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Microreactors in Organic Chemistry and
Catalysis Process Understanding How to Scale-Up a
Wet Granulation End Point Scientifically Advances in
Bioprocess Engineering Fine Chemicals
Manufacture Evolutionary Multi-Criterion
Optimization Wastewater and Water Quality Handbook
of Chemical Reactor Design, Optimization, and
Scale-up Protein Chromatography OPTIMIZATION AND
SCALE-UP OF MOLYBDENUM-RECYCLE
PROCESS. Multiscale Structural Topology
Optimization Biomanufacturing Large Scale
Optimization in Supply Chains and Smart
Manufacturing Process Chromatography Optimization,
scale-up and validation of manufacturing process of
acarbose as an antidiabetes mellitus agent Design of
Multiphase Reactors 11th International Symposium on
Process Systems Engineering - PSE 2012 Real-time
Artificial Intelligence Control and Optimization of a
Full-scale WTP Chemical Reactor Design Scale-up,
Optimization, and Analysis of Escherichia Coli Extracts
for Cell-free Protein Synthesis Fundamentals of Food
Biotechnology Optimization in Large Scale
Problems Developing Solid Oral Dosage
Forms Pharmaceutical Process Scale-Up, Third

Read Book Scale Up And Optimization In Preparative Chromatography Principles And Biopharmaceutical Applications Chromatographic Edition Scaling Up Treatment for the Global AIDS Pandemic Optimization and scale-up of animal cell bioreactors Cell and Tissue Reaction Engineering Biotechnology for Biofuel Production and Optimization Preparative Chromatography for Separation of Proteins Scale-Up and Optimization in Preparative Chromatography Scaling Up Machine Learning Optimize for Growth Handbook of Process Chromatography Chemical Reactor Design, Optimization, and Scaleup Biochromatography Scale-up in Chemical Engineering Startup, Scaleup, Screwup Intelligent Data Engineering and Automated Learning -- IDEAL 2013 Nanoscale Fabrication, Optimization, Scale-up and Biological Aspects of Pharmaceutical Nanotechnology Scaling Up Health Service Delivery

Microreactors in Organic Chemistry and Catalysis

Presenting guidelines to predict and improve separation system performance, this book contains numerous case studies illustrating the practice of scale-up principles in process development. It offers solutions to limitations that occur in real-world purification schemes; methods to model, optimize, and characterize nonlinear separation processes; d

Process Understanding

Multiscale Structural Topology Optimization discusses the development of a multiscale design framework for

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topology optimization of multiscale nonlinear structures. With the intention to alleviate the heavy computational burden of the design framework, the authors present a POD-based adaptive surrogate model for the RVE solutions at the microscopic scale and make a step further towards the design of multiscale elastoviscoplastic structures. Various optimization methods for structural size, shape, and topology designs have been developed and widely employed in engineering applications. Topology optimization has been recognized as one of the most effective tools for least weight and performance design, especially in aeronautics and aerospace engineering. This book focuses on the simultaneous design of both macroscopic structure and microscopic materials. In this model, the material microstructures are optimized in response to the macroscopic solution, which results in the nonlinearity of the equilibrium problem of the interface of the two scales. The authors include a reduce database model from a set of numerical experiments in the space of effective strain. Presents the first attempts towards topology optimization design of nonlinear highly heterogeneous structures Helps with simultaneous design of the topologies of both macroscopic structure and microscopic materials Helps with development of computer codes for the designs of nonlinear structures and of materials with extreme constitutive properties Focuses on the simultaneous design of both macroscopic structure and microscopic materials Includes a reduce database model from a set of numerical experiments in the space of effective strain

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How to Scale-Up a Wet Granulation End Point Scientifically

This book will update the original edition published in 1997. Since the publication of the first edition, the biotechnology and biologics industries have gained extensive knowledge and experience in downstream processing using chromatography and other technologies associated with recovery and purification unit operations. This book will tie that experience together for the next generation of readers. Updates include: - sources and productivity - types of products made today - experiences in clinical and licensed products - economics - current status of validation - illustrations and tables - automated column packing - automated systems New topics include: - the use of disposables - multiproduct versus dedicated production - design principles for chromatography media and filters - ultrafiltration principles and optimization - risk assessments - characterization studies - design space - platform technologies - process analytical technologies (PATs) - biogenerics - comparability assessments Key Features: - new approaches to process optimization - use of platform technologies - applying risk assessment to process design

