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Nota di contenuto	Contents -- Preface -- A Random Walk through Membrane Science -- From Water Desalination and Artificial Kidneys to Fuel Cell Separators and Membrane Reactors -- Abstract -- Introduction -- 2. The Structures of Synthetic Membranes and Their Function -- 3. Assessment of Today's State of Membrane Science and Technology -- 4. The Membrane-Based Industry, Its Structure and Market Strategy -- 5. Research Needs in Membrane Science and Technology -- 6. The Future of Membrane Science and Technology -- References -- Preparation and Application of Ion Exchange Membranes: Current Status and Perspective Abstract -- 1. Development of Ion Exchange Membranes and Related Processes -- 2. Preparation of Ion Exchange Membranes -- 3. Applications of Ion Exchange Membranes -- 4. Conclusive Remarks and the Perspective -- Acknowledgments -- References -- Proton Exchange Membranes and Fuel Cells -- Abstract -- 1. Introduction -- 2. State-of-the-Art -- References -- Organic/Inorganic Hybrid Membranes: Overview and Perspective -- Abstract -- 1. Introduction: Membranes and Membrane Materials -- 2. Classification and Nomenclature of Hybrid Membranes -- 3. Historic Development of Hybrid Membranes -- 4. Preparation of Hybrid Membranes -- 5. Applications of Hybrid Membranes -- 6. Conclusions and Remarks -- 7. Acknowledgments -- References -- Pervaporation Membranes for Organic Separation -- Abstract -- 5.1. Introduction -- 5.2. Fundamentals of Pervaporation Separation Process -- 5.3. Factors Influencing Pervaporation Membrane

Performance -- 5.4. Structure Engineering of Pervaporation Membranes -- 5.5. Recent Research Progress of Pervaporation Membranes -- 5.6. Industrial Applications and Commercial Aspects -- 5.7. Conclusions and Future Perspective -- Acknowledgments -- References -- Membrane Bioreactor: Theory and Practice -- Abstract -- 1. Membrane Bioreactor (MBR) -- 2. Membrane Fouling in MBR -- 3. Membrane Flux Decline Models -- 4. Current Practice of Membrane Bioreactor (MBR) -- References -- Membrane Integration Processes in Industrial Applications -- Abstract -- 1. Introduction -- 2. Membrane Technology Integration Based on Desalting Electrodialysis -- 3. Membrane Technology Integration Based on Electrodialysis with Bipolar Membranes -- 4. Integration of Reactors with Ion Exchange Membranes -- 5. Integration of Ion Exchanges with Ion Exchange Membranes -- 6. Other Integration Processes Based on Ion Exchange Membranes -- 7. Other Integrated Membrane Processes -- 8. Conclusion -- Acknowledgment -- References -- Membrane Controlled Release -- Abstract -- 1. Introduction -- 2. Thermo-Responsive Membrane Controlled Release.

Sommario/riassunto

Over the years, membranes and related technologies have gained more technical and commercial relevance. Their applications have extended to environmental, chemical, medical, food, and energy industries. This book focuses on the status of some advanced membrane technologies which are well related to human life.