN： 9787030522382
出版社： 科学出版社 出版日期： 2017-03
阅读全文

光电子材料与器件
作者： 唐群委,段加龙,段艳艳 著 ISBN： 9787030529404
出版社： 科学出版社 出版日期： 2017-06
阅读全文

有机自旋光电子
作者： 胡斌等 编著 ISBN： 9787030663566
出版社： 科学出版社 出版日期： 2020-11
阅读全文

飞秒激光技术（第二版）
作者： 张志刚 编著 ISBN： 9787030531407
出版社： 科学出版社 出版日期： 2017-06
阅读全文

光纤激光器及其应用
作者： 郭玉彬，霍佳雨主编 ISBN： 9787030195562
出版社： 科学出版社 出版日期： 2008-01
阅读全文

多波长光纤激光技术
作者： 王天枢 著 ISBN： 9787030544285
出版社： 科学出版社 出版日期： 2017-09
阅读全文

深亚微米 CMOS 全数字频率合成器

作者： （美）Robert Bogdan Staszewski，Poras T.Balsara 著;彭刚 译
ISBN： 9787030480255
出版社： 科学出版社 出版日期： 2017-06
阅读全文

高速集成电路互连
作者： 毛军发,唐旻 ISBN： 9787030519375
出版社： 科学出版社 出版日期： 2017-03
阅读全文

后摩尔时代集成电路新型互连技术
作者： 赵文生,王高峰,尹文言 著 ISBN： 9787030534187
出版社： 科学出版社 出版日期： 2017-09
阅读全文

碳基纳电子和光电子器件
作者： 彭练矛，张志勇，李彦，王胜 ISBN： 9787030428264
出版社： 科学出版社 出版日期： 2015-01
阅读全文

纳米光电子器件
作者： 彭英才，傅广生编著 ISBN： 9787030281555
出版社： 科学出版社 出版日期： 2010-07
阅读全文

分子纳电子器件学科导论
作者： 韩汝珊编著 ISBN： 9787030245120
出版社： 科学出版社 出版日期： 2009-05
阅读全文

纳电子学 ：纳米线，分子电子学和纳米器件
作者： Krzysztof Iniewski[编著] ISBN： 9787030322630
出版社： 科学出版社 出版日期： 2011-09
阅读全文

摩擦纳米发电机
作者： 王中林等 ISBN： 9787030517494
出版社： 科学出版社 出版日期： 2017-03
阅读全文

光电器件半导体纳米结构：加工、表征与应用：processing, characterization and applications
作者： Gyu-Chui Yi[主编] ISBN： 9787030414311
出版社： 科学出版社 出版日期： 2014-07
阅读全文

铁电体及有关材料的原理和应用
作者： ( )莱因斯(Lines， M.E.)，( )格拉斯(Glass， A.M.)著；钟维烈译 ISBN： 7030009320
出版社： 科学出版社 出版日期： 1989-08
阅读全文

碳纳米管、石墨烯纤维及薄膜
作者： 张兴祥，耿宏章编著 ISBN： 9787030410849
出版社： 科学出版社 出版日期： 2014-06
阅读全文

碳纳米光电材料与器件
作者： 李福山 ISBN： 9787030473783
出版社： 科学出版社 出版日期： 2016-03
阅读全文

近红外光谱分析技术与应用
作者： 任东等 著 ISBN： 9787030534033
出版社： 科学出版社 出版日期： 2016-06
阅读全文

拉曼光谱学与低维纳米半导体

作者： 张树霖著 ISBN： 9787030206398
出版社： 科学出版社 出版日期： 2008-05
阅读全文

二氧化钛半导体光催化材料离子掺杂
作者： 陈建华，龚竹青著 ISBN： 7030178521
出版社： 科学出版社 出版日期： 2006-12
阅读全文

稀土激光晶体材料及其应用
作者： 徐军等 ISBN： 9787030473684
出版社： 科学出版社 出版日期： 2016-02
阅读全文

石墨烯-新型二维碳纳米材料
作者： 陈永胜，黄毅等 ISBN： 9787030428264
出版社： 科学出版社 出版日期： 2015-01
阅读全文

有机场效应晶体管器件及功能化应用
作者： 汤庆鑫,童艳红,刘益春 著 ISBN： 9787030638380
出版社： 科学出版社 出版日期： 2020-07
阅读全文

薄膜生长 | 2 版
作者： 吴自勤，王兵，孙霞著 ISBN： 9787030367310
出版社： 科学出版社 出版日期： 2013-03
阅读全文

固体能带理论和电子性质 :[英文版]
作者： J.Singlrton[著] ISBN： 9787030236227
出版社： 科学出版社 出版日期： 2009-01
阅读全文

电子书推介 2022 年第 5 期（总第 10 期）

半导体所图书馆

2022-4-7

Mid-infrared Optoelectronics：Materials, Devices, and Applications

Edited by: Eric Tournié and Laurent Cerutti

Part One: Fundamentals

Part Two: Light sources

Part Three: Photodetectors

Part Four: New approaches

Part Five: Application of mid-IR devices

全文：http://www.sciencedirect.com/science/book/9780081027097

Handbook of Advanced Electronic and Photonic Materials and Devices

Edited by: Hari Singh Nalwa

Volume 1: Semiconductors

Volume 2: Semiconductors Devices

Volume 3: High-Tc Superconductors and Organic Conductors

Volume 4: Ferroelectrics and Dielectrics

Volume 5: Chalcogenide Glasses and Sol-Gel Materials

Volume 6: Nanostructured Materials

Volume 7: Liquid Crystals, Display and Laser Materials

Volume 8: Conducting Polymers

Volume 9: Nonlinear Optical Materials

Volume 10: Light-Emitting Diodes, Lithium Batteries and Polymer Devices

全文：http://www.sciencedirect.com/science/book/9780125137454

Future Directions in Silicon Photonics

Edited by Sebastian Lourdudoss, John E. Bowers, Chennupati Jagadish

全文：http://www.sciencedirect.com/science/book/9780128188576

Optical Fiber Telecommunications VII

Edited by: Alan E. Willner

全文：http://www.sciencedirect.com/science/book/9780128165027

Handbook of Silicon Based MEMS Materials and Technologies

Edited by: Markku Tilli, Teruaki Motooka, ... Veikko Lindroos

全文：http://www.sciencedirect.com/science/book/9780323299657

Molecular Beam Epitaxy：From Research to Mass Production

Edited by: Mohamed Henini

Description

Molecular Beam Epitaxy (MBE): From Research to Mass Production, Second Edition, provides a comprehensive overview of the latest MBE research and applications in epitaxial growth, along with a detailed discussion and 'how to' on processing molecular or atomic beams that occur on the surface of a heated crystalline substrate in a vacuum. The techniques addressed in the book can be deployed wherever precise thin-film devices with enhanced and unique properties for computing, optics or photonics are required. It includes new semiconductor materials, new device structures that are commercially available, and many that are at the advanced research stage.

This second edition covers the advances made by MBE, both in research and in the mass production of electronic and optoelectronic devices. Enhancements include new chapters on MBE growth of 2D materials, Si-Ge materials, AIN and GaN materials, and hybrid ferromagnet and semiconductor structures.

全文：http://www.sciencedirect.com/science/book/9780128121368

Handbook of Optical Constants of Solids

Edited by: Edward D. Palik

Description

This set of five volumes, four volumes edited by Edward D. Palik and a volume by Gorachand Ghosh, is a unique resource for any science and technology library. It provides materials researchers and optical device designers with reference facts in a context not available anywhere else. The singular functionality of the set derives from the unique format for the three core volumes that comprise the Handbook of Optical Constants of Solids. The Handbook satisfies several essential needs: first, it affords the most comprehensive database of the refractive index and extinction (or loss) coefficient of technically important and scientifically interesting dielectrics. This data has been critically selected and evaluated by authorities on each material. Second, the dielectric constant database is supplemented by tutorial chapters covering the basics of dielectric theory and reviews of experimental techniques for each wavelength region and material characteristic. As an additional resource, two of the tutorial chapters summarize the relevant characteristics of each of the materials in the database.

The data in the core volumes have been collected and analyzed over a period of

twelve years, with the most recent completed in 1997. The volumes systematically define the dielectric properties of 143 of the most engaging materials, including metals, semiconductors, and insulators. Together, the three Palik books contain nearly 3,000 pages, with about 2/3 devoted to the dielectric constant data. The tutorial chapters in the remaining 1/3 of the pages contain a wealth of information, including some dielectric data. Hence, the separate volume, Index to Handbook of Optical Constants of Solids, which is included as part of the set, substantially enhances the utility of the Handbook and in essence, joins all the Palik volumes into one unit. It isthen of great importance to users of the set. A final volume rounds out the set. The Handbook of Thermo-Optic Coefficients of Optical Materials with Applications collects refractive index measurements and their temperature dependence for a large number of crystals and glasses. Mathematical models represent these data, and in turn are used in the design of nonlinear optical devices.

全文：http://www.sciencedirect.com/science/book/9780125444156

Handbook of Thin Film Devices

Authors: Maurice H. Francombe

Volume 1: Hetero-Structures for High Performance Devices

Volume 2: Semiconductor Optical and Electro-Optical Devices

Volume 3: Superconducting film devices

Volume 4: Magnetic thin film devices

Volume 5: Ferroelectric Film Devices

全文：http://www.sciencedirect.com/science/book/9780122653209

Reference Data for Engineers： Radio, Electronics, Computer, and Communications (Ninth Edition)

Edited by: Wendy M. Middleton and Mac E. Van Valkenburg

Description

Reference Data for Engineers is the most respected, reliable, and indispensable reference tool for technical professionals around the globe. Written by professionals for professionals, this book is a complete reference for engineers, covering a broad range of topics. It is the combined effort of 96 engineers, scientists, educators, and other recognized specialists in the fields of electronics, radio, computer, and communications technology.

By providing an abundance of information on essential, need-to-know topics without heavy emphasis on complicated mathematics, Reference Data for Engineers is an absolute "must-have" for every engineer who requires comprehensive electrical, electronics, and communications data at his or her fingertips. Featured in the Ninth Edition is updated coverage on intellectual property and patents, probability and design, antennas, power electronics, rectifiers, power supplies, and properties of materials. Useful information on units, constants and conversion factors, active filter design, antennas, integrated circuits, surface acoustic wave design, and digital signal processing is also included. The Ninth Edition also offers new knowledge in the fields of satellite technology, space communication, microwave science, telecommunication, global positioning systems, frequency data, and radar.

全文：http://www.sciencedirect.com/science/book/9780750672917

Advances in Infrared Photodetectors

Edited by Sarath D. Gunapala, David R. Rhiger, Chennupati Jagadish

全文：http://www.sciencedirect.com/science/book/9780123813374

电子书推介 2022 年第 6 期（总第 11 期）

半导体所图书馆

2022-4-14

Advances in Semiconductor Lasers

Edited by James J. Coleman, A. Catrina Bryce, Chennupati Jagadish

全文：http://www.sciencedirect.com/science/book/9780123910660

Silicon Photonics

Edited by Sebastian Lourdudoss, Ray T. Chen, Chennupati Jagadish

全文：http://www.sciencedirect.com/science/book/9780128150993

Defects in Semiconductors

Edited by Lucia Romano, Vittorio Privitera, Chennupati Jagadish

全文：http://www.sciencedirect.com/science/book/9780128019351

III-Nitride Electronic Devices

Edited by Rongming Chu, Keisuke Shinohara

全文：http://www.sciencedirect.com/science/book/9780128175446

Nitride Semiconductor Light-Emitting Diodes (LEDs)： Materials, Technologies, and Applications

Second Edition • 2018

Edited by: JianJang Huang, Hao-Chung Kuo and Shyh-Chiang Shen

Part One: Materials and fabrication

Part Two: Performance of nitride LEDs

Part Three: Applications of nitride LEDs

全文：http://www.sciencedirect.com/science/book/9780081019429

Molecular Beam Epitaxy：From Research to Mass Production

Edited by: Mohamed Henini

This multi-contributor handbook discusses Molecular Beam Epitaxy (MBE), an epitaxial deposition technique which involves laying down layers of materials with atomic thicknesses on to substrates. It summarizes MBE research and application in epitaxial growth with close discussion and a 'how to' on processing molecular or atomic beams that occur on a surface of a heated crystalline substrate in a vacuum.

MBE has expanded in importance over the past thirty years (in terms of unique authors, papers and conferences) from a pure research domain into commercial applications (prototype device structures and more at the advanced research stage). MBE is important because it enables new device phenomena and facilitates the production of multiple layered structures with extremely fine dimensional and compositional control. The techniques can be deployed wherever precise thin-film devices with enhanced and unique properties for computing, optics or photonics are required. This book covers the advances made by MBE both in research and mass production of electronic and optoelectronic devices. It includes new semiconductor materials, new device structures which are commercially available, and many more which are at the advanced research stage.

全文：http://www.sciencedirect.com/science/book/9780123878397

Lasers for Medical Applications：Diagnostics, Therapy and Surgery

Edited by: Helena Jelínková

Part I: Laser–tissue interaction

Part II: Types of laser used in medicine

Part III: Lasers in diagnostics

Part IV: Laser therapy and surgery

全文：http://www.sciencedirect.com/science/book/9780857092373

Introduction to Fiber-Optic Communications

Authors: Rongqing Hui

Introduction to Fiber-Optic Communications provides students with the most up-to-date, comprehensive coverage of modern optical fiber communications and applications, striking a fine balance between theory and practice that avoids excessive mathematics and derivations. Unlike other textbooks currently available, this book covers all of the important recent technologies and developments in the field, including electro-optic modulators, coherent optical systems, and silicon integrated photonic circuits. Filled with practical, relevant worked examples and exercise problems, the book presents complete coverage of the topics that optical and communications engineering students need to be successful.

From principles of optical and optoelectronic components, to optical transmission system design, and from conventional optical fiber links, to more useful optical communication systems with advanced modulation formats and high-speed DSP, this book covers the necessities on the topic, even including today's important application areas of passive optical networks, datacenters and optical interconnections.

全文：http://www.sciencedirect.com/science/book/9780128053454

Optical Fiber Telecommunications：Systems and Networks

Sixth Edition • 2013

Optical Fiber Telecommunications VI (A&B) is the sixth in a series that has chronicled the progress in the R&D of lightwave communications since the early 1970s. Written by active authorities from academia and industry, this edition brings a fresh look to many essential topics, including devices, subsystems, systems and networks. A central theme is the enabling of high-bandwidth communications in a cost-effective manner for the development of customer applications. These volumes are an ideal reference for R&D engineers and managers, optical systems implementers, university researchers and students, network operators, and investors.

Volume A is devoted to components and subsystems, including photonic integrated circuits, multicore and few-mode fibers, photonic crystals, silicon photonics, signal processing, and optical interconnections.

Volume B is devoted to systems and networks, including advanced modulation formats, coherent detection, Tb/s channels, space-division multiplexing, reconfigurable networks, broadband access, undersea cable, satellite communications, and microwave photonics.

全文：http://www.sciencedirect.com/science/book/9780123969606

Reliability of Semiconductor Lasers and Optoelectronic Devices

Edited by: Robert W. Herrick and Osamu Ueda

全文：http://www.sciencedirect.com/science/book/9780128192542

Handbook of Terahertz Technology for Imaging, Sensing and Communications

Edited by: Daryoosh Saeedkia

全文：http://www.sciencedirect.com/science/book/9780857092359

The Physics of SiO2 and its Interfaces

Proceedings of the International Topical Conference on the Physics of SiO2 and Its Interfaces Held at the IBM Thomas J. Waston Research Center, Yorktown Heights, New York, March 22–24, 1978

Edited by: SOKRATES T. PANTELIDES

全文：http://www.sciencedirect.com/science/book/9780080230498

III-Nitride Semiconductor Optoelectronics

Edited by Zetian Mi, Chennupati Jagadish

全文：http://www.sciencedirect.com/science/book/9780128095843

High Performance Silicon Imaging：Fundamentals and Applications of CMOS and CCD Sensors

Second Edition • 2020

Edited by: Daniel Durini

High Performance Silicon Imaging: Fundamentals and Applications of CMOS and CCD Sensors, Second Edition, covers the fundamentals of silicon image sensors, addressing existing performance issues and current and emerging solutions. Silicon imaging is a fast growing area of the semiconductor industry. Its use in cell phone cameras is already well established, with emerging applications including web,

security, automotive and digital cinema cameras. The book has been revised to reflect the latest state-of-the art developments in the field, including 3D imaging, advances in achieving lower signal noise, and new applications for consumer markets.

The fundamentals section has also been expanded to include a chapter on the characterization and testing of CMOS and CCD sensors that is crucial to the success of new applications. This book is an excellent resource for both academics and engineers working in the optics, photonics, semiconductor and electronics industries.

全文：http://www.sciencedirect.com/science/book/9780081024348

电子书推介 2022 年第 7 期（总第 12 期）

半导体所图书馆

2022-4-20

Carrier Scattering in Metals and Semiconductors

Edited by V.F. GANTMAKHER, Y.B. LEVINSON

全文：http://www.sciencedirect.com/science/book/9780444870254

Ultrawide Bandgap Semiconductors

Edited by Yuji Zhao, Zetian Mi

Chapter Ten - Development of AlN integrated photonic platform for octave-spanning supercontinuum generation in visible spectrum
Chapter Eleven - AlGaN-based thin-film ultraviolet laser diodes and light-emitting diodes
Chapter Twelve - Electrical transport properties of hexagonal boron nitride epilayers
全文：http://www.sciencedirect.com/science/book/9780128228708

Laser Surface Engineering：Processes and Applications

Edited by: J. Lawrence and D.G. Waugh

Part One: Thermal surface treatments using lasers
Part Two: Laser additive manufacturing in surface treatment and engineering
Part Three: Laser struturing and surface modification
Part Four: Chemical and biological applications of laser surface engineering
全文：http://www.sciencedirect.com/science/book/9781782420743

Handbook of Optical Constants of Solids　Volume 1

Edited by: EDWARD D. PALIK

Description

While bits and pieces of the index of refraction n and extinction coefficient k for a given material can be found in several handbooks, the Handbook of Optical Constants of Solids gives for the first time a single set of n and k values over the broadest spectral range (ideally from x-ray to mm-wave region). The critiquers have chosen the numbers for you, based on their own broad experience in the study of optical properties. Whether you need one number at one wavelength or many numbers at many wavelengths, what is available in the literature is condensed down into a single set of numbers.
全文：http://www.sciencedirect.com/science/book/9780080547213

Handbook of Crystal Growth：Thin Films and Epitaxy

Second Edition • 2015

Edited by: Thomas F. Kuech

Description

Volume IIIA Basic Techniques

Handbook of Crystal Growth, 2nd Edition Volume IIIA (Basic Techniques), edited by chemical and biological engineering expert Thomas F. Kuech, presents the underpinning science and technology associated with epitaxial growth as well as highlighting many of the chief and burgeoning areas for epitaxial growth. Volume

IIIA focuses on major growth techniques which are used both in the scientific investigation of crystal growth processes and commercial development of advanced epitaxial structures. Techniques based on vacuum deposition, vapor phase epitaxy, and liquid and solid phase epitaxy are presented along with new techniques for the development of three-dimensional nano-and micro-structures.

Volume IIIB Materials, Processes, and Technology

Handbook of Crystal Growth, 2nd Edition Volume IIIB (Materials, Processes, and Technology), edited by chemical and biological engineering expert Thomas F. Kuech, describes both specific techniques for epitaxial growth as well as an array of materials-specific growth processes. The volume begins by presenting variations on epitaxial growth process where the kinetic processes are used to develop new types of materials at low temperatures. Optical and physical characterizations of epitaxial films are discussed for both in situ and exit to characterization of epitaxial materials. The remainder of the volume presents both the epitaxial growth processes associated with key technology materials as well as unique structures such as monolayer and two dimensional materials.

全文：http://www.sciencedirect.com/science/book/9780444633040

Physics of Condensed Matter

Authors: Prasanta K. Misra

Description

Physics of Condensed Matter is designed for a two-semester graduate course on condensed matter physics for students in physics and materials science. While the book offers fundamental ideas and topic areas of condensed matter physics, it also includes many recent topics of interest on which graduate students may choose to do further research. The text can also be used as a one-semester course for advanced undergraduate majors in physics, materials science, solid state chemistry, and electrical engineering, because it offers a breadth of topics applicable to these majors.

The book begins with a clear, coherent picture of simple models of solids and properties and progresses to more advanced properties and topics later in the book. It offers a comprehensive account of the modern topics in condensed matter physics by including introductory accounts of the areas of research in which intense research is underway. The book assumes a working knowledge of quantum mechanics, statistical mechanics, electricity and magnetism and Green's function formalism (for the second-semester curriculum).

