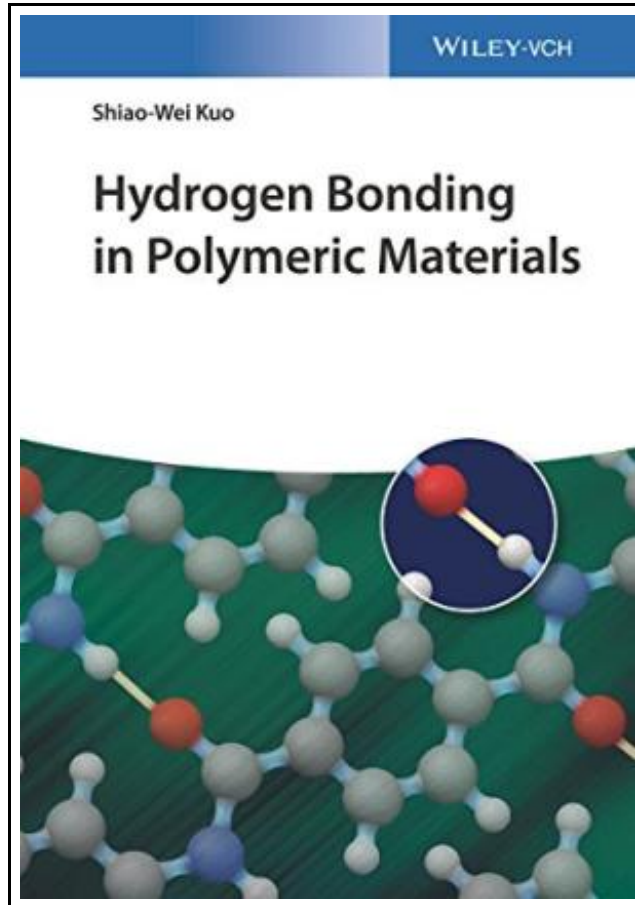


# Hydrogen Bonding in Polymeric Materials



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## ***Reviews***

*This book is definitely not straightforward to get started on studying but extremely exciting to read. It is really simplistic but shocks in the 50 percent of the ebook. Once you begin to read the book, it is extremely difficult to leave it before concluding.*

*(Ally Reichel)*

## HYDROGEN BONDING IN POLYMERIC MATERIALS



Condition: New. Publisher/Verlag: Wiley-VCH | Summarizing our current knowledge of the topic, this book describes the roles and effects of hydrogen bonding in polymer materials by reviewing the latest developments over recent years. To this end, it discusses all relevant aspects from the fundamentals, via characterization, to properties and applications in various polymeric materials, including polymer blends, block copolymers, mesoporous materials, biomacromolecules and nanocomposites. Invaluable reading for scientists in polymers and materials as well as those working in macromolecular chemistry. | 1. Introduction 1.1. Hydrogen Bonding 1.2. Characterizations of Hydrogen Bonding 2. Hydrogen Bonding in Polymer Blend 2.1. Thermodynamic Properties in Polymer Blend 2.2. Association Model Approach 2.3. Measuring Hydrogen Bonds Using Infrared Spectroscopy 2.3.1 Self-Association Equilibrium Constant 2.3.2 Inter-Association Equilibrium Constant 2.4. Factors Influencing Hydrogen Bonds 2.4.1 Intramolecular Screening Effect 2.4.2 Functional Group Accessibility 2.4.3 The Acidity of H-Bond Donor Groups 2.4.4 The Basicity of H-Bond Acceptor Groups 2.4.5 Steric Hindrance 2.4.6 Bulk of the Side Groups 2.4.7 Temperature Effect 2.4.8 Solvent Effect 2.5. Enhancing Miscibility through Hydrogen Bonding 2.5.1 Miscibility Characterization 2.5.2 Incorporation of Hydrogen Bonding Monomers on Main Chain 2.5.3 Effect of Inert Diluent Segments 2.5.4 Ternary Polymer Blends 3. Physical Properties of Hydrogen Bond Polymer 3.1. Thermal Property 3.1.1 Glass Transition Temperatures 3.1.1.1 Positive Deviation of Glass Transition Temperature 3.1.2 Negative Deviation of Glass Transition Temperature 3.1.2.1 Melting Temperatures 3.1.3 Crystallization Behavior 3.2. Rheology Property 3.3. Dynamic Property 4. Surface Properties of Hydrogen Bond Polymer 4.1 Low Surface Energy Polymer 4.2 Superhydrophobic Surface 5. Sequence Distribution Effect in Hydrogen Bond Copolymer 5.1. Block Copolymer vs Random Copolymer 5.2. Block Copolymer vs Polymer Blend 5.3. Separated Coil vs Chain Aggregation 6. Hydrogen Bonding Mediated Self-Assembly Structures of Block Copolymer 6.1. Self-Assembly Structure in Bulk State 6.1.1. Block Copolymer/Low Molecular Weight Compound Mixture 6.1.2. Block Copolymer/Homopolymer Mixture 6.1.3. Block Copolymer/Block Copolymer Mixture 6.2. Self-Assembly Structure in Solution 6.2.1. Block Copolymer/Low Molecular Weight Compound Mixture 6.2.2. Block Copolymer/Homopolymer Mixture 6.2.3. Block Copolymer/Block Copolymer Mixture 6.2.4. Non-Covalent Bond Micelle (Block-free Copolymer) 7. Mesoporous Materials through Hydrogen Bonding 7.1 Mesoporous Phenolic/Carbon Materials 7.2 Mesoporous Silica Materials 8. Bioinspired Hydrogen Bonding in Biomacromolecules 8.1. Polypeptide 8.1.1. Secondary Structure...



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