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versus Biological Structures; 3.1.2 Toward Chemical Computers?; 3.2 Combinational Logic Gates and Circuits; 3.2.1 Basic Concepts; 3.2.2 Bidirectional Half Subtractor and Reversible Logic Device; 3.2.3 A Simple Unimolecular Multiplexer-Demultiplexer; 3.2.4 An Encoder/Decoder Based on Ruthenium Tris(bipyridine); 3.2.5 All-Optical Integrated Logic Operations Based on Communicating Molecular Switches; 3.3 Sequential Logic Circuits; 3.3.1 Basic Concepts
3.3.2 Memory Effect in Communicating Molecular Switches3.3.3 A Molecular Keypad Lock; 3.3.4 A Set-Reset Memory Device Based on a Copper Rotaxane; 3.4 Summary and Outlook; Acknowledgments; References; 4 Photonically Switched Molecular Logic Devices; 4.1 Introduction; 4.2 Photochromic Molecules; 4.3 Photonic Control of Energy and Electron Transfer Reactions; 4.3.1 Energy Transfer; 4.3.2 Electron Transfer; 4.4 Boolean Logic Gates; 4.5 Advanced Logic Functions; 4.5.1 Half-Adders and Half-Subtractors; 4.5.2 Multiplexers and Demultiplexers; 4.5.3 Encoders and Decoders
4.5.4 Sequential Logic Devices4.5.5 An All-Photonic Multifunctional Molecular Logic Device; 4.6 Conclusion; References; 5 Engineering Luminescent Molecules with Sensing and Logic Capabilities; 5.1 Introduction; 5.2 Engineering Luminescent Molecules; 5.3 Logic Gates with the Same Modules in Different Arrangements; 5.4 Consolidating AND Logic; 5.5 "Lab-on-a-Molecule" Systems; 5.6 Redox-Fluorescent Logic Gates; 5.7 Summary and Perspectives; References; 6 Supramolecular Assemblies for Information Processing; 6.1 Introduction; 6.2 Recognition of Metal Ion Inputs by Crown Ethers
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7.3 Electrochemical Deposition

Sommario/riassunto

Edited by a renowned and much cited chemist, this book covers the whole span of molecular computers that are based on non-biological systems. The contributions by all the major scientists in the field provide an excellent overview of the latest developments in this rapidly expanding area. A must-have for all researchers working on this very hot topic. Perfectly complements Biomolecular Information Processing, also by Prof. Katz, and available as a two-volume set.