全文：http://www.sciencedirect.com/science/book/9780123849540

Diamond for Quantum Applications Part 1

Edited by Christoph E. Nebel, Igor Aharonovich, Norikazu Mizuochi,

Mutsuko Hatano

全文：http://www.sciencedirect.com/science/book/9780128202401

Diamond for Quantum Applications Part 2

Edited by Christoph E. Nebel, Igor Aharonovich, Norikazu Mizuochi, Mutsuko Hatano

全文：http://www.sciencedirect.com/science/book/9780323850247

Handbook of Vacuum Science and Technology

Edited by: Dorothy M. Hoffman, Bawa Singh, ... John H. Thomas, III

全文：http://www.sciencedirect.com/science/book/9780123520654

Optical Fiber Telecommunications：Components and Subsystems

A volume in Optics and Photonics

Sixth Edition • 2013

Authors: Ivan P. Kaminow, Tingye Li and Alan E. Willner

Description

Optical Fiber Telecommunications VI (A&B) is the sixth in a series that has chronicled the progress in the R&D of lightwave communications since the early 1970s. Written by active authorities from academia and industry, this edition brings a fresh look to many essential topics, including devices, subsystems, systems and networks. A central theme is the enabling of high-bandwidth communications in a cost-effective manner for the development of customer applications. These volumes are an ideal reference for R&D engineers and managers, optical systems implementers, university researchers and students, network operators, and investors.

Volume A is devoted to components and subsystems, including photonic integrated circuits, multicore and few-mode fibers, photonic crystals, silicon photonics, signal processing, and optical interconnections.

全文：http://www.sciencedirect.com/science/book/9780123969583

High Power Lasers

Edited by: A. NIKU-LARI and B.L. MORDIKE

1: Laser Surface Treatment

2: Laser Surface Coating and Alloying

3: The Mechanism of Surface Modifications by Laser

4: Laser Machining

5: Research and Development in Laser Technology and Application

全文：http://www.sciencedirect.com/science/book/9780080359182

Diamond Films： Chemical Vapor Deposition for Oriented and Heteroepitaxial Growth

Authors: Koji Kobashi

Chapter 1 - Overview of Oriented Growth

Chapter 2 - Diamond – Structure and CVD Growth

Chapter 3 - Microwave Plasma CVD Reactors

Chapter 4 - Other Reactors

Chapter 5 - Crystal Orientations and Film Surface Morphology

Chapter 6 - Formation of Twins
Chapter 7 - Homoepitaxial Growth
Chapter 8 - Surface Reconstruction
Chapter 9 - Heteroepitaxial Growth on cBN, Ni, and Other Substrates
Chapter 10 - Diamond Nucleation
Chapter 11 - HOD Film Growth
Chapter 12 - Oriented Growth on Noble Metals
Chapter 13 - Properties and Applications of Heteroepitaxial Diamond Films
Chapter 14 - Conclusions
Appendix A - Notations and Units
Appendix B - Plasma
Appendix C - Properties of Diamond and Other Semiconductors
Appendix D - Reconstruction of Diamond Surfaces
Appendix E - Materials Constants
Appendix F - Phase Diagrams of Carbon and Metals
Appendix G - Carbon Solubility in Metals
Appendix H - Process Conditions for Biasing and HOD Film Growth
全文：http://www.sciencedirect.com/science/book/9780080447230

Handbook of Nanostructured Materials and Nanotechnology

Edited by: Hari Singh Nalwa

Volume 1: Synthesis and Processing
Volume 2: Spectroscopy and Theory
Volume 3: Electrical Properties
Volume 4: Optical Properties
Volume 5: Organics, Polymers, and Biological Materials
全文：http://www.sciencedirect.com/science/book/9780125137607

Semiconductor Quantum Science and Technology

Edited by Steven T. Cundiff, Mackillo Kira

Chapter One - Toward scalable III-nitride quantum dot structures for quantum photonics
Chapter Two - Microcavity exciton polaritons
Chapter Three - Ultrastrong light–matter coupling in semiconductors
Chapter Four - Quantum integrated photonic circuits
Chapter Five - Quantum optics with quantum dot ensembles
Chapter Six - Valley excitons: From monolayer semiconductors to moiré superlattices
Chapter Seven - Quantum light from optically dressed quantum dot states in microcavities

Chapter Eight - Coherent control of a semiconductor quantum dot ensemble
Chapter Nine - Single-photon nonlinear optics with a semiconductor quantum dot
Chapter Ten - Quantum-light shaping and quantum spectroscopy in semiconductors
全文：http://www.sciencedirect.com/science/book/9780128237731

Handbook of Infra-red Detection Technologies

Edited by: Mohamed Henini and Manijeh Razeghi

Chapter 1 - Introduction
Chapter 2 - Comparison of photon and thermal detector performance
Chapter 3 - GaAs/AIGaAs based quantum well infrared photodetector focal plane arrays
Chapter 4 - GaInAs(P) based QWIPs on GaAs, InP, and Si substrates for focal plane arrays
Chapter 5 - InAs/(GaIn)Sb superlattices: a promising material system for infrared detection
Chapter 6 - GaSb/InAs supperlattices for infrared FPAs
Chapter 7 - MCT properties, growth methods and characterization
Chapter 8 - HgCdTe 2D arrays–technology and performance limits
Chapter 9 - Status of HgCdTe MBE technology
Chapter 10 - Silicon infrared focal plane arrays
Chapter 11 - Infrared silicon/germanium detectors
Chapter 12 - PolySiGe uncooled microbolometers for thermal IR detection
Chapter 13 - Fundamentals of spin filtering in ferromagnetic metals with application to spin sensors
全文：http://www.sciencedirect.com/science/book/9781856173889

电子书推介 2022 年第 8 期（总第 13 期）

半导体所图书馆

2022-4-26

生物光电子学

作者： 黄维,董晓臣,汪联辉 著 ISBN： 9787030433275

出版社： 科学出版社 出版日期： 2018-01

简介： 生物光电子学的研究内容主要包括三个方面：一是研究生物体系本身的电子学特性、生物体系中的信息存储和信息传递；二是利用光学材料和光学理论解决生物分子识别、信息传递、信息标记问题；三是应用电子信息科学的理论和技术解决生物信息获取、信息分析问题，发展生物医学检测技术及辅助治疗的新方法和新技术，探索开发微型检测仪器。围绕以上研究内容，本书系统、全面而又详细地介绍了生物光电子学的相关基本概念、基本理论及其在生物医学检测等方面的发展状况。基于对生物光电子学理论的理解，书中介绍了生物电子学、生物光子学及各种光电相关的生物传感器，讨论了相应生物传感器在实际电子器件中的应用。例如，场效应晶体管生物传感器、电化学生物传感器、表面等离子激元、微流控等。对于各种传感器件，本书主要强调了它们的基础知识、基本原理、结构和性能的关系等。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=B5D705A3AEDA66CC3E053010B0A0A9AF3000

半导体科学与技术（第二版）

作者： 何杰,夏建白 主编 ISBN： 9787030514561

出版社： 科学出版社 出版日期： 2017-06

简介： 本书第一版自 2006 年出版以来，受到了广大读者的欢迎。第二版在原来基础上仍然延续第一版的体例和风格，内容增加到 30 章，并且分为物理篇、材料篇和器件篇，涵盖半导体科学与技术的方方面面。参与写作的作者均为长年工作在该领域第一线的专家学者（包括第一版的作者），介绍了所从事领域的国内

外发展动态、自己的工作以及对将来的展望，并附有最新的参考文献以便广大(特别是青年科技工作者)能尽快地进入该领域，加强相互间的学术交流，做出创新性的成果。同时，为科技管理干部提供一个半导体科学技术研究领域的全貌，利于其做出科学合理的规划和管理。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=B51556FFB67B282A2E053010B0A0AABA9000

集成电路制造工艺技术体系

作者： 严利人,周卫 ISBN： 9787030501578

出版社： 科学出版社 出版日期： 2016-10

简介： 本书从三个方面系统地论述集成电路的制造技术。首先是制造对象，对工艺结构及结构所对应的电子器件特性进行深人的分析与揭示。其次是生产制造本身，详细讨论集成电路各单步作用的本质性特征及各不同工艺技术在成套流程中的作用，讨论高端制造的组织、调度和管理，工艺流程的监控，工艺效果分析与诊断等内容。最后是支撑半导体制造的设备设施，该部分的论述比较简明，但是也从整体和系统的角度突出了制造设备的若干要素。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=B26E6112ADF6047A59628F4AC51C578B1000

Ⅲ族氮化物发光二极管技术及其应用

作者： 李晋闽,王军喜,刘喆 ISBN： 9787030472649

出版社： 科学出版社 出版日期： 2016-03

简介： 本书以作者及其研究团队多年的研究成果为基础，详细介绍了Ⅲ族氮化物发光二极管（LED）的材料外延、芯片制作、器件封装和系统应用，内容集学术性与实用性为一体。全书共 12 章，内容包括：Ⅲ族氮化物 LED 的基本原理、材料性质及外延生长理论，InGaN/GaN 多量子阱材料及蓝、绿光 LED，AlGaN/GaN 多量子阱材料及紫外 LED，Ⅲ族氮化物 LED 量子效率提升技术、关键制备工艺、

封装技术，可靠性分析，LED 的应用，以及当前氮化物 LED 的一些研究前沿和热点。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=B6C88A49DB07C4855AFB1027CBF6DF3AD000

半导体光谱测试方法与技术

作者： 张永刚,顾溢,马英杰著 ISBN： 9787030472229

出版社： 科学出版社 出版日期： 2016-01

简介： 本书在回顾光谱学和光谱仪器的发展过程后，对半导体中涉及的主要光学过程以及半导体材料、器件及应用研究中需要哪些光谱分析手段和方法作了简要介绍，然后以分光（色散）和傅里叶变换两种方法为基础讨论了光谱分析的基本原理、测试仪器、关键部件、系统构成以及限制因素等，并结合一系列测量实例对吸收谱类、光电谱类和发射谱类测量方法与技术及相关细节进行了详细说明。此外，本书还对半导体研究中涉及的一些拓展的光谱分析方法（如拉曼光谱、微区光谱、扫描成像光谱、时间分辨瞬态光谱及调制光谱等）也结合实例进行了介绍。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=BD333CBDBF1AA49EAB911C18AA40BF8F7000

新型纤维状电子材料与器件

作者： 彭慧胜 ISBN： 9787030466822

出版社： 科学出版社 出版日期： 2016-01

简介： 本书重点介绍了纤维状的有机太阳能电池、锂离子电池、超级电容器、光电转换与储能集成器件以及聚合物发光电化学池。与板状和块状的电子器件相比，这些纤维状的电子器件体积更小、质量更轻，可三维扭曲变形，并可以像化学纤维那样被进一步编成织物，成为多学科交叉研究的一个重要发展方向。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=BC5BB75B6AA2741F4A007D2A38427C35E000

胶体半导体量子点

作者： 张宇,于伟泳 ISBN： 9787030436023
出版社： 科学出版社 出版日期： 2015-05

简介： 本书是作者长期从事胶体量子点研究成果的总结，同时汲取了近几年相关领域主要的最新研究报道。主要内容包括：胶体量子点的激子结构和多激子效应，量子点中激子与声子的相互作用。胶体量子点的主要特性，如光学特性、电学特性、温度特性等；详细描述胶体量子点的合成和表征方法，以及典型胶体量子点（如Ⅱ-Ⅵ族、Ⅲ-Ⅴ族、掺杂量子点等）的合成工艺和主要性能；还以较大篇幅展示胶体量子点在光电子器件和生命科学中的应用，如量子点 LED、量子点太阳电池、量子点激光器、量子点掺杂光纤和光纤放大器、量子点在生命科学和医学中的应用等。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=B694EFD357A6C470BA9CBC248D1CC6AAB000

透明氧化物半导体

作者： 马洪磊，马瑾著 ISBN： 9787030416643
出版社： 科学出版社 出版日期： 2014-09

简介： 本书论述了透明氧化物半导体薄膜的制备技术、理论基础，分别阐述已经得到广泛应用或具有重要应用前景的八种典型氧化物半导体薄膜的晶体结构、形貌、缺陷、电子结构、电学性质、磁学性质、压电性质、光学性质、气敏性质和光催化性质，评述新兴透明氧化物电子学。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=B64E895E22E9B4E22B50A2FA343E60D5B000

太阳电池基础与应用．上册 | 2 版

作者： 朱美芳，熊绍珍主编 ISBN： 9787030397898

出版社： 科学出版社 出版日期： 2014-03

简介： 本书在阐述光伏利用太阳能的必然与重要性及的基础上。主要讲述半导体基础理论及光伏电池的基本原理与模拟设计。具体内容包括：光伏发电——人类能源的希望、光伏原理基础、晶体硅太阳电池、硅基薄膜太阳电池等。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=B47F5D5B9CE94415489D7F6F72A15F198000

太阳电池基础与应用．下册 | 2 版

作者： 朱美芳，熊绍珍主编 ISBN： 9787030398802

出版社： 科学出版社 出版日期： 2014-03

简介： 本书主要讲述半导体基础理论及光伏电池的基本原理与模拟设计。结合该领域的最新进展，全面深入地介绍常规晶体硅电池，III—V 族化合物电池；同时对 CIGS 电池；CdTe 电池；硅基薄膜电池；染料敏化电池；有机电池等各种不同薄膜电池的光伏材料、电池结构及其工艺特色和技术发展予以详细阐述。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=B00898293A0E44554BE206763787D0222000

半导体光谱分析与拟合计算

作者： 陆卫，傅英著 ISBN： 9787030395665

出版社： 科学出版社 出版日期： 2014-02

简介： 本书简要介绍半导体光谱测量基本手段后，比较系统地阐述了几种常用的半导体光谱分析方法，同时对光谱的拟合方法作了理论探讨和具体介绍。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=B5A

1AD2C1CF7A429680E709AF4E41D770000

纳米生物医学光电子学前沿

作者： 祝宁华[等]主编 ISBN： 9787030367051

出版社： 科学出版社 出版日期： 2013-03

简介： 本书内容包括了纳米材料在医药中的应用，以及纳米器件在医疗诊断、器械、设备、纳米生物医学成像、DNA 测序等多方面的应用，系统介绍了多种纳米材料和纳米器件的物理基础、工作原理、实际应用，同时对研究历史、现状、研究内容和发展趋势进行了全面的总结。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=BE9B079CD6EFE430F89B8017D3F704D0A000

氮化物宽禁带半导体材料与电子器件

作者： 郝跃，张金风，张进成著 ISBN： 9787030367174

出版社： 科学出版社 出版日期： 2013-01

简介： 本书共 14 章，介绍了Ⅲ族氮化物宽禁带半导体材料与电子器件的物理特性和实现方法，重点介绍了半导体高电子迁移率晶体管（HEMT）与相关氮化物材料。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=B5BD1BF2454CA459797683AD88B2D78E6000

半导体物理学

作者： 黄昆，谢希德著 ISBN： 9787030346148

出版社： 科学出版社 出版日期： 2012-06

简介： 本书比较全面介绍了有关半导体物理原理的基础知识，内容包括：半导体中电子的运动状态、在电磁场以及在有温差时的各种输运过程、光吸收和光电

导的现象、非平衡载流子的运动、表面和接触的现象等。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=BF3D404C0495F4B2F9C8E424D97CE4DEC000

低维量子器件物理

作者： 彭英才，赵新为，傅广生编著 ISBN： 9787030338495

出版社： 科学出版社 出版日期： 2012-04

简介： 本书主要以异质结双极晶体管、高电子迁移率晶体管、共振隧穿电子器件、单电子输运器件、量子结构激光器、量子结构红外探测器和量子结构太阳电池为主，比较系统地分析与讨论了它们的工作原理与器件特性，并对自旋电子器件、单分子器件和量子计算机等内容进行了简单介绍。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=B67E3176B290B4A35A67D8FE8C9B43CD4000

半导体光放大器及其应用

作者： 黄德修，张新亮，黄黎蓉编著 ISBN： 9787030335319

出版社： 科学出版社 出版日期： 2012-03

简介： 本书共分 9 章，介绍了半导体光放大器的原理、器件结构、性能参数和可能产生的应用，介绍了半导体光放大器增益介质的不断改进和相应的性能改善，阐述了半导体炮放大器在全光信号处理的几个不同方面的应用研究结果，介绍了半导体光放大器作为一个重要器件参与光电子集成的关键技术。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=BAF2D9D9C6BE14429BE06FBFAEB13D681000

半导体太赫兹源、探测器与应用

作者： 曹俊诚著 ISBN： 9787030334022

出版社： 科学出版社 出版日期： 2012-02

简介： 本书主要论述了半导体太赫兹（THz）辐射源与探测器的基本原理、模拟与设计、器件研制方法以及 THz 通信与成像应用等。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=B37320E75141C4213AA08C140884CD3DB000

光电子器件微波封装和测试 | 2 版

作者： 祝宁华著 ISBN： 9787030330048

出版社： 科学出版社 出版日期： 2011-12

简介： 本书系统介绍了高速光电子器件测试和微波封装设计方面的实用技术，其具体内容包括半导体激光器、光调制器和光探测器三种典型高速光电子器件的微波封装设计，网络分析仪扫频测试法、小信号功率测试法、光外差技术等小信号频率响应特性测试方法及测试系统校准方法等。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=BABC6215811DD4C69AE95DE1A9C1AB561000

光纤光学前沿

作者： 祝宁华，闫连山，刘建国主编 ISBN： 9787030324702

出版社： 科学出版社 出版日期： 2011-10

简介： 本书是由四十余位知名青年学者撰写而成的。全书共分 16 章，重点介绍光纤光学技术的最新进展，其中包括微纳光纤、光纤光源、光纤传感及其应用、光纤信息处理、光纤通信系统与接入网等内容。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=BBB6DF6C742A249B791D0ED391BF2EBF5000

超高频激光器与线性光纤系统

作者： (美)刘锦贤著；谢世钟[等]译 ISBN： 9787030308719

出版社： 科学出版社 出版日期： 2011-05

简介： 本书对直接调制激光二极管的高频特性做出了科学归纳和剖析，阐述了高频直接调制下激光二极管的动态纵模特性和光纤链路中信号感应的噪声，讨论了宽带毫米波在光纤传输链路中的传输特性及其影响因素，介绍了掺铒光纤放大器对系统信噪比的影响，并针对实际的传输验证实验，阐述了减小光纤链路中各种影响因素的补偿技术。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=BC9169598D85B40D5A48A17E9973F7AA2000

硅光子学

作者： 余金中主编 ISBN： 9787030304797

出版社： 科学出版社 出版日期： 2011-03

简介： 本书共 19 章，分别介绍硅基光子学基础、应用和发展趋势；硅基异质结构和量子结构的物理性质、制备方法；硅基光子器件，包括硅基发光器件、探测器、光波导器件；硅基光子晶体、硅基光电子集成、硅基光互连以及硅基太阳能电池。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=B994DE9D574F04E44968798AEB6A0ABA3000

有机电子学

作者： 黄维，密保秀，高志强著 ISBN： 9787030302458

出版社： 科学出版社 出版日期： 2011-01

简介： 本书从有机电子学的角度，概括总结了有机电子材料中的电子结构与过程，阐释了有机固体凝聚态的各种性质，还介绍了有机薄膜材料在实际电子器件

中的各种应用。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=BC734DC816F244980AC08583D5F1F15E1000

微机电系统设计 ：建模、仿真与可视化

作者： 卢桂章，赵新著 ISBN： 9787030292209

出版社： 科学出版社 出版日期： 2010-10

简介： 本书建立了一种微电子机械器件的设计方法，对现有设计系统功能作了一些重要的补充和完善，其基本思路是在设计阶段，当版图和工艺设计完成后，通过建立运动部件的动态模型，进行三维可视化仿真，形成器件在虚拟环境中运行，从而对器件的运动功能进行评测。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=B9B6829246FA34B4D8FBE1B36734160AA000

半导体中的自旋物理学

作者： (美)M.I. 迪阿科诺夫主编；姬扬译 ISBN： 9787030282866

出版社： 科学出版社 出版日期： 2010-07

简介： 本书介绍了半导体自旋物理学当前研究全貌，共 13 章，每章都是由从事该方向研究多年、长期处于研究前沿的专家撰写。在概述了半导体物理学和自旋物理学的基本知识之后，该书重点介绍了当前研究的热点和重要成果，在实验技术和实验测量方面的描述更为详尽。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=BEA7E424FC3BF4EAD8E0BDB2DB8B23B2F000

