



SHENG S. LI

Semiconductor Physical Electronics

SECOND EDITION



Springer

Semiconductor Physical Electronics

David K. Ferry, D. Ronald Fannin



Semiconductor Physical Electronics:

Semiconductor Physical Electronics Sheng S. Li, 2007-01-16 **Semiconductor Physical Electronics** Second Edition provides comprehensive coverage of fundamental semiconductor physics that is essential to an understanding of the physical and operational principles of a wide variety of semiconductor electronic and optoelectronic devices. This text presents a unified and balanced treatment of the physics characterization and applications of semiconductor materials and devices for physicists and material scientists who need further exposure to semiconductor and photonic devices and for device engineers who need additional background on the underlying physical principles. This updated and revised second edition reflects advances in semiconductor technologies over the past decade including many new semiconductor devices that have emerged and entered into the marketplace. It is suitable for graduate students in electrical engineering, materials science, physics, and chemical engineering and as a general reference for processing and device engineers working in the semiconductor industry.

Semiconductor Physical Electronics Sheng S. Li, 1993-01-31 **Semiconductor Physical Electronics** Sheng S. Li, 2012-12-06. The purpose of this book is to provide the reader with a self-contained treatment of fundamental solid state and semiconductor device physics. The material presented in the text is based upon the lecture notes of a one-year graduate course sequence taught by this author for many years in the Department of Electrical Engineering of the University of Florida. It is intended as an introductory textbook for graduate students in electrical engineering. However, many students from other disciplines and backgrounds such as chemical engineering, materials science, and physics have also taken this course sequence and will be interested in the material presented herein. This book may also serve as a general reference for device engineers in the semiconductor industry. The present volume covers a wide variety of topics on basic solid state physics and physical principles of various semiconductor devices. The main subjects covered include crystal structures, lattice dynamics, semiconductor statistics, energy band theory, excess carrier phenomena, and recombination mechanisms, carrier transport and scattering mechanisms, optical properties, photoelectric effects, metal-semiconductor devices, the p-n junction, diode, bipolar junction transistor, MOS devices, photonic devices, quantum effect devices, and high-speed III-V semiconductor devices. The text presents a unified and balanced treatment of the physics of semiconductor materials and devices. It is intended to provide physicists and materials scientists with more device backgrounds and device engineers with a broader knowledge of fundamental solid state physics. **Semiconductor Physical Electronics**, 2007-09-01 **Solid State Physical Electronics** Aldert Van der Ziel, 1976 *Semiconductor Physical Electronics* S. Sheng, **Physical Electronics** David K. Ferry, D. Ronald Fannin, 1971 **An Introduction to Physical Electronics** Arnold Hugh William Beck, H. Ahmed, 1968. For electronics engineers and physicists **Hair and Hair Diseases** Constantin E. Orfanos, Rudolf Happle, 1990-05-30. Hair is the subject of this book including the anatomy of the hair follicle, developmental stages, analyzed by light and electron microscopy, hair ultrastructure, nerve and blood supply, specialized hairs, and hair organs, and a review of

the present techniques to cultivate hair follicle cells in vitro In the clinical part several chapters describe the most important diseases and possibilities for treatment Hair care products and their toxicology are the subject of further sections Extensive reviews of the antiandrogens a most important group of drugs influencing hair growth and of their clinical use in conditions such as androgenetic alopecias and hirsutism are included as well Finally surgical techniques for hair transplantation are discussed This book is a standard textbook for everything pertaining to hair under normal and pathological conditions

Physical Electronics John Seymour,1972 **Introduction to Physical Electronics** Bill Wilson,2009-09-01 **Modern Physical Electronics** L. Solymar,2012-12-06 **Problems in Physical Electronics** Ronald L. Ferrari,1973 *Physical Electronics and Circuits Models of Transistors* Paul E. Gra,1964 **Introduction to the Physics of Electronics** Myron F. Uman,1974 **Physical Electronics** Curtis L. Hemenway,Richard Warfield Henry,Martin Caulton,1967 *Physical Electronics* Brian Tuck,Christos Christopoulos,1986 **Wide Bandgap Semiconductor Electronics And Devices** Uttam Singiseti,Towhidur Razzak,Yuewei Zhang,2019-12-10 This book is more suited for researchers already familiar with WBS who are interested in developing new WBG materials and devices since it provides the latest developments in new materials and processes and trends for WBS and UWBS technology IEEE Electrical Insulation Magazine With the dawn of Gallium Oxide Ga₂O and Aluminum Gallium Nitride AlGa_N electronics and the commercialization of Gallium Nitride GaN and Silicon Carbide SiC based devices the field of wide bandgap materials and electronics has never been more vibrant and exciting than it is now Wide bandgap semiconductors have had a strong presence in the research and development arena for many years Recently the increasing demand for high efficiency power electronics and high speed communication electronics together with the maturity of the synthesis and fabrication of wide bandgap semiconductors has catapulted wide bandgap electronics and optoelectronics into the mainstream Wide bandgap semiconductors exhibit excellent material properties which can potentially enable power device operation at higher efficiency higher temperatures voltages and higher switching speeds than current Si technology This edited volume will serve as a useful reference for researchers in this field newcomers and experienced alike This book discusses a broad range of topics including fundamental transport studies growth of high quality films advanced materials characterization device modeling high frequency high voltage electronic devices and optical devices written by the experts in their respective fields They also span the whole spectrum of wide bandgap materials including AlGa_N Ga₂O and diamond **Nuclear Science Abstracts** ,1973 *Physics of Semiconductor Devices* ,1990

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