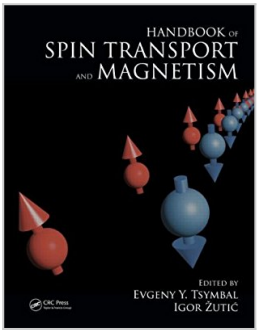

Handbook of Spin Transport and Magnetism

From Chapman and Hall/CRC

Handbook of Spin Transport and Magnetism From Chapman and Hall/CRC

In the past several decades, the research on spin transport and magnetism has led to remarkable scientific and technological breakthroughs, including Albert Fert and Peter Grünberg's Nobel Prize-winning discovery of giant magnetoresistance (GMR) in magnetic metallic multilayers. **Handbook of Spin Transport and Magnetism** provides a comprehensive, balanced account of the state of the art in the field known as spin electronics or spintronics. It reveals how key phenomena first discovered in one class of materials, such as spin injection in metals, have been revisited decades later in other materials systems, including silicon, organic semiconductors, carbon nanotubes, graphene, and carefully engineered nanostructures.

The first section of the book offers a historical and personal perspective of the field written by Nobel Prize laureate Albert Fert. The second section addresses physical phenomena, such as GMR, in hybrid structures of ferromagnetic and normal metals. The third section discusses recent developments in spin-dependent tunneling, including magnetic tunnel junctions with ferroelectric barriers. In the fourth section, the contributors look at how to control spin and magnetism in semiconductors. In the fifth section, they examine phenomena typically found in nanostructures made from metals, superconductors, molecular magnets, carbon nanotubes, quantum dots, and graphene. The final section covers novel spin-based applications, including advanced magnetic sensors, nonvolatile magnetoresistive random access memory, and semiconductor spin-lasers.

The techniques and materials of spintronics have rapidly evolved in recent years, leading to vast improvements in hard drive storage and magnetic sensing. With extensive cross-references between chapters, this seminal handbook provides a complete guide to spin transport and magnetism across various classes of materials and structures.

Handbook of Spin Transport and Magnetism

From Chapman and Hall/CRC

Handbook of Spin Transport and Magnetism From Chapman and Hall/CRC

In the past several decades, the research on spin transport and magnetism has led to remarkable scientific and technological breakthroughs, including Albert Fert and Peter Grünberg's Nobel Prize-winning discovery of giant magnetoresistance (GMR) in magnetic metallic multilayers. **Handbook of Spin Transport and Magnetism** provides a comprehensive, balanced account of the state of the art in the field known as spin electronics or spintronics. It reveals how key phenomena first discovered in one class of materials, such as spin injection in metals, have been revisited decades later in other materials systems, including silicon, organic semiconductors, carbon nanotubes, graphene, and carefully engineered nanostructures.

The first section of the book offers a historical and personal perspective of the field written by Nobel Prize laureate Albert Fert. The second section addresses physical phenomena, such as GMR, in hybrid structures of ferromagnetic and normal metals. The third section discusses recent developments in spin-dependent tunneling, including magnetic tunnel junctions with ferroelectric barriers. In the fourth section, the contributors look at how to control spin and magnetism in semiconductors. In the fifth section, they examine phenomena typically found in nanostructures made from metals, superconductors, molecular magnets, carbon nanotubes, quantum dots, and graphene. The final section covers novel spin-based applications, including advanced magnetic sensors, nonvolatile magnetoresistive random access memory, and semiconductor spin-lasers.

The techniques and materials of spintronics have rapidly evolved in recent years, leading to vast improvements in hard drive storage and magnetic sensing. With extensive cross-references between chapters, this seminal handbook provides a complete guide to spin transport and magnetism across various classes of materials and structures.

