

## 电子书推介 2022 年第 7 期（总第 12 期）

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2022-4-20

### **Carrier Scattering in Metals and Semiconductors**

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

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CHAPTER 1 - Quasi-Particles in an Ideal Crystal

CHAPTER 2 - Scattering

CHAPTER 3 - Electron-Phonon Interaction

CHAPTER 4 - Scattering by Long-Wavelength Phonons in a Simple Band

CHAPTER 5 - Scattering by Phonons in an Anisotropic Electron Band

CHAPTER 6 - Electron-Electron Scattering and the Electron Temperature

CHAPTER 7 - Relaxation Characteristics of Kinetic Effects

CHAPTER 8 - Two-Phonon Processes

CHAPTER 9 - Scattering by Impurities

CHAPTER 10 - Scattering by Dislocations

CHAPTER 11 - Scattering by a Crystal Surface

CHAPTER 12 - Scattering in a Degenerate Band and in a Multiband Model

CHAPTER 13 - Spin-Flip Induced by Spin-Orbit Interaction

CHAPTER 14 - The Effect of a Magnetic Field on Scattering

CHAPTER 15 - Exchange and Spin Interaction

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

### **Ultrawide Bandgap Semiconductors**

Edited by Yuji Zhao, Zetian Mi

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Chapter One - Fundamental technologies for gallium oxide transistors

Chapter Two - Advanced concepts in Ga<sub>2</sub>O<sub>3</sub> power and RF devices

Chapter Three -  $\beta$ -(Al<sub>x</sub>Ga<sub>(1-x)</sub>)<sub>2</sub>O<sub>3</sub> epitaxial growth, doping and transport

Chapter Four - Thermal science and engineering of  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> materials and devices

Chapter Five - Controlling different phases of gallium oxide for solar-blind photodetector application

Chapter Six - Nanoscale AlGaN and BN: Molecular beam epitaxy, properties, and device applications

Chapter Seven - High-Al-content heterostructures and devices

Chapter Eight - AlN nonlinear optics and integrated photonics

Chapter Nine - Material epitaxy of AlN thin films

Chapter Ten - Development of AlN integrated photonic platform for octave-spanning supercontinuum generation in visible spectrum

Chapter Eleven - AlGaIn-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

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Part One: Thermal surface treatments using lasers

Part Two: Laser additive manufacturing in surface treatment and engineering

Part Three: Laser structuring 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

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### **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 contributors 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

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#### **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

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Chapter One - Color centers in diamond for quantum applications

Chapter Two - Ultrapure homoepitaxial diamond films grown by chemical vapor deposition for quantum device application

Chapter Three - Step-edge growth and doping of diamond

Chapter Four - Nitrogen-vacancy doped CVD diamond for quantum applications: A review

Chapter Five - Charge state control by band engineering

Chapter Six - High-pressure, high-temperature synthesis and doping of nanodiamonds

Chapter Seven - The silicon vacancy center in diamond

Chapter Eight - Color centers based on heavy group-IV elements

Chapter Nine - Hybrid light collection

Chapter Ten - Dynamic nuclear polarization (DNP) in diamond

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

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Chapter One - Color center formation by deterministic single ion implantation

Chapter Two - Advanced and in situ transmission electron microscopy of diamond: A review

Chapter Three - Fundamentals of photoelectric readout of spin states in diamond

Chapter Four - Integrated quantum photonic circuits made from diamond

Chapter Five - Diamond membranes for photonic devices

Chapter Six - Diamond quantum nanophotonics and optomechanics

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

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Part 1: Fundamentals of Vacuum Technology and Surface Physics

Part 2: Creation of Vacuum

Part 3: Vacuum Measurements

Part 4: Systems Design and Components

Part 5: Vacuum applications

Part 6: Large-Scale Vacuum-Based Processes

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

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### **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.

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## **High Power Lasers**

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

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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

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## **Diamond Films : Chemical Vapor Deposition for Oriented and Heteroepitaxial Growth**

Authors: Koji Kobashi

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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  
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## **Handbook of Nanostructured Materials and Nanotechnology**

Edited by: Hari Singh Nalwa

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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

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## **Semiconductor Quantum Science and Technology**

Edited by Steven T. Cundiff, Mackillo Kira

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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

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## **Handbook of Infra-red Detection Technologies**

Edited by: Mohamed Henini and Manijeh Razeghi

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Chapter 1 - Introduction

Chapter 2 - Comparison of photon and thermal detector performance

Chapter 3 - GaAs/AlGaAs 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 superlattices 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

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