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Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Organic Nanostructures; Contents; Preface; List of Contributors; 1 Artificial Photochemical Devices and Machines; 1.1 Introduction; 1.2 Molecular and Supramolecular Photochemistry; 1.2.1 Molecular Photochemistry; 1.2.2 Supramolecular Photochemistry; 1.3 Wire-Type Systems; 1.3.1 Molecular Wires for Photoinduced Electron Transfer; 1.3.2 Molecular Wires for Photoinduced Energy Transfer; 1.4 Switching Electron-Transfer Processes in Wire-Type Systems; 1.5 A Plug-Socket Device Based on a Pseudorotaxane; 1.6 Mimicking Electrical Extension Cables at the Molecular Level; 1.7 Light-Harvesting Antennas 1.8 Artificial Molecular Machines 1.8.1 Introduction; 1.8.2 Energy Supply; 1.8.3 Light Energy; 1.8.4 Threading-Dethreading of an Azobenzene-Based Pseudorotaxane; 1.8.5 Photoinduced Shuttling in Multicomponent Rotaxanes: a Light-Powered Nanomachine; 1.9 Conclusion; References; 2 Rotaxanes as Ligands for Molecular Machines

and Metal-Organic Frameworks; 2.1 Interpenetrated and Interlocked Molecules; 2.1.1 Introduction; 2.1.2 Templating of [2]Pseudorotaxanes; 2.1.3 [2]Rotaxanes; 2.1.4 Higher Order [n]Rotaxanes; 2.1.5 [3] Catenanes; 2.2 Molecular Machines; 2.2.1 Introduction 2.2.2 Controlling Threading and Unthreading 2.2.3 Molecular Shuttles; 2.2.4 Flip Switches; 2.3 Interlocked Molecules and Ligands; 2.3.1 [2] Pseudorotaxanes as Ligands; 2.3.2 [2]Rotaxanes as Ligands; 2.4 Materials from Interlocked Molecules; 2.4.1 Metal-Organic Rotaxane Frameworks (MORFs); 2.4.2 One-dimensional MORFs; 2.4.3 Two-dimensional MORFs; 2.4.4 Three-dimensional MORFs; 2.4.5 Controlling the Dimensionality of a MORF; 2.4.6 Frameworks Using Hydrogen Bonding; 2.5 Properties of MORFs: Potential as Functional Materials; 2.5.1 Robust Frameworks; 2.5.2 Porosity and Internal Properties 2.5.3 Dynamics and Controllable Motion in the Solid StateReferences; 3 Strategic Anion Templation for the Assembly of Interlocked Structures; 3.1 Introduction; 3.2 Precedents of Anion-directed Formation of Interwoven Architectures; 3.3 Design of a General Anion Templation Motif; 3.4 Anion-templated Interpenetration; 3.5 Probing the Scope of the New Methodology; 3.6 Anion-templated Synthesis of Rotaxanes; 3.7 Anion-templated Synthesis of Catenanes; 3.8 Functional Properties of Anion-templated Interlocked Systems; 3.9 Summary and Outlook; References; 4 Synthetic Nanotubes from Calixarenes 4.1 Introduction4.2 Early Calixarene Nanotubes; 4.3 Metal Ion Complexes with Calixarene Nanotubes; 4.4 Nanotubes for NO(x) Gases; 4.5 Self-assembling Structures; 4.6 Conclusions and Outlook; References; 5 Molecular Gels - Nanostructured Soft Materials; 5.1 Introduction to Molecular Gels; 5.2 Preparation of Molecular Gels; 5.3 Analysis of Molecular Gels; 5.3.1 Macroscopic Behavior - "Table-Top" Rheology; 5.3.1.1 Tube Inversion Methodology; 5.3.1.2 Dropping Ball Method; 5.3.2 Macroscopic Behavior - Rheology; 5.3.3 Macroscopic Behavior - Differential Scanning Calorimetry 5.3.4 Nanostructure - Electron Microscopy

Sommario/riassunto

Filling the need for a volume on the organic side of nanotechnology, this comprehensive overview covers all major nanostructured materials in one handy volume. Alongside metal organic frameworks, this monograph also treats other modern aspects, such as rotaxanes, catenanes, nanoporosity and catalysis. Detailed attention is paid to the chemistry, physics and materials science throughout, making this a definite must for all chemists.