Handbook of Spin Transport and Magnetism From Chapman and Hall/CRC Bibliography

- Sales Rank: #1044086 in Books
- Published on: 2011-08-25
- Original language: English
- Number of items: 1
- Dimensions: 11.20" h x 1.70" w x 8.70" l, 4.60 pounds
- Binding: Hardcover
- 808 pages

Editorial Review

Review

This handbook is a timely, up-to-date review of the intricate relationship between both carrier and spin transport and magnetism in semiconductors and metals. The chapters are written by leading experts and will undoubtedly serve as a valuable reference for all workers in the field of spintronics.
?Professor Stephan von Molnár, Florida State University

[It] provides a wide perspective on spin-polarized electron transport in the bulk of solids, at interfaces, and in microstructures … a highly useful source for researchers, engineers, and students working in this fascinating and technologically important field.
?Emmanuel Rashba, Harvard University

About the Author

Evgeny Y. Tsymbal is a Charles Bessey Professor of Physics and the director of the Materials Research Science and Engineering Center at the University of Nebraska–Lincoln (UNL). Dr. Tsymbal is a fellow of the American Physical Society, a fellow of the Institute of Physics (UK), and a recipient of UNL's Outstanding Research and Creativity Award. His research in computational materials science focuses on the understanding of fundamental properties of advanced ferromagnetic and ferroelectric nanostructures and materials relevant to nanoelectronics and spintronics.

Igor Žuti? is an associate professor of physics at the University at Buffalo (State University of New York). Dr. Žuti? has been a recipient of the National Science Foundation CAREER Award, the National Research Council/American Society for Engineering Education Postdoctoral Research Award, and the National Research Council Fellowship. His research encompasses spin transport, magnetism, spintronics, and superconductivity.

Users Review

From reader reviews:

Timmy Gallegos:

Information is provisions for folks to get better life, information today can get by anyone in everywhere. The information can be a know-how or any news even restricted. What people must be consider any time those information which is inside the former life are challenging to be find than now's taking seriously which one would work to believe or which one often the resource are convinced. If you find the unstable resource then you obtain it as your main information it will have huge disadvantage for you. All of those possibilities will not happen in you if you take Handbook of Spin Transport and Magnetism as your daily resource information.

Christopher Arredondo:

Reading a guide tends to be new life style within this era globalization. With studying you can get a lot of information which will give you benefit in your life. Together with book everyone in this world could share their idea. Guides can also inspire a lot of people. Many author can inspire their own reader with their story or their experience. Not only the storyline that share in the publications. But also they write about the ability about something that you need illustration. How to get the good score toefl, or how to teach your sons or daughters, there are many kinds of book which exist now. The authors nowadays always try to improve their talent in writing, they also doing some investigation before they write with their book. One of them is this Handbook of Spin Transport and Magnetism.

David Kane:

Do you like reading a e-book? Confuse to looking for your selected book? Or your book had been rare? Why so many query for the book? But almost any people feel that they enjoy to get reading. Some people likes reading, not only science book but in addition novel and Handbook of Spin Transport and Magnetism or maybe others sources were given knowledge for you. After you know how the fantastic a book, you feel want to read more and more. Science reserve was created for teacher or even students especially. Those ebooks are helping them to add their knowledge. In other case, beside science reserve, any other book likes Handbook of Spin Transport and Magnetism to make your spare time much more colorful. Many types of book like this.

Rebecca Muldoon:

As a scholar exactly feel bored in order to reading. If their teacher requested them to go to the library or make summary for some book, they are complained. Just very little students that has reading's heart and soul or real their hobby. They just do what the teacher want, like asked to the library. They go to there but nothing reading significantly. Any students feel that examining is not important, boring and can't see colorful pictures on there. Yeah, it is to get complicated. Book is very important for you personally. As we know that on this age, many ways to get whatever we wish. Likewise word says, many ways to reach Chinese's country. So , this Handbook of Spin Transport and Magnetism can make you sense more interested to read.

Read Handbook of Spin Transport and Magnetism From Chapman and Hall/CRC for online ebook

Handbook of Spin Transport and Magnetism From Chapman and Hall/CRC 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 Handbook of Spin Transport and Magnetism From Chapman and Hall/CRC books to read online.

Online Handbook of Spin Transport and Magnetism From Chapman and Hall/CRC ebook PDF download

Handbook of Spin Transport and Magnetism From Chapman and Hall/CRC Doc

Handbook of Spin Transport and Magnetism From Chapman and Hall/CRC Mobipocket

Handbook of Spin Transport and Magnetism From Chapman and Hall/CRC EPub

9WPRL3U5G0V: Handbook of Spin Transport and Magnetism From Chapman and Hall/CRC