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Soggetti	Vidre Ciència dels materials Ceramics Glass Composite materials Phase transformations (Statistical physics) Chemistry, Inorganic Optical materials Electronics - Materials Building materials Lasers Photonics Ceramics, Glass, Composites, Natural Materials Phase Transitions and Multiphase Systems Inorganic Chemistry Optical and Electronic Materials Building Materials Optics, Lasers, Photonics, Optical Devices Llibres electrònics
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Nota di contenuto	The History of Glass -- Part A: Fundamentals of Glass and the Glassy State -- Thermodynamics and Kinetics of Glass Viscosity of Glass-

Forming Melts -- Crystallization and Glass Ceramics -- Linear Optical Properties of Glass -- Nonlinear Optical Properties of Glass -- Mechanical Properties of Glass -- Chemical Strengthening of Glass -- Colors in Glass -- Electrical Transport Properties of Glass -- Photosensitivity in Glasses -- Chemical Durability of Glasses -- Part B: Glass Families -- Silicate Glasses -- Borate and Boro-Silicate Glasses -- Chalcogenide Glasses -- Phosphate Glasses -- Halide Glasses -- Metallic Glasses -- Amorphous Selenium and Nanostructures -- Spin and Ferroic Glasses -- Hybrid Organic-Inorganic Amorphous Materials -- Natural Glasses -- Bioactive Glass -- Part C: Characterization of Glass -- Thermal Analysis of Glass -- Optical Spectroscopy of Glass -- Terahertz Time-Domain Spectroscopy of Glasses -- Electron and Ion Beam Characterization of Glass -- Nuclear Magnetic Resonance and Electron Paramagnetic Resonance Studies of Glass -- Refractive Index of Optical Materials -- Neutron and X-Ray Diffraction -- Part D: Glass Modeling -- First-Principles Calculation -- Molecular Dynamics Simulations of Oxide Glasses -- Data-Based Statistical Modeling -- Part E: Glass Processing -- Industrial Glass Processing and Fabrication -- Batch Chemistry and Reaction -- Glass Shaping -- Glass Thin Film Deposition -- Sol-Gel Glasses -- Glass Recycling -- Part F: Optical and Photonic Glass Applications -- Laser Glass -- ptical Fibers -- Glass in Integrated Photonics -- Amorphous Silicon in Microphotonics -- Phase Change Memory and Optical Data Storage -- Display Glass -- Scintillator Glasses -- Mid-Infrared Molecular Sensing -- Part G: Glass for Energy Applications -- Glass for Solar Applications -- Glass for Thermoelectric Applications -- Glasses and glass-ceramics for solid-state battery applications -- Nuclear Waste Vitrification -- Part H: Glasses in Art and Architecture -- Art Glass -- Architectural Glass.

Sommario/riassunto

This handbook provides comprehensive treatment of the current state of glass science from the leading experts in the field. Opening with an enlightening contribution on the history of glass, the volume is then divided into eight parts. The first part covers fundamental properties, from the current understanding of the thermodynamics of the amorphous state, kinetics, and linear and nonlinear optical properties through colors, photosensitivity, and chemical durability. The second part provides dedicated chapters on each individual glass type, covering traditional systems like silicates and other oxide systems, as well as novel hybrid amorphous materials and spin glasses. The third part features detailed descriptions of modern characterization techniques for understanding this complex state of matter. The fourth part covers modeling, from first-principles calculations through molecular dynamics simulations, and statistical modeling. The fifth part presents a range of laboratory and industrial glass processing methods. The remaining parts cover a wide and representative range of applications areas from optics and photonics through environment, energy, architecture, and sensing. Written by the leading international experts in the field, the Springer Handbook of Glass represents an invaluable resource for graduate students through academic and industry researchers working in photonics, optoelectronics, materials science, energy, architecture, and more.