

A Practical Handbook Of Preparative Hplc

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Enantiomer Separation - Fumio Toda 2007-11-04

In spite of important advances in asymmetric synthesis, chiral compounds cannot all be obtained in a pure state by asymmetric synthesis. As a result, enantiomer separation remains an important technique for obtaining optically active materials. Although asymmetric synthesis is a once-only procedure, an enantiomer separation process can be repeated until the optically pure sample is obtained. This book discusses several new enantiomer separation methods using modern techniques developed by experts in the field. These methods consist mainly of the following three types: 1) Enantiomer separation by inclusion complexation with a chiral host compound 2) Enantiomer separation using biological methods 3) Enantiomer separation by HPLC chromatography using a column containing a chiral stationary phase. Separation of a racemic compound has been called "optical resolution" or simply "resolution". Nowadays, the descriptions "enantiomer resolution" or "enantiomer separation" are also commonly used. Accordingly, "Enantiomer Separation" is used in the title of this book. The editor and all chapter contributors hope that this book is helpful for scientists and engineers working in this field.

Handbook of Bioseparations - Satinder Ahuja 2000-06-23

It is generally recognized that the commercial success of biotechnology products is highly dependent on the successful development and application of high-powered separation and purification methods. In this practical and

authoritative handbook, the separation of proteins, nucleic acids, and oligonucleotides from biological matrices is covered from analytical to process scales. Also included in a chapter on the separation of monoclonal antibodies, which have found numerous uses as therapeutic and diagnostic agents. Analytical techniques include an interesting montage of chromatographic methods, capillary electrophoresis, isoelectric focusing, and mass spectrometry. Among separation and purification methods, liquid-liquid distribution, displacement chromatography, expanded bed adsorption, membrane chromatography, and simulated moving bed chromatography are covered at length. Regulatory and economic considerations are addressed, as are plant and process equipment and engineering process control. A chapter on future developments highlights the application of DNA chip arrays as well as evolving methodologies for a large number of drugs that are under development for treatment of cancer, AIDS, rheumatoid arthritis, and Alzheimer's disease. Handbook of Bioseparations serves as an essential reference and guidebook for separation scientists working in the pharmaceutical and biotechnology industries, academia, and government laboratories. Key Features * Covers bioseparations of proteins, nucleic acids, and monoclonal antibodies * Encompasses both analytical and process-scale methods * Elucidates the importance of engineering process control * Details selection of plant and process equipment * Addresses economic considerations * Discusses future developments

Practical High-Performance Liquid Chromatography - Veronika R. Meyer
2010-05-17

Jump into the HPLC adventure! Three decades on from publication of the 1st German edition of Veronika Meyer's book on HPLC, this classic text remains one of the few titles available on general HPLC aimed at practitioners. New sections on the following topics have been included in this fifth edition: Comparison of HPLC with capillary electrophoresis How to obtain peak capacity van Deemter curves and other coherences Hydrophilic interaction chromatography Method transfer

Comprehensive two-dimensional HPLC Fast separations at 1000 bar HPLC with superheated water In addition, two chapters on the instrument test and troubleshooting in the appendix have been updated and expanded by Bruno E. Lendi, and many details have been improved and numerous references added. A completely new chapter is presented on quality assurance covering: Is it worth the effort? Verification with a second method Method validation Standard operating procedures Measurement uncertainty Qualifications, instrument test, and system suitability test The quest for quality Reviews of earlier editions

"That this text is written by an expert in both the practice and teaching of HPLC is evident from the first paragraph....not only an enjoyable, fascinating and easy read, but a truly excellent text that has and will serve many teachers, students and practitioners very well." —The Analyst "...provides essential information on HPLC for LC practitioners in academia, industry, government, and research laboratories...a valuable introduction." - American Journal of Therapeutics

Handbook of Isolation and Characterization of Impurities in Pharmaceuticals - Satinder Ahuja
2003-07-18