半导体材料测试与分析

作者： 杨德仁等著 ISBN： 9787030270368
出版社： 科学出版社 出版日期： 2010-04
简介： 本书主要介绍半导体材料的各种测试分析技术，涉及测试技术的基本原理、仪器结构、样品制备和应用实例等内容：包括四探针电阻率、无接触电阻率、扩展电阻、微波光电导衰减、霍尔效应、红外光谱等测试分析技术。
阅读全文：
https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=B689ED371F7694C6F961DA162E8F3FDFF000

太阳能电池基础与应用
作者： 熊绍珍，朱美芳主编 ISBN： 9787030255495
出版社： 科学出版社 出版日期： 2009-10
简介： 本书从社会发展和生态保护以及能源需求角度出发，阐述光伏利用太阳能的必然性与重要性；讲述半导体基础理论及光伏电池的基本原理。
阅读全文：
https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=B322A33AD86A84249B1141E43C52B95A3000

共振隧穿器件及其应用
作者： 郭维廉编著 ISBN： 9787030237262
出版社： 科学出版社 出版日期： 2009-06
简介： 本书内容包括：共振隧穿二极管概述和物理基础、共振隧穿二极管的器件模型和模拟、共振隧穿晶体管、共振隧穿型光电器件、共振隧穿器件在高速数字电路中的应用、共振隧穿器件及其集成技术发展趋势和目前研究热点等。
阅读全文：
https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=BC2C8F37D33B049CCB3F93B18376A6408000

金属有机化合物气相外延基础及应用

作者： 陆大成，段树坤著 ISBN： 9787030238450

出版社： 科学出版社 出版日期： 2009-05

简介： 本书论述了 MOVPE 技术的生长系统和原材料特性等实验基础、MOVPE 生长热力学、化学反应动力学和输运现象等理论基础，介绍了Ⅲ-Ⅴ族和Ⅱ-Ⅵ族化合物半导体材料生长及其量子阱、量子点等低维结构的 MOVPE 生长，以及在光电器件和电子器件方面的应用。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=B7807622B945E4A58B81814E2717C70DC000

半导体自旋电子学

作者： 夏建白，葛惟昆，常凯著 ISBN： 9787030221179

出版社： 科学出版社 出版日期： 2008-10

简介： 本书介绍了半导体自旋电子学的一些基本概念和国际国内的研究成果，其中包括半导体中磁离子的性质、稀磁半导体中巨 Zeeman 分裂、铁磁半导体的居里温度等。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=B1FD492B0558F4CFAAA3504A66A38B525000

微纳米 MOS 器件可靠性与失效机理

作者： 郝跃，刘红侠著 ISBN： 9787030205865

出版社： 科学出版社 出版日期： 2008-03

简介： 本书主要介绍了微纳米 MOS 器件的失效机理与可靠性理论，目的是在微电子器件可靠性理论和微电子器件的设计与应用之间建立联系，阐述微纳米 MOS 器件的主要可靠性问题和系统的解决方法。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=BB0

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半导体的检测与分析 | 2 版

作者： 许振嘉主编 ISBN： 9787030194626

出版社： 科学出版社 出版日期： 2007-08

简介： 本书共分 7 章。内容包括：引论，半导体的高分辨 X 射线衍射，光学监测与分析，表面、薄膜成分分析，扫描探针显微学在半导体中的运用，透射电子显微学及其在半导体中的应用和半导体深中心的表征等。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=BA9A94CD58C1442E08A16186647774DAB000

光电子器件微波封装和测试

作者： 祝宁华著 ISBN： 9787030191984

出版社： 科学出版社 出版日期： 2007-07

简介： 本书共十一章。内容包括：半导体激光器、光调制器和光探测器三种典型高速光电子器件的微波封装设计，网络分析仪扫频测试法、小信号功率测试法等。

阅读全文：

https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=BE9B37A104A3A43F8A0D768C831F22B63000

高速 CMOS 数据转换器

作者： 杨银堂，朱樟明，朱臻编著 ISBN： 7030177363

出版社： 科学出版社 出版日期： 2006-09

简介： 本书主要讨论高速 CMOS 数据转换器，即高速 D/A 转换器和高速 D/A 转换器设计所涉及的问题，包括体系结构、高层次模型、关键技术、电路实现及新技术等内容。

阅读全文：
https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=B78FA0A6168B64A6EA7B0A42880C237C3000

半导体异质结物理 | 2 版

作者： 虞丽生编著 ISBN： 7030168844

出版社： 科学出版社 出版日期： 2006-05

简介： 本书总结了国内外半导体异质结方面的研究成果，较系统地介绍了半导体异质结的基本物理原理和特性。

阅读全文：
https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=B01857A20EFFF469FB6D65747D5A279C1000

微系统封装技术概论

作者： 金玉丰，王志平，陈兢编著 ISBN： 7030169409

出版社： 科学出版社 出版日期： 2006-03

简介： 本书以微电子封装和集成技术为重点，融合了 MEMS 封装技术、射频系统封装技术、光电子封装技术，介绍了微系统封装设计基础技术、厚薄膜精细加工技术等相关内容。

阅读全文：
https://book.sciencereading.cn/shop/book/Booksimple/show.do?id=B4AAB850AD6D24E72A25151713DA3DF36000

电子书推介 2022 年第 9 期（总第 14 期）

——Wiley 2020-2021 年高使用量图书（第 1 期）

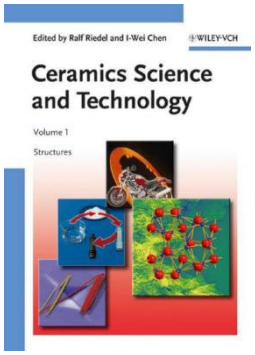
半导体所图书馆

2022-4-28

Wiley Online Library (WOL) 是世界上内容最广泛的多学科在线资源平台之一，涵盖了几乎全部学科领域。Wiley 已与 800+学协会合作，出版 23000+种在线图书及 240+种在线参考工具书。

目前，中科院已经订购 Wiley 在线图书。近期，我们将通过三期内容为大家推介半导体所在 2020-2021 年期间使用量最高的 Wiley 在线图书。

第一期内容，我们先为大家带来了其中的 10 本，一起来先睹为快吧！



陶瓷科学与技术

Ceramics Science and Technology

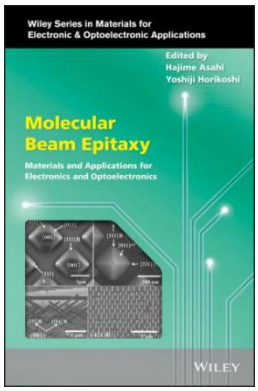
编者：Ralf Riedel, I-Wei Chen

Online ISBN：9783527631940

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/9783527631940

内容介绍

本书全面介绍了陶瓷这一令人振奋的材料类别，是包含了理论、基础知识、实践方法和问题解决方案的陶瓷知识宝库。它适用于所有材料科学家、工程师和化学家。



分子束外延：电子和光电子学的材料及应用

Molecular Beam Epitaxy: Materials and Applications for Electronics and Optoelectronics

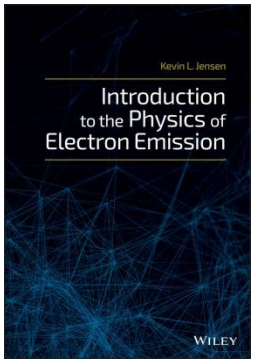
作者：Hajime Asahi, Yoshiji Horikoshi

Online ISBN：9781119354987

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/9781119354987

内容介绍

本书由工作在该领域前沿的专家研究人员撰写，涵盖了分子束外延（MBE）技术的基础知识，以及用于电子和光电设备应用的最先进的 MBE 技术。



电子发射的物理性质介绍

Introduction to the Physics of Electron Emission

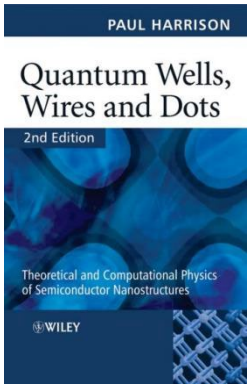
作者：Kevin Jensen

Online ISBN：9781119051794

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/9781119051794

内容介绍

本书对电子发射背后的物理学原理及其在科学实验和技术中的应用进行了深入的介绍，是研究量子力学、统计力学、固体物理学、电子传输和电子束物理学的研究生的宝贵学习工具。



量子阱、线和点：半导体纳米结构的理论和计算物理学 第 2 版

Quantum Wells, Wires and Dots: Theoretical and Computational Physics of Semiconductor Nanostructures, Second Edition

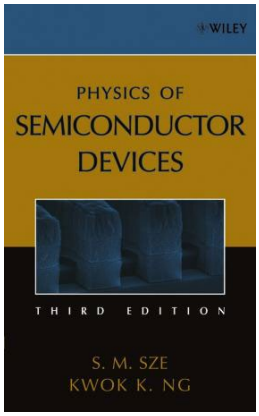
作者：Paul Harrison

Online ISBN：9780470010822

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/0470010827

内容介绍

本书介绍了量子阱、线和点相关的理论和计算，帮助读者理解半导体纳米结构的电子、光学和传输的特性，并将这些新技术在实际中应用起来。



半导体器件的物理学

Physics of Semiconductor Devices

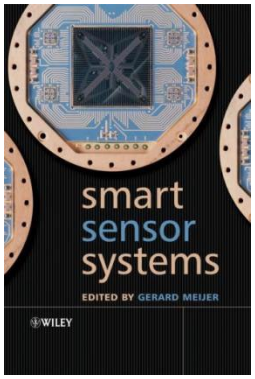
作者：S.M. Sze, Kwok K. Ng

Online ISBN：9780470068328

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/0470068329

内容介绍

这本经典的著作为半导体器件领域的研究设定了标准。本书介绍了器件的概念及其性能的巨大进步，是关于半导体器件领域的最详细和权威的参考资料，为读者提供了非常有价值的信息。



智能传感器系统

Smart Sensor Systems

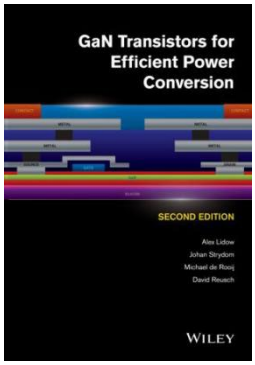
编者：Gerard C. M. Meijer

Online ISBN：9780470866931

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/9780470866931

内容介绍

本书由国际知名的专家小组编写，回顾了智能传感器系统领域的最新发展。书中完整介绍了关键的与系统和设计相关的内容，以及它们的构建模块和信号处理方法，读者可直接将这些知识运用到实践中去。



高效功率转换的氮化镓晶体管 第 2 版

GaN Transistors for Efficient Power Conversion, Second Edition

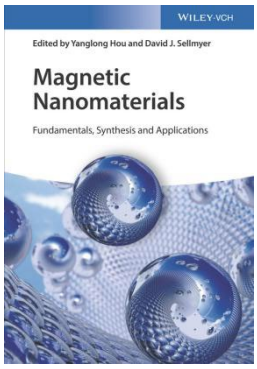
作者：Alex Lidow，Johan Strydom，Michael de Rooij，David Reusch

Online ISBN：9781118844779

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/9781118844779

内容介绍

本书的第二版经过了大幅扩充，使读者可以接触到最新的氮化镓领域知识，书中介绍了氮化镓晶体管的基本结构、特性和应用，是一本宝贵的学习资源。



磁性纳米材料：基础知识、合成和应用

Magnetic Nanomaterials: Fundamentals, Synthesis and Applications

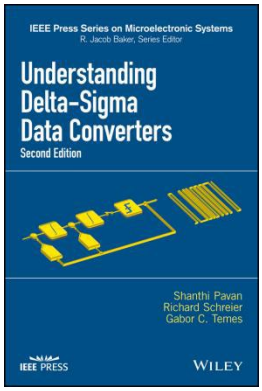
编者：Yanglong Hou, David J. Sellmyer

Online ISBN：9783527803255

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/9783527803255

内容介绍

本书全面地介绍了磁性纳米材料研究的最新进展，包括磁性纳米粒子的设计和制备、其物理和化学特性以及在不同领域的应用，包括生物医学、磁能存储、吸波和水修复等。



了解德尔塔-西格玛数据转换器 第 2 版

Understanding Delta-Sigma Data Converters, Second Edition

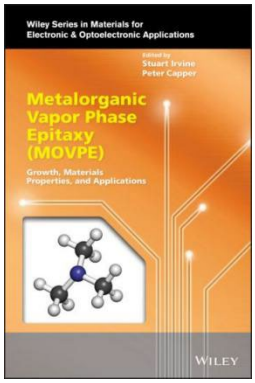
作者：Richard Schreier, Shanthi Pavan, Gabor C. Temes

Online ISBN：9781119258308

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/9781119258308

内容介绍

本书介绍了德尔塔-西格玛转换器的操作和设计技术，探讨了该领域在过去十年中的发展，并为行业专业人士提供了实用设计问题的重点。



金属有机物气相外延（MOVPE）：生长、材料特性和应用

Metalorganic Vapor Phase Epitaxy (MOVPE): Growth, Materials Properties, and Applications

编者：Stuart Irvine, Peter Capper

Online ISBN：9781119313021

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/9781119313021

内容介绍

MOVPE 是一种化学气相沉积技术，可以生产单晶或多晶薄膜。本书介绍了这种技术的方方面面，包括其所产生的材料的特性及其应用，以及该技术的未来。

在接下来的内容中，我们还会分享更多 Wiley 高使用量图书，敬请期待！

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电子书推介 2022 年第 10 期（总第 15 期）

——Wiley 2020-2021 年高使用量图书（第 2 期）

半导体所图书馆

2022-5-7

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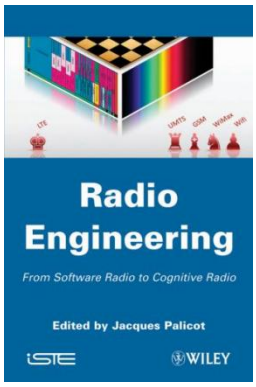
目前，中科院已经订购 Wiley 在线图书。近期，我们将通过三期内容为大家推介半导体所在 2020-2021 年期间使用量最高的 Wiley 在线图书。

今天的第二期内容，我们再为大家带来 10 本 Wiley 高质量在线图书，快来看看吧！



无线电工程：从软件到认知无线电

Radio Engineering: From Software to Cognitive Radio

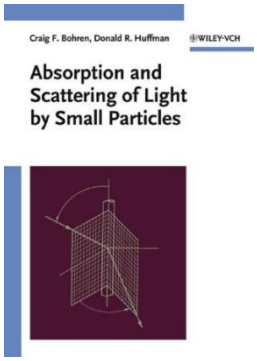
编者：Jacques Palicot, Pierre-Noël Favennec

Online ISBN：9781118602218

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/9781118602218

内容介绍

认知无线电是当今现代无线电通信世界中不可或缺的一部分，它能让设备进行自主行为、适应通信参数、满足用户需求。本书为工程师、研究人员和无线电设计师提供了核心的信息，帮助他们深入了解这个新的无线电领域。



细小微粒对光的吸收和散射

Absorption and Scattering of Light by Small Particles

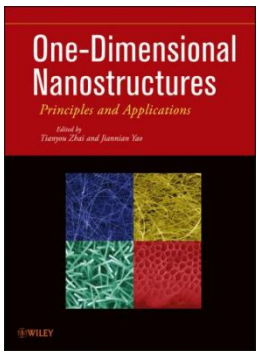
作者：Craig F. Bohren, Donald R. Huffman

Online ISBN：9783527618156

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/9783527618156

内容介绍

本书以跨学科的视角对细小微粒如何吸收和散射光进行了研究和说明。作者在书中强调，对细小微粒光学行为的讨论应该是建立在对其母质材料的光学行为的充分理解之上的，只有这样，研究结论才会完整。



一维纳米结构：原理与应用

One-Dimensional Nanostructures: Principles and Applications

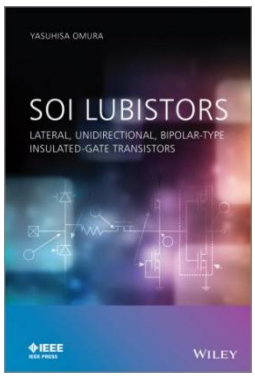
编者：Tianyou Zhai, Jiannian Yao

Online ISBN：9781118310342

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/9781118310342

内容介绍

一维纳米结构处于纳米技术研究的前沿。本书由 68 位国际知名专家合作撰写，回顾了该领域的基本原理以及最新发现和应用，介绍了该技术的现状。此外，本书对一维纳米结构的未来提出了独特的见解，并对新的研究突破和应用进行了预测。



硅绝缘体晶体管的物理学和应用：横向、单向、双极型绝缘栅晶体管

SOI Lubistors: Lateral, Unidirectional, Bipolar-type Insulated-gate Transistors

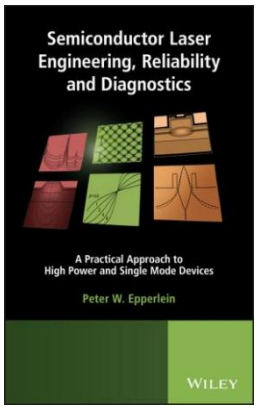
编者：Yasuhisa Omura

Online ISBN：9781118487914

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/9781118487914

内容介绍

本书全面介绍了硅绝缘体晶体管的技术、物理学原理及设计。编者为硅绝缘体晶体管的发明者，他从物理学原理、到建模、再到应用，系统地探讨了该课题。本书为高级研究人员所撰写，需要读者具有研究生以上水平的电子电气工程知识。



半导体激光工程、可靠性和诊断：高功率和单模设备的实用方法

Semiconductor Laser Engineering, Reliability and Diagnostics: A Practical Approach to High Power and Single Mode Devices

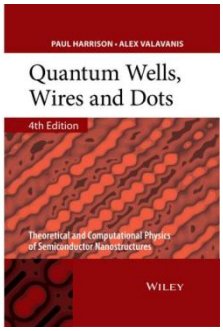
作者：Peter W. Epperlein

Online ISBN：9781118481882

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/9781118481882

内容介绍

这本书填补了目前半导体激光领域的空白。本书首先讨论了二极管激光器的基本原理；随后详细探讨了以解决问题为导向的设计准则与技术，为激光退化提供了根源性的解决办法，并深入探讨了提高激光器光学强度的工程手段。



量子阱、线和点：半导体纳米结构的理论和计算物理学 第 4 版

Quantum Wells, Wires and Dots: Theoretical and Computational Physics of Semiconductor Nanostructures, Fourth Edition

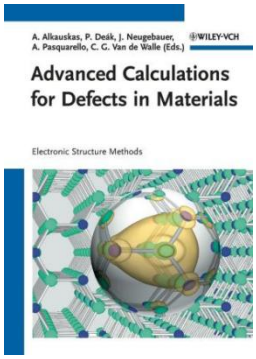
作者：Paul Harrison, Alex Valavanis

Online ISBN：9781118923337

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/9781118923337

内容介绍

本书由半导体纳米结构和量子光电子学领域的知名作者撰写，利用大量案例和习题帮助读者在半导体纳米领域打下坚实基础，并达到可以独立开展理论研究的水平。本书适用于半导体和凝聚态物理学的研究生及该领域内的学术和业内研究人员阅读。



材料缺陷的高级计算：电子结构方法

Advanced Calculations for Defects in Materials: Electronic Structure Methods

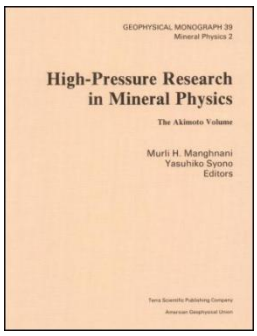
编者：Dr. Audrius Alkauskas, Prof. Dr. Peter Deák, Prof. Dr. Jörg Neugebauer, Prof. Dr. Alfredo Pasquarello, Prof. Dr. Chris G. Van de Walle

Online ISBN：9783527638529

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/9783527638529

内容介绍

本书通过应用更复杂的电子结构方法并对超格子模型进行修正和替代，来探索改进材料缺陷的可能途径。编辑们是领域内的权威专家，他们在书中对该领域过去的发展和当前的进展进行了全面概述。



矿物物理学中的高压研究：纪念 Syun-iti Akimoto 卷 第 39 卷

High - Pressure Research in Mineral Physics: A Volume in Honor of Syun - iti Akimoto, Volume 39

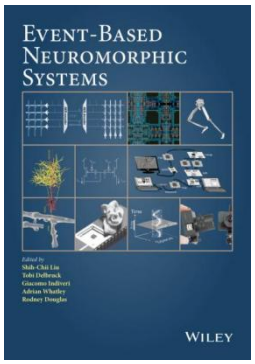
编者：Murli H. Manghnani, Yasuhiko Syono

Online ISBN：9781118664124

WOL 链接：https://agupubs.onlinelibrary.wiley.com/doi/book/10.1029/GM039

内容介绍

本书是美国地球物理学会出版的地球物理学专著系列第 39 卷，为纪念 **Syun-iti Akimoto** 教授而作。**Syun-iti Akimoto** 教授为高压高温领域的研究做出了巨大贡献，促进了人类对于地球内部结构的认知与理解，影响深远。



