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Altri autori (Persone)	ZhangPeigen LiuWei HeWei
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Soggetti	Materials science Materials science - Data processing Materials - Analysis Crystallography Condensed matter Surfaces (Physics) Materials Science Computational Materials Science Materials Characterization Technique Crystallography and Scattering Methods Phase Transitions and Multiphase Systems Surface and Interface and Thin Film
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Nota di contenuto	Introduction -- Electronic Structure -- Basics of crystallography -- The structure of solid materials -- Material surfaces and interfaces -- Diffusion in solids -- Crystal defects -- Phase diagrams -- Solidification and crystallization -- Solid-state phase transformations -- Physical characters of materials -- Deformation and stress-strain behavior of solid materials -- Computational materials science -- Materials science and noble prizes.
Sommario/riassunto	This book introduces the fundamentals of materials science and is intended to be used by undergraduate students in materials-related

majors mainly in China. The book focusses on the basic theories of the three primary types of solid state materials (metals, ceramics and polymers) and composites and emphasizes the relationships between the structures and properties of materials. In addition, it presents the crystal structure, imperfections, microstructure, material processing and performance of the materials from the electronic and atomic levels. The physicochemical processes in materials such as diffusion, phase diagram and phase transition are also explained from the thermodynamic point of view. To highlight the fundamental role of the materials science to the modern technologies and the development of the society, the materials science-related content about Nobel Prizes is introduced in this book. Exercises and questions are included at the end of each chapter for students to practice and gain hands-on experience. Given its scope, this book is of interest to undergraduate students major in materials science and engineering and other related areas and is also beneficial for researchers, graduates and engineers with interdisciplinary backgrounds.