



# 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:**

#### **Omar Yoder:**

Nowadays reading books are more than want or need but also be a life style. This reading practice give you lot of advantages. The benefits you got of course the knowledge the rest of the information inside the book that improve your knowledge and information. The information you get based on what kind of publication you read, if you want get more knowledge just go with education books but if you want truly feel happy read one together with theme for entertaining for example comic or novel. The actual Electronic Properties of Materials is kind of book which is giving the reader erratic experience.

#### **Marie Nitta:**

The reserve with title Electronic Properties of Materials has a lot of information that you can study it. You can get a lot of benefit after read this book. This kind of book exist new understanding the information that exist in this e-book represented the condition of the world at this point. That is important to you to learn how the improvement of the world. This kind of book will bring you inside new era of the glowbal growth. You can read the e-book with your smart phone, so you can read this anywhere you want.

#### **Rene Pina:**

Reading can called mind hangout, why? Because while you are reading a book mainly book entitled Electronic Properties of Materials your head will drift away trough every dimension, wandering in each aspect that maybe not known for but surely might be your mind friends. Imaging each word written in a publication then become one form conclusion and explanation which maybe you never get before. The Electronic Properties of Materials giving you one more experience more than blown away your head but also giving you useful details for your better life within this era. So now let us present to you the relaxing pattern is your body and mind is going to be pleased when you are finished reading through it, like winning a sport. Do you want to try this extraordinary paying spare time activity?

#### **Alice Winfield:**

Beside that Electronic Properties of Materials in your phone, it may give you a way to get more close to the new knowledge or data. The information and the knowledge you are going to got here is fresh in the oven so don't possibly be worry if you feel like an aged people live in narrow village. It is good thing to have Electronic Properties of Materials because this book offers for you readable information. Do you often have book but you rarely get what it's exactly about. Oh come on, that will not happen if you have this within your hand. The Enjoyable agreement here cannot be questionable, including treasuring beautiful island. So do you still want to miss the item? Find this book in addition to read it from right now!

# **Download and Read Online Electronic Properties of Materials By Rolf E. Hummel #61JYW4V3DLR**

## **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**