神经形态学与仿生工程系统

Event-Based Neuromorphic Systems

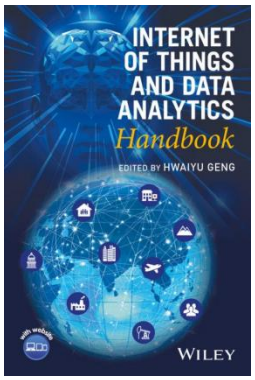
作者：Shih-Chii Liu, Tobi Delbruck, Giacomo Indiveri, Adrian Whatley, Rodney Douglas

Online ISBN：9781118927601

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/9781118927601

内容介绍

基于事件的神经形态系统的灵感来自于人体大脑高效的、以数据为驱动的通信系统设计。本书以跨学科的视角全面介绍了电路构件是如何在架构中组合以构建完整的系统。各个章节均由领域权威专家撰写，确保了内容的准确性和前沿性。



物联网和数据分析手册

Internet of Things and Data Analytics Handbook

编者：Hwaiyu Geng

Online ISBN：9781119173601

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/9781119173601

内容介绍

本书介绍了关于物联网的基本技术知识、模块构建流程、设计原则、具体执行以及营销策略，为读者提供了规划、设计和执行物联网项目的关键知识。此外本书还涉及大数据分析、机器学习、云计算等领域的实践，有极强的指导意义。

电子书推介 2022 年第 11 期（总第 16 期）

——Wiley 2020-2021 年高使用量图书（第三期）

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2022-5-17

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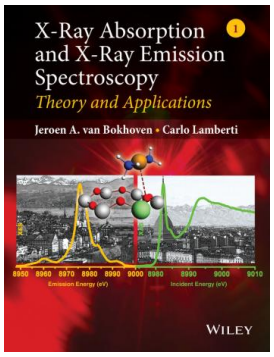
目前，中科院已经订购 Wiley 在线图书。在前两期的内容中，我们为大家推荐了 20 本半导体所在 2020-2021 年期间的高使用量 Wiley 在线图书，作为这一系列推介的收官之作，我们将继续分享 10 本同样**“集高学术价值和使用便捷性”于一身**的优质 Wiley 在线图书，千万别错过本期的内容！



X-射线吸收和 X-射线发射光谱学：理论与应用

X-Ray Absorption and X-Ray Emission Spectroscopy: Theory and Applications

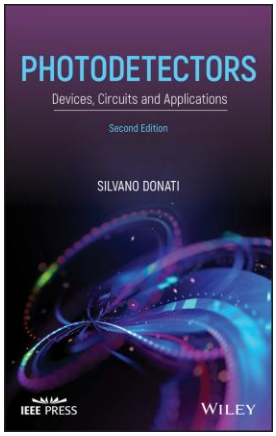
编者：Jeroen A. Van Bokhoven, Carlo Lamberti

Online ISBN：9781118844243

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/9781118844243

内容介绍

本书解释了 X 射线现象背后的原理，并描述了如何将 X 射线的吸收和发射应用到实践中，应用的领域包括化学、生物化学、催化、非晶态和液体系统等。



光电探测器：器件、电路和应用

Photodetectors: Devices, Circuits and Applications

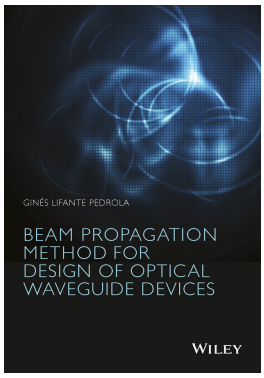
作者：Silvano Donati

Online ISBN：9781119769958

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/9781119769958

内容介绍

本书全面介绍了光电探测的基础知识，以及近二十年来出现的新技术和新概念。书中的每一章都包含供学生练习的习题，以保证学习效果。本书适合对现代光电子学的科学和设计感兴趣的本科生阅读，也是相关领域的工程师和物理学家的必备参考。



用于光波导器件设计的光束传播法

Beam Propagation Method for Design of Optical Waveguide Devices

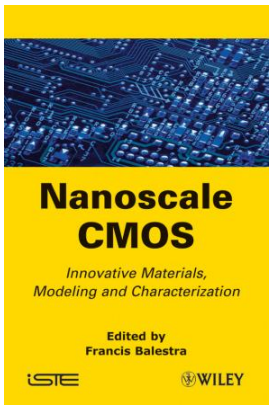
作者：Ginés Lifante Pedrola

Online ISBN：9781119083405

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/9781119083405

内容介绍

本书介绍了几种处理光线的方法，包括广角法（wide-angle）和标量法（scalar）等。此外，书中还涵盖了关于光束传播法（BPM）的特别主题，例如光在各向异性介质中传播的模拟。本书介绍了 BPM 相关领域的方方面面，是一本有价值的参考资料。



纳米级 CMOS：创新材料、建模和表征

Nanoscale CMOS: Innovative Materials, Modeling and Characterization

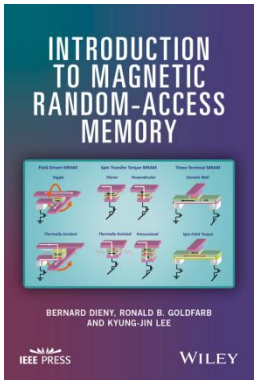
编者：Francis Balestra

Online ISBN：9781118621523

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/9781118621523

内容介绍

本书全面回顾了创新材料的开发和纳米级 CMOS 器件的高级建模及表征方法领域的最新进展。该领域一直是材料科学的一个重要研究方向，旨在寻找新的方法来提高半导体技术的性能。



磁随机存取存储器导论

Introduction to Magnetic Random-Access Memory

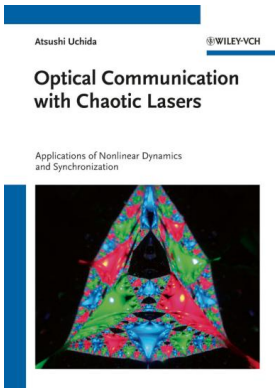
作者：Bernard Dieny, Ronald B. Goldfarb, Kyung-Jin Lee

Online ISBN：9781119079415

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/9781119079415

内容介绍

本书是由磁性材料和器件专家为微电子工程师编写的磁随机存取存储器（MRAM）介绍。它介绍了 MRAM 所涉及的基本现象、所使用的材料和薄膜堆栈、各种类型的 MRAM 的基本原理、后端磁技术，以及最近转向逻辑存储架构的发展，有助于加深微电子学界和磁学界的学术联系。



混沌激光器的光通信：非线性动力学和同步化的应用

Optical Communication with Chaotic Lasers: Applications of Nonlinear Dynamics and Synchronization

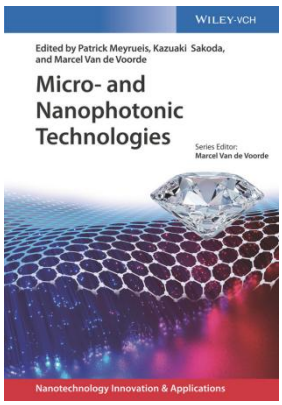
作者：Dr. Atsushi Uchida

Online ISBN：9783527640331

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/9783527640331

内容介绍

这本全面的参考书从混沌激光系统不稳定性的基本物理学入手，介绍了耦合激光器中混沌同步的技术和工艺，以及在激光和光学、通信、安全和信息技术中的诸多应用。全书介绍了该领域在当前的最新知识，包括编码/解码技术、混沌通信系统的性能、随机数生成和新型通信技术。



微纳光子技术

Micro- and Nanophotonic Technologies

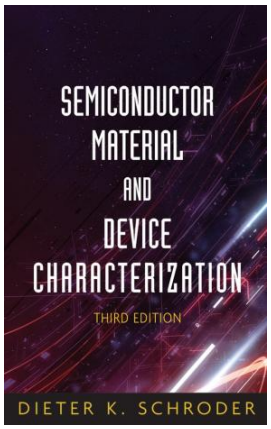
编者：Patrick Meyrueis, Marcel Van de Voorde, Kazuaki Sakoda

Online ISBN：9783527699940

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/9783527699940

内容介绍

本书由来自各国的顶尖专家编辑和撰写，对微纳光子学进行了全面的概述，涵盖了物理和化学方面的基础知识，同时明确侧重于工业研发中的技术和应用。



半导体材料和器件表征 第 3 版

Semiconductor Material and Device Characterization, Third Edition

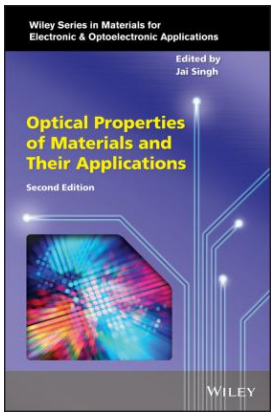
作者：Dieter K. Schroder

Online ISBN：9780471749097

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/0471749095

内容介绍

本书覆盖了该领域的最新发展。书中包含一系列新的教学工具以帮助读者更好地学习。这本书的第三版本仍然是业内唯一一本专门介绍测量半导体材料和器件的表征技术的图书，内容包括电学和光学的全部表征方法，且包含更专业的化学和物理技术。



材料的光学特性及其应用 第 2 版

Optical Properties of Materials and Their Applications, Second Edition

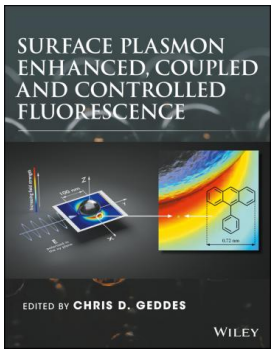
编者：Jai Singh

Online ISBN：9781119506003

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/9781119506003

内容介绍

本书由电子和光电材料及光子学领域的知名专家撰写，探讨了材料的光学特性以及它们的物理过程和各种类别。本书采用半定量的方法，对相关领域的基本概念进行了总结，并回顾了对于材料光学特性研究的最新进展，附有许多实例和应用。



表面等离子体增强、耦合和控制荧光

Surface Plasmon Enhanced, Coupled and Controlled Fluorescence

编者：Chris D. Geddes

Online ISBN：9781119325161

WOL 链接：https://onlinelibrary.wiley.com/doi/book/10.1002/9781119325161

内容介绍

本书介绍了质子增强荧光的原理和当前最新的研究进展，纳入了世界权威科学家在荧光和质子领域的贡献，还描述了开发金属增强荧光表面和纳米颗粒的详细实验程序。

以上就是“Wiley 高使用量在线图书推介”专题的全部内容，感谢大家一路以来的陪伴！

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电子书推介 2022 年第 12 期（总第 17 期）

半导体所图书馆

2022-7-7

Handbook of Fiber Optic Data Communication：A Practical Guide to Optical Networking

Fourth Edition • 2014

Edited by: Casimer DeCusatis

全文：http://www.sciencedirect.com/science/book/9780124016736

Single Crystals of Electronic Materials：Growth and Properties

A volume in Woodhead Publishing Series in Electronic and Optical Materials

Edited by: Roberto Fornari

14 - Gallium oxide

15 - Indium oxide: In2O3

16 - Preparation, properties and electronic structure of SnO2

全文：https://www.sciencedirect.com/book/9780081020968

Photonic Crystal Metasurface Optoelectronics

Edited by Weidong Zhou, Shanhui Fan

Chapter One - Fano resonance principles in photonic crystal slabs

Chapter Two - Transition from photonic crystals to dielectric metamaterials

Chapter Three - Light trapping in photonic structures

Chapter Four - Optical image processing using photonic crystal slab

Chapter Five - Guided mode resonances and photonic crystals for biosensing and imaging

Chapter Six - Fano resonance photonic crystal filters and modulators

Chapter Seven - On-chip photonic crystal surface-emitting lasers

全文：http://www.sciencedirect.com/science/book/9780128175422

Optical Fiber Telecommunications IV-B

Volume B A volume in Optics and Photonics

Book • Fourth Edition • 2002

Edited by: Ivan P. Kaminow and Tingye Li

Chapter 1 - Overview

Chapter 2 - Growth of the Internet

Chapter 3 - Optical Network Architecture Evolution

Chapter 4 - Undersea Communication Systems

Chapter 5 - High-Capacity, Ultra-Long-Haul Networks

Chapter 6 - Pseudo-Linear Transmission of High-Speed TDM Signals: 40 and 160 Gb/s

Chapter 7 - Dispersion-Managed Solitons and Chirped Return to Zero: What Is the Difference?

Chapter 8 - Metropolitan Optical Networks

Chapter 9 - The Evolution of Cable TV Networks

Chapter 10 - Optical Access Networks

Chapter 11 - Beyond Gigabit: Application and Development of High-Speed Ethernet Technology

Chapter 12 - Photonic Simulation Tools

Chapter 13 - Nonlinear Optical Effects in WDM Transmission

Chapter 14 - Fixed and Tunable Management of Fiber Chromatic Dispersion

Chapter 15 - Polarization-Mode Dispersion

Chapter 16 - Bandwidth-Efficient Modulation Formats for Digital Fiber Transmission Systems

Chapter 17 - Error-Control Coding Techniques and Applications

Chapter 18 - Equalization Techniques for Mitigating Transmission Impairments

全文：http://www.sciencedirect.com/science/book/9780123951731

Advances in Laser Materials Processing：Technology, Research and Applications

Book • Second Edition • 2018

Edited by: Jonathan Lawrence

Chapter 1 - “Light” Industry: An Overview of the Impact of Lasers on Manufacturing

Chapter 2 - The Challenges Ahead for Laser Macro, Micro and Nano Manufacturing

Chapter 3 - Laser Fusion Cutting of Difficult Materials

Chapter 4 - Laser-Assisted Glass Cleaving

Chapter 5 - Laser Dicing of Silicon and Electronics Substrates

Chapter 6 - Laser Machining of Carbon Fiber-Reinforced Plastic Composites

Chapter 7 - Understanding and Improving Process Control in Pulsed and Continuous Wave Laser Welding

Chapter 8 - Laser Microspot Welding in Electronics Production

Chapter 9 - Laser Arc Hybrid Welding

Chapter 10 - Influencing the Weld Pool During Laser Welding

Chapter 11 - Laser Transformation Hardening of Steel

Chapter 12 - Pulsed Laser Annealing Technology for Nano-Scale Fabrication of Silicon-Based Devices in Semiconductors

Chapter 13 - Laser-Induced Forward Transfer Techniques and Applications

Chapter 14 - Production of Biomaterial Coatings by Laser-Assisted Processes

Chapter 15 - Thick Metallic Coatings Produced by Coaxial and Side Laser Cladding: Processing and Properties

Chapter 16 - Laser Consolidation—A Rapid Manufacturing Process for Making Net-Shape Functional Components

Chapter 17 - Laser-Based Additive Manufacturing Processes

Chapter 18 - Direct Infrared Laser Machining of Semiconductors for Electronics Applications

Chapter 19 - Laser Processing of Direct-Write Nano-Sized Materials

Chapter 20 - Micro- and Nano-Parts Generated by Laser-Based Solid Freeform Fabrication

Chapter 21 - Laser-Assisted Additive Fabrication of Micro-Sized Coatings

Chapter 22 - Multiphysics Modelling of Laser Solid Freeform Fabrication Techniques

Chapter 23 - Process Control of Laser Materials Processing

Chapter 24 - Development of Laser Processing Technologies via Experimental Design

Chapter 25 - Microstructural Characterization and Mechanical Reliability of Laser-Machined Structures

全文：http://www.sciencedirect.com/science/book/9780081012529

Handbook of Silicon Based MEMS Materials and Technologies
A volume in Micro and Nano Technologies

Edited by: Markku Tilli, Mervi Paulasto-Krockel, ... Veikko Lindroos

Part I: Silicon as MEMS Material

Part II: Modeling in MEMS

Part III: Micromachining Technologies in MEMS

Part IV: Encapsulation and Integration of MEMS

Part V: Characterization of MEMS

Part VI: Process integration and case studies

全文：http://www.sciencedirect.com/science/book/9780128177860

InGaAs Avalanche Photodiodes for Ranging and Lidar

Authors: Andrew S. Huntington

全文：http://www.sciencedirect.com/science/book/9780081027257

Gallium Oxide：Technology, Devices and Applications

Edited by: Stephen Pearton, Fan Ren and Michael Mastro

全文：http://www.sciencedirect.com/science/book/9780128145210

Oxide Semiconductors

Edited by Bengt G. Svensson, Stephen J. Pearton, Chennupati Jagadish

全文：http://www.sciencedirect.com/science/book/9780123964892

Handbook of Crystal Growth

Edited by: Tatau Nishinaga

Part A: Thermodynamics and Kinetics

Part B: Transport and Stability

全文：http://www.sciencedirect.com/science/book/9780444563699

Analog Circuit Design：Immersion in the Black Art of Analog Design

Authors: Bob Dobkin and Jim Williams

PART 1: Power Management

PART 2: Data Conversion, Signal Conditioning and High Frequency/RF

PART 3: Circuit Collections

全文：http://www.sciencedirect.com/science/book/9780123978882

电子书推介 2022 年第 13 期（总第 18 期）

半导体所图书馆

2022-7-18

Handbook of Fiber Optic Data Communication：A Practical Guide to Optical Networking

Book • Third Edition • 2008

Edited by: Casimer DeCusatis

全文：http://www.sciencedirect.com/science/book/9780123742162

2D Materials

Edited by Francesca Iacopi, John J. Boeckl, Chennupati Jagadish

全文：http://www.sciencedirect.com/science/book/9780128042724

International Edition University Physics

Authors: George B. Arfken, David F. Griffing, ... Joseph Priest

Description

International Edition University Physics aims to provide an authoritative treatment and pedagogical presentation in the subject of physics. The text covers basic topics in physics such as scalars and vectors, the first and second condition of equilibrium, torque, center of gravity, and velocity and acceleration. Also covered are Newton's laws; work, energy, and power; the conservation of energy, linear momentum, and angular momentum; the mechanical properties of matter; fluid mechanics, and wave kinematics. College students who are in need of a textbook for introductory physics would find this book a reliable reference material.

全文：http://www.sciencedirect.com/science/book/9780120598588

Semiconductor Optoelectronic Devices：Introduction to Physics and Simulation

Authors: JOACHIM PIPREK

全文：http://www.sciencedirect.com/science/book/9780080469782

Photodetectors：Materials, Devices and Applications

Edited by: Bahram Nabet

Key Features：

Reviews materials, detector types and devices

Addresses fabrication techniques, and the advantages and limitations and different types of photodetector

Considers a range of application for this important technology

Includes discussions of silicon photonics, detectors based on reduced dimensional charge systems, carbon nanotubes, graphene, nanowires, and more

全文：http://www.sciencedirect.com/science/book/9781782424451

Principles of Optics： Electromagnetic Theory of Propagation, Interference and Diffraction of Light

Sixth Edition • 1980

Authors: MAX BORN and EMIL WOLF

Description

Principles of Optics: Electromagnetic Theory of Propagation, Interference and Diffraction of Light, Sixth Edition covers optical phenomenon that can be treated with Maxwell's phenomenological theory. The book is comprised of 14 chapters that discuss various topics about optics, such as geometrical theories, image forming instruments, and optics of metals and crystals. The text covers the elements of the theories of interference, interferometers, and diffraction. The book tackles several behaviors of light, including its diffraction when exposed to ultrasonic waves. The selection will be most useful to researchers whose work involves understanding the behavior of light.

