

1. Record Nr.	UNINA9910254614003321
Autore	Grundmann Marius
Titolo	The Physics of Semiconductors : An Introduction Including Nanophysics and Applications / / by Marius Grundmann
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2016
ISBN	3-319-23880-9
Edizione	[3rd ed. 2016.]
Descrizione fisica	1 online resource (XXXIX, 989 p. 855 illus., 200 illus. in color.)
Collana	Graduate Texts in Physics, , 1868-4513
Disciplina	621.38152
Soggetti	Semiconductors Nanoscience Nanostructures Electronics Microelectronics Solid state physics Nanoscale Science and Technology Electronics and Microelectronics, Instrumentation Solid State Physics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di contenuto	Introduction -- Part I Fundamentals -- Bonds -- Crystals -- Defects -- Mechanical Properties -- Band Structure -- Electronic Defect States -- Transport -- Optical Properties -- Recombination -- Part II Selected Topics -- Surfaces -- Heterostructures -- External Fields -- Nanostructures -- Polarized Semiconductors -- Magnetic Semiconductors -- Organic Semiconductors -- Graphene and Carbon Nanotubes -- Dielectric Structures -- Transparent Conductive Oxide Semiconductors -- Part III Applications -- Diodes -- Light-to-Electricity Conversion -- Electricity-to-Light Conversion -- Transistors.
Sommario/riassunto	The 3rd edition of this successful textbook contains ample material for a comprehensive upper-level undergraduate or beginning graduate course, guiding readers to the point where they can choose a special topic and begin supervised research. The textbook provides a balance between essential aspects of solid-state and semiconductor physics, on

the one hand, and the principles of various semiconductor devices and their applications in electronic and photonic devices, on the other. It highlights many practical aspects of semiconductors such as alloys, strain, heterostructures, nanostructures, that are necessary in modern semiconductor research but typically omitted in textbooks. Coverage also includes additional advanced topics, such as Bragg mirrors, resonators, polarized and magnetic semiconductors, nanowires, quantum dots, multi-junction solar cells, thin film transistors, carbon-based nanostructures and transparent conductive oxides. The text derives explicit formulas for many results to support better understanding of the topics. The Physics of Semiconductors requires little or no prior knowledge of solid-state physics and evolved from a highly regarded two-semester course. In the third edition several topics are extended and treated in more depth including surfaces, disordered materials, amorphous semiconductors, polarons, thermopower and noise. More than 1800 references guide the reader to historic and current literature including original and review papers and books.

---