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Soggetti	Ceramic materials Chemistry, Inorganic Microtechnology Microelectromechanical systems Energy storage Biotechnology Building materials Ceramics Inorganic Chemistry Microsystems and MEMS Mechanical and Thermal Energy Storage Structural Materials
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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	PART A: Unit Operations: Processing Steps used in Aerogel Science -- PART B: Characterization -- Part C: Oxide Based Aerogels -- Part D: Synthetic Polymer Aerogels -- Part E: Biopolymer Aerogels -- Part F: Organic-Inorganic Hybrid Aerogels -- Part G: Carbon-Based Aerogels -- Part H: Frontier / Emerging Aerogels -- Part I: Applications -- Part J: Commercial Products and Industry Overview -- Part K: Recipes and Designs -- Glossary, Acronyms, and Abbreviations -- Subject Index.
Sommario/riassunto	This indispensable handbook provides comprehensive coverage of the current state-of-the-art in inorganic, organic, and composite aerogels – from synthesis and characterization to cutting-edge applications and

their potential market impact. Built upon Springer's successful Aerogels Handbook published in 2011, this handbook features extensive revisions and timely updates, reflecting the changes in this fast-growing field. Aerogels are the lightest solids known to man. Up to 1000 times lighter than glass and with a density only four times that of air, they possess extraordinarily high thermal, electrical, and acoustic insulation properties, and boast numerous entries in Guinness World Records. Originally based on silica, R&D efforts have extended this class of materials to incorporate non-silicate inorganic oxides, natural and synthetic organic polymers, carbon, metal, and ceramic materials. Composite systems involving polymer-crosslinked aerogels and interpenetrating hybrid networks have been developed and exhibit remarkable mechanical strength and flexibility. Even more exotic aerogels based on clays, chalcogenides, phosphides, quantum dots, and biopolymers such as chitosan are opening new applications for the construction, transportation, energy, defense and healthcare industries. Applications in electronics, chemistry, mechanics, engineering, energy production and storage, sensors, medicine, nanotechnology, military and aerospace, oil and gas recovery, thermal insulation, and household uses are being developed. Readers of this fully updated and expanded edition will find an exhaustive source for all aerogel materials known today, their fabrication, upscaling aspects, physical and chemical properties, and the most recent advances towards applications and commercial use. This key reference is essential reading for a combined audience of graduate students, academic researchers, and industry professionals.