



# Electronic Properties of Materials

By Rolf E. Hummel



## Electronic Properties of Materials By Rolf E. Hummel

This text on the electrical, optical, magnetic, and thermal properties of materials stresses concepts rather than mathematical formalism. Suitable for advanced undergraduates, it is intended for materials and electrical engineers who want to gain a fundamental understanding of alloys, semiconductor devices, lasers, magnetic materials, and so forth. The book is organized to be used in a one-semester course; to that end each section of applications, after the introduction to the fundamentals of electron theory, can be read independently of the others. Many examples from engineering practice serve to provide an understanding of common devices and methods. Among the modern applications covered are: high-temperature superconductors, optoelectronic materials, semiconductor device fabrication, xerography, magneto-optic memories, and amorphous ferromagnetics. The fourth edition has been revised and updated with an emphasis on the applications sections, which now cover devices of the next generation of electronics.

 [Download Electronic Properties of Materials ...pdf](#)

 [Read Online Electronic Properties of Materials ...pdf](#)

# Electronic Properties of Materials

*By Rolf E. Hummel*

## Electronic Properties of Materials By Rolf E. Hummel

This text on the electrical, optical, magnetic, and thermal properties of materials stresses concepts rather than mathematical formalism. Suitable for advanced undergraduates, it is intended for materials and electrical engineers who want to gain a fundamental understanding of alloys, semiconductor devices, lasers, magnetic materials, and so forth. The book is organized to be used in a one-semester course; to that end each section of applications, after the introduction to the fundamentals of electron theory, can be read independently of the others. Many examples from engineering practice serve to provide an understanding of common devices and methods. Among the modern applications covered are: high-temperature superconductors, optoelectronic materials, semiconductor device fabrication, xerography, magneto-optic memories, and amorphous ferromagnetics. The fourth edition has been revised and updated with an emphasis on the applications sections, which now cover devices of the next generation of electronics.

## Electronic Properties of Materials By Rolf E. Hummel Bibliography

- Sales Rank: #876781 in Books
- Brand: Brand: Springer New York
- Published on: 2013-02-14
- Original language: English
- Number of items: 1
- Dimensions: 9.21" h x 1.13" w x 6.14" l, 1.90 pounds
- Binding: Hardcover
- 488 pages

 [Download Electronic Properties of Materials ...pdf](#)

 [Read Online Electronic Properties of Materials ...pdf](#)

## Download and Read Free Online Electronic Properties of Materials By Rolf E. Hummel

---

### Editorial Review

#### Review

From the reviews of the fourth edition:

“This is an excellent book for materials and electrical engineers, as well as advanced students. This book is divided into five distinct and self-contained parts, which makes it easier for the reader to find information on a particular area of interest. ... contains many applications and problems that help to bridge the gap between physics and engineering. ... For practicing engineers, this would be a good reference book. It would also be useful for someone looking to gain an overall concept of device physics.” (Ishtiaque Ahmed, Optics & Photonics News, April, 2012)

#### From the Back Cover

This book on electrical, optical, magnetic, and thermal properties of materials differs from other introductory texts in solid-state physics. First, it is written for engineers, particularly materials and electrical engineers, who want to gain a fundamental understanding of semiconductor devices, magnetic materials, lasers, alloys, and so forth. Second, it stresses concepts rather than mathematical formalism, which should make the presentation relatively easy to read. Third, it is not an encyclopedia: The topics are restricted to material considered to be essential and that can be covered in one 15-week semester.

The book is divided into five parts. The first part, "Fundamentals of Electron Theory," introduces the essential quantum mechanical concepts needed for understanding materials science; the other parts may be read independently of each other. Many practical applications are discussed to provide students with an understanding of electronic devices currently in use. The solutions to the numerical problems are given in the appendix.