The United States Food and Drug Administration (FDA) and other regulatory bodies around the world require that impurities in drug substance and drug product levels recommended by the International Conference on Harmonisation (ICH) be isolated and characterized. Identifying process-related impurities and degradation products also helps us to understand the production of impurities and assists in defining

degradation mechanisms. When this process is performed at an early stage, there is ample time to address various aspects of drug development to prevent or control the production of impurities and degradation products well before the regulatory filing and thus assure production of a high-quality drug product. This book, therefore, has been designed to meet the need for a reference text on the complex process of isolation and characterization of process-related (synthesis and formulation) impurities and degradation products to meet critical regulatory requirements. It's objective is to provide guidance on isolating and characterizing impurities of pharmaceuticals such as drug candidates, drug substances, and drug products. The book outlines impurity identification processes and will be a key resource document for impurity analysis, isolation/synthesis, and characterization. - Provides valuable information on isolation and characterization of impurities. - Gives a regulatory perspective on the subject. - Describes various considerations involved in meeting regulatory requirements. - Discusses various sources of impurities and degradation products.

Liquid Chromatography - Salvatore Fanali
2017-06-23

Liquid Chromatography: Applications, Second Edition, is a single source of authoritative information on all aspects of the practice of modern liquid chromatography. It gives those working in both academia and industry the opportunity to learn, refresh, and deepen their knowledge of the wide variety of applications in the field. In the years since the first edition was published, thousands of papers have been released on new achievements in liquid chromatography, including the development of new stationary phases, improvement of instrumentation, development of theory, and new applications in biomedicine, metabolomics, proteomics, foodomics, pharmaceuticals, and more. This second edition addresses these new developments with updated chapters from the most expert researchers in the field. Emphasizes the integration of chromatographic methods and sample preparation Explains how liquid chromatography is used in different industrial sectors Covers the most interesting and valuable applications in different fields, e.g., proteomic,

metabolomics, foodomics, pollutants and contaminants, and drug analysis (forensic, toxicological, pharmaceutical, biomedical) Includes references and tables with commonly used data to facilitate research, practical work, comparison of results, and decision-making

Purification of Laboratory Chemicals -

W.L.F. Armarego 2009-07-23

A best seller since 1966, Purification of Laboratory Chemicals keeps engineers, scientists, chemists, biochemists and students up to date with the purification of the chemical reagents with which they work, the processes for their purification, and guides reader on critical safety and hazards for the safe handling of chemicals and processes. The Sixth Edition is updated and provides expanded coverage of the latest chemical products and processing techniques, safety and hazards. The book has been reorganised and is now fully indexed by CAS Registry Numbers. Compounds are now grouped to make navigation easier and literature references for all substances and techniques have been added, and ambiguous alternate names and cross references have been removed. The only comprehensive chemical purification reference, a market leader since 1966, Amarego delivers essential information for research and industrial chemists, pharmacists and engineers: '... (it) will be the most commonly used reference book in any chemical or biochemical laboratory' (MDPI Journal) An essential lab practice and procedures manual. Improves efficiency, results and safety by providing critical information for day-to-day lab and processing work. Improved, clear organization and new indexing delivers accurate, reliable information on processes and techniques of purification along with detailed physical properties. The Sixth Edition has been reorganised and is fully indexed by CAS Registry Numbers; compounds are now grouped to make navigation easier; literature references for all substances and techniques have been added; ambiguous alternate names and cross references removed; new chemical products and processing techniques are covered; hazards and safety remain central to the book.

Handbook of Green Analytical Chemistry -

de la Guardia 2012-02-23

The emerging field of green analytical chemistry

is concerned with the development of analytical procedures that minimize consumption of hazardous reagents and solvents, and maximize safety for operators and the environment. In recent years there have been significant developments in methodological and technological tools to prevent and reduce the deleterious effects of analytical activities; key strategies include recycling, replacement, reduction and detoxification of reagents and solvents. The Handbook of Green Analytical Chemistry provides a comprehensive overview of the present state and recent developments in green chemical analysis. A series of detailed chapters, written by international specialists in the field, discuss the fundamental principles of green analytical chemistry and present a catalogue of tools for developing environmentally friendly analytical techniques. Topics covered include: Concepts: Fundamental principles, education, laboratory experiments and publication in green analytical chemistry. The Analytical Process: Green sampling techniques and sample preparation, direct analysis of samples, green methods for capillary electrophoresis, chromatography, atomic spectroscopy, solid phase molecular spectroscopy, derivative molecular spectroscopy and electroanalytical methods. Strategies: Energy saving, automation, miniaturization and photocatalytic treatment of laboratory wastes. Fields of Application: Green bioanalytical chemistry, biodiagnostics, environmental analysis and industrial analysis. This advanced handbook is a practical resource for experienced analytical chemists who are interested in implementing green approaches in their work. *Supercritical Fluid Chromatography* - Gregory K. Webster 2014-02-04