Advances in Bioprocess Engineering

Details simple design methods for multiphase reactors in the chemical process industries Includes basic aspects of transport in multiphase reactors and the importance of relatively reliable and simple

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procedures for predicting mass transfer parameters
Details of design and scale up aspects of several important types of multiphase reactors Examples illustrated through design methodologies presenting different reactors for reactions that are industrially important Includes simple spreadsheet packages rather than complex algorithms / programs or computational aid

Fine Chemicals Manufacture

The field of bioseparation, and biochromatography in particular, is advancing very rapidly as our knowledge of the properties of molecules and atomic forces increases. This volume covers the basic principles of biochromatography in detail. It assesses different techniques and includes a large number of applications, providing the reader with a mult

Evolutionary Multi-Criterion Optimization

The sector of fine chemicals, including pharmaceuticals, agrochemicals, dyes and pigments, fragrances and flavours, intermediates, and performance chemicals is growing fast. For obvious reasons chemistry is a key to the success in developing new processes for fine chemicals. However, as a rule, chemists formulate results of their work as recipes, which usually lack important information for process development. Fine Chemicals Manufacture, Technology and Engineering is intended to show what is needed to make the recipe more useful for process development purposes and to

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transform the recipe into an industrial process that will be safe, environmentally friendly, and profitable. The goal of this book is to form a bridge between chemists and specialists of all other branches involved in the scale-up of new processes or modification of existing processes with both a minimum effort and risk and maximum profit when commercializing the process. New techniques for scale-up and optimization of existing processes and improvements in the utilization of process equipment that have been developed in recent years are presented in the book.

Wastewater and Water Quality

Water is accepted as the most important source of life. It is assumed that life began in water and spread from there to the whole world. But water has been polluted anthropogenically since the beginning of the industrial revolution in the late 19th century. At the end of the 20th century, most water sources cannot be used for aquaculture, irrigation, and human use. Therefore, for sustainable development, we have to protect our water sources on Earth, because it's the only planet we have!

Handbook of Chemical Reactor Design, Optimization, and Scaleup

Nanoscale Fabrication, Optimization, Scale-up and Biological Aspects of Pharmaceutical Nanotechnology focuses on the fabrication, optimization, scale-up and biological aspects of pharmaceutical nanotechnology.

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In particular, the following aspects of nanoparticle preparation methods are discussed: the need for less toxic reagents, simplification of the procedure to allow economic scale-up, and optimization to improve yield and entrapment efficiency. Written by a diverse range of international researchers, the chapters examine characterization and manufacturing of nanomaterials for pharmaceutical applications. Regulatory and policy aspects are also discussed. This book is a valuable reference resource for researchers in both academia and the pharmaceutical industry who want to learn more about how nanomaterials can best be utilized. Shows how nanomanufacturing techniques can help to create more effective, cheaper pharmaceutical products Explores how nanofabrication techniques developed in the lab have been translated to commercial applications in recent years Explains safety and regulatory aspects of the use of nanomanufacturing processes in the pharmaceutical industry

Protein Chromatography

Developing Solid Oral Dosage Forms is intended for pharmaceutical professionals engaged in research and development of oral dosage forms. It covers essential principles of physical pharmacy, biopharmaceutics and industrial pharmacy as well as various aspects of state-of-the-art techniques and approaches in pharmaceutical sciences and technologies along with examples and/or case studies in product development. The objective of this book is to offer updated (or current) knowledge and skills

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required for rational oral product design and development. The specific goals are to provide readers with: Basics of modern theories of physical pharmacy, biopharmaceutics and industrial pharmacy and their applications throughout the entire process of research and development of oral dosage forms Tools and approaches of preformulation investigation, formulation/process design, characterization and scale-up in pharmaceutical sciences and technologies New developments, challenges, trends, opportunities, intellectual property issues and regulations in solid product development The first book (ever) that provides comprehensive and in-depth coverage of what's required for developing high quality pharmaceutical products to meet international standards It covers a broad scope of topics that encompass the entire spectrum of solid dosage form development for the global market, including the most updated science and technologies, practice, applications, regulation, intellectual property protection and new development trends with case studies in every chapter A strong team of more than 50 well-established authors/co-authors of diverse background, knowledge, skills and experience from industry, academia and regulatory agencies

OPTIMIZATION AND SCALE-UP OF MOLYBDENUM-RECYCLE PROCESS.

This study shows that advanced artificial neural network (ANN) model-based control systems can be used for drinking water treatment process control. ANN technology, an artificial intelligence technology

that has the ability to learn patterns and relationships contained in sets of data, is the most powerful modeling tool currently available to the drinking water treatment industry. ANN predicts the output of a process given the values of process inputs and process control variables. The results of this project have the potential to revolutionize the way in which drinking water utilities optimize and control their unit processes to efficiently and consistently supply high quality drinking water

Multiscale Structural Topology Optimization

The third edition of Pharmaceutical Process Scale-Up deals with the theory and practice of scale-up in the pharmaceutical industry. This thoroughly revised edition reflects the rapid changes in the field and includes: New material on tableting scale-up and compaction. Regulatory appendices that cover FDA and EU Guidelines. New chapters on risk evaluation and validation as related to scale-up. Practical advice on scale-up solutions from world renowned experts in the field. Pharmaceutical Process Scale-Up, Third Edition will provide an excellent insight in to the practical aspects of the process scale-up and will be an invaluable source of information on batch enlargement techniques for formulators, process engineers, validation specialists and quality assurance personnel, as well as production managers. It will also provide interesting reading material for anyone involved in Process Analytical Technology (PAT), technology transfer and product globalization.

Large Scale Optimization in Supply Chains and Smart Manufacturing

This book constitutes the refereed proceedings of the 14th International Conference on Intelligent Data Engineering and Automated Learning, IDEAL 2013, held in Hefei, China, in October 2013. The 76 revised full papers presented were carefully reviewed and selected from more than 130 submissions. These papers provided a valuable collection of latest research outcomes in data engineering and automated learning, from methodologies, frameworks and techniques to applications. In addition to various topics such as evolutionary algorithms, neural networks, probabilistic modelling, swarm intelligent, multi-objective optimisation, and practical applications in regression, classification, clustering, biological data processing, text processing, video analysis, including a number of special sessions on emerging topics such as adaptation and learning multi-agent systems, big data, swarm intelligence and data mining, and combining learning and optimisation in intelligent data engineering.

Process Chromatography

Food biotechnology is the application of modern biotechnological techniques to the manufacture and processing of food, for example through fermentation of food (which is the oldest biotechnological process)

and food additives, as well as plant and animal cell cultures. New developments in fermentation and enzyme technological processes, molecular thermodynamics, genetic engineering, protein engineering, metabolic engineering, bioengineering, and processes involving monoclonal antibodies, nanobiotechnology and quorum sensing have introduced exciting new dimensions to food biotechnology, a burgeoning field that transcends many scientific disciplines. Fundamentals of Food Biotechnology, 2nd edition is based on the author's 25 years of experience teaching on a food biotechnology course at McGill University in Canada. The book will appeal to professional food scientists as well as graduate and advanced undergraduate students by addressing the latest exciting food biotechnology research in areas such as genetically modified foods (GMOs), bioenergy, bioplastics, functional foods/nutraceuticals, nanobiotechnology, quorum sensing and quenching. In addition, cloning techniques for bacterial and yeast enzymes are included in a "New Trends and Tools" section and selected references, questions and answers appear at the end of each chapter. This new edition has been comprehensively rewritten and restructured to reflect the new technologies, products and trends that have emerged since the original book. Many new aspects highlight the short and longer term commercial potential of food biotechnology.

Optimization, scale-up and validation of manufacturing process of acarbose as an antidiabetes mellitus agent

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Real-world tools to build your venture, grow your business, and avoid mistakes Startup, Scaleup, Screwup is an expert guide for emerging and established businesses to accelerate growth, facilitate scalability, and keep pace with the rapidly changing economic landscape. The contemporary marketplace is more dynamic than ever before—increased global competition, the impact of digital transformation, and disruptive innovation factors require businesses to implement agile management and business strategies to compete and thrive. This indispensable book provides business leaders and entrepreneurs the tools and guidance to meet growth and scalability challenges head on. Equal parts motivation and practical application, this book answers the questions every business leader asks from the startup ventures to established companies. Covering topics including funding options, employee hiring, product-market validation, remote team management, agile scaling, and the business lifecycle, this essential resource provides a solid approach to grow at the right pace and stay lean. This book will enable you to: Apply 42 effective tools to sustain and accelerate your business growth Avoid the mistakes and pitfalls associated with rapid business growth or organizational change Develop a clear growth plan to integrate into your overall business model Structure your business for rapid scaling and efficient management Startup, Scaleup, Screwup: 42 Tools to Accelerate Lean & Agile Business Growth is a must-read for entrepreneurs, founders, managers, and senior executives. Author Jurgen Appelo shares his wisdom on the creative economy, agile management, innovation marketing,

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and organizational change to provide a comprehensive guide to business growth. Practical methods and expert advice make this book an essential addition to any business professional's library.

Design of Multiphase Reactors

THE MODERN GUIDE TO CHEMICAL REACTORS In the best professional sourcebook on chemical reactors ever written, world-class expert Bruce Nauman provides tools, information, and hands-on expertise to make important engineering tasks and decisions easier. Clearly and in depth, CHEMICAL REACTOR DESIGN, OPTIMIZATION AND SCALEUP provides-- * Up-to-date information to help chemical and process engineers save time, money, and materials * Decision-aiding coverage of every aspect of selection, design factors and parameters, optimization, and scaleup * A convenient source of explained formulas, principles, and data * Numerous detailed examples * Worked mathematical solutions * The latest information on reactor design for biochemicals and polymers, as well as other newer and standard substances DESIGN AND SPECIFY CHEMICAL REACTORS CONFIDENTLY, WITH STATE-OF-THE-ART SKILLS

11th International Symposium on Process Systems Engineering - PSE2012

Biotechnology for Biofuel Production and Optimization is the compilation of current research findings that cover the entire process of biofuels production from

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manipulation of genes and pathways to organisms and renewable feedstocks for efficient biofuel production as well as different cultivation techniques and process scale-up considerations. This book captures recent breakthroughs in the interdisciplinary areas of systems and synthetic biology, metabolic engineering, and bioprocess engineering for renewable, cleaner sources of energy. Describes state-of-the-art engineering of metabolic pathways for the production of a variety of fuel molecules Discusses recent advances in synthetic biology and metabolic engineering for rational design, construction, evaluation of novel pathways and cell chassis Covers genome engineering technologies to address complex biofuel-tolerant phenotypes for enhanced biofuel production in engineered chassis Presents the use of novel microorganisms and expanded substrate utilization strategies for production of targeted fuel molecules Explores biohybrid methods for harvesting bioenergy Discusses bioreactor design and optimization of scale-up

Real-time Artificial Intelligence Control and Optimization of a Full-scale WTP

For the second edition of 'Microreactors in Organic Chemistry and Catalysis' all chapters have been revised and updated to reflect the latest developments in this rapidly developing field. This new edition has 60% more content, and it remains a comprehensive publication covering most aspects of the topic. The use of microreactors in homogeneous, heterogeneous as well as biphasic reactions is

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covered in the main part of the book, together with catalytic, bioorganic and automation approaches. The initial chapters also provide a solid physical chemistry background on fluidics in microdevices. Finally, a chapter on industrial applications and developments covers recent progress in process chemistry. An excellent reference for beginners and experts alike.

Chemical Reactor Design

The completion of the Human Genome Project and the rapid progress in cell biology and biochemical engineering, are major forces driving the steady increase of approved biotech products, especially biopharmaceuticals, in the market. Today mammalian cell products (“products from cells”), primarily monoclonals, cytokines, recombinant glycoproteins, and, increasingly, vaccines, dominate the biopharmaceutical industry. Moreover, a small number of products consisting of in vitro cultivated cells (“cells as product”) for regenerative medicine have also been introduced in the market. Their efficient production requires comprehensive knowledge of biological as well as biochemical mammalian cell culture fundamentals (e.g., cell characteristics and metabolism, cell line establishment, culture medium optimization) and related engineering principles (e.g., bioreactor design, process scale-up and optimization). In addition, new developments focusing on cell line development, animal-free culture media, disposables and the implications of changing processes (multi-purposities) have to be taken into account. While a

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number of excellent books treating the basic methods and applications of mammalian cell culture technology have been published, only little attention has been afforded to their engineering aspects. The aim of this book is to make a contribution to closing this gap; it particularly focuses on the interactions between biological and biochemical and engineering principles in processes derived from cell cultures. It is not intended to give a comprehensive overview of the literature. This has been done extensively elsewhere.

Scale-up, Optimization, and Analysis of Escherichia Coli Extracts for Cell-free Protein Synthesis

This volume provides resourceful thinking and insightful management solutions to the many challenges that decision makers face in their predictions, preparations, and implementations of the key elements that our societies and industries need to take as they move toward digitalization and smartness. The discussions within the book aim to uncover the sources of large-scale problems in socio-industrial dilemmas, and the theories that can support these challenges. How theories might also transition to real applications is another question that this book aims to uncover. In answer to the viewpoints expressed by several practitioners and academicians, this book aims to provide both a learning platform which spotlights open questions with related case studies. The relationship between Industry 4.0 and Society 5.0 provides the basis for the expert contributions in this book, highlighting the uses of

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analytical methods such as mathematical optimization, heuristic methods, decomposition methods, stochastic optimization, and more. The book will prove useful to researchers, students, and engineers in different domains who encounter large scale optimization problems and will encourage them to undertake research in this timely and practical field. The book splits into two parts. The first part covers a general perspective and challenges in a smart society and in industry. The second part covers several case studies and solutions from the operations research perspective for large scale challenges specific to various industry and society related phenomena.

Fundamentals of Food Biotechnology

Optimization in Large Scale Problems

Developing Solid Oral Dosage Forms

In this book, theory of large scale optimization is introduced with case studies of real-world problems and applications of structured mathematical modeling. The large scale optimization methods are represented by various theories such as Benders' decomposition, logic-based Benders' decomposition, Lagrangian relaxation, Dantzig -Wolfe decomposition, multi-tree decomposition, Van Roy' cross decomposition and parallel decomposition for mathematical programs such as mixed integer

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nonlinear programming and stochastic programming. Case studies of large scale optimization in supply chain management, smart manufacturing, and Industry 4.0 are investigated with efficient implementation for real-time solutions. The features of case studies cover a wide range of fields including the Internet of things, advanced transportation systems, energy management, supply chain networks, service systems, operations management, risk management, and financial and sales management. Instructors, graduate students, researchers, and practitioners, would benefit from this book finding the applicability of large scale optimization in asynchronous parallel optimization, real-time distributed network, and optimizing the knowledge-based expert system for convex and non-convex problems.

Pharmaceutical Process Scale-Up, Third Edition

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 compliance using 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

Scaling Up Treatment for the Global AIDS Pandemic

Optimization and scale-up of animal cell bioreactors

Process Understanding is the underpinning knowledge that allows the manufacture of chemical entities to be carried out routinely, robustly and to the required standard of quality. This area has gained in importance over the last few years, particularly due to the recent impetus from the USA's Food and Drug Administration. This book covers the multidisciplinary aspects required for successful process design, safety, modeling, scale-up, PAT, pilot plant implementation, plant design as well the rapidly expanding area of outsourcing. In discussing what process understanding means to different disciplines and sectors throughout a product's life cycle, this handbook and ready reference reveals the factors important to the development and manufacture of chemicals. The book focuses on the fundamental scientific understanding necessary for a smoother technical transfer between the disciplines, leading to more effective and efficient process development and manufacturing. A range of case studies are used to exemplify and illustrate the main issues raised. As a result, readers will appreciate that process understanding can deliver a real competitive advantage within the pharmaceuticals and fine

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chemicals industry. This book serves as an aid to meeting the stringent regulations required by the relevant authorities through demonstrable understanding of the underlying science.

Cell and Tissue Reaction Engineering

Covering the important task of the scale-up of processes from the laboratory to the production scale, this easily comprehensible and transparent book is divided into two sections. The first part details the theoretical principles, introducing the subject for readers without a profound prior knowledge of mathematics. It discusses the fundamentals of dimensional analysis, the treatment of temperature-dependent and rheological material values and scale-up where model systems or not available or only partly similar. All this is illustrated by 20 real-world examples, while 25 exercises plus solutions new to this edition practice and monitor learning. The second part presents the individual basic operations and covers the fields of mechanical, thermal, and chemical process engineering with respect to dimensional analysis and scale-up. The rules for scale-up are given and discussed for each operation. Other additions to this second edition are dimensional analysis of pelleting processes, and a historical overview of dimensional analysis and modeling, while all the chapters have been updated to take the latest literature into account. Written by a specialist with more than 40 years of experience in the industry, this book is specifically aimed at students as well as practicing engineers, chemists and process engineers

already working in the field.

Biotechnology for Biofuel Production and Optimization

This book constitutes the refereed proceedings of the Third International Conference on Evolutionary Multi-Criterion Optimization, EMO 2005, held in Guanajuato, Mexico, in March 2005. The 59 revised full papers presented together with 2 invited papers and the summary of a tutorial were carefully reviewed and selected from the 115 papers submitted. The papers are organized in topical sections on algorithm improvements, incorporation of preferences, performance analysis and comparison, uncertainty and noise, alternative methods, and applications in a broad variety of fields.

Preparative Chromatography for Separation of Proteins

How to Scale-Up a Wet Granulation End Point Scientifically provides a single-source devoted to all relevant information on the scale-up of a wet granulation end point. Contents include a general description, problem identification, and theoretical background with supporting literature, case studies, potential solutions, and more. By outlining issues related to scale-up and end-point determination, and then using practical examples and advice to address these issues, How to Scale-Up a Wet Granulation End Point Scientifically is a valuable and essential resource for all those pharmaceutical scientists and

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technologists engaged in the granulation process. Thoroughly referenced and based on the latest research and literature Part of the Expertise in Pharmaceutical Process Technology Series edited by internationally respected expert, Michael Levin Illustrates the most common problems related to scale-up of a wet granulation end point and provides valuable insights on how to solve these problems in a practical way

Scale-Up and Optimization in Preparative Chromatography

The classic reference, now expanded and updated Chemical Reactor Design, Optimization, and Scaleup is the authoritative sourcebook on chemical reactors. This new Second Edition consolidates the latest information on current optimization and scaleup methodologies, numerical methods, and biochemical and polymer reactions. It provides the comprehensive tools and information to help readers design and specify chemical reactors confidently, with state-of-the-art skills. This authoritative guide: Covers the fundamentals and principles of chemical reactor design, along with advanced topics and applications Presents techniques for dealing with varying physical properties in reactors of all types and purposes Includes a completely new chapter on meso-, micro-, and nano-scale reactors that addresses such topics as axial diffusion in micro-scale reactors and self-assembly of nano-scale structures Explains the method of false transients, a numerical solution technique Includes suggestions for further reading,

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problems, and, when appropriate, scaleup or scaledown considerations at the end of each chapter to illustrate industrial applications Serves as a ready reference for explained formulas, principles, and data This is the definitive hands-on reference for practicing professionals and an excellent textbook for courses in chemical reactor design. It is an essential resource for chemical engineers in the process industries, including petrochemicals, biochemicals, microelectronics, and water treatment.

Scaling Up Machine Learning

Research and development into biological products for therapeutic use has increased dramatically over the last 10 years. With this, strict regulatory requirements have been imposed by authorities such as the U.S. Food & Drug Administration, so that today validation has become a key issue in the biopharmaceutical industry. This concise book addresses validation issues in the chromatography of biotherapeutics. It covers process design, qualification and validation, including an overview of analytical techniques commonly used in the validation of processes. A concluding section comments on product changeover and presents four case studies.

Optimize for Growth

Handbook of Process Chromatography

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Chemical Reactor Design, Optimization, and Scaleup

An estimated forty million people carry the human immunodeficiency virus (HIV), and five million more become newly infected annually. In recent years, many HIV-infected patients in wealthy nations have enjoyed significantly longer, good-quality lives as a result of antiretroviral therapy (ART). However, most infected individuals live in the poorest regions of the world, where ART is virtually nonexistent. The consequent death toll in these regions--especially sub-Saharan Africa--is begetting economic and social collapse. To inform the multiple efforts underway to deploy antiretroviral drugs in resource-poor settings, the Institute of Medicine committee was asked to conduct an independent review and assessment of rapid scale-up ART programs. It was also asked to identify the components of effective implementation programs. At the heart of the committee's report lie five imperatives: Immediately introduce and scale up ART programs in resource-poor settings. Devise strategies to ensure high levels of patient adherence to complicated treatment regimens. Rapidly address human-resource shortages to avoid the failure of program implementation. Continuously monitor and evaluate the programs to form the most effective guidelines and treatment regimens for each population. Prepare to sustain ART for decades.

Biochromatography

As the CEO of a small business, you know what it

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means to hit the ceiling. Business leaders often struggle with four primary barriers to growth: people, profit, control, and traction. The heroic efforts you relied on to build your business from the ground up, aren't adequate to take it to the next level. What you need are the three essential resources in the Optimize for Growth Model: * A business operating system helps CEOs articulate a shared vision and build the organization, process, accountability and productivity to achieve their goals.* A peer advisory network provides valuable insights and advice from other leaders who share their experiences in a trusted and confidential setting to leverage the wisdom of the group.* A business coach keeps the CEO accountable and acts as a necessary sounding board and advisor to shape key leadership skills. In his work with growing organizations in all industries, Jonathan B. Smith has helped executives implement the Optimize for Growth Model to foster their success. The book features stories of CEOs from various industries plus Jonathan's own experience building an INC 500 company. Every business owner eventually stalls on the road to growth. CEOs who bring in the right resources can make the difference between staying stuck and catapulting the organization to greater profits, productivity, and traction. The Optimize for Growth Model provides the framework to scale up. Are you ready to optimize for growth? Take our assessment at ChiefOptimizer.com/assessment.

Scale-up in Chemical Engineering

"The focus here is on ways to increase impact of

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health service innovations that have been tested in pilot or experimental projects so as to benefit more people and to foster policy and programme development on a lasting, sustainable basis." -- p.i Preface.

Startup, Scaleup, Screwup

An all-in-one practical guide on how to efficiently use chromatographic separation methods Based on a training course that teaches the theoretical as well as practical aspects of protein bioseparation to bioprocess professionals, this fully updated and revised new edition offers comprehensive coverage of continuous chromatography and provides readers with many relevant examples from the biopharmaceutical industry. Divided into two large parts, Protein Chromatography: Process Development and Scale-Up, Second Edition presents all the necessary knowledge for effective process development in chromatographic bioseparation, both on small and large scale. The first part introduces chromatographic theory, including process design principles, to enable the reader to rationalize the set-up of a bioseparation process. The second part illustrates by way of case studies and sample protocols how the theory learned in the first part may be applied to real-life problems. Chapters look at: Downstream Processing of Biotechnology Products; Chromatography Media; Laboratory and Process Columns and Equipment; Adsorption Equilibrium; Rate Processes; and Dynamics of Chromatography Columns. The book closes with chapters on: Effects of

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-Presents the most pertinent examples from the biopharmaceutical industry, including monoclonal antibodies -Provides an overview of the field along with design tools and examples illustrating the advantages of continuous processing in biopharmaceutical productions -Focuses on process development and large-scale bioseparation tasks, making it an ideal guide for the professional bioengineer in the biotech and pharma industries -Offers field-tested information based on decades of training courses for biotech and chemical engineers in Europe and the U.S. Protein Chromatography: Process Development and Scale-Up, Second Edition will appeal to biotechnologists, analytical chemists, chromatographers, chemical engineers, pharmaceutical industry, biotechnological industry, and biochemists.

Intelligent Data Engineering and Automated Learning -- IDEAL 2013

Bioprocess engineering has played a key role in biotechnology, contributing towards bringing the exciting new discoveries of molecular and cellular biology into the applied sphere, and in maintaining established processes, some centuries-old, efficient and essential for today's industry. Novel developments and new application areas of biotechnology, along with increasing constraints in costs, product quality, regulatory and environmental

considerations, have placed the biochemical engineer at the forefront of new challenges. This second volume of Advances in Bioprocess Engineering reflects precisely the multidisciplinary nature of the field, where new and traditional areas of application are nurtured by a better understanding of fundamental phenomena and by the utilization of novel techniques and methodologies. The chapters in this book were written by the invited speakers to the 2nd International Symposium on Bioprocess Engineering, Mazatlan, Mexico, September 1997.

Nanoscale Fabrication, Optimization, Scale-up and Biological Aspects of Pharmaceutical Nanotechnology

This integrated collection covers a range of parallelization platforms, concurrent programming frameworks and machine learning settings, with case studies.

Scaling Up Health Service Delivery

With contributions by numerous experts

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