全文：http://www.sciencedirect.com/science/book/9780080264820

Semiconductor Lasers：Fundamentals and Applications

Edited by: Alexei Baranov and Eric Tournié

Key Features

Provides a comprehensive review of semiconductor lasers and their applications in

engineering, biology, chemistry and medicine

Discusses photonic crystal lasers, high power semiconductor lasers and laser beams, and the use of semiconductor lasers in ultrafast pulse generation

Reviews applications of visible and near-infrared emitting lasers and mid- and far-infrared emitting lasers

全文：http://www.sciencedirect.com/science/book/9780857091215

Ultra-Wide Bandgap Semiconductor Materials

Edited by: Meiyong Liao, Bo Shen and Zhanguo Wang

Chapter 1 - Al-rich AlGaN semiconductor materials and their device applications

Chapter 2 - Semiconductor diamond

Chapter 3 - Progress in semiconductor β-Ga2O3

Chapter 4 - Recent progress of boron nitrides

Chapter 5 - Nanostructures based on UWBG materials

全文：http://www.sciencedirect.com/science/book/9780128154687

III-Nitride Semiconductors: Electrical, Structural and Defects Properties

Edited by: Omar Manasreh

Chapter 1 - Introduction to defects and structural properties of III-nitride semiconductors

Chapter 2 - Dopants in GaN

Chapter 3 - Defect engineering in III-nitrides epitaxial systems

Chapter 4 - Magnetic resonance studies of defects in GaN and related compounds

Chapter 5 - Characterization of native point defects in GaN by positron annihilation spectroscopy

Chapter 6 - Persistent photoconductivity in III-nitrides

Chapter 7 - Ion implantation, isolation and thermal processing of GaN and related materials

Chapter 8 - Radiation and processed induced defects in GaN

Chapter 9 - Residual stress in III–V nitrides

Chapter 10 - Structural defects in nitride heteroepitaxy

Chapter 11 - Optical phonon confinement in nitride-based heterostructures

全文：http://www.sciencedirect.com/science/book/9780444506306

Physics of Semiconductor Lasers

Authors: BOHDAN MROZIEWICZ, MACIEJ BUGAJSKI and WŁODZIMIERZ NAKWASKI

1 - Preface

2 - Physical Principles of the Operation of Semiconductor Lasers

3 - Basic Techniques for Fabricating Semiconductor Lasers

4 - The Design and Basic Characteristics of Semiconductor Lasers

5 - Review of the Structures and Properties of Fabry–Perot Cavity Junction Lasers

6 - Structures of Distributed Feedback Lasers

7 - Dynamic Properties of Junction Lasers and Methods for Improving Their Frequency Discrimination

8 - Thermal Effects Occurring in Semiconductor Lasers

9 - Principles of Modelling the Physical Phenomena in Junction Lasers

10 - Reliability of LEDs and Junction Lasers

全文：http://www.sciencedirect.com/science/book/9780444987372

Solid State Physics：An Introduction to Theory

Authors: Joginder Singh Galsin

Key Features

Provides an introduction to recent topics, such as the quantum hall effect, high-superconductivity and nanomaterials

Utilizes the Dirac' notation to highlight the physics contained in the mathematics in an appropriate and succinct manner

Includes many figures and solved problems throughout all chapters to provide a deeper understanding for students

Offers topics of particular interest to engineering students, such as elasticity in solids, dislocations, polymers, point defects and nanomaterials

全文：http://www.sciencedirect.com/science/book/9780128171035

Integrated Lasers on Silicon

Authors: Charles Cornet, Yoan Léger and Cédric Robert

Key Features

Features a clear description of the advantages, drawbacks, and challenges of laser integration on silicon

Serves as a staple reference in the general field of silicon photonics

Focuses on the promising developments of hybrid and monolithic III-V lasers on silicon, previously unreviewed

Discusses the different kinds of cavity geometries benchmarked with respect to their potential integration on silicon in an industrial environment

全文：http://www.sciencedirect.com/science/book/9781785480621

电子书推介 2022 年第 14 期（总第 19 期）

半导体所图书馆

2022-7-26

Raman Spectroscopy and its Application in Nanostructures

Author(s):Shu-Lin Zhang
First published:20 January 2012
Print ISBN:9780470686102 |Online ISBN:9781119961659 |DOI:10.1002/9781119961659

About this book

Raman Spectroscopy and its Application in Nanostructures is an original and timely contribution to a very active area of physics and materials science research. This book presents the theoretical and experimental phenomena of Raman spectroscopy, with specialized discussions on the physical fundamentals, new developments and main features in low-dimensional systems of Raman spectroscopy.

In recent years physicists, materials scientists and chemists have devoted increasing attention to low-dimensional systems and as Raman spectroscopy can be used to study and analyse such materials as carbon nanotubes, quantum wells, silicon nanowires, etc., it is fast becoming one of the most powerful and sensitive experimental techniques to characterize the qualities of such nanostructures.

Recent scientific and technological developments have resulted in the applications of Raman spectroscopy to expand. These developments are vital in providing information for a very broad field of applications: for example in microelectronics, biology, forensics and archaeology. Thus, this book not only introduces these important new branches of Raman spectroscopy from both a theoretical and practical view point, but the resulting effects are fully explored and relevant representative models of Raman spectra are described in-depth with the inclusion of theoretical calculations, when appropriate.

全文：https://onlinelibrary.wiley.com/doi/book/10.1002/9781119961659

Nanomaterials, Polymers, and Devices: Materials Functionalization

and Device Fabrication

Editor(s):Eric S.W. Kong
First published:20 April 2015
Print ISBN:9780470048061 |Online ISBN:9781118867204 |DOI:10.1002/9781118867204

About this book

Providing an eclectic snapshot of the current state of the art and future implications of the field, Nanomaterials, Polymers, and Devices: Materials Functionalization and Device Fabrication presents topics grouped into three categorical focuses:

The synthesis, mechanism and functionalization of nanomaterials, such as carbon nanotubes, graphene, silica, and quantum dots

Various functional devices which properties and structures are tailored with emphasis on nanofabrication. Among discussed are light emitting diodes, nanophotonic, nano-optical, and photovoltaic devices

Nanoelectronic devices, which include semiconductor, nanotube and nanowire-based electronics, single-walled carbon-nanotube based nanoelectronics, as well as thin-film transistors

全文：https://onlinelibrary.wiley.com/doi/book/10.1002/9781118867204

Handbook of Wafer Bonding

Editor(s):Dr. Peter Ramm, Prof. Dr. James Jian-Qiang Lu, Dr. Maaike M. V. Taklo
First published:11 January 2012
Print ISBN:9783527326464 |Online ISBN:9783527644223 |DOI:10.1002/9783527644223

About this book

The focus behind this book on wafer bonding is the fast paced changes in the research and development in three-dimensional (3D) integration, temporary bonding and micro-electro-mechanical systems (MEMS) with new functional layers. Written by authors and edited by a team from microsystems companies and industry-near research organizations, this handbook and reference presents dependable, first-hand

information on bonding technologies.

Part I sorts the wafer bonding technologies into four categories: Adhesive and Anodic Bonding; Direct Wafer Bonding; Metal Bonding; and Hybrid Metal/Dielectric Bonding. Part II summarizes the key wafer bonding applications developed recently, that is, 3D integration, MEMS, and temporary bonding, to give readers a taste of the significant applications of wafer bonding technologies.

全文：https://onlinelibrary.wiley.com/doi/book/10.1002/9783527644223

Density Functional Theory: A Practical Introduction

Author(s):David S. Sholl, Janice A. Steckel

First published:30 March 2009

Print ISBN:9780470373170 |Online ISBN:9780470447710 |DOI:10.1002/9780470447710

About this book

Density Functional Theory: A Practical Introduction offers a concise, easy-to-follow introduction to the key concepts and practical applications of DFT, focusing on plane-wave DFT. The authors have many years of experience introducing DFT to students from a variety of backgrounds. The book therefore offers several features that have proven to be helpful in enabling students to master the subject, including:

Problem sets in each chapter that give readers the opportunity to test their knowledge by performing their own calculations

Worked examples that demonstrate how DFT calculations are used to solve real-world problems

Further readings listed in each chapter enabling readers to investigate specific topics in greater depth

This text is written at a level suitable for individuals from a variety of scientific, mathematical, and engineering backgrounds. No previous experience working with DFT calculations is needed.

全文：https://onlinelibrary.wiley.com/doi/book/10.1002/9780470447710

GaN Transistors for Efficient Power Conversion, Third Edition

Author(s):Alex Lidow, Michael de Rooij, Johan Strydom, David Reusch, John Glaser
First published:30 August 2019
Print ISBN:9781119594147 |Online ISBN:9781119594406 |DOI:10.1002/9781119594406

About this book

GaN Transistors for Efficient Power Conversion, 3rd Edition brings key updates to the chapters of Driving GaN Transistors; Modeling, Simulation, and Measurement of GaN Transistors; DC-DC Power Conversion; Envelope Tracking; and Highly Resonant Wireless Energy Transfer. It also offers new chapters on Thermal Management, Multilevel Converters, and Lidar, and revises many others throughout.

Written by leaders in the power semiconductor field and industry pioneers in GaN power transistor technology and applications

Updated with 35% new material, including three new chapters on Thermal Management, Multilevel Converters, Wireless Power, and Lidar

Features practical guidance on formulating specific circuit designs when constructing power conversion systems using GaN transistors

A valuable resource for professional engineers, systems designers, and electrical engineering students who need to fully understand the state-of-the-art.

全文：https://onlinelibrary.wiley.com/doi/book/10.1002/9781119594406

Fundamentals of Infrared and Visible Detector Operation and Testing, Second Edition

Author(s):John David Vincent, Steven E. Hodges, John Vampola, Mark Stegall, Greg Pierce
First published:5 October 2015
Print ISBN:9781118094884 |Online ISBN:9781119011897 |DOI:10.1002/9781119011897

About this book

Chapter 1 contains introductory material. Radiometry is covered in Chapter 2. The author examines Thermal detectors in Chapter 3; the “Classical” photon detectors –

simple photoconductors and photovoltaics in Chapter 4; and “Modern Photon Detectors” in Chapter 5. Chapters 6 through 8 consider respectively individual elements and small arrays of elements the “readouts” (ROICs) used with large imaging arrays; and Electronics for FPA Operation and Testing. The Test Set and The Testing Process are analyzed in Chapters 9 and 10, with emphasis on uncertainty and trouble shooting. Chapters 11 through 15 discuss related skills, such as Uncertainty, Cryogenics, Vacuum, Optics, and the use of Fourier Transforms in the detector business. Some highlights of this new edition are that it

Discusses radiometric nomenclature and calculations, detector mechanisms, the associated electronics, how these devices are tested, and real-life effects and problems

Examines new tools in Infrared detector operations, specifically: selection and use of ROICs, electronics for FPA operation, operation of single element and very small FPAs, microbolometers, and multi-color FPAs

Contains five chapters with frequently sought-after information on related subjects, such as uncertainty, optics, cryogenics, vacuum, and the use of Fourier mathematics for detector analyses

全文：https://onlinelibrary.wiley.com/doi/book/10.1002/9781119011897

Handbook of Nitride Semiconductors and Devices: Materials Properties, Physics and Growth, Volume 1

Author(s):Prof. Dr. Hadis Morkoç

First published:26 March 2008

Print ISBN:9783527408375 |Online ISBN:9783527628438 |DOI:10.1002/9783527628438

About this book

The three volumes of this handbook treat the fundamentals, technology and nanotechnology of nitride semiconductors with an extraordinary clarity and depth. They present all the necessary basics of semiconductor and device physics and engineering together with an extensive reference section. Volume 1 deals with the properties and growth of GaN. The deposition methods considered are: hydride VPE, organometallic CVD, MBE, and liquid/high pressure growth. Additionally, extended defects and their electrical nature, point defects, and doping are reviewed.

全文：https://onlinelibrary.wiley.com/doi/book/10.1002/9783527628438

Nitride Semiconductor Technology: Power Electronics and Optoelectronic Devices

Editor(s):Fabrizio Roccaforte, Mike Leszczynski
First published:3 August 2020
Print ISBN:9783527347100 |Online ISBN:9783527825264 |DOI:10.1002/9783527825264

About this book

The book "Nitride Semiconductor Technology" provides an overview of nitride semiconductors and their uses in optoelectronics and power electronics devices. It explains the physical properties of those materials as well as their growth methods. Their applications in high electron mobility transistors, vertical power devices, LEDs, laser diodes, and vertical-cavity surface-emitting lasers are discussed in detail. The book further examines reliability issues in these materials and puts forward perspectives of integrating them with 2D materials for novel high-frequency and high-power devices.

全文：https://onlinelibrary.wiley.com/doi/book/10.1002/9783527825264

Silicon Photonics: Fundamentals and Devices

Author(s):M. Jamal Deen, P. K. Basu
First published:29 March 2012
Print ISBN:9780470517505 |Online ISBN:9781119945161 |DOI:10.1002/9781119945161

About this book

The creation of affordable high speed optical communications using standard semiconductor manufacturing technology is a principal aim of silicon photonics research. This would involve replacing copper connections with optical fibres or waveguides, and electrons with photons. With applications such as telecommunications and information processing, light detection, spectroscopy,

holography and robotics, silicon photonics has the potential to revolutionise electronic-only systems. Providing an overview of the physics, technology and device operation of photonic devices using exclusively silicon and related alloys, the book includes:

Basic Properties of Silicon

Quantum Wells, Wires, Dots and Superlattices

Absorption Processes in Semiconductors

Light Emitters in Silicon

Photodetectors , Photodiodes and Phototransistors

Raman Lasers including Raman Scattering

Guided Lightwaves

Planar Waveguide Devices

Fabrication Techniques and Material Systems

全文：https://onlinelibrary.wiley.com/doi/book/10.1002/9781119945161

Semiconductor Terahertz Technology: Devices and Systems at Room Temperature Operation

Editor(s):Guillermo Carpintero, Luis Enrique García Muñoz, Hans L. Hartnagel, Sascha Preu, Antti V. Räisänen

First published:23 July 2015

Print ISBN:9781118920428 |Online ISBN:9781118920411 |DOI:10.1002/9781118920411

About this book

Key advances in Semiconductor Terahertz (THz) Technology now promises important new applications enabling scientists and engineers to overcome the challenges of accessing the so-called "terahertz gap". This pioneering reference explains the fundamental methods and surveys innovative techniques in the generation, detection and processing of THz waves with solid-state devices, as well as illustrating their potential applications in security and telecommunications, among other fields.

With contributions from leading experts, Semiconductor Terahertz Technology: Devices and Systems at Room Temperature Operation comprehensively and systematically covers semiconductor-based room temperature operating sources

such as photomixers, THz antennas, radiation concepts and THz propagation as well as room-temperature operating THz detectors.

The second part of the book focuses on applications such as the latest photonic and electronic THz systems as well as emerging THz technologies including: whispering gallery resonators, liquid crystals, metamaterials and graphene-based devices.

This book will provide support for practicing researchers and professionals and will be an indispensable reference to graduate students in the field of THz technology.

Key features:

Includes crucial theoretical background sections to photomixers, photoconductive switches and electronic THz generation & detection.

Provides an extensive overview of semiconductor-based THz sources and applications.

Discusses vital technologies for affordable THz applications.

Supports teaching and studying increasingly popular courses on semiconductor THz technology.

全文：https://onlinelibrary.wiley.com/doi/book/10.1002/9781118920411

电子书推介 2022 年第 15 期（总第 20 期）

半导体所图书馆

2022-08-15

Guide to State-of-the-Art Electron Devices

Editor(s):Prof. Dr. Joachim N. Burghartz
First published:25 February 2013
Print ISBN:9781118347263 |Online ISBN:9781118517543 |DOI:10.1002/9781118517543

About this book

Winner, 2013 PROSE Award, Engineering and Technology

Concise, high quality and comparative overview of state-of-the-art electron device development, manufacturing technologies and applications

Guide to State-of-the-Art Electron Devices marks the 60th anniversary of the IRE electron devices committee and the 35th anniversary of the IEEE Electron Devices Society, as such it defines the state-of-the-art of electron devices, as well as future directions across the entire field.

Spans full range of electron device types such as photovoltaic devices, semiconductor manufacturing and VLSI technology and circuits, covered by IEEE Electron and Devices Society

Contributed by internationally respected members of the electron devices community

A timely desk reference with fully-integrated colour and a unique lay-out with sidebars to highlight the key terms

Discusses the historical developments and speculates on future trends to give a more rounded picture of the topics covered

A valuable resource R&D managers; engineers in the semiconductor industry; applied scientists; circuit designers; Masters students in power electronics; and members of the IEEE Electron Device Society.

全文：https://onlinelibrary.wiley.com/doi/book/10.1002/9781118517543

CMOS Sigma-Delta Converters: Practical Design Guide

Author(s):José M. de la Rosa, Rocío del Río
First published:15 March 2013
Print ISBN:9781119979258 |Online ISBN:9781118569238 |DOI:10.1002/9781118569238

全文：https://onlinelibrary.wiley.com/doi/book/10.1002/9781118569238

Coplanar Waveguide Circuits, Components, and Systems

Author(s):Rainee N. Simons Ph.D.,
First published:1 March 2001
Print ISBN:9780471161219 |Online ISBN:9780471224754 |DOI:10.1002/0471224758

About this book

Up-to-date coverage of the analysis and applications of coplanar waveguides to microwave circuits and antennas

The unique feature of coplanar waveguides, as opposed to more conventional waveguides, is their uniplanar construction, in which all of the conductors are aligned on the same side of the substrate. This feature simplifies manufacturing and allows faster and less expensive characterization using on-wafer techniques.

Coplanar Waveguide Circuits, Components, and Systems is an engineer's complete resource, collecting all of the available data on the subject. Rainee Simons thoroughly

discusses propagation parameters for conventional coplanar waveguides and includes valuable details such as the derivation of the fundamental equations, physical explanations, and numerical examples.

Coverage also includes:

Discontinuities and circuit elements

Transitions to other transmission media

Directional couplers, hybrids, and magic T

Microelectromechanical systems based switches and phase shifters

Tunable devices using ferroelectric materials

Photonic bandgap structures

Printed circuit antennas

全文：https://onlinelibrary.wiley.com/doi/book/10.1002/0471224758

Optics, Light and Lasers: The Practical Approach to Modern Aspects of Photonics and Laser Physics, Second Edition

Author(s):Prof. Dr. Dieter Meschede

First published:20 November 2006

Print ISBN:9783527406289 |Online ISBN:9783527618873 |DOI:10.1002/9783527618873

About this book

Starting from the concepts of classical optics, Optics, Light and Lasers introduces in detail the phenomena of linear and nonlinear light matter interaction, the properties of modern laser sources, and the concepts of quantum optics. Several examples taken from the scope of modern research are provided to emphasize the relevance of optics in current developments within science and technology. The text has been written for newcomers to the topic and benefits from the author's ability to explain difficult sequences and effects in a straightforward and easily comprehensible way. To this second, completely updated and enlarged edition, new chapters on quantum optics, quantum information, matter waves, photonic fibres and materials have been added, as well as more than 100 problems on laser physics and applied optics.

全文：https://onlinelibrary.wiley.com/doi/book/10.1002/9783527618873

Resonant MEMS: Fundamentals, Implementation and Application

Editor(s):Oliver Brand PhD,, Isabelle Dufour PhD,, Stephen M. Heinrich PhD,, Fabien Josse PhD,
First published:20 April 2015
Print ISBN:9783527335459 |Online ISBN:9783527676330 |DOI:10.1002/9783527676330

Book Series:Advanced Micro and Nanosystems

About this book

Part of the AMN book series, this book covers the principles, modeling and implementation as well as applications of resonant MEMS from a unified viewpoint. It starts out with the fundamental equations and phenomena that govern the behavior of resonant MEMS and then gives a detailed overview of their implementation in capacitive, piezoelectric, thermal and organic devices, complemented by chapters addressing the packaging of the devices and their stability. The last part of the book is devoted to the cutting-edge applications of resonant MEMS such as inertial, chemical and biosensors, fluid properties sensors, timing devices and energy harvesting systems.

全文：https://onlinelibrary.wiley.com/doi/book/10.1002/9783527676330

Understanding Lasers: An Entry Level Guide, Fourth Edition

Author(s):Jeff Hecht
First published:12 December 2018
Print ISBN:9781119310648 |Online ISBN:9781119310693 |DOI:10.1002/9781119310693

About this book

The expanded fourth edition of the book that offers an essential introduction to laser technology and the newest developments in the field

The revised and updated fourth edition of Understanding Lasers offers an essential

guide and introduction that explores how lasers work, what they do, and how they are applied in the real world. The author—a Fellow of The Optical Society—reviews the key concepts of physics and optics that are essential for understanding lasers and explains how lasers operate. The book also contains information on the optical accessories used with lasers.

Written in non-technical terms, the book gives an overview of the wide-variety laser types and configurations. Understanding Lasers covers fiber, solid-state, excimer, helium-neon, carbon dioxide, free-electron lasers, and more. In addition, the book also explains concepts such as the difference between laser oscillation and amplification, the importance of laser gain, and tunable lasers. The updated fourth edition highlights the most recent research and development in the field. This important resource:

Includes a new chapter on fiber lasers and amplifiers

Reviews new topics on physics of optical fibers and fiber lasers, disk lasers, and Ytterbium lasers

Contains new sections on Laser Geometry and Implications, Diode Laser Structures, Optimal Parametric Sources, and 3D Printing and Additive Manufacturing

Puts the focus on research and emerging developments in areas such as spectroscopy, slow light, laser cooling, and extremely precise measurements

Contains appendices, glossary, and index that help make this book a useful reference

Written for engineering and physics students, engineers, scientists, and technicians, the fourth edition of Understanding Lasers contains the basic concepts of lasers and the most recent advances in the technology.

