BIOSEPARATIONS SCIENCE AND ENGINEERING

Second Edition

ROGER G. HARRISON PAUL W. TODD SCOTT R. RUDGE DEMETRI P. PETRIDES

Bioseparations Science And Engineering Harrison Solutions

A Abbott, M Ellison

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Bioseparations Science and Engineering Roger G. Harrison, Paul W. Todd, Scott R. Rudge, Demetri P. Petrides, 2015-01-27 Designed for undergraduates graduate students and industry practitioners Bioseparations Science and Engineering fills a critical need in the field of bioseparations Current comprehensive and concise it covers bioseparations unit operations in unprecedented depth In each of the chapters the authors use a consistent method of explaining unit operations starting with a qualitative description noting the significance and general application of the unit operation They then illustrate the scientific application of the operation develop the required mathematical theory and finally describe the applications of the theory in engineering practice with an emphasis on design and scaleup Unique to this text is a chapter dedicated to bioseparations process design and economics in which a process simular SuperPro Designer is used to analyze and evaluate the production of three important biological products New to this second edition are updated discussions of moment analysis computer simulation membrane chromatography and evaporation among others as well as revised problem sets Unique features include basic information about bioproducts and engineering analysis and a chapter with bioseparations laboratory exercises Bioseparations Science and Engineering is ideal for students and professionals working in or studying bioseparations and is the premier text in the field Biologically Inspired Textiles A Abbott, M Ellison, 2008-09-30 Biomimetic materials are those inspired from nature and implemented into new fibre and fabric technologies Biologically inspired textiles explores the current state of the art in this research arena and examines how biomimetics are increasingly applied to new textile technologies Part one discusses the principles production and properties of biomimetics Chapters include recombinant DNA technologies and their application for protein production spinning of fibres from protein solutions and structure function relationships in spider silk The second part of the book provides a review of the application of biomimetics to a range of textile applications including the design of clothing and self cleaning textiles Written by a distinguished team of international authors Biologically inspired textiles is a valuable reference for textile technologists fibre scientists textile manufacturers and others in academia Discusses the principles production and properties of biomimetics Reviews the application of biomimetics to a range of textile disciplines Chapters explore recombinant DNA technologies spinning of fibres and structure function relationships in spider silk **Preparative Chromatography for Separation of Proteins** Arne Staby, Anurag S. Rathore, Satinder Ahuja, 2017-03-06 Preparative Chromatography for Separation of Proteins addresses a wide range of modeling techniques strategies and case studies of industrial separation of proteins and peptides Covers broad aspects of preparative chromatography with a unique combination of academic and industrial perspectives Presents Combines modeling with compliantce useing of Quality by Design QbD approaches including modeling Features a variety of chromatographic case studies not readily accessible to the general public Represents an essential reference resource for academic industrial and pharmaceutical researchers **Biopharmaceutical Manufacturing Gary**

Gilleskie, Charles Rutter, Becky McCuen, 2021-09-07 Biopharmaceuticals medicines made by or from living organisms including cells from living organisms are extremely effective in treating a broad range of diseases Their importance to human health has grown significantly over the years as more biopharmaceutical products have entered the market and now the biggest selling drugs in the world are biopharmaceuticals Biopharmaceutical Manufacturing Principles Processes and Practices provides concise comprehensive and up to date coverage of biopharmaceutical manufacturing Written in a clear and informal style the content has been influenced by the authors substantial industry experience and teaching expertise That expertise enables the authors to address the many questions posed over the years both by university students and professionals with experience in the field Consequently the book will appeal both to undergraduate or graduate students using it as a textbook and specialized industry practitioners seeking to understand the big picture of biopharmaceutical manufacturing This book Separation Process Engineering Phillip C. Wankat, 2022-10-24 The Definitive Learner Friendly Guide to Chemical Engineering Separations Extensively Updated Including a New Chapter on Melt Crystallization Efficient separation processes are crucial to addressing many societal problems from developing new medicines to improving energy efficiency and reducing emissions Separation Process Engineering Fifth Edition is the most comprehensive accessible guide to modern separation processes and the fundamentals of mass transfer In this completely updated edition Phillip C Wankat teaches each key concept through detailed realistic examples using actual data with up to date simulation practice spreadsheet based exercises and references Wankat thoroughly covers each separation process including flash column and batch distillation exact calculations and shortcut methods for multicomponent distillation staged and packed column design absorption stripping and more His extensive discussions of mass transfer and diffusion enable faculty to teach separations and mass transfer in a single course And detailed material on liquid liquid extraction adsorption chromatography and ion exchange prepares students for advanced work New and updated content includes melt crystallization steam distillation residue curve analysis batch washing the Shanks system for percolation leaching eutectic systems forward osmosis microfiltration and hybrid separations A full chapter discusses economics and energy conservation including updated equipment costs Over 300 new and updated homework problems are presented all extensively tested in undergraduate courses at Purdue University New chapter on melt crystallization solid liquid phase equilibrium suspension static and falling film layer approaches and 34 questions and problems New binary VLE equations and updated content on simultaneous solutions New coverage of safety and fire hazards New material on steam distillation simple multi component batch distillation and residue curve analysis Expanded discussion of tray efficiencies packed column design and energy reduction in distillation New coverage of two hybrid extraction with distillation and the Kremser equation in fractional extraction Added sections on deicing with eutectic systems eutectic freeze concentration and scale up New sections on forward osmosis and microfiltration Expanded advanced content on adsorption and ion exchange including updated instructions for eight detailed

