

# **BIOSEPARATIONS SCIENCE AND ENGINEERING**

Second Edition

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# Bioseparations Science Engineering

**Kamalesh K. Sirkar**



## **Bioseparations Science Engineering:**

Bioseparations Science and Engineering Roger G. Harrison, Paul W. Todd, Scott R. Rudge, Demetri P. Petrides, 2015-01-27 An updated edition of a comprehensive and authoritative chemical engineering textbook on bioprocess engineering science updated to include new information on topics like moment analysis chromatography and evaporation **Bioseparations Science and Engineering** Trevor G Day, Roger G. Harrison, Paul Todd, Scott R. Rudge, Technical Leader Scott R Rudge, Paul W. Todd, Demetri Petrides, 2003 Other unique features include basic information about bioproducts and engineering analysis and a chapter with bioprocess laboratory exercises Bioseparations Science and Engineering is ideal for students and professionals alike **BOOK JACKET** *Bioseparations Science and Engineering* Roger G. Harrison, 1999 The principal purpose of this book is to provide the most comprehensive and authoritative text on the science and engineering of bioprocess The text is designed for students at all levels and is also intended to be useful for practitioners in industry

**Bioseparations Science and Engineering** Roger G. Harrison, Paul Todd, Scott R. Rudge, Demetri P. Petrides, 2015 An updated edition of a comprehensive and authoritative chemical engineering textbook on bioprocess engineering science updated to include new information on topics like moment analysis chromatography and evaporation Bioseparation Science and Engineering HARRISON, **Engineering Processes for Bioprocess** LAURENCE R. WEATHERLEY, 2013-10-22 The use of biotechnology in chemical synthesis offers up numerous advantages to the engineer in the process industries but it also presents a number of fundamental challenges and difficulties which impinge directly on separation process requirements The use of biochemical separations has grown significantly during the past decade and is especially used in process industries such as healthcare and food processing However it is becoming increasingly more important in areas such as recycling and waste water treatment and as industry shifts towards cleaner processes biochemical separations will continue to grow The two main objectives of this book are to focus on the application of existing separation process techniques to the recovery and purification of biologically derived products and to examine the state of knowledge of new techniques which have future potential Within these objectives the complexities and breadth of problems associated with biological separations are discussed specific engineering techniques are featured and their adaptation to biochemical separations are highlighted

Bioseparations Engineering Michael R. Ladisch, 2001-03-27 Bioprocess engineering is the multidisciplinary application of fundamental engineering and biological principles to the design of absorbents systems and processes for the separation of biological molecules *Bioprocess Engineering* I. Endo, T. Nagamune, S. Kato, T. Yonemoto, 2000-03-17 The bioprocess engineering of today includes downstream process engineering such as waste water material and gas treatment Taking this tendency into account bioprocess engineers gathered in Japan as a special research group under the main theme of Recovery and Recycle of Resources to Protect the Global Environment The scope of this book is based on the conference and deals not only with recent advances in bioprocess engineering in a narrow sense but also the

environmental engineering which includes waste water treatment and bioremediation The contributors of this book cover many disciplines such as chemical engineering analytical chemistry biochemistry and microbiology Bioseparation Engineering will stimulate young engineers and scientists who will develop bioseparation engineering further in the 21st century and contribute to a world wide attention to the global environment *From Biotechnology To Bioindustry* Seung Wook Kim, Kyung Yeon Kim,2019-05-23

**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

**Separation of Molecules, Macromolecules and Particles** Kamallesh K. Sirkar,2014-01-16 Providing chemical engineering undergraduate and graduate students with a basic understanding of how separation of a mixture of molecules macromolecules or particles is achieved this textbook is a comprehensive introduction to the engineering science of separation Students learn how to apply their knowledge to determine the separation achieved in a given device or process Real world examples are taken from biotechnology chemical food petrochemical pharmaceutical and pollution control industries Worked examples elementary separator designs and chapter end problems are provided giving students a practical understanding of separation The textbook systematically develops different separation processes by considering the forces causing the separation and how this separation is influenced by the patterns of bulk flow in the separation device Readers will be able to take this knowledge and apply it to their own future studies and research in separation and purification Online resources include solutions to the exercises and guidance for computer simulations

*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 *Surface-Functionalized Ceramics* Laura Treccani, Fabian Meder, 2022-12-14 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 Principles Of Bioseparations Engineering Raja Ghosh, 2006-10-23 Bioseparations engineering deals with the scientific and engineering principles involved in large scale separation and purification of biological products It is a key component of most chemical engineering biotechnology bioprocess engineering programmes This book discusses the underlying principles of bioseparations engineering written from the perspective of an undergraduate course It covers membrane based bioseparations in much more detail than some of the other books on bioseparations engineering Based largely on the lecture notes the author developed to teach the course this book is especially suitable for use as an undergraduate level textbook as most other textbooks are targeted at graduate students *Separation Process Engineering* Phillip C. Wankat, 2007 Reviewing core concepts such as equilibrium and unit operations this title introduces a step by step process for solving separation problems It looks at each leading processes including advanced processes such as membrane separation

adsorption and chromatography For each process it presents principles techniques equations and examples **New Developments in Bioseparation** Mohammad M. Ataai, Subhas K. Sikdar, American Institute of Chemical Engineers, 1992  
*American Book Publishing Record*, 2003 BIOSPERATIONS B. SIVASANKAR, 2005-01-01 This systematically organized and well balanced book compresses within the covers of a single volume the theoretical principles and techniques involved in bio separations also called downstream processing These techniques are derived from a range of subjects for example physical chemistry analytical chemistry bio chemistry biological science and chemical engineering Organized in its 15 chapters the text covers in the first few chapters topics related to chemical engineering unit operations such as filtration centrifugation adsorption extraction and membrane separation as applied to bioseparations The use of chromatography as practiced at laboratory as well as industrial scale operation and related techniques such as gel filtration affinity and pseudoaffinity chromatography ion exchange chromatography electrophoresis and related methods have been discussed The important applications of these techniques have also been highlighted Downstream Processing and Bioseparation Jean-François Hamel, Jean B. Hunter, Subhas K. Sikdar, American Chemical Society. Division of Industrial and Engineering Chemistry, 1990 This new volume examines the state of the art of several important separation processes as they relate to biotechnology Focusing on isolation and purification of downstream processing it presents recent research results of several promising techniques Its 15 chapters cover extraction and membrane processing processes using biospecific interaction with proteins and novel isolation and purification processes Many of the chapters contain data that have not been published before This volume presents the spectrum of current thinking and activities on bioseparation specifically of large molecules such as proteins and polysaccharides **Chemical Engineering Education**, 2004

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