全文：https://onlinelibrary.wiley.com/doi/book/10.1002/9781119310693

High-k Gate Dielectrics for CMOS Technology

Editor(s):Prof. Gang He, Prof. Zhaoqi Sun
First published:22 August 2012
Print ISBN:9783527330324 |Online ISBN:9783527646340 |DOI:10.1002/9783527646340

About this book

A state-of-the-art overview of high-k dielectric materials for advanced field-effect transistors, from both a fundamental and a technological

viewpoint, summarizing the latest research results and development solutions. As such, the book clearly discusses the advantages of these
materials over conventional materials and also addresses the issues that accompany their integration into existing production technologies.
Aimed at academia and industry alike, this monograph combines introductory parts for newcomers to the field as well as advanced sections
with directly applicable solutions for experienced researchers and developers in materials science, physics and electrical engineering.
全文：https://onlinelibrary.wiley.com/doi/book/10.1002/9783527646340

Fundamentals of Semiconductor Manufacturing and Process Control

Author(s):Gary S. May Ph.D.,, Costas J. Spanos Ph.D.,

First published:9 May 2006
Print ISBN:9780471784067 |Online ISBN:9780471790280 |DOI:10.1002/0471790281

About this book

A practical guide to semiconductor manufacturing from process control to yield modeling and experimental design

Fundamentals of Semiconductor Manufacturing and Process Control covers all issues involved in manufacturing microelectronic devices and circuits, including fabrication sequences, process control, experimental design, process modeling, yield modeling, and CIM/CAM systems. Readers are introduced to both the theory and practice of all basic manufacturing concepts.

Following an overview of manufacturing and technology, the text explores process monitoring methods, including those that focus on product wafers and those that focus on the equipment used to produce wafers. Next, the text sets forth some fundamentals of statistics and yield modeling, which set the foundation for a detailed discussion of how statistical process control is used to analyze quality and improve yields.

The discussion of statistical experimental design offers readers a powerful approach for systematically varying controllable process conditions and determining their impact on output parameters that measure quality. The authors introduce process modeling concepts, including several advanced process control topics such as

run-by-run, supervisory control, and process and equipment diagnosis.

Critical coverage includes the following:

* Combines process control and semiconductor manufacturing

* Unique treatment of system and software technology and management of overall manufacturing systems

* Chapters include case studies, sample problems, and suggested exercises

* Instructor support includes electronic copies of the figures and an instructor's manual

Graduate-level students and industrial practitioners will benefit from the detailed exami?nation of how electronic materials and supplies are converted into finished integrated circuits and electronic products in a high-volume manufacturing environment.

An Instructor's Manual presenting detailed solutions to all the problems in the book is available from the Wiley editorial department.

全文：https://onlinelibrary.wiley.com/doi/book/10.1002/0471790281

Coherent Laser Beam Combining

Editor(s):Arnaud Brignon

First published:2 August 2013

Print ISBN:9783527411504 |Online ISBN:9783527652778 |DOI:10.1002/9783527652778

Part One : Coherent Combining with Active Phase Control

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CHAPTER 3：Kilowatt Coherent Beam Combining of High-Power Fiber Amplifiers Using Single-Frequency Dithering Techniques (Pages: 75-101)

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CHAPTER 7： Refractive Index Changes in Rare Earth-Doped Optical Fibers and Their Applications in All-Fiber Coherent Beam Combining (Pages: 193-230)

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全文：https://onlinelibrary.wiley.com/doi/book/10.1002/9783527652778

Halide Perovskites: Photovoltaics, Light Emitting Devices, and Beyond

Editor(s):Tze-Chien Sum, Nripan Mathews

First published:29 October 2018

Online ISBN:9783527800766 |DOI:10.1002/9783527800766

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CHAPTER 1.1： Structural, Optical, and Related Properties of Some Perovskites Based on Lead and Tin Halides: The Effects on Going from Bulk to Small Particles (Pages: 1-24)

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全文：https://onlinelibrary.wiley.com/doi/book/10.1002/9783527800766

Nitride Semiconductor Devices: Fundamentals and Applications

Author(s):Prof. Dr. Hadis Morkoç

First published:2 April 2013

Print ISBN:9783527411016 |Online ISBN:9783527649006 |DOI:10.1002/9783527649006

About this book

This book gives a clear presentation of the necessary basics of semiconductor and device physics and engineering. It introduces readers to fundamental issues that will enable them to follow the latest technological research. It also covers important applications, including LED and lighting, semiconductor lasers, high power switching devices, and detectors. This balanced and up-to-date treatment makes the text an essential educational tool for both advanced students and professionals in the

electronics industry.

全文：https://onlinelibrary.wiley.com/doi/book/10.1002/9783527649006

Handbook of Optical Systems: Volume 5: Metrology of Optical Components and Systems, Volume 5

Editor(s):Herbert Gross, Bernd Dörband, Henriette Müller
First published:3 April 2012
Print ISBN:9783527403813 |Online ISBN:9783527699230 |DOI:10.1002/9783527699230

In this Volume

Volume 5 topics comprise the methods of measuring the properties of optical systems. The different fundamental techniques, such as propagation measurement and polarimetry, are introduced and discussed in detail and clarity. The presentation allows the reader, after having devised an optical system, to perform the measurements best suited to ascertain that the system fulfills the specific needs and requirements. The following chapters provide a survey on materials, coatings and surfaces of optical components, and combine this with a treatment of light and radiation. The book thus serves as a one-stop reference for metrology of optical systems.

Other Volumes

Volume 1: Fundamentals of Technical Optics

Volume 2: Physical Image Formation

Volume 3: Aberration Theory and Correction of Optical Systems

Volume 4: Survey of Optical Instruments

全文：https://onlinelibrary.wiley.com/doi/book/10.1002/9783527699230

Semiconductor Terahertz Technology: Devices and Systems at Room Temperature Operation

Editor(s):Guillermo Carpintero, Luis Enrique García Muñoz, Hans L. Hartnagel, Sascha Preu, Antti V. Räisänen
First published:23 July 2015
Print ISBN:9781118920428 |Online ISBN:9781118920411

|DOI:10.1002/9781118920411

About this book

Key advances in Semiconductor Terahertz (THz) Technology now promises important new applications enabling scientists and engineers to overcome the challenges of accessing the so-called "terahertz gap". This pioneering reference explains the fundamental methods and surveys innovative techniques in the generation, detection and processing of THz waves with solid-state devices, as well as illustrating their potential applications in security and telecommunications, among other fields.

With contributions from leading experts, Semiconductor Terahertz Technology: Devices and Systems at Room Temperature Operation comprehensively and systematically covers semiconductor-based room temperature operating sources such as photomixers, THz antennas, radiation concepts and THz propagation as well as room-temperature operating THz detectors.

The second part of the book focuses on applications such as the latest photonic and electronic THz systems as well as emerging THz technologies including: whispering gallery resonators, liquid crystals, metamaterials and graphene-based devices.

This book will provide support for practicing researchers and professionals and will be an indispensable reference to graduate students in the field of THz technology.

Key features:

Includes crucial theoretical background sections to photomixers, photoconductive switches and electronic THz generation & detection.

Provides an extensive overview of semiconductor-based THz sources and applications.

Discusses vital technologies for affordable THz applications.

Supports teaching and studying increasingly popular courses on semiconductor THz technology.

电子书推介 2022 年第 16 期（总第 21 期）

半导体所图书馆

2022-09-02

Semiconducting Metal Oxide Thin-Film Transistors

Editor　Ye Zhou

Published　December 2020

Online ISBN: 978-0-7503-2556-1 • Print ISBN: 978-0-7503-2554-7

Semiconducting metal oxide thin-film transistors (TFTs) are promising candidates for functional electronic devices. This reference text covers the latest developments in the field, including the design, materials characteristics, device operation principles, specialised device applications and mechanisms, including the latest semiconducting TFT technologies. The book introduces the concepts and working mechanisms of semiconducting metal oxide TFTs, with a focus on metal oxide thin films that have desirable electrical and optical properties. The relationship between material properties and device performance is analysed, and materials and device challenges, as well as possible strategies, are discussed.

全文：https://iopscience.iop.org/book/edit/978-0-7503-2556-1

Rays, Waves and Photons： A compendium of foundations and emerging technologies of pure and applied optics

Author　William L Wolfe

Published　August 2020

Online ISBN: 978-0-7503-2612-4 • Print ISBN: 978-0-7503-2610-0

Rays Waves and Photons presents the foundational concepts of optical science. Written by subject, each topic is presented in a standalone chapter with a brief historical foundation, current developments, and future predictions. With non-technical language, this book provides accessible content with terms, concepts and definitions, a glossary, and appendices to enhance the reader's experience. More than forty subjects are discussed including: optical design, lenses, cameras,

microscopes, telescopes, lasers, fibers, missiles, autonomous cars and remote sensing. This book will provide a useful resource for students, teachers, professionals, and general audiences interested in the complexity of optical phenomena and devices. Part of https://iopscience.iop.org/bookListInfo/emerging-technologies-in-optics-and-photonics#series.

全文：https://iopscience.iop.org/book/mono/978-0-7503-2612-4

Wide Bandgap Semiconductor-Based Electronics

Editors Fan Ren and Stephen J Pearton

Published September 2020

Online ISBN: 978-0-7503-2516-5 • Print ISBN: 978-0-7503-2514-1

Advances in wide bandgap semiconductor materials are enabling the development of a new generation of power semiconductor devices that far exceed the performance of silicon-based devices. These technologies offer potential breakthrough performance for a wide range of applications, including high-power and RF electronics, deep-UV optoelectronics, quantum information and extreme-environment applications.

全文：https://iopscience.iop.org/book/edit/978-0-7503-2516-5

Nanofabrication：Nanolithography techniques and their applications

Editor José María De Teresa

Published December 2020

Online ISBN: 978-0-7503-2608-7 • Print ISBN: 978-0-7503-2606-3

A comprehensive edited volume on important and up-to-date nanolithography techniques and applications. The book includes an introduction on the importance of nanolithography in today's research and technology, providing examples of its applications.

全文：https://iopscience.iop.org/book/edit/978-0-7503-2608-7

Optics Experiments and Demonstrations for Student Laboratories

Author Stephen G Lipson

Published August 2020

Online ISBN: 978-0-7503-2300-0 • Print ISBN: 978-0-7503-2298-0

This book provides a comprehensive guide to a wide range of optical experiments. Topics covered include classical geometrical and physical optics, polarization, scattering and diffraction, imaging, interference, wave propagation, optical properties of materials, atmospheric and relativistic optics. There are a few selected suggestions on lasers and quantum optics. The book is an essential practical guide for optics students and their mentors at undergraduate and postgraduate levels. The experiments described are based on the author's experience during many years of laboratory teaching in several universities and colleges and the emphasis is on setups which use equipment that is commonly available in student labs, with minimal dependence on special samples or instruments. A basic background in physics and optics is assumed, but commonly encountered problems and mistakes are discussed. There are several appendices describing specialized points which are difficult to locate in the literature, and advice is provided about computer simulations which accompany some of the experiments. Part of IOP Series in Emerging Technologies in Optics and Photonics.

全文：https://iopscience.iop.org/book/mono/978-0-7503-2300-0

Lens Design (Second Edition)

Author Donald C Dilworth

Published December 2020

Online ISBN: 978-0-7503-3695-6 • Print ISBN: 978-0-7503-3693-2

Lens Design: Automatic and Quasi-Autonomous Computational Methods and Techniques (Second Edition) shows how these new tools can design systems in minutes that would have required weeks or months of labor using older methods. Powerful search routines that can quickly produce excellent designs starting with plane-parallel plates are described. The principles are explained, and data files are provided so the user can duplicate these systems and learn how to use the new software to solve unexpected problems should they occur. Automatic substitution of

real glass types for a glass model, and automatic matching to the testplates of a selected vendor, are fully explained, with examples. Part of IOP Series in Emerging Technologies in Optics and Photonics.

全文：https://iopscience.iop.org/book/mono/978-0-7503-3695-6

Modeling and Design Photonics by Examples Using MATLAB®

Author Dan T Nguyen

Published July 2021

Online ISBN: 978-0-7503-2272-0 • Print ISBN: 978-0-7503-2270-6

As a broad area of science and technology, modeling and computational photonics is an ever-growing and developing topic. Covering the crucial foundations of photonics, as well as delving into the more complex aspects of the field, Modeling and Design Photonics by Examples with MATLAB® is a comprehensive study of computational photonics that will bridge the gap between academic and industrial worlds. Using MATLAB® code to help provide solutions, this book will help readers to use modelling as an effective tool for designing and optimizing photonic systems. Part of IOP Series in Emerging Technologies in Optics and Photonics.

全文：https://iopscience.iop.org/book/mono/978-0-7503-2272-0

Nanoscale Energy Transport: Emerging phenomena, methods and applications

Editor Bolin Liao

Published March 2020

Online ISBN: 978-0-7503-1738-2 • Print ISBN: 978-0-7503-1736-8

This book brings together leading names in the field of nanoscale energy transport to provide a comprehensive and insightful review of this developing topic. The text covers new developments in the scientific basis and the practical relevance of nanoscale energy transport, highlighting the emerging effects at the nanoscale that qualitatively differ from those at the macroscopic scale. Throughout the book, microscopic energy carriers are discussed, including photons, electrons and magnons.

State-of-the-art computational and experimental nanoscale energy transport methods are reviewed, and a broad range of materials system topics are considered, from interfaces and molecular junctions to nanostructured bulk materials. Nanoscale Energy Transport is a valuable reference for researchers in physics, materials, mechanical and electrical engineering, and it provides an excellent resource for graduate students.

全文：https://iopscience.iop.org/book/edit/978-0-7503-1738-2

Lens Design Basics: Optical design problem-solving in theory and practice

Author Christoph Gerhard

Published December 2020

Online ISBN: 978-0-7503-2240-9 • Print ISBN: 978-0-7503-2238-6

This book gives a comprehensive overview on the principles of optical imaging. The first seven chapters provide an extensive summary of optical design, as well as the mechanisms and interrelations leading to the formation of aberrations and the accompanying decrease in imaging performance. Aside from the fundamentals of optics and imaging models, topics covered include calculations of simple optical components and systems, characterisation and quantification of aberrations and defects in optical systems, and optimisation of imaging performance. The second part focuses on problem-based learning via multiple exercises and case examples derived from the first seven chapters. It is an ideal guide for optics and photonics students. Part of IOP Series in Emerging Technologies in Optics and Photonics.

全文：https://iopscience.iop.org/book/mono/978-0-7503-2240-9

Laser Micro- and Nano-Scale Processing: Fundamentals and applications

Editors Ahmed Issa and Dermot Brabazon

Published August 2021

Online ISBN: 978-0-7503-1683-5 • Print ISBN: 978-0-7503-1681-1

This book presents a collection of chapters written by experienced researchers in the fields of laser micro- and nano-scale processing for both surface and bulk processing covering surface modification processes, laser material interaction regimes, laser system construction for micro- and nanomachining applications, and the thermal mathematical modelling of laser processes. As an important reference for researchers in the field of micro- and nano-scale processing, this book aims to assist researchers and postgraduates in becoming familiar with the principles, capabilities and potential of the laser processing of materials quickly. Offering a one-stop reference, this book provides an understanding of the physical phenomena, process principles, latest achievements, and applications from the key researchers and research groups that focus on precision micro- and nano-scale laser processing. Part of IOP Series in Coherent Sources, Quantum Fundamentals, and Applications.

全文：https://iopscience.iop.org/book/edit/978-0-7503-1683-5

Modern Analytical Electromagnetic Homogenization with Mathematica® (Second Edition)

Authors Tom G Mackay and Akhlesh Lakhtakia

Published December 2020

Online ISBN: 978-0-7503-3423-5 • Print ISBN: 978-0-7503-3421-1

This book is an overview of state-of-the-art analytical homogenization formalisms used to estimate the effective electromagnetic properties of complex composite materials. Beginning with an introduction to homogenization, the book progresses to cover both constitutive and depolarization dyadics. The homogenization formalisms for linear and non-linear materials are examined, followed by their applications and multiple examples using Mathematica code. This text is a valuable reference for PhD students and researchers working on the electromagnetic theory of complex composite materials.

全文：https://iopscience.iop.org/book/mono/978-0-7503-3423-5

Butterfly in the Quantum World

Author Indubala I Satija

Published August 2016

Online ISBN: 978-1-6817-4117-8 • Print ISBN: 978-1-6817-4053-9

Butterfly in the Quantum World is the first book ever to tell the story of the "Hofstadter butterfly", a beautiful and fascinating graph lying at the heart of the quantum theory of matter. The butterfly came out of a simple-sounding question: What happens if you immerse a crystal in a magnetic field? What energies can the electrons take on? From 1930 onwards, physicists struggled to answer this question, until 1974, when graduate student Douglas Hofstadter discovered that the answer was a graph consisting of nothing but copies of itself nested down infinitely many times. This wild mathematical object caught the physics world totally by surprise, and it continues to mesmerize physicists and mathematicians today.

全文：https://iopscience.iop.org/book/mono/978-1-6817-4117-8

Modern Physics: A critical approach

Editor Canio Noce

Published August 2020

Online ISBN: 978-0-7503-2678-0 • Print ISBN: 978-0-7503-2676-6

Intended for science and engineering students with a background in introductory physics and calculus, this textbook creates a bridge between classical and modern physics, filling the gap between descriptive elementary texts and formal graduate textbooks. The book presents the main topics and concepts of special relativity and quantum mechanics, starting from the basic aspects of classical physics and analysing these topics within a modern physics frame. The classical experiments that gave rise to modern physics are also critically discussed, and special emphasis is devoted to solid state physics and its relationship with modern physics.

全文：https://iopscience.iop.org/book/edit/978-0-7503-2678-0

Radiative Properties of Semiconductors

Authors N M Ravindra, Sita Rajyalaxmi Marthi and Asahel Bañobre

Published August 2017

Online ISBN: 978-1-6817-4112-3 • Print ISBN: 978-1-6817-4048-5
Optical properties, particularly in the infrared range of wavelengths, continue to be of enormous interest to both material scientists and device engineers. The need for the development of standards for data of optical properties in the infrared range of wavelengths is very timely considering the on-going transition of nano-technology from fundamental R&D to manufacturing. The recent progress in two-dimensional materials is an example of this evolution in materials science and engineering.
全文：https://iopscience.iop.org/book/mono/978-1-6817-4112-3

Optical Fiber Technology and Applications: Recent advances
Editors Mário F S Ferreira and Mukul Chandra Paul
Published August 2021

Online ISBN: 978-0-7503-3243-9 • Print ISBN: 978-0-7503-3241-5
Optical Fiber Technology and Applications: Recent advances, comprised of 10 chapters written by leading experts in the field, documents the cutting-edge work of new material composition and waveguide design-based specialty optical fibers and their photonic devices. Highlighting the most recent progress and trends in optical fiber technology, this book covers important topics such as specialty optical fibers, optical amplifiers, radiation dosimetry, borosilicate glass, radiation effect, fiber optic temperature sensors, pulsed fiber lasesr, non-linear fiber optics, solitons, supercontinuum generation, and fiber-optic-based 5G networks.
全文：https://iopscience.iop.org/book/edit/978-0-7503-3243-9

Fundamentals of Quantum Entanglement
Author F J Duarte
Published October 2019

Online ISBN: 978-0-7503-2228-7 • Print ISBN: 978-0-7503-2226-3
Quantum entanglement (QE) is undoubtedly one of the most, if not the most, mysterious and yet most promising subjects of current physics. With applications in

cryptographic space-to-space, space-to-earth, and fibre communications, in addition to teleportation and quantum computing, QE goes beyond fascination and into the pragmatic spheres of commerce and the military. This book is written by Professor Duarte, an expert in the field of quantum optics. He provides the first side-by-side description of the philosophical path and the physical path to quantum entanglement, and does so in a clear and cohesive manner. This is also the first book to describe and explain, in a transparent exposition, the interferometric derivation, à la Dirac, of the ubiquitous probability amplitude for quantum entanglement. The book will be useful for optical engineers working in the field of quantum entanglement and quantum communications as well as graduate students. The book includes 29 succinct, to the point, chapters and utilizes 10 useful appendices to further detail QE. Part of Series in Coherent Sources and Applications.

