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Nota di contenuto	Photo-Induced Metastability in Amorphous Semiconductors; Preface; Introduction; Contents; List of Contributors; 1 Structure, Defects and Electronic Properties of Amorphous Semiconductors; 1.1 Structural States of Solids; 1.1.1 Ordered State; 1.1.2 Disordered (Non-Crystalline) State; 1.2 Atomic Scale Ordering in Crystalline and Non-Crystalline Solids; 1.2.1 Long-Range Order; 1.2.2 Short-Range Order; 1.2.3 Medium-Range Order; 1.3 Fundamental Problems of Structure of Non-Crystalline Semiconductors; 1.3.1 Tetrahedrally Bonded Amorphous Semiconductors 1.3.2 Amorphous Non-Tetrahedrally Bonded Semiconductors 1.4 Defects in Non-Crystalline Solids; 1.4.1 Local Defects; 1.4.2 The Diffuse or Collective Defects (Extended Defects); 1.4.3 Chemical Defects; 1.4.4 Electronic-Structural Defects; 1.4.5 Macrodefects; 1.5 Electronic States in Amorphous Semiconductors; 1.5.1 Electronic States in Tetrahedrally Bonded Semiconductors; 1.5.2 Electronic States in Non-Tetrahedrally Bonded Semiconductors; References; 2 Photo-Induced Phenomena in Amorphous and Glassy Chalcogenides; 2.1 Introduction; 2.2 Photo-Induced Effects in Amorphous and Glassy

Chalcogenides

2.2.1 Irreversible Photo-Induced Changes; 2.2.2 Reversible Photo-Induced Changes; 2.3 Applications; 2.4 Summary; References; 3 Short-, Medium- and Long-Range-Order Structural Transformations in Amorphous Semiconductors; 3.1 Introduction; 3.2 Short-Range-Order (SRO) Effects; 3.3 Medium-Range-Order (MRO) Effects; 3.4 Long-Range-Order (LRO) Effects; 3.5 Conclusion; References; 4 Dynamics of Photo-Induced Metastability in Amorphous Chalcogenides; 4.1 Introduction; 4.2 Light-Induced Metastable Defect (LIMD) Creation; 4.3 Photostructural Changes; 4.4 Discussion; 4.5 Conclusions; References; 5 Sub-Gap Photo-Induced Phenomena in Chalcogenide Glasses; 5.1 Introduction; 5.2 Chalcogenide Glass; 5.3 Photo-Induced Phenomena; 5.4 Sub-Gap Photo-Induced Phenomena; 5.4.1 Background; 5.4.2 Photo-Induced Bragg Grating; 5.4.3 Photo-Induced Persistent Self-Focusing Structure; 5.4.4 Photo-Induced Fluidity; 5.4.5 Giant Photoexpansion; 5.4.6 Spectral Light-Intensity Dependence; 5.5 Mechanism; 5.5.1 Temperature Rise; 5.5.2 Two-Photon Absorption; 5.5.3 Gap States and Microscopic Structure; 5.5.4 Refractive-Index Change; 5.5.5 Fluidity and Volume Expansion; 5.6 Summary; References; 6 Photo-Induced Anisotropy in Chalcogenide Glassy Semiconductors; 6.1 Introduction; 6.2 Samples and Experimental Procedures; 6.3 Photo-Induced Optical Anisotropy; 6.3.1 Above-Bandgap Light Excitation; 6.3.2 Sub-Bandgap Light Excitation; 6.3.3 Super-Bandgap Light Excitation; 6.4 Photo-Induced Anisotropy of Other Properties of ChGS; 6.4.1 Polarization-Dependent Photocrystallization; 6.4.2 Polarization-Dependent Photodoping of ChGS Films by Silver; 6.4.3 Photo-Induced Anisotropy of Photoconductivity; 6.4.4 Anisotropic Opto-Mechanical Effect and Ionic Transport; 6.5 Conclusion; References; 7 The Optomechanical Effect in Amorphous Chalcogenide Films

Sommario/riassunto

A review summarising the current state of research in the field, bridging the gaps in the existing literature. All the chapters are written by world leaders in research and development and guide readers through the details of photo-induced metastability and the results of the latest experiments and simulations not found in standard monographs on this topic. A useful reference not only for graduates but also for scientific and industrial researchers. With a foreword of Kazunobu Tanaka.
