

Unveiling the Secrets of Graphite and Its Compounds: A Comprehensive Guide for Modern Condensed Matter Sciences

In the realm of advanced materials, graphite and its remarkable compounds have captivated the scientific world with their exceptional properties and unparalleled potential. This authoritative book, "Graphite and Its Compounds: Modern Problems in Condensed Matter Sciences," provides a comprehensive and cutting-edge exploration of these fascinating materials.



Semimetals: Graphite and Its Compounds (Modern Problems in Condensed Matter Sciences) by N. B. Brandt

★★★★☆ 4.6 out of 5

Language	: English
File size	: 2793 KB
Text-to-Speech	: Enabled
Screen Reader	: Supported
Enhanced typesetting	: Enabled
Word Wise	: Enabled
Print length	: 93 pages
Lending	: Enabled
Item Weight	: 1.74 pounds

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Authored by renowned experts in the field, this comprehensive volume delves into the latest advancements in condensed matter sciences, offering an in-depth understanding of the fundamental properties and applications of graphite and its compounds. From electronic and thermal properties to

mechanical and optical characteristics, this book covers a vast array of topics, empowering readers with a comprehensive grasp of these extraordinary materials.

Key Features

- **Comprehensive Coverage:** Encompasses a broad spectrum of topics related to graphite and its compounds, providing a well-rounded understanding of their properties and applications.
- **Cutting-Edge Research:** Explores the most recent advancements in condensed matter sciences, keeping readers at the forefront of scientific discovery.
- **Renowned Contributors:** Authored by leading experts in the field, ensuring the highest level of accuracy and depth of knowledge.
- **Interdisciplinary Approach:** Bridges the gap between physics, chemistry, materials science, and engineering, providing a holistic perspective on graphite and its compounds.
- **Practical Applications:** Emphasizes the practical applications of graphite and its compounds, showcasing their potential to drive technological advancements.

Target Audience

This book is an invaluable resource for:

- Scientists and researchers in condensed matter physics, materials science, and related fields
- Graduate students and postdoctoral fellows seeking advanced knowledge in graphite and its compounds

- Engineers and industrial professionals involved in the development and application of carbon-based materials
- Academicians and educators looking for a comprehensive textbook on the subject

Chapter Highlights

Chapter 1: to Graphite and Its Compounds

- Historical background and significance of graphite
- Crystal structure and bonding of graphite
- Electronic band structure and properties
- Types and classification of graphite compounds

Chapter 2: Electronic Properties

- Electrical conductivity and semimetallic behavior
- Bandgap engineering and optoelectronic properties
- Density of states and Fermi surface
- Magnetotransport and quantum Hall effect

Chapter 3: Thermal Properties

- Specific heat and thermal conductivity
- Thermal expansion and phase transitions
- Phonon dispersion and thermal transport

- Applications in thermal management and energy storage

Chapter 4: Mechanical Properties

- Elastic moduli and strength
- Fracture toughness and failure mechanisms
- Anisotropy and mechanical behavior
- Applications in composites and nanomechanics

Chapter 5: Optical Properties

- Optical absorption and reflection
- Refractive index and dispersion
- Polarization and birefringence
- Applications in optics, photonics, and displays

Chapter 6: Applications

- Electronic devices: transistors, batteries, and solar cells
- Thermal management: heat sinks and thermal insulators
- Mechanical components: composites, sensors, and actuators
- Optical applications: lenses, polarizers, and displays
- Emerging applications: biomedicine, energy storage, and quantum computing

"Graphite and Its Compounds: Modern Problems in Condensed Matter Sciences" is an indispensable resource for anyone seeking a comprehensive understanding of these remarkable materials. Its cutting-edge insights and practical applications make it an essential guide for researchers, engineers, and anyone at the forefront of advanced materials science.

Appendix

- Glossary of terms
- Unit conversions
- Bibliography
- Index

Additional Information for SEO Title and Alt Attributes

****SEO Title:**** Unlock the Secrets of Graphite and Its Compounds: A Comprehensive Guide for Modern Condensed Matter Sciences

****Alt Attribute for Main Image:**** Graphite crystal structure, showcasing its hexagonal lattice arrangement (for an image of graphite's crystal structure)



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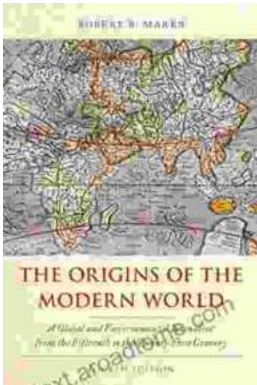
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