全文：https://iopscience.iop.org/book/mono/978-0-7503-2228-7

Ultrafast Lasers and Optics for Experimentalists

Author James David Pickering

Published March 2021

Online ISBN: 978-0-7503-3659-8 • Print ISBN: 978-0-7503-3657-4

The use of ultrafast lasers has expanded beyond use by specialist laser physicists and is increasingly commonplace in both physical and life sciences, where the high intensities, broad bandwidths, and short pulse durations make them ideal for investigating a wide range of chemical and physical phenomena. Working with these ultrashort femtosecond laser pulses requires some special care when compared to other laser systems, and this book provides an ideal starting point for the non-specialist to gain the necessary knowledge to start effectively working with ultrafast lasers and optics. The book walks the reader through the relevant parts of ultrashort pulse physics, pulse generation, and pulse characterisation, before discussing how to practically build an optical setup and manipulate these pulses. Many aspects of the practicalities of working with optics and lasers that are often considered assumed knowledge by experienced campaigners are discussed in detail. Aimed specifically at non-specialists, the emphasis is placed on intuitive, qualitative understanding of the concepts. The fundamental aim is that students starting a project

or PhD in a laser group, can pick this book up and quickly get up to speed with the fundamentals of ultrafast laser physics that enable effective laboratory working.

全文：https://iopscience.iop.org/book/mono/978-0-7503-3659-8

电子书推介 2022 年第 17 期（总第 22 期）

半导体所图书馆

2022-09-09

Advances in Image and Data Processing using VLSI Design, Volume 1

Editors：Sandeep Saini, Kusum Lata, Abhishek Sharma and G R Sinha

Published：December 2021

Online ISBN: 978-0-7503-3919-3 • Print ISBN: 978-0-7503-3917-9

VLSI is a well-established field of research that ignited the modern computing revolution. Serving as a guide to future developments, this book provides a framework for design, modeling concepts, and application of Image Processing based systems using VLSI design techniques. This volume focuses on a range of topics including object detection, recognition, smart traffic management, surveillance systems, face detection, gesture-based automated systems, and smart cities based on automated cameras. The book will help the research community to get in-depth knowledge of various systems that can be designed with image processing techniques using hardware. Part of IOP Series in Next Generation Computing.

全文：https://iopscience.iop.org/book/edit/978-0-7503-3919-3

Practical Terahertz Electronics: Devices and Applications, Volume 1：Solid-state devices and vacuum tubes

Author：Vinod Kumar Khanna

Published：December 2021

Online ISBN: 978-0-7503-3171-5 • Print ISBN: 978-0-7503-3169-2

This research and reference text provides a comprehensive and authoritative survey of the state-of-the-art in terahertz electronics research. Covering the fundamentals, operational principles, and theoretical aspects of the field, the book equips the reader to take the practical steps involved in the fabrication of devices that work in the terahertz frequency range. Volume one focuses on solid-state devices and vacuum

tubes, discussing Schottky, MIM, self-switching, geometric, resonant tunneling, IMPATT and Gunn diodes, HBTs, MOSFETs, and HEMTs, as well as traveling wave tubes, backward wave oscillators, gyrotrons and free electron lasers. Intended for researchers and professionals in the field, this text will be an essential reference for anyone working at the cutting edge of terahertz electronics.

全文：https://iopscience.iop.org/book/mono/978-0-7503-3171-5

Practical Terahertz Electronics: Devices and Applications, Volume 2：Optical devices and applications

Author：Vinod Kumar Khanna

Published：December 2021

Online ISBN: 978-0-7503-4886-7 • Print ISBN: 978-0-7503-4884-3

全文：https://iopscience.iop.org/book/mono/978-0-7503-4886-7

Rich Quasiparticle Properties of Low Dimensional Systems

Authors ： Chiun-Yan Lin, Cheng-Hsueh Yang, Chih-Wei Chiu, Hsien-Ching Chung, Shih-Yang Lin and Ming-Fa Lin

Online ISBN: 978-0-7503-3783-0 • Print ISBN: 978-0-7503-3781-6

This book discusses the essential properties of carbon nanotubes and 2D graphene systems. The book focuses on the fundamental excitation properties of a large range of graphene-related materials, presenting a new theoretical framework that couples electronic properties and e–e Coulomb interactions together in order to thoroughly explore Coulomb excitations and decay rates in carbon-nanotube-related systems. This book is aimed at researchers in nanomaterials and high-level students in physics, science and material engineering. It will serve as the ideal reference text for scientists working on carbon nanotubes, and will thoroughly expand the reader's knowledge of the application of carbon nanotube technology to graphene-based materials and the technological potential thereof.

全文：https://iopscience.iop.org/book/mono/978-0-7503-3783-0

Hot Carriers in Semiconductors

Author：David K Ferry
Published：December 2021

Online ISBN: 978-0-7503-3947-6 • Print ISBN: 978-0-7503-3945-2

This research and reference text provides up-to-date coverage of the latest research on hot carriers in semiconductors, with a focus on the background, theoretical approaches, measurements and physical understanding required to engage with the field. It equips researchers transitioning from optics to hot carrier solar cells to fully understand the role of hot carriers in semiconductors. Pitched at an introductory level, this is an essential reference text for researchers, a core text for graduate courses in hot carrier phenomena, and valuable supplementary reading for first year graduate courses in quantum mechanics, condensed matter physics, solid-state electronics and photovoltaics.

全文：https://iopscience.iop.org/book/mono/978-0-7503-3947-6

Semiconductors (Second Edition): Bonds and bands

Author：David K Ferry
Published：November 2019

Online ISBN: 978-0-7503-2480-9 • Print ISBN: 978-0-7503-2478-6

This second edition discusses the importance of semiconductors along with their newest applications. The book introduces the ever-changing field of semiconductors, before covering chapters on electronic structure, lattice dynamics, transport structures, optical properties and electron–electron interaction. This edition has been extensively updated with the addition of new chapters on statistics and optics, two expanded chapters on transport, and examples of the most recent applications of semiconductors. The book offers the deepest insight yet into the field of semiconductors, providing essential reading for graduate students and industry specialists.

全文：https://iopscience.iop.org/book/mono/978-0-7503-2480-9

Topological Insulators

Author：Panagiotis Kotetes
Published：April 2019

Online ISBN: 978-1-68174-517-6 • Print ISBN: 978-1-68174-516-9

This book provides an introduction to topological matter with a focus on insulating bulk systems. A number of prerequisite concepts and tools are first laid out, including the notion of symmetry transformations, the band theory of semiconductors and aspects of electronic transport. The main part of the book discusses realistic models for both time-reversal-preserving and -violating topological insulators, as well as their characteristic responses to external perturbations. Special emphasis is given to the study of the anomalous electric, thermal, and thermoelectric transport properties, the theory of orbital magnetisation, and the polar Kerr effect. The topological models studied throughout this book become unified and generalised by means of the tenfold topological-classification framework and the respective systematic construction of topological invariants. This approach is further extended to topological superconductors and topological semimetals. This book covers a wide range of topics and aims at the transparent presentation of the technical aspects involved. For this purpose, homework problems are also provided in dedicated Hands-on sections. Given its structure and the required background level of the reader, this book is particularly recommended for graduate students or researchers who are new to the field.

全文：https://iopscience.iop.org/book/mono/978-1-68174-517-6

Organic Lasers and Organic Photonics

Editor：F J Duarte
Published：December 2018

Online ISBN: 978-0-7503-1572-2 • Print ISBN: 978-0-7503-1570-8

Organic Lasers and Organic Photonics is the first book, since the early 1990s, to address the technology and applications of organic dye lasers and provide an insightful perspective into the vast fields of organic lasers and their applications. The latest generation of organic lasers have opened the horizon to the realm of

miniaturized devices with their own array of applications. This book also provides a comprehensive insight into the world of organic dye molecules with chapters that also explore the exciting fields optogenetics, organic laser medicine, and quantum communications. This co-edited book has been compiled by leading experts in the field of organic lasers and organic photonics, each providing a unique insight into the practical applications of such lasers as well as electrically-pumped organic semiconductor coherent sources, their physics, technology and future prospects. Part of Series in Coherent Sources and Applications.

全文：https://iopscience.iop.org/book/edit/978-0-7503-1572-2

Single-photon Detection for Data Communication and Quantum Systems

Authors： Michael Hofbauer, Kerstin Schneider-Hornstein and Horst Zimmermann

Published：December 2021

Online ISBN: 978-0-7503-2584-4 • Print ISBN: 978-0-7503-2582-0

Many single photon detection systems are based on the technology of superconducting nanowires. But despite their high detection efficiency, the need of cooling them to cryogenic temperatures prohibits their widespread usage. This book shows the progress of integrated (thick) CMOS SPADs towards high photon detection probabilities and applications such as in low-cost consumer data communication and high-end single-photon counting for quantum applications. Newest research results are introduced and comprehensively detailed. Part of IOP Series in Advances in Optics, Photonics and Optoelectronics.

全文：https://iopscience.iop.org/book/mono/978-0-7503-2584-4

Ultrafast Spectroscopy：Quantum information and wavepackets

Authors： Joel Yuen-Zhou, Jacob J Krich, Ivan Kassal, Allan S Johnson and Alán Aspuru-Guzik

Published：September 2014

Online ISBN: 978-0-750-31062-8 • Print ISBN: 978-0-750-31063-5

This book provides a self-contained introduction to quantum process tomography and nonlinear spectroscopy, which underlie the study of excited state dynamics in molecular aggregates, such as photosynthetic complexes.

全文：https://iopscience.iop.org/book/mono/978-0-750-31062-8

Semiconductor Integrated Optics for Switching Light (Second Edition)

Author：Charlie Ironside

Published：May 2021

Online ISBN: 978-0-7503-3519-5 • Print ISBN: 978-0-7503-3517-1

Semiconductor Integrated Optics for Switching Light (Second Edition) provides concise description of the physics and engineering of semiconductor optical waveguides for photonic and electronic switching with a focus on optical communication applications. It provides Python notebooks that illustrate the concepts discussed in the book. The book includes the following topics: linear and nonlinear optics, linear electro-optic effect electroabsorption and electrorefraction, nonlinear refraction, nonlinear optical devices.

全文：https://iopscience.iop.org/book/mono/978-0-7503-3519-5

Lithium Niobate-Based Heterostructures: Synthesis, properties and electron phenomena

Author：Maxim Sumets

Published：August 2018

Online ISBN: 978-0-7503-1729-0 • Print ISBN: 978-0-7503-1727-6

With the use of ferroelectric materials in memory devices and the need for high speed integrated optics devices, the interest in ferroelectric thin films continues to grow. With their remarkable properties such as energy nonvolatility, fast switching, radiative stability, and unique optoacoustic and optoelectronic properties, Lithium Niobate-Based Heterostructures: Synthesis, properties and electron phenomena,

discusses why Lithium Niobate (LiNbO3) is one of the most promising of all ferroelectric materials. Based on years of study, this book presents the systematic characterization of substructure and electronic properties of a heterosystem formed in the deposition process of lithium niobate films onto the surface of silicon wafers.

全文：https://iopscience.iop.org/book/mono/978-0-7503-1729-0

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半导体所图书馆

2022-09-22

量子点的合成与应用

作者： 康振辉,刘阳,毛宝东 著

ISBN： 9787030573001

出版社： 科学出版社 出版日期： 2018-06

简介：本书为“低维材料与器件丛书”之一。全书主要介绍量子点类材料的概念、合成、主要性质及其应用，除了针对经典半导体材料类的量子点进行介绍外，还对近年来发展的非经典半导体类量子点进行了介绍。在量子点的应用方面，不仅介绍了经典的发光，生物成像、检测、太阳能器件、光电器件等应用，而且针对近年来开展的量子点材料的催化特性进行了详细的介绍。此外，在内容上本书在新型量子点材料的研究进展，新型量子点材料的合成、性质及应用方面进行了比较详尽的讨论。对最近研究成果的举例讨论，是本书的一大特色。

阅读全文

石墨炔：从发现到应用

作者： 李玉良,李勇军 著

ISBN： 9787030575258

出版社： 科学出版社

出版日期： 2018-06

简介： 本书为“低维材料与器件丛书”之一。石墨炔是本书作者首次发现的一种新型二维碳材料，全书系统地介绍了石墨炔的理论预测、结构、合成与表征方法、聚集态结构研究及其在电子、信息、能源转化和存储、催化、环境与检测、生物医药等领域的前沿研究及应用探索。本书共分 7 章：第 1 章为绪论；第 2 章介绍了石墨炔的理论预测与发现；第 3 章主要从理论模拟角度介绍石墨炔的基本性质；第 4 章介绍了石墨炔的合成与表征；第 5 章介绍了石墨炔的聚集态结构；第 6 章介绍了石墨炔的应用；第 7 章展望了石墨炔材料发展面临的问题和挑战。石墨炔的发展日新月异，本书是作者在石墨炔领域多年原创性研究成果的系统归纳和整理，对石墨炔新材料的发展具有重要的推动意义与学术参考价值。

阅读全文

低维度金刚石及其光电器件

作者： 朱嘉琦,代兵,韩杰才 著

ISBN： 9787030580696

出版社： 科学出版社

出版日期： 2018-06

简介： 本书为“低维材料与器件丛书”之一。全书主要介绍从零维到二维的含有sp3 杂化结构的碳质材料，包括本征非晶金刚石薄膜、掺杂非晶金刚石薄膜、纳米晶金刚石材料的制备方法、性能表征及其在光电器件方面的应用等内容。不仅简要介绍了低维度金刚石发展概况，而且详细介绍了在低维度金刚石中具有代表性的纳米金刚石及非晶金刚石的制备及表征方法，最后还分别阐释了纳米金刚石和非晶金刚石在声波增频、光伏发电、电化分析等光电器件领域的创新性成果。内容涵盖了典型低维度金刚石的合成手段、性能检测、器件应用、技术难点、最新成果及发展趋势。

阅读全文

碳纳米管的结构控制生长

作者： 张锦,张莹莹 著

ISBN： 9787030585219

出版社： 科学出版社

出版日期： 2019-01

简介：本书为“低维材料与器件丛书”之一。过去 20 余年，碳纳米管因其独特的结构和优异的性能而引起了全世界科学界和工业界的高度关注。由于碳纳米管的性能强烈依赖于结构，其结构控制制备技术就成为最根本的基础。本书基于著者多年的科研工作，并结合国内外最新研究进展，针对碳纳米管的结构控制制备，从碳纳米管的基本结构、性能与分类出发，系统而深入地介绍了碳纳米管的化学气相沉积制备方法；系统介绍了碳纳米管的壁数/直径/手性、水平/垂直阵列和碳纳米管薄膜的制备方法，并讨论了该领域的挑战与机遇。

阅读全文

低维体系的计算材料学

作者： 邹小龙 著
ISBN： 9787030585233
出版社： 科学出版社
出版日期： 2019-01
简介：本书为“低维材料与器件丛书”之一。由于低维材料的特殊性，其在量子和统计行为上都有别于三维的块体材料，对其深入理解需借助基于量子力学的第一性原理方法。以第一性原理方法在低维材料中的研究为主线，本书涵盖的内容包括第一性原理计算方法、多种低维材料及其缺陷结构、低维材料的力学、电子学和光电子学、磁学和热输运性质、其他新奇低维材料（包括铁电、铁弹、压电、超导和拓扑绝缘体材料）、新型低维材料预测、几种典型低维材料的生长机制及计算材料学在低维材料应用中的作用。
阅读全文

半导体纳米线功能器件
作者： 张跃著
ISBN： 9787030605337
出版社： 科学出版社
出版日期： 2019-03
简介：《半导体纳米线功能器件》为“低维材料与器件丛书”之一。过去二十多年，半导体纳米线因其独特结构与优异性能引起了世界各国科学家的高度关注与广泛研究，半导体纳米线功能器件在不同领域都展现出巨大的前景。《半导体纳米线功能器件》基于作者多年的科研工作，并结合国内外的最新研究进展，系统介绍了半导体纳米线功能器件的研究成果。内容涵盖了从半导体纳米线功能器件的发展现状和加工技术、不同功能器件的研究进展、多场耦合调控到损伤与服役行为研究。对基于半导体纳米线的电子器件、发光器件、光电转换器件、力电转换器件、传感器件等代表性功能器件进行了详细介绍。《半导体纳米线功能器件》对半导体纳米线功能器件的发展具有重要的推动意义与学术参考价值。
阅读全文

低维纳米材料制备方法学
作者： 俞书宏著
ISBN： 9787030606440

出版社： 科学出版社
出版日期： 2019-06
简介： 《低维纳米材料制备方法学》为“低维材料与器件丛书”之一。由于低维材料尺寸较小，其通常具有较高比表面积和活性，这使得大量、稳定地制备低维材料需要用到一些特殊的方法。此外，低维材料的性能与其形貌、物相、成分及元素分布等关系密切，因此还需要考虑制备过程及产物的可控性。以低维材料的实际应用为导向，《低维纳米材料制备方法学》系统介绍了通过物理、化学方法制备低维材料的策略。内容不仅涵盖发展较为成熟的各类气相、液相和固相制备技术，还介绍了可控、连续、宏量制备低维材料的研究前沿。
阅读全文

富勒烯：从基础到应用
作者： 谢素原,杨上峰,李姝慧编著
ISBN： 9787030624239
出版社： 科学出版社
出版日期： 2019-11
简介： 《富勒烯：从基础到应用》为“低维材料与器件丛书”之一。《富勒烯：从基础到应用》基于作者多年的科研工作，并结合国内外的最新研究进展比较系统地介绍了富勒烯的发现、结构、合成、分离、形成机理、物理性质、化学性质及高分子化学等相关基础知识，对富勒烯的产业化开发和应用作了回顾与展望。《富勒烯：从基础到应用》共分 10 章，涵盖了目前国内外有关富勒烯的最新研究成果。
阅读全文

拓扑绝缘体：基础及新兴应用
作者： 彭海琳 编著
ISBN： 9787030641175
出版社： 科学出版社
出版日期： 2020-02
简介： 拓扑绝缘体是一种内部绝缘、界面允许电荷移动的全新量子材料，是科技前沿领域近年来的研究热点。拓扑绝缘体具有独特的电子结构，涉及许多重要的物理现象和机制，并表现出优异的物理化学性质和广阔的器件应用前景。本书

基于作者多年在拓扑绝缘体材料领域的科研工作，结合国内外最新研究进展，从拓扑绝缘体的理论基础出发，系统而深入地介绍了拓扑绝缘体的材料体系和相应的制备方法，并详细介绍了拓扑绝缘体材料的性质表征及器件应用前景。
阅读全文

低维磁性材料

作者： 王荣明等 著
ISBN： 9787030640369
出版社： 科学出版社
出版日期： 2020-05

简介： 本书为“低维材料与器件丛书”之一。随着低维磁性材料的制备、表征和相关理论研究等方面突飞猛进的发展，将本领域的最新成果及时梳理和总结已成为磁性材料和磁学学科发展的必然需求。本书正是在这一背景下应运而生的，并基于作者多年在低维磁性材料领域的科研工作，结合国内外的最新研究成果，力图系统深入地分析和介绍低维磁性材料的研究现状和发展趋势。全书涵盖了磁性材料的磁学基础知识、特性、分类与应用以及低维磁性材料的基本特性、制备方法、微结构表征。在此基础上，重点介绍了低维永磁材料、低维软磁材料、低维磁记录材料和自旋电子学相关的多种低维磁性材料。
阅读全文

低维半导体光子学

作者： 潘安练 著
ISBN： 9787030654366
出版社： 科学出版社
出版日期： 2020-10

简介： 本书为“低维材料与器件丛书”之一。全书主要介绍低维半导体光子学的物理基础，低维半导体材料制备与能带调控、瞬态光学特性、光传输与光反馈、光子调控、非线性光学性质和纳米尺度光学表征与应用，以及基于低维半导体材料或结构的发光二极管、激光器、光调制器和非线性光学器件等，最后介绍了基于低维半导体结构集成光子器件与技术。本书力求为读者全面系统地介绍低维半导体纳米材料的各种基本物理性质与光学特性，以及相关的光学器件设计与制备等。希望本书的出版能帮助读者获得必要的背景知识和了解国内外相关的研究成

果与技术。
阅读全文

低维纳米材料柔性储能器件

作者： 牛志强 著
ISBN： 9787030680730
出版社： 科学出版社
出版日期： 2021-05

简介： 本书为“低维材料与器件丛书”之一。随着电子技术的不断发展，便携式电子器件及产品在不断小型化、轻量化和柔性化，这对新一代储能器件提出了“轻、薄、柔”的要求，柔性储能器件的设计是实现完全柔性自供电电子系统的前提。柔性储能器件不仅需要各器件组成单元在承受外力作用下保持原有的性能，还需要器件整体能够具有对外场的柔性响应。纳米材料具有大比表面积、高导电性和优异力学性能，通过纳米基元的纳米复合和自组装，可实现纳米材料优异性能从微观到宏观的有效转移，得到力学、电学和电化学性能兼备的柔性电极，纳米材料的添加也会有效提升固态和准固态电解质的离子电导率和力学性能，因此，纳米材料的发展为实现高性能柔性储能器件的设计提供了可能。本书围绕纳米材料在柔性储能器件中的应用，系统阐述了不同柔性储能体系的电极设计、电解质优化、器件组装、系统集成和智能化设计，并对纳米材料柔性储能器件目前存在的问题和未来的发展方向进行了讨论与展望。
阅读全文

