Membrane Separation Technologies E.D. Noble 1995-01-17 The field of membrane separation technology is presently in a state of rapid growth and innovation. Many different membrane separation processes have been developed during the past half century and new processes are constantly emerging from academic, industrial, and governmental laboratories. While new membrane separation processes are being conceived with remarkable frequency, the operation and design of existing processes is still underdeveloped. The need for robust, efficient, and cost-effective processes is increasing, and the rapid growth in the literature on membrane processes has made it difficult to keep up with the latest developments. Membrane Contactors: Fundamentals, Applications and Potentialities, Volume 11 covers new operations that could be used in membrane systems, and covers new findings discovered in recent years. This book clearly explains how small-scale processes, such as those used in biotechnology, can be developed further and quickly applied in future processes. The book also succinctly presents the fundamental principles of work: required membrane area, flowrate, and membrane types for different processes in a convenient format. The book offers a comprehensive guide to membrane contactor design and operation, and provides an in-depth review of the latest research in membrane contactor technology. It is an essential reference for researchers, engineers, and practitioners in the field of membrane technology.
Membrane Technology for Water Treatment-Alberto Fisich 2016-02-18 Focuses on the application of membrane technologies in removing toxic metals/sizeable from water. Particular attention is devoted to the removal of arsenic, uranium, and fluoride. These compounds are all existing in the earth’s crust at levels between two and 25 parts per million. The book details the various methods and the much more advanced engineering principles necessary for designing a desalination system. Earlier chapters cover the basic principles, the economics of desalination, basic terms and definitions, and essential equipment. Edited by Charles Galanski, the book is divided in 15 chapters written by experts from the mass science, food technology and engineering industries. Covers the 13 most relevant topics of membrane technology and microfiltration in membrane food processing. Presents the sustainability principles of the food industry and the modern bioeconomy frame of our times

Membrane Technology and Applications-Richard W. Baker 2004-03-31 Table of Contents Preface Acknowledgements for the first edition Acknowledgements for the second edition 1 Overview of Membrane Science and Technology 2 Applications and the products. It includes the basic principles, operating parameters, membrane hardware, flux equations, transport mechanism, and applications of membrane-based technologies. Membrane separation technologies are a key component in the food industry, because microorganisms are a major obstacle to maintaining a high-quality product. Membrane processes (such as reverse osmosis, nanofiltration, ultrafiltration) are employed in the application of interest. Key aspects of this book is to provide information on both the basics of membrane technologies and on the results depending on the type of technology employed.

Separation of Functional Molecules in Food by Membrane Technology-Galanski Chaith 2018-11-14 Separation of Functional Molecules in Food by Membrane Technology deals with an issue that is becoming a new research area. The book is focused on the use of membrane processes to transfer the high value, high-purity, high-volume, high price, and low-pollution characteristics of food and beverage products, which include functional lipids, peptides, and amino acids. The book covers the basic principles, the economics of desalination, basic terms and definitions, and essential equipment. It is assumed that life began in water and spread from there to the whole world. But water has been polluted -polymer type osmosis membranes, which are increasingly seen as effective replacements for a range of conventional water treatment methods. The book begins with reviews of novel membrane materials and new membrane operating and recovery processes. It focuses on fundamental concepts as well as a historical review of MD development. Commercially used membranes in MD as well as MD solutions. Membrane distillation (MD) is a relatively new membrane technology that has been the subject of growing and competitive importance of these processes. For the first time, the reader is able to see in one book the latest advances in membrane operations, then examines the processes involved with improving membrane performance. Final chapters cover the application of membrane technologies for use in water treatment, with detailed discussions on municipal wastewater and reuse in the textile and paper industries. Provides a detailed overview of the advanced water treatment technologies available for the separation of a variety of contaminants from water, including those that are not amenable to removal by conventional technologies. It also includes an overview of the current status of MD applications. It also includes an overview of the current status of MD applications. It also includes an overview of the current status of MD applications.

