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Titolo	The physics of semiconductors : an introduction including nanophysics and applications // Marius Grundmann
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ISBN	3-030-51569-9
Edizione	[Fourth edition.]
Descrizione fisica	1 online resource (XXXVII, 889 p. 930 illus., 294 illus. in color.)
Collana	Graduate texts in physics
Classificazione	PHKM 260
Disciplina	621.38152
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Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
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Nota di bibliografia	Includes bibliographical references and index.
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 -- Two-Dimensional Semiconductors -- Nanostructures -- Polarized Semiconductors -- Magnetic Semiconductors -- Organic Semiconductors -- Dielectric Structures -- Transparent Conductive Oxide Semiconductors -- Topological Properties of Semiconductors -- Part III Applications -- Diodes -- Light-to-Electricity Conversion -- Electricity-to-Light Conversion -- Transistors.
Sommario/riassunto	The 4th edition of this highly successful textbook features copious material for a complete upper-level undergraduate or graduate course, guiding readers to the point where they can choose a specialized topic and begin supervised research. The textbook provides an integrated approach beginning from the essential principles of solid-state and semiconductor physics to their use in various classic and modern semiconductor devices for applications in electronics and photonics. The text highlights many practical aspects of semiconductors: alloys, strain, heterostructures, nanostructures, amorphous semiconductors, and noise, which are essential aspects of modern semiconductor research but often omitted in other textbooks. This textbook also covers advanced topics, such as Bragg mirrors, resonators, polarized and magnetic semiconductors, nanowires, quantum dots, multi-junction solar cells, thin film transistors, and transparent conductive

oxides. The 4th edition includes many updates and chapters on 2D materials and aspects of topology. The text derives explicit formulas for many results to facilitate a better understanding of the topics. Having evolved from a highly regarded two-semester course on the topic, *The Physics of Semiconductors* requires little or no prior knowledge of solid-state physics. More than 2100 references guide the reader to historic and current literature including original papers, review articles and topical books, providing a go-to point of reference for experienced researchers as well.
