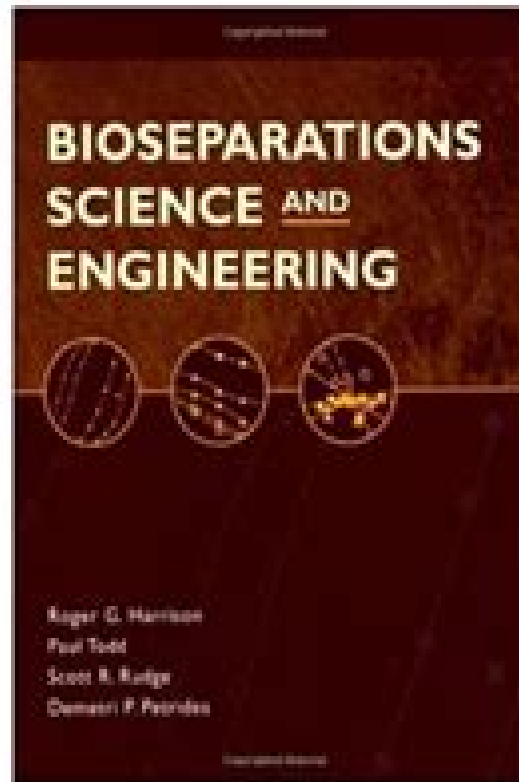


## Bioseparations Science and Engineering (Topics in Chemical Engineering)

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**BOOK JACKET Engineering Principles in Biotechnology** Wei-Shou Hu, 2017-09-11 This book is a short introduction to the engineering principles of harnessing the vast potential of microorganisms and animal and plant cells in making biochemical products It was written for scientists who have no background in engineering and for engineers with minimal background in biology The overall subject dealt with is process But the coverage goes beyond the process of biomanufacturing in the bioreactor and extends to the factory of cell s biosynthetic machinery Starting with an overview of biotechnology and organism engineers are eased into biochemical reactions and life scientists are exposed to the technology of production using cells Subsequent chapters allow engineers to be acquainted with biochemical pathways while life scientist learn about stoichiometric and kinetic principles of reactions and cell growth This leads to the coverage of reactors oxygen transfer and scale up Following three chapters on biomanufacturing of current and future importance i e cell culture stem cells and synthetic biology the topic switches to product purification first with a conceptual coverage of operations used in bioseparation and then a more detailed analysis to

provide a conceptual understanding of chromatography the modern workhorse of bioseparation Drawing on principles from engineering and life sciences this book is for practitioners in biotechnology and bioengineering The author has used the book for a course for advanced students in both engineering and life sciences To this end problems are provided at the end of each chapter

*A Research Agenda for Transforming Separation Science* National Academies of Sciences, Engineering, and Medicine, Division on Earth and Life Studies, Board on Chemical Sciences and Technology, Committee on a Research Agenda for a New Era in Separation Science, 2019-10-30 Separation science plays a critical role in maintaining our standard of living and quality of life Many industrial processes and general necessities such as chemicals medicines clean water safe food and energy sources rely on chemical separations However the process of chemical separations is often overlooked during product development and this has led to inefficiency unnecessary waste and lack of consensus among chemists and engineers A reevaluation of system design establishment of standards and an increased focus on the advancement of separation science are imperative in supporting increased efficiency continued U S manufacturing competitiveness and public welfare A Research Agenda for Transforming Separation Science explores developments in the industry since the 1987 National Academies report Separation and Purification Critical Needs and Opportunities Many needs stated in the original report remain today in addition to a variety of new challenges due to improved detection limits advances in medicine and a recent emphasis on sustainability and environmental stewardship This report examines emerging chemical separation technologies relevant developments in intersecting disciplines and gaps in existing research and provides recommendations for the application of improved separation science technologies and processes This research serves as a foundation for transforming separation science which could reduce global energy use improve human and environmental health and advance more efficient practices in various industries

**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

*Product Engineering* James Wei, 2007-01-04 The current chemical engineering curriculum concentrates on process the efficient manufacturing in quantity of traditional chemical products such as ammonia and benzene However many chemical companies now invent and

manufacture specialty products with particular properties such as pharmaceuticals cosmetics and electronic coatings and their employees need to know how to design the products as well as manufacture them James Wei a famous chemical engineer is writing this book to provide theories and case studies in product engineering the design of new useful products with desired properties The first section relates historical case studies of successful product invention and development by individuals and companies The second part of the book describes the toolbox of molecular structure property relations A desired product needs to have certain properties for example phase transition or thermal properties and the chemist must find or design a molecular structure with the required properties This section will instruct chemists in the analysis of structure and property information The third section is concerned with the next stage product research and design It will discuss improving the desired product by additives and blending among other strategies It will also cover future challenges in product engineering

Valorization of Biomass to Value-Added Commodities Michael O. Daramola, Augustine O. Ayeni, 2020-04-21 This book presents the most up to date technologies for the transformation of biomass into valuable fuels chemicals materials and products It provides comprehensive coverage of the characterization and fractionation of various types of biomass and details the many challenges that are currently encountered during this process Divided into two sections this book discusses timely topics such as the characterization of biomass feedstock pretreatment and fractionation of biomass and describes the process for conversion of biomass to value added commodities The authors bring biomass transformational strategies that are yet to be explored to the forefront making this innovative book useful for graduate students and researchers in academia government and industry

Environment, Energy and Climate Change II Gilles Lefebvre, Elena Jiménez, Beatriz Cabañas, 2015-10-06 This volume provides a comprehensive overview of advanced research in the field of efficient clean and renewable energy production conversion and storage The ten chapters written by internationally respected experts address the following topics 1 solar and wind energy 2 energy storage in batteries 3 biomass and 4 socio economic aspects of energy Given its multidisciplinary approach which combines environmental analysis and an engineering perspective the book offers a valuable resource for all researchers and students interested in environmentally sustainable energy production conversion storage and its engineering

**Ecological Modelling for Sustainable Development (Penerbit USM)** Koh Hock Lye, 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 find this book of proceedings useful informative and stimulating

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