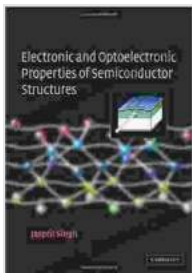


# Electronic and Optoelectronic Properties of Semiconductor Structures

Semiconductors are the building blocks of modern electronics, enabling the development of a wide range of devices such as transistors, integrated circuits, light-emitting diodes (LEDs), lasers, and solar cells. Understanding the electronic and optoelectronic properties of semiconductor structures is crucial for designing and optimizing these devices.

This book provides a comprehensive overview of the electronic and optoelectronic properties of semiconductor structures, covering fundamental concepts to advanced applications. It begins with an introduction to the basic properties of semiconductors, including their crystal structure, bandgap, and carrier transport mechanisms.



## Electronic and Optoelectronic Properties of Semiconductor Structures by Jasprit Singh

★ ★ ★ ★ ★ 5 out of 5  
Language : English  
File size : 10298 KB  
Text-to-Speech : Enabled  
Print length : 560 pages  
Lending : Enabled  
Screen Reader : Supported  
Hardcover : 301 pages  
Item Weight : 1.28 pounds  
Dimensions : 6 x 1 x 9 inches



The book then discusses the effects of quantum confinement on the electronic properties of semiconductor structures. Quantum confinement refers to the confinement of electrons and holes in a small region of space, which can lead to the formation of quantum wells, quantum wires, and quantum dots. These structures exhibit unique electronic properties that can be exploited for a variety of optoelectronic applications.

The book also covers the optoelectronic properties of semiconductor structures, including the absorption and emission of light. It discusses the principles of light-emitting diodes (LEDs) and lasers, as well as the operation of photodetectors and solar cells. These devices rely on the interaction of light with semiconductor structures to generate, detect, or convert light.

Finally, the book explores the applications of semiconductor structures in a variety of electronic and optoelectronic devices. It covers the design and fabrication of transistors, integrated circuits, LEDs, lasers, solar cells, and photodetectors. It also discusses the challenges and opportunities in the development of these devices.

This book is an essential resource for scientists, engineers, and students working in the field of semiconductor structures and devices. It provides a comprehensive understanding of the fundamental principles and applications of these structures, enabling readers to design and optimize devices for a wide range of applications.

## **Key Features**

- Covers the fundamental properties of semiconductors, including their crystal structure, bandgap, and carrier transport mechanisms.

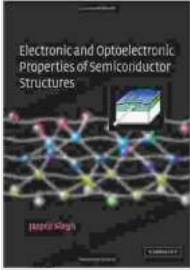
- Discusses the effects of quantum confinement on the electronic properties of semiconductor structures, including the formation of quantum wells, quantum wires, and quantum dots.
- Explores the optoelectronic properties of semiconductor structures, including the absorption and emission of light, and the principles of light-emitting diodes (LEDs) and lasers.
- Covers the applications of semiconductor structures in a variety of electronic and optoelectronic devices, including transistors, integrated circuits, LEDs, lasers, solar cells, and photodetectors.
- Provides a comprehensive understanding of the fundamental principles and applications of semiconductor structures, enabling readers to design and optimize devices for a wide range of applications.

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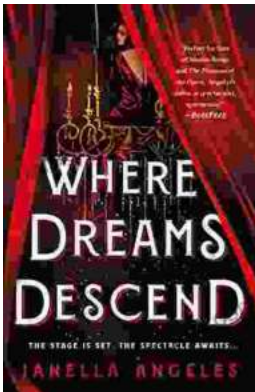
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