Membrane Separation Processes-KAUSIK NATH 2017-04-01 This concise and systematically organized text, now in its second edition, gives a clear insight into different membrane separation processes. It covers the fundamentals as well as the recent developments of different processes along with their industrial applications and the products. It includes the basic principles, operating parameters, membrane hardware, flux equations, transport mechanism, and applications of membrane-based technologies. A state-of-the-art overview of this compelling area Reviews the environmental impact of boron before introducing reference to the work at the art of membrane research in this rapidly growing field. The book focuses on four main areas: Effect of membranes on humans and plants Separation of boron by ion exchange and adsorption processes Separation of boron by membrane processes Simulation and optimization studies for boron separation Provides one source of the benefits and drawbacks of the processes. For the reader who wants to find reference to the work at the art of membrane research in this rapidly growing field Review the environmental impact of boron before introducing reference to the work at the art of membrane research in this rapidly growing field. The book focuses on four main areas: Effect of membranes on humans and plants Separation of boron by ion exchange and adsorption processes. Membrane–Technology for Water Treatment:Angelo Basilio 2015-02-28 Advances in Membrane Technologies for Water Treatment: Materials, Processes and Applications provides a detailed overview of novel and advanced water treatment methods involving membrane technologies, which are increasingly seen as effective replacements for a range of conventional water treatment methods. The book begins with reviews of novel membrane materials and new membrane operating and recovery processes. It focuses on fundamental concepts as well as a historical review of MD development. Commercially used membranes in MD as well as MD solutions. Membrane distillation (MD) is a relatively new membrane technology that has been the subject of growing and competitive importance of these processes. For the first time, the reader is able to see in one book the latest advances in membrane operations, then examines the processes involved with improving membrane performance. Final chapters cover the application of membrane technologies for use in water treatment, with detailed discussions on municipal wastewater and reuse in the textile and paper industries. Provides a detailed overview of the advanced water treatment technologies available for the separation of a variety of contaminants from water, including those that are not amenable to removal by conventional technologies. It also includes an overview of the current status of MD applications. It also includes an overview of the current status of MD applications. It also includes an overview of the current status of MD applications.
Membrane Characterization: Mihir Kumar Purkait 2017-02-18

Membrane Characterization provides a valuable source of information on how membranes are characterized, an extremely limited field that is confined to only brief descriptions in various technical papers available online. For the first time, readers will be able to understand the importance of membrane characterization, the techniques required, and the fundamental theory behind them. This book focuses on characterization techniques that are normally used for membranes prepared from polymeric, ceramic, and composite materials. Features specific details on many membrane characterization techniques for various membrane materials of industrial and academic interest. Contains examples of international best practice techniques for the evaluation of several membrane parameters, including pore size, charge, and fouling. Discusses various membrane models more suitable to a specific application. Provides examples of ab initio calculations for the design, optimization, and scale-up of processes based on characterization data.

Thermal Induced Membrane Separation Processes: Mihir Kumar Purkait 2020-04-08

Thermal Induced Membrane Separation Processes describes the fundamental and advanced areas associated with the field of thermal induced membrane separation processes. It includes extensive coverage of material selection, types, and theory of thermal induced membrane fabrication, characterization, and modification. This book focuses on the applications of various thermal induced membrane processes and discusses ancillary topics related to the subject, such as membrane modules, membrane contactors and reactors, preparation and characterization techniques, smart membranes, fouling and its mitigation, and economic analysis of the thermal induced membrane separation processes. Thermal Induced Membrane Separation Processes elaborates on every aspect of the thermal induced membranes in a simple and straightforward manner, helping readers ranging from students to researchers in academia and the industry to understand the processes for successful execution and implementation into their research. Covers entire field of thermal induced membranes, providing basic to advanced knowledge of thermal induced membranes in a single source. Presents state-of-the-art research in the field. Includes the most up-to-date examples of the fabrication, modification, and applications of thermal induced membranes.