Previous editions have been well received by students and teachers alike. This Fourth Edition has again been thoroughly revised and brought up to date to take into account the explosive developments in electrical, optical, and magnetic materials and devices. Specifically, new topics have been added in the "applied sections," such as energy saving light sources, particularly compact fluorescence light fixtures, organic light-emitting diodes (OLEDs), organic photovoltaics (OPV cells), optical fibers, pyroelectricity, phase-change memories, blue ray disks, holographic versatile disks, galvanoelectric phenomena (emphasizing the entire spectrum of primary and rechargeable batteries), graphene, quantum Hall effect, iron-based semiconductors (pnictides), etc. to mention just a few subjects.

#### About the Author

Rolf E. Hummel is a Professor Emeritus of Materials Science and Engineering at the University of Florida, Gainesville, USA. He received his Ph.D (Dr. rer.nat.) in 1963 from the University of Stuttgart, Germany and the Max-Planck Institute for Materials Research, also in Stuttgart. He has been at the University of Florida since graduation, only interrupted by Sabbatical stays in Japan, Korea, China, New Zealand, France, Vietnam, Germany, and Colorado. His previous publications include *Optical Properties of Metals and Alloys* (1971), *Electro-and Thermo-Transport in Metals and Alloys* (ed.), (1977), the two-volume *Handbook of*

Optical Properties (ed.), (1996), and Understanding Materials Science 2nd Ed. (2004). His books are widely appraised for their easy understandability.

## **Users Review**

### **From reader reviews:**

#### **Robert Johnson:**

Why don't make it to be your habit? Right now, try to prepare your time to do the important work, like looking for your favorite book and reading a publication. Beside you can solve your long lasting problem; you can add your knowledge by the e-book entitled Electronic Properties of Materials. Try to the actual book Electronic Properties of Materials as your buddy. It means that it can to be your friend when you really feel alone and beside associated with course make you smarter than ever. Yeah, it is very fortunated for you personally. The book makes you far more confidence because you can know every thing by the book. So , let us make new experience as well as knowledge with this book.

#### **Alma Rasmussen:**

In this 21st century, people become competitive in each and every way. By being competitive now, people have do something to make these individuals survives, being in the middle of the particular crowded place and notice through surrounding. One thing that oftentimes many people have underestimated it for a while is reading. Sure, by reading a guide your ability to survive increase then having chance to stay than other is high. For you personally who want to start reading any book, we give you this particular Electronic Properties of Materials book as beginner and daily reading book. Why, because this book is greater than just a book.

#### **Bernard Lewis:**

As people who live in the actual modest era should be upgrade about what going on or facts even knowledge to make them keep up with the era that is certainly always change and move ahead. Some of you maybe will probably update themselves by examining books. It is a good choice for you but the problems coming to an individual is you don't know what type you should start with. This Electronic Properties of Materials is our recommendation to make you keep up with the world. Why, since this book serves what you want and need in this era.

#### **Cassandra Harvey:**

Reading can called mind hangout, why? Because while you are reading a book specifically book entitled Electronic Properties of Materials your head will drift away trough every dimension, wandering in every aspect that maybe not known for but surely can be your mind friends. Imaging each word written in a reserve then become one type conclusion and explanation that maybe you never get before. The Electronic Properties of Materials giving you an additional experience more than blown away your head but also giving you useful information for your better life in this era. So now let us explain to you the relaxing pattern at this point is your body and mind will be pleased when you are finished studying it, like winning a. Do you want

to try this extraordinary shelling out spare time activity?

## **Download and Read Online Electronic Properties of Materials By Rolf E. Hummel #R29OSPBDHC4**

## **Read Electronic Properties of Materials By Rolf E. Hummel for online ebook**

Electronic Properties of Materials By Rolf E. Hummel Free PDF d0wnl0ad, audio books, books to read, good books to read, cheap books, good books, online books, books online, book reviews epub, read books online, books to read online, online library, greatbooks to read, PDF best books to read, top books to read Electronic Properties of Materials By Rolf E. Hummel books to read online.

### **Online Electronic Properties of Materials By Rolf E. Hummel ebook PDF download**

#### **Electronic Properties of Materials By Rolf E. Hummel Doc**

**Electronic Properties of Materials By Rolf E. Hummel Mobipocket**

**Electronic Properties of Materials By Rolf E. Hummel EPub**