Aspen Chromatography labs Discussion of membrane separations including gas permeation reverse osmosis ultrafiltration pervaporation and applications Thirteen up to date Aspen Plus process simulation labs adaptable to any simulator This guide reflects an up to date understanding of how modern students learn designed organized and written to be exceptionally clear and easy to use It presents detailed examples in a clear standard format using real data to solve actual engineering problems preparing students for their future careers Introduction to Peptides and Proteins Ulo Langel, Benjamin F. Cravatt, Astrid Graslund, N.G.H. von Heijne, Matjaz Zorko, Tiit Land, Sherry Niessen, 2009-11-18 Human cells produce at least 30 000 different proteins Each has a specific function characterized by a unique sequence and native conformation that allows it to perform that function While research in this post genomic era has created a deluge of invaluable information the field has lacked for an authoritative introductory text needed to inform **Advances in Technologies for Producing Food-relevant Polyphenols** Jose Cuevas Valenzuela, Jose Rodrigo Vergara-Salinas, Jose Ricardo Perez-Correa, 2016-09-19 The growing concern for human wellbeing has generated an increase in the demand for polyphenols secondary plant metabolites that exhibit different bioactive properties This increasing demand is mainly due to the current applications in the food industry where polyphenols are considered essential for human health and nutrition Advances in Technologies for Producing Food relevant Polyphenols provides researchers scientists engineers and professionals involved in the food industry with the latest methodologies and equipment useful to extract isolate purify and analyze polyphenols from different available sources such as herbs flora vegetables fruits and agro industrial wastes Technologies currently used to add polyphenols to diverse food matrices are also included This book serves a reference to design and scale up processes to obtain polyphenols from different plant sources and to produce polyphenol rich foods with bioactive properties e g antioxidant antibacterial antiviral anticancer properties of interest for human health and wellbeing Ecological Modelling for Sustainable Development (Penerbit USM) Koh Hock Lve, Teh Su Yean, Shahrul Anuar Mohd Sah, Zary Shariman Yahaya, Anita Talib, 2013 In view of the current global scenario which highlighted the importance of sustainable development and sustaining natural resources the theme selected for the 2nd Regional ECOMOD 2007 Conference was indeed appropriate This conference has generated overwhelming interest and I am sure the participants have focussed diligently on the serious issues concerning important environmental issues and steps needed to be taken towards a sustainable development and management of our natural resources and environment As governments in the Asian region introduce new initiatives and development policies to rejuvenate and protect their environment and natural resources it is imperative that universities and research institutions play a fundamental role in ensuring that the objectives of these policies are realized Such institutions can complement government proposals by embarking on research that is relevant and valuable to the needs of respective nations and pursuing extensive research so that the outcome and technology generated can be transferred effectively to the end users This concerted effort by all the researchers from different fields to improve and manage our natural resources should be lauded I strongly believe

that this conference is an extraordinary testimony to our capacity building at regional and local levels I believe USM has something interesting to share with all of you in this area Finally on behalf of the Organizing Committee I hope readers will Surface-Functionalized Ceramics Laura Treccani, Fabian find this book of proceedings useful informative and stimulating Meder, 2022-12-12 Surface Functionalized Ceramics Focused coverage of making and using functional ceramic materials for a wide variety of scientific and technical applications Surface Functionalized Ceramics provides a comprehensive overview of surface functionalization approaches for ceramic materials including alumina zirconia titania and silica and their uses as sensors chemical and biological probes chromatographic supports for bio molecule purification and analysis and adsorbents for toxic substances and pollutants Overall the text provides a broad picture of the enormous possibilities offered by surface functionalization and addresses the current challenges regarding surface analysis characterization and stability As a well rounded resource the text points out opportunities of surface functionalized ceramics their issues such as achieving surface stability and complex analysis and how to counter them Edited by two experts in the field of advanced materials surfaces Surface Functionalized Ceramics covers topics such as Processing methods for advanced ceramics surface modification of ceramic materials and methods for electrokinetic surface characteristics Surface imaging and chemical surface analysis using atomic force microscopy Surface chemical analysis and ceramic enhanced analytics Biological and living matter surface interactions including protein adsorption mechanisms as well as bacteria behavior in terms of biofilm formation and prevention for antibacterial applications Mesoporous silica and organosilica biosensors for water quality and environmental monitoring plus ceramic based adsorbents in bioproduct recovery and purification For professionals researchers and academics in the fields of materials science biotechnology biotechnological industry environmental sciences and ceramics industry Surface Functionalized Ceramics is a one stop reference on the subject that provides different approaches to obtain surfaces of ceramic materials that perform desired functions Responsive Membranes and Materials D. Bhattacharyya, Thomas Schäfer, S. R. Wickramasinghe, Sylvia Daunert, 2012-11-26 The development of new multifunctional membranes and materials which respond to external stimuli such as pH temperature light biochemicals or magnetic or electrical signals represents new approaches to separations reactions or recognitions With multiple cooperative functions responsive membranes and materials have applications which range from biopharmaceutical to drug delivery systems to water treatment This book covers recent advances in the generation and application of responsive materials and includes Development and design of responsive membranes and materials Carbon nanotube membranes Tunable separations reactions and nanoparticle synthesis Responsive membranes for water treatment Pore filled membranes for drug release Biologically inspired responsive materials and hydrogels Biomimetic polymer gels Responsive Membranes and Materials provides a cutting edge resource for researchers and scientists in membrane science and technology as well as specialists in separations biomaterials bionanotechnology drug delivery polymers and functional materials

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