柔性电子技术

作者： 冯雪 编著
ISBN： 9787508858920
出版社： 科学出版社
出版日期： 2021-05

简介： 本书以当前半导体电子产业所出现的技术革命为背景，针对柔性电子技术在信息、能源、医疗、国防等重要领域的应用需求，简要介绍柔性电子技术的概念、发展历程和重要应用方向，系统介绍柔性电子器件设计方法、柔性电子功能材料、柔性电子关键制备技术、柔性固体器件、柔性集成电路及系统和柔性电子检测技术与可靠性分析等所面临的机遇与挑战，并对柔性电子的发展前景进行

展望。
阅读全文

n 型有机半导体材料及在光电器件中的应用

作者： 占肖卫等 编著
ISBN： 9787030648068
出版社： 科学出版社
出版日期： 2020-05

简介： 有机半导体材料具有质轻、柔性、可溶液加工、价廉等优点，在光电器件中的应用越来越广泛。n 型和 p 型有机半导体材料对光电器件同等重要。然而，n 型有机半导体材料的早期发展曾长时间滞后于 p 型有机半导体材料，被认为是有机电子学领域的一个瓶颈。近年来，n 型有机半导体材料的研究取得了突破性进展。本书重点论述 n 型有机半导体材料的分子设计、合成及在有机光电器件（发光二极管、场效应晶体管、有机太阳电池和钙钛矿太阳电池、光电探测器、逻辑电路）中的应用。

阅读全文

宽禁带半导体电机驱动控制技术

作者： 丁晓峰 著
ISBN： 9787030677440
出版社： 科学出版社
出版日期： 2021-01

简介：本书主要介绍基于宽禁带功率器件的电机驱动控制技术的最新研究成果。首先，介绍两种典型宽禁带功率器件，即碳化硅和氮化镓功率器件的内部结构及其外部特性；接着，分析宽禁带功率器件门极驱动电路的特点和要求，介绍了串扰抑制、过流保护及高温门极驱动电路；然后，从器件特性出发分析电机驱动器输出电压非线性，进而分析基于宽禁带功率器件的驱动器对电机损耗、动态性能及轴电流的影响；最后，介绍一种基于线性功率放大器和宽禁带功率器件结合的电机驱动新拓扑，以及一种基于宽禁带功率器件的增强型无传感器控制技术。

阅读全文

宽禁带半导体电子材料与器件

作者： 沈波,唐宁 编著

ISBN： 9787030674401

出版社： 科学出版社

出版日期： 2021-01

简介： 宽禁带半导体材料具有禁带宽度大、临界击穿场强高、电子饱和速率高、抗辐射能力强等优异性质，不仅在制备短波长光电子器件方面具有不可替代性，而且是制备高功率、高频、高温射频电子器件和功率电子器件的最优选半导体体系，在信息、能源、交通、先进制造、国防军工等领域具有重大应用价值。本书系统介绍了III族氮化物、SiC、金刚石和 Ga2O3 四种最重要的宽禁带半导体电子材料和器件，从晶体结构、能带结构、衬底材料、外延生长、射频电子器件和功率电子器件等方面论述了其基础物理性质、面临的关键科学技术问题、国内外前沿研究成果和应用前景。

阅读全文

有机半导体存储器

作者： 黄维,解令海,仪明东 编著

ISBN： 9787030674418

出版社： 科学出版社

出版日期： 2020-12

简介： 本书系统总结了不同类型的有机半导体存储器的工作原理、器件结构、制备方法、存储材料、存储参数和性能表征。全书共四章，第一章概述了存储器的类型和发展趋势；第二章介绍有机二极管电存储器，对其工作原理、器件结构、制备方法、性能表征、工作机制等进行了总结；第三章介绍有机场效应晶体管存储器，对其工作原理、器件结构与参数、存储类型、存储器材料等进行了总结；第四章介绍了忆阻器的神经形态功能模拟。

阅读全文

硅基光电子学（第二版）

作者： 周治平 著 ISBN： 9787030687555

出版社： 科学出版社 出版日期： 2021-06

简介：硅基光电子学是作者遵循半导体科学和信息科学的发展规律，在微电子、

光电子、光通信领域数十年教学科研成果的总结。本书分为基础篇和应用篇。基础篇由第 1 章~第 10 章组成，包括绪论、硅基光电子学基本理论、硅基光波导、硅基光无源器件、硅基光源、硅基光学调制、硅基光电探测、硅基表面等离激元、硅基非线性光学效应、硅基光电子器件工艺及系统集成等。应用篇由第 11 章~第 18 章组成，包括硅基光通信和光互连、硅基光交换、硅基光电计算、硅基图像传感、硅基片上激光雷达、硅基光电生物传感、硅基光信号处理、硅基光电子芯片的设计与仿真等。

阅读全文

硅锗低维材料可控生长

作者： 马英杰等 著

ISBN： 9787030685162

出版社： 科学出版社

出版日期： 2021-05

简介： 本书首先简要介绍低维异质半导体材料及其物理性质，概述刻蚀和分子束外延生长两种基本的低维半导体材料制备方法，简要说明了分子束外延技术设备的工作原理和低维异质结构的外延生长过程及其工艺发展。接着分别从热力学和动力学的角度详细阐述了硅锗低维结构的外延生长机理及其相关理论，重点讨论了图形衬底上的硅锗低维结构可控生长理论和硅锗低维结构的可控外延生长技术，并结合丰富的硅锗纳米结构可控生长实例，详细讨论图形硅衬底和斜切硅衬底上低维材料的可控外延生长及其生长机理。最后，简要介绍可控硅锗低维结构的光电特性及其器件与集成应用研究，并展望基于可控外延生长量子点的新型器件。

阅读全文

氮化铝晶体生长与应用

作者： 宋波,韩杰才,刘梦婷 编著

ISBN： 9787030696830

出版社： 科学出版社

出版日期： 2021-11

简介： 氮化铝（AlN）是一种典型的III-V族氮化物半导体材料。氮化铝拥有热导率高、热膨胀系数低、介电常数高、抗腐蚀能力强、热力学稳定性高等优异特

性。本书系统、深入地介绍了氮化铝晶体的基本性质、生长方法和具体应用。全书分为 7 章：第 1 章是绪论，介绍了第一、二、三代半导体材料的基本概念、性质和应用；第 2～6 章主要介绍了氮化铝晶体的基本特性，低维氮化铝纳米材料、氮化铝薄膜和氮化铝晶体的制备方法，以及三元合金及掺杂改性；第 7 章主要介绍了氮化铝材料的具体应用。

阅读全文

薄膜真空沉积中的等离子体探测方法与技术

作者： 陈吉堃 著

ISBN： 9787030699152

出版社： 科学出版社

出版日期： 2021-10

简介： 低温等离子体被广泛应用于脉冲激光沉积、磁控溅射、等离子体增强化学气相沉积等现代半导体薄膜真空沉积技术中，并承担着薄膜组分物质输运、薄膜形核与生长动力学调控等关键性角色。由于等离子体性质是联系薄膜真空沉积条件与沉积性能的关键性纽带，以对等离子体性质的表征与探测为突破口并建立其与薄膜沉积条件和性能之间的基础关系，有助于从理论角度为薄膜沉积条件的设计与动力学过程优化提供依据。本书结合作者的长期相关研究系统介绍了低温等离子体的常用探测方法；重点结合脉冲激光沉积实例对等离子体与背景气体间复杂的物理碰撞与化学反应，以及对薄膜沉积的基础性影响关系作详细介绍。

阅读全文

硅光子设计：从器件到系统

作者：(加)卢卡斯·赫罗斯托夫斯基(Lukas Chrostowski),(美)迈克尔·霍克伯格(Michael Hochberg) 著;郑煜等 译

ISBN： 9787030685230

出版社： 科学出版社

出版日期： 2021-06

简介： 硅光子技术在电信通信、数据中心、高性能计算、传感、航空航天等领域的广泛应用，特别是随着 CMOS(互补金属氧化物半导体)技术的持续发展，光子技术与电子技术的融合有望最终取代电子技术。

本书详细地介绍了硅光子技术，从光无源器件到光有源器件，从功能结构设

计到芯片制造，从制造到测试，从器件回路到系统回路，从理论分析计算到仿真等，涵盖器件结构原理、设计、制造、封测、仿真等全流程，结合大量实例详细说明硅光子从器件到系统各个环节的关键要素，并辅以仿真计算源代码供学习和参考。本书共四篇，第 1 篇介绍硅光子发展及其应用，包括硅光子研究现状、技术挑战和发展机遇；第 2 篇介绍光无源器件，包括光学材料和光波导、基本功能结构和光输入/输出结构；第 3 篇介绍光有源器件，包括光调制器、探测器和激光光源；第 4 篇介绍系统设计，包括硅光子回路模型、设计工具、制造、封测和硅光子系统。

阅读全文

氮化物深紫外发光材料及器件

作者： 李晋闽等 著
ISBN： 9787030680709
出版社： 科学出版社
出版日期： 2021-01

简介： 为基础，详细介绍了III族氮化物紫外发光二极管的材料外延、芯片制作、器件封装和系统应用，内容集学术性和实用性为一体。全书共 8 章，内容包括：氮化物半导体材料性质及外延生长理论，氮化物半导体材料制备及表征方法，深紫外发光二极管的量子效率与结构设计、关键制备工艺、封装技术、应用，以及当前氮化物深紫外发光二极管的一些研究前沿和热点。

阅读全文

固体材料电子结构与化学性质

作者： （英）P.A.考克斯（P.A.Cox） 著;张洪良,王婧,吴锐 译
ISBN： 9787030663788
出版社： 科学出版社
出版日期： 2020-11

简介： 子结构及其对固体电学、磁学和光学等性质的影响。前三章主要讲述固体材料的化学键、电子结构的模型及先进的光电子能谱技术。第 4～6 章介绍能带理论、半导体、绝缘体、莫特绝缘体的本质和电子强关联效应、电声子相互作用、超导电性等。最后一章介绍固体材料缺陷、掺杂及在光电转换方面的应用。

阅读全文

各向异性介质中的耗散波：基于频散方程求解的波动特性研究

作者： 钱征华,朱峰,李鹏 著

ISBN： 9787030703576
出版社： 科学出版社
出版日期： 2021-11

简介： 算法，结合超声导波的应用背景，以该算法为基础，系统研究了多种复杂材料层合结构中波传播的耗散问题，包括压电复合结构中的介电损耗、电极电阻、压电半导体结构中的载流子迁移以及一般各向异性复合结构中材料的黏弹性等引起的能量损耗。

阅读全文

电子书推介 2022 年第 19 期（总第 24 期）

半导体所图书馆

2022-10-19

光学前沿研究与应用丛书 光信息检测

作者：刘永智，岳慧敏，代志勇，唐雄贵编；王之江总主编

页数：407

出版时间：2021.03

出版社：上海：上海科学技术出版社

本书围绕光的接收与探测，结合国内外新技术的发展，系统介绍光信息检测的基础知识和重要技术，主要包括信息的光调制与传输、光电探测、光波参数检测、微弱光信号检测、光电接收系统设计、典型光电检测系统等内容，使读者深入了解光信息的调制、传输特点；熟悉各类光电探测器的主要特性及应用技术；了解噪声的随机概念，通过对光电转换过程中噪声产生原因与特点的分析掌握噪声抑制的方法；掌握光波参数检测的特殊技术及对微弱光信号与单光子进行高灵敏度检测的方法；掌握光接收机设计方法，同时了解几种特殊光电转换电路与典型光电检测系统。本书可供光信息检测及相关领域科技人员阅读与参考，也可作为高等院校光学、光学工程、光信息科学与技术、物理电子学等专业研究生的参考书。

阅读全文

信息光学理论与应用 第 4 版

作者：王仕璠编著

页数：304

出版时间：2020.08

全书共 10 章，内容涉及二维傅里叶分析、标量衍射理论、光学成像系统的频率特性、部分相干理论、光学全息照相、空间滤波、相干光学处理、非相干光学处理，以及信息光学在计量学中的应用。

阅读全文

信息光学理论与应用（英文版）=Theory and Application of Information Optics

作者：王仕璠编著
页数：399
出版时间：2020.12
出版社：北京邮电出版社
本书是在普通高等教育“十一五”国家级规划教材《信息光学理论与应用》(第 3 版)的基础上修订而成的,系统地介绍了信息光学的基础理论及相关的应用。全书共 10 章,内容涉及二维傅里叶分析、标量衍射理论、光学成像系统的频率特性、部分相干理论、光学全息照相、空间滤波、相干光学处理、非相干光学处理，以及信息光学在计量学中的应用等。本书内容丰富,选材新颖,既系统地介绍基础理论,又同时兼顾理论和技术的发展,并强调理论与应用的结合。《信息光学理论与应用》的第 2 版曾被教育部评为“2009 年度普通高等教育精品教材”。
阅读全文

自适应光学理论及应用
作者：张晓芳，董冰编
页数：246
出版时间：2020.12
出版社：北京：北京理工大学出版社
本书从基本的物理光学知识入手，深入浅出、循序渐进地引导初学者学习该领域的基本理论与方法，深入细致地阐述了自适应光学的理论与技术，包括光波波前扰动理论，自适应光学系统误差源，自适应光学校正原理，光波波前传感、重构与校正技术。同时，书中较为详细地阐述了自适应光学在若干重要领域的应用，给出了实例分析，可为研究人员开展相关的科学研究工作提供理论依据。
阅读全文

非线性光学与光子学
作者：赫光生著
页数：692
出版时间：2018.12
本书作为一本关于非线性光学与光子学的学术著作，全面总结介绍了半个世纪以来非线性光学领域的主要课题内容和发展成就，着重介绍了 20 世纪 90 年代以后的一系列新型研究课题以及它们在光子学领域内的独特应用，同时客观反映了作

者及其所领导的研究团队多年来做出的一些新新发现和相关贡献。
阅读全文

应用光学 第 3 版 英文版
作者：李林
页数：260
出版时间：2018.07
出版社：北京：北京理工大学出版社
本书内容包括了几何光学、典型光学仪器原理、光度学、光纤光学系统、激光光学系统及红外光学系统等的基础理论和方法。
阅读全文

纳米机械振子与光腔耦合系统的量子特性及应用
作者：马鹏程，陈贵宾，肖银著
页数：110
出版社：苏州：苏州大学出版社
出版时间：2018.12
本书主要研究纳米光机械系统的量子特性及其在量子通信网络中的应用。共包括6 章内容，第一章，主要介绍纳机械振子及光学腔的的基本概念、应用及其发展历史和研究现状以及当今研究领域占有的地位。第二章，理论证明在纳米机械振子与高品质光学腔耦合系统中发现可调的双模的光力诱导透明现象。第三章，提出实验可行的多通道单光子量子路由的方案。第四章，利用超导微波腔与光学腔耦合共同的纳米机械振子，实现微波与光学频域之间双向多出口单光子路由。第五章，利用超导量子库珀对与纳米机械振子耦合系统的特性，实现微波控制的快慢光效应。最后一章，在总结上述工作的基础上，展望光力机械系统的未来发展。
阅读全文

光谱数据处理与定量分析技术
作者：李志刚
页数：179
出版时间：2017.06

出版社：北京：北京邮电大学出版社
阅读全文

亚波长光栅光学
作者：赵华君著
页数：132
出版社成都：西南交通大学出版社
出版时间：2017.12
本书为专著，运用严格耦合波法详细分析光栅的理论与算法，并给出了模态法、传输矩阵法、有效介质理论、LC 电路模型分析法等多种光栅分析与设计的方法，据此分析了亚波长及共振域光栅的衍射特性、偏振特性、分束特性、闪耀特性、电磁增强特性及表面等离子效应等光栅的特性及相关应用，同时还简要介绍了光栅的制造与检定方法。
阅读全文

非线性光学 原理和应用
作者：李淳飞著
页数：356
出版时间：2015.02
出版社：上海：上海交通大学出版社
本书用简明的经典极化理论和光子的物理图像，系统讲解非线性光学的基本原理。扼要阐述二阶非线性光学效应，重点讨论三阶非线性光学效应，并介绍了非线性光学近期研究和应用的新进展，包括激发态非线性光学、光学双稳性、光学混沌、光学孤子、全光开关、非线性光限幅、Z 扫描技术等,这些内容反映了作……
阅读全文

傅里叶光学原理与系统设计
作者：李林著
页数：356
出版时间：2021.03
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本书系统而深入地介绍了傅里叶光学及其光学系统设计的基本概念、基础理论，以及在一些研究领域的应用。全书内容共分七章，其中第 1 章和第 2 章内容介绍了从波动光学过渡到傅里叶变换光学的主要基础理论，第 3 章到第 6 章分别介绍了光学传递函数、全息术、光学信息存储、傅里叶光谱技术的系统知识，第 7 章则介绍了傅里叶变换镜头及光学信息处理系统的设计知识。
阅读全文

精密激光光谱学研究前沿
作者：高克林等编著
页数：490
出版社：上海：上海交通大学出版社
出版时间：2014.10
精密光谱科学与技术的发展极大地提高了人类探索自然规律的能力，被科学界公认为是人类探索和揭示微观世界规律及发展重要前沿科学和高新技术的基点和关键。本书收录了冷原子物理，冷分子物理，激光光谱，冷原子/离子光频标，原子分子的精密测量等前沿专题。
阅读全文

凝聚态光学研究前沿
作者：陈良尧等编著
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非线性光学研究前沿
作者：陈险峰等编著
页数：407
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出版时间：2014.10
阅读全文

X 射线衍射技术及其应用

作者：姜传海，杨传铮编著

页数：262

出版社上海：华东理工大学出版社

出版时间：2010.08

本书介绍了 X 射线衍射近年来的发展，着重在实验技术和数据分析两个方面。全书共 9 章，主要内容包括 X 射线物理学基础、X 射线衍射方向、X 射线强度、X 射线衍射方法、多晶物相分析、晶体结构与点阵参数分析、应力测量与分析、衍射谱线形分析、多晶织构测定和单晶定向等。

阅读全文

频域光纤光学双稳态及其应用

作者：吕国辉著

页数：247

出版社：哈尔滨：黑龙江大学出版社

出版时间：2010.12

本书详细介绍了基于光纤波导技术的混合型光学双稳和混沌的工作机理及其应用。书中提出的新型光纤结构的双稳器件中，采用半导体激光器或可调谐光纤激光器作为光源，利用光纤无源器件构成非线性光强度调制单元，用光电探测与放大电路构成反馈单元，实现新型的电光混合型光学双稳和混沌。还探讨了光纤频域双稳机制在物理传感量的数字化测量和电光混合频域混沌在保密通信中的应用。

阅读全文

相干态导论

作者：（美）克劳德尔（Klauder，J.R.），（美）斯卡格斯塔姆（Skagerstam，B-S.）著；郭光灿译

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光的偏振
作者：张之翔著
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现代量子光学基础 英文影印版
作者：（英）维特拉著
页数：222
出版社：上海：复旦大学出版社
出版时间：2006.11
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太赫兹光谱在自旋电子学中的应用
作者：马国宏作
出版日期 2021.08
出版社：上海：华东理工大学出版社
本书主要介绍了太赫兹光谱在自旋电子学中的应用，包括三个部分，首部分包括1-3 章，介绍了太赫兹概述和光谱技术;第二部分为本书的重点，包括第 4-6 章，主要介绍了太赫兹波与磁有序介质的相互作用;第三部分包括第 7、8 章，介绍了太赫兹强场与电子自旋的非线性相互作用，进而实现自旋波的太赫兹非线性调控。本书可作为太赫兹光谱、太赫兹自旋电子学等研究领域科研人员和相关学科研究生的参考书和工具书，为将要从事该研究的科研工作者提供一定的参考和借鉴，亦可供有关工程技术人员参考。
阅读全文

毫米波理论与技术

作者：阮成礼，董宇亮编著
页数：431
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出版社：成都：电子科技大学出版社
本书介绍了毫米波的传播特性、毫米波波导、毫米波准 TEM 传输线、毫米波无源电路、毫米波源、固态电路、毫米波电子系统等内容。
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射频与微波波谱学
作者：（美）戴维.J.E.英格拉姆著；陈家森等译
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生物光电子学
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低维量子器件物理
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胶体半导体量子点
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作者：(美)刘锦贤著；谢世钟[等]译

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半导体中的自旋物理学

作者：(美)M.I. 迪阿科诺夫主编；姬扬译

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窄禁带半导体物理学

作者：褚君浩著
ISBN：7030144147
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