

Glassy, Amorphous And Nano-crystalline Materials

[DOWNLOAD HERE](#)

1;Preface;6 2;About the Editors;12 3;Acknowledgments;14 4;Contents;16 5;Chapter 1: Introduction: Some Essential Attributes of Glassiness Regarding the Nature of Non-crystalline Solids;20 5.1;1.1 Character of the Amorphous Solids;20 5.2;1.2 Preparation and Characterizations of Amorphous Solids;22 5.3;1.3 Glass Transitions in Crystals: Glassy Crystals;29 5.4;1.4 Other Aspects of Glassy Solids;35 5.5;References;37 6;Chapter 2: Heat Capacity and Entropy Functions in Strong and Fragile Glass-Formers, Relative to Those of Disordering Crystalline Materials;39 6.1;2.1 Introduction;39 6.2;2.2 Glassforming Liquids, Strong and Fragile;45 6.3;References;55 7;Chapter 3: Vibration Forms in the Vicinity of Glass Transition, Structural Changes and the Creation of Voids When Assuming the Role of Polarizability;59 7.1;3.1 Movements Below the Critical Temperature;59 7.2;3.2 Distinguishing Local Heterogeneity Using the Positron Annihilation Spectroscopy;65 7.3;3.3 Three Types of Entropy Contributions in Main Transition Zone;65 7.4;3.4 Linear Cooperative Phenomena in the Built-In Blocks;66 7.4.1;3.4.1 Limiting Values of Block Time Characteristic;66 7.4.2;3.4.2 Estimate on the Number of N-Elements in the Built-In Blocks and, Accordingly, on Their Size as Related to the Shear Viscosity Data;67 7.5;3.5 Polarizability of Molecules Determining the Critical Volume;70 7.6;3.6 Alpha Process and Beta Slow Processes;70 7.7;References;1 8;Chapter 4: Some Aspects of Vitrification, Amorphisation and Disordering and the Generated Extent of Nano-Crystallinity;77 8.1;4.1 Introduction: Some Particularities of Natural and Artificial Disordered Materials;77 8.2;4.2 Some Structural Features of Non-crystallinity and Nano-crystallinity;79 8.3;4.3 Specificity of Non-crystalline Chalcogenide Materials;81 8.4;4.4 Pressure and Temperature-Induced Amorphization;83 8.5;4.5 Vitrification Versus Crystallization: Reduced Tg and the Hrub Parameter;85 8.6;4.6 Practical Aspects of Freeze-In Process Mostly Applied to Metallic Alloys;88 8.7;References;91 9;Chapter 5: Basic Role of Thermal Analysis in Polymer Physics;94 9.1;5.1 Introduction: Misunderstanding on Thermal Analysis;94 9.2;5.2 Applicability of the Chosen Methods;95 9.2.1;5.2.1 Calorimetry;95 9.2.2;5.2.2 Thermogravimetry;98 9.2.3;5.2.3 Dilatometry and Positron Annihilation Lifetime Spectroscopy;99 9.2.4;5.2.4 Dynamic Mechanical Thermal Analysis;101 9.3;5.3 Supermolecular Structure of Semi-Crystalline Polymers;101 9.4;5.4 Structural Relaxations and Glass

Transition Temperatures;104 9.5;5.5 Concluding Remarks: Myths and Legends ;105 9.6;References;107 10;Chapter 6: Phases of Amorphous, Crystalline, and Intermediate Order in Microphase and Nanophase Systems;109 10.1;6.1 Solids, Liquids and Their Transitions;109 10.2;6.2 Phase Types, Distinguished by Their Sizes and Molecules Lead to 57 Different Entities;110 10.3;6.3 Measurement of Thermal Properties;113 10.4;6.4 Interpretation of the Heat Capacity of Solids;117 10.5;6.5 Large Amplitude Motion;120 10.6;6.6 Ordering Phase Transitions;121 10.7;6.7 Glass Transitions;124 10.8;6.8 Conclusions;126 10.9;References;127 11;Chapter 7: Thermal Portrayal of Phase Separation in Polymers Producing Nanophase Separated Materials;131 11.1;7.1 Polymers;131 11.2;7.2 Polymer Solutions and Blends;133 11.3;7.3 Block Copolymers;140 11.4;7.4 Nanophase Separation in Polymer Networks;141 11.5;References;143 12;Chapter 8: Solid Forms of Pharmaceutical Molecules;144 12.1;8.1 Introduction;144 12.2;8.2 Polymorphs;145 12.3;8.3 Anhydrides and Hydrates;148 12.4;8.4 Salts;149 12.5;8.5 Cocrystals;150 12.6;8.6 Glycosylated Derivatives;152 12.7;8.7 Amorphates;152 12.8;8.8 Conclusion;154 12.9;References;154 13;Chapter 9: Chalcogenide Glasses Selected as a Model System for Studying Thermal Properties;156 13.1;9.1 Introduction;156 13.2;9.2 Differential Scanning Calorimetry;157 13.3;9.3 Glass Transition;158 13.3.1;9.3.1 Capability of Conventio EAN/ISBN : 9789048128822 Publisher(s): Springer Netherlands, Springer Science & Business Media Format: ePub/PDF Author(s): Sestk, Jaroslav - Mares, Jiri J. - Hubk, Pavel

[DOWNLOAD HERE](#)

Similar manuals: