

PROCESS CHROMATOGRAPHY

A GUIDE TO VALIDATION



G. K. SOFER
L.-E. NYSTRÖM

Process Chromatography A Guide To Validation

B. Mattiasson



Process Chromatography A Guide To Validation:

Process Chromatography Gail K. Sofer, L. E.E. Nystrom, 2015-09-02 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

Handbook of Process Chromatography Gail K. Sofer, Lars Hagel, 1997-06-24 This Handbook offers a practical approach to developing an optimal chromatographic process scaling it up and adapting it to comply with requirements set by world wide regulatory agencies The reader is led through every stage of the development process using examples from companies with established processes and approved biotherapeutics The aim is to help the reader to realize the scope of issues that must be evaluated and to avoid common pitfalls For the uninitiated separate chapters also deal with basic chromatography theory and properties of biological molecules The holistic and practical approach of the Handbook make it an essential reference for graduates and researchers in biochemical engineering and biotechnology as well as practitioners in the pharmaceutical industry The enclosed disk also makes the Handbook an excellent hands on teaching tool

Validation of Pharmaceutical Processes James P. Agalloco, Frederick J. Carleton, 2007-09-25 Completely revised and updated to reflect the significant advances in pharmaceutical production and regulatory expectations this third edition of *Validation of Pharmaceutical Processes* examines and blueprints every step of the validation process needed to remain compliant and competitive The many chapters added to the prior compilation examine va

Handbook of Process Chromatography Gunter Jagschies, Gail K. Sofer, Lars Hagel, 2007-12-08 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

Handbook of Process Chromatography Gail Sofer, 1997

Scale-Up and Optimization in Preparative Chromatography Anurag Rathore, Ajoy Velayudhan, 2002-09-26 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 data comparisons from all stages of production and industrial separation schemes for products such as synthetic molecules antibody fragments IgG growth factors and plasmid DNA The book covers external constraints separation economics correlations for transport and kinetic phenomena and the configuration and parameters of column design

Biochromatography M. A. Vijayalakshmi, 2002-02-14 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

Handbook of Biogeneric Therapeutic Proteins Sarfaraz K. Niazi, 2002-08-15 More than 20 billion dollars worth of biopharmaceuticals are scheduled to go off patent by 2006 Given the strong political impetus and the development of technological tools that can answer the questions regulatory authorities may raise it is inevitable that the FDA and EMEA will allow biogeneric or biosimilar products Even with all the regulato

Biosimilars and Interchangeable Biologics Sarfaraz K. Niazi, 2018-10-30 What s the Deal with Biosimilars Biosimilars are gaining momentum as new protein therapeutic candidates that can help fill a vital need in the healthcare industry The biological drugs are produced by recombinant DNA technology that allows for large scale production and an overall reduction time in costs and development Part of a two volume set that covers varying aspects of biosimilars

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Handbook of Methods and Instrumentation in Separation Science , 2009-11-11 Handbook of Methods and Instrumentation in Separation Science Volume 1 provides concise overviews and summaries of the main methods used for separation It is based on the Encyclopedia of Separation Science The handbook focuses on the principles of methods and instrumentation It provides general concepts concerning the subject matter it does not present specific procedures This volume discusses the separation processes including affinity methods analytical ultracentrifugation centrifugation chromatography and use of decanter centrifuge and

dye Each methodology is defined and compared with other separation processes It also provides specific techniques principles and theories concerning each process Furthermore the handbook presents the applications benefits and validation of the processes described in this book This handbook is an excellent reference for biomedical researchers environmental and production chemists flavor and fragrance technologists food and beverage technologists academic and industrial librarians and nuclear researchers Students and novices will also find this handbook useful for practice and learning One stop source for information on separation methods General overviews for quick orientation Ease of use for finding results fast Expert coverage of major separation methods Coverage of techniques for all sizes of samples pico level to kilo level

Bioprocess Engineering Bjorn K. Lydersen, Nancy A. D'Elia, Kim L. Nelson, 1994-04-18 Divided into four sections the first and third reflect the fact that there are two types of equipment required in the plant one in which the actual product is synthesized or processed such as the fermentor centrifuge and chromatographic columns and the other that supplies support for the facility or process including air conditioning water and waste systems Part two describes such components as pumps filters and valves not limited to a certain type of equipment Lastly it covers planning and designing the entire facility along with requirements for containment and validation of the process

Biopharmaceutical Processing Gunter Jagschies, Eva Lindskog, Karol Lacki, Parrish M. Galliher, 2018-01-18 Biopharmaceutical Processing Development Design and Implementation of Manufacturing Processes covers bioprocessing from cell line development to bulk drug substances The methods and strategies described are essential learning for every scientist engineer or manager in the biopharmaceutical and vaccines industry The integrity of the bioprocess ultimately determines the quality of the product in the biotherapeutics arena and this book covers every stage including all technologies related to downstream purification and upstream processing fields Economic considerations are included throughout with recommendations for lowering costs and improving efficiencies Designed for quick reference and easy accessibility of facts calculations and guidelines this book is an essential tool for industrial scientists and managers in the biopharmaceutical industry Offers a comprehensive go to reference for daily work decisions Covers both upstream and downstream processes Includes case studies that emphasize financial outcomes Presents summaries decision grids graphs and overviews for quick reference

Expanded Bed Chromatography B. Mattiasson, 2013-04-17 Expanded bed adsorption chromatography is a novel processing technique for the purification of biomolecules combining clarification concentration and initial purification in one step By such an integration it is possible to reduce the number of steps in the purification process to shorten the processing time and to improve the yields The technology is new and interesting developments have taken place concerning the adsorbents the processing technology and potential applications Both small scale laboratory processes and larger industrial processes are being developed Expanded bed chromatography is one of the most exciting new developments in downstream processing in recent years The technology will be a standard procedure when new biotechnological processes are being developed

Comprehensive Biotechnology

,2011-08-26 The second edition of Comprehensive Biotechnology Six Volume Set continues the tradition of the first inclusive work on this dynamic field with up to date and essential entries on the principles and practice of biotechnology The integration of the latest relevant science and industry practice with fundamental biotechnology concepts is presented with entries from internationally recognized world leaders in their given fields With two volumes covering basic fundamentals and four volumes of applications from environmental biotechnology and safety to medical biotechnology and healthcare this work serves the needs of newcomers as well as established experts combining the latest relevant science and industry practice in a manageable format It is a multi authored work written by experts and vetted by a prestigious advisory board and group of volume editors who are biotechnology innovators and educators with international influence All six volumes are published at the same time not as a series this is not a conventional encyclopedia but a symbiotic integration of brief articles on established topics and longer chapters on new emerging areas Hyperlinks provide sources of extensive additional related information material authored and edited by world renown experts in all aspects of the broad multidisciplinary field of biotechnology Scope and nature of the work are vetted by a prestigious International Advisory Board including three Nobel laureates Each article carries a glossary and a professional summary of the authors indicating their appropriate credentials An extensive index for the entire publication gives a complete list of the many topics treated in the increasingly expanding field

Separation, Extraction and Concentration Processes in the Food, Beverage and Nutraceutical Industries Syed S. H. Rizvi,2010-10-28 Separation extraction and concentration are essential processes in the preparation of key food ingredients They play a vital role in the quality optimization of common foods and beverages and there is also increasing interest in their use for the production of high value compounds such as bioactive peptides from milk and whey and the recovery of co products from food processing wastes Part one describes the latest advances in separation extraction and concentration techniques including supercritical fluid extraction process chromatography and membrane technologies It also reviews emerging techniques of particular interest such as pervaporation and pressurised liquid extraction Part two then focuses on advances in separation technologies and their applications in various sectors of the food beverage and nutraceutical industries Areas covered include dairy and egg processing oilseed extraction and brewing This section discusses the characteristics of different foods and fluids how food constituents are affected by separation processes and how separation processes can be designed and operated to optimize end product quality With its team of experienced international contributors Separation extraction and concentration processes in the food beverage and nutraceutical industries is an important reference source for professionals concerned with the development and optimisation of these processes Describes the latest advances in separation extraction and concentration techniques and their applications in various sectors of the food beverage and nutraceutical industries Reviews emerging techniques of particular interest such as pervaporation and pressurised liquid extraction Explores the characteristics of different foods and fluids and how food constituents are affected

by separation processes **Protein Chromatography** Sinéad T Loughran, John Joseph Milne, 2023-08-30 This third edition expands on the previous editions with updated and new chapters on protein chromatography Chapters detail protein stability and storage avoiding proteolysis protein quantitation methods generation and purification of recombinant proteins recombinant antibody production and the tagging of proteins Written in the format of the highly successful *Methods in Molecular Biology* series each chapter includes an introduction to the topic lists necessary materials and reagents includes tips on troubleshooting and known pitfalls and step by step readily reproducible protocols Authoritative and cutting edge *Protein Chromatography Methods and Protocols Third Edition* aims to provide commonly used methods and new approaches to help both new researchers and experts expand their knowledge *Handbook of Therapeutic Antibodies* Stefan Dübel, Janice M. Reichert, 2014-12-03 Dieses Nachschlagewerk zu therapeutischen Antikörpern sucht auch in der komplett bearbeiteten 2. Auflage seinesgleichen und bietet 30 % neue Inhalte zu Entwicklung, Herstellung und therapeutischen Anwendungen dieser Biomoleküle **Process Scale Purification of Antibodies** Uwe Gottschalk, 2017-03-02 Promoting a continued and much needed renaissance in biopharmaceutical manufacturing this book covers the different strategies and assembles top tier technology experts to address the challenges of antibody purification Updates existing topics and adds new ones that include purification of antibodies produced in novel production systems novel separation technologies novel antibody formats and alternative scaffolds and strategies for ton scale manufacturing Presents new and updated discussions of different purification technologies focusing on how they can address the capacity crunch in antibody purification Emphasizes antibodies and innovative chromatography methods for processing *Protein Purification Applications*, 2001-01-25 Proteins are an integral part of molecular and cellular structure and function and are probably the most purified type of biological molecule In order to elucidate the structure and function of any protein it is first necessary to purify it Protein purification techniques have evolved over the past ten years with improvements in equipment control automation and separation materials and the introduction of new techniques such as affinity membranes and expanded beds These developments have reduced the workload involved in protein purification but there is still a need to consider how unit operations linked together to form a purification strategy which can be scaled up if necessary The two Practical Approach books on protein purification have therefore been thoroughly updated and rewritten where necessary The core of both books is the provision of detailed practical guidelines aimed particularly at laboratory scale purification Information on scale up considerations is given where appropriate The books are not comprehensive but do cover the major laboratory techniques and common sources of protein *Protein Purification Techniques* focuses on unit operations and analytical techniques It starts with an overview of purification strategy and then covers initial extraction and clarification techniques The rest of the book concentrates on different purification methods with the emphasis being on chromatography The final chapter considers general scale up considerations *Protein Purification Applications* describes purification strategies from common sources

mammalian cell culture microbial cell culture milk animal tissue and plant tissue It also includes chapters on purification of inclusion bodies fusion proteins and purification for crystallography A purification strategy that can produce a highly pure single protein from a crude mixture of proteins carbohydrates lipids and cell debris is a work of art to be admired These books available individually or as a set are designed to give the laboratory worker the information needed to undertake the challenge of designing such a strategy Biotechnology and Biopharmaceutical Manufacturing, Processing, and Preservation Kenneth E. Avis, Vincent L. Wu, 2020-08-13 In this unique book experts describe practices applicable to the large scale processing of biotechnological products Beginning with processing and bulk storage preservation techniques the book provides strategies for improving efficiency of process campaigns of multiple products and manufacturing facilities for such processing techniques Large scale chromatography for the purification of biomolecules in manufacturing and lyophilization of protein pharmaceuticals are discussed Includes a case study on blow fill seal processing technology and a chapter on economic and cost factors for bioprocess engineering

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