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Altri autori (Persone)	LalenaJohn N
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Nota di contenuto	INORGANIC MATERIALS SYNTHESIS AND FABRICATION; CONTENTS; Preface; 1 Crystallographic and Microstructural Considerations; 1.1 Relationship Between Physical Properties and Crystallographic Symmetry; 1.2 Morphological Crystallography; 1.3 Space Lattices; 1.4 Surface and Interface Structures; 1.5 Controlled Crystal Growth and Microstructural Evolution; 1.6 Structures of Glassy and Quasicrystalline Phases; References; 2 Chemical Energetics and Atomistics of Reactions and Transformations in Solids; 2.1 Equilibrium Thermodynamics; 2.2 Structural Energetics 2.3 Grain Boundary Energy and Surface Energy Contributions 2.4 Mass Transport and Nonequilibrium Thermodynamics; 2.5 Chemical Reaction and Phase Transformation Kinetics in Solids; References; 3 Solid-Vapor Reactions; 3.1 Vapor-Phase Fundamentals; 3.2 Vapor Absorption and Adsorption; 3.3 Film Formation Basics; 3.4 Vapor-Phase Intercalation; 3.5 Physical Vapor Deposition; 3.6 Chemical Vapor Deposition; 3.7 Molecular Beam Epitaxy; References; 4 Solid-Liquid Reactions; 4.1 Solid-Liquid Interface; 4.2 Crystallization, Precipitation, and

Solidification; 4.3 Sol-Gel Processing
4.4 Solvothermal and Hydrothermal Techniques
4.5 Molten Salts and Room-Temperature Ionic Liquids; 4.6 Electrochemical Synthesis; References; 5 Solid-Solid Reactions; 5.1 Solid-Solid Interface; 5.2 Ceramic Method; 5.3 Mechanical Alloying; 5.4 Combustion Synthesis; 5.5 Microwave Synthesis; References; 6 Nanomaterials Synthesis; 6.1 Top-Down Methods for Fabrication of Nanocrystalline Materials; 6.2 Bottom-Up Methods for Synthesis of Nanostructured Solids; References; 7 Materials Fabrication; 7.1 Influence of Structure on Materials Properties; 7.2 Deformation and Solidification Methods
7.3 Consolidation Methods
7.4 Summary; References; Appendix A1: General Mechanical Engineering Terms; Appendix A2: Green Materials Synthesis and Processing; Index

Sommario/riassunto

This up-to-date, single-source reference on the preparation of single-phase inorganic materials covers the most important methods and techniques in solid-state synthesis and materials fabrication. Presenting both fundamental background and advanced methodologies, it describes the principles of crystallography, thermodynamics, and kinetics required, addresses crystallographic and microstructural considerations, and describes various kinds of reactions. This is an excellent text for materials science and engineering, chemistry, and physics students, as well as a practical, hands-on reference for