Analytical chemists in the pharmaceutical industry are always looking for more-efficient techniques to meet the analytical challenges of today's pharmaceutical industry. One technique that has made steady advances in pharmaceutical analysis is supercritical fluid chromatography (SFC). SFC is meeting the chromatography needs of the industry by providing efficient and selective testing capabilities on the analytical and preparative scale. The supercritical fluid mobile phase, consisting mainly of CO₂, facilitates cost

reduction costs and helps the industry in meeting green chemistry standards. This book provides a comprehensive overview of the use of SFC in pharmaceutical analysis. Supercritical Fluid Chromatography reviews the use of SFC in drug-discovery applications and describes its application in drug development. When a drug is developed and brought to market, it is tested many times for impurities and degradants, enantiomeric purity, and analytical and preparative isolations—it is tested during discovery and development and for under-regulated and unregulated methodologies. The book describes the use of SFC for each of these applications and discusses more in-depth topics, such as the use of SFC in mass spectrometric and polarographic detection. The book also sheds light on the role of SFC in drug development from natural products and the advancement of SFC with new technologies and its use in pilot-scale operations as a chromatographic technique.

HPLC - Toshihiko T Hanai 2007-10-31

How can these compounds be separated? Why was that method used? These are the two basic questions often asked by students of chromatography. HPLC: A Practical Guide provides the answers, enabling the reader to grasp the concepts of the technique using simple, representative chromatograms. Divided into six chapters, this practical guide covers basic concepts of HPLC; instrumentation; stationary phase materials; eluents; column efficiency; and the influence of physical chemistry on separations. Focusing on the basic considerations such as selection of stationary phase and eluent, rather than specific applications, sections on troubleshooting are also included. Uniquely, the descriptions of chromatographic separations are based on solubility using molecular properties, and solubility parameters are used to analyse the selections of chromatographic mode and column. Presenting the chemistry of liquid chromatography for undergraduate students, this valuable practical guide will also be useful for laboratory staff in industry and academia.

Physical Property Data Book - David C. Shallcross 2004

Chemical and Process Plant Commissioning

Handbook - Martin Killcross 2011-09-27

The Chemical and Process Plant Commissioning Handbook, winner of the 2012 Basil Brennan Medal from the Institution of Chemical Engineers, is a guide to converting a newly constructed plant or equipment into a fully integrated and operational process unit. Good commissioning is based on a disciplined, systematic and proven methodology and approach that achieve results in the safest, most efficient, cost effective and timely manner. The book is supported by detailed, proven and effective commission templates, plus extensive commissioning scenarios that enable the reader to learn the context of good commissioning practice from an experienced commissioning manager. It focuses on the critical safety assessment and inspection regimes necessary to ensure that new plants are compliant with OSHA and environmental requirements. Martin Killcross has brought together the theory of textbooks and technical information obtained from sales literature, in order to provide engineers with what they need to know before initiating talks with vendors regarding equipment selection. Unique information from a respected, global commissioning manager: delivers the know-how to succeed for anyone commissioning new plant or equipment Comes with online commissioning process templates that make this title a working tool kit as well as a key reference Extensive examples of successful commissioning processes with step-by-step guidance enable readers to understand the function and performance of the wide range of tasks required in the commissioning process

Carbohydrate Analysis - Z. El Rassi 1994-11-11

Carbohydrates and glycoconjugates play an important role in several life processes. The wide variety of carbohydrate species and their inherent polydispersity and heterogeneity require separation techniques of high resolving power and high selectivity such as high performance liquid chromatography (HPLC) and capillary electrophoresis (HPCE). In the last decade HPLC, and recently HPCE methods have been developed for the high resolution and reproducible quantitation of carbohydrates. Despite the importance of these two column separation technologies in the area of carbohydrates, no previous book describes

specialized methods for the separation, purification and detection of carbohydrates and glycoconjugates by HPLC and HPCE. Therefore, the objective of the present book is to provide a comprehensive review of carbohydrate analysis by HPLC and HPCE by covering analytical and preparative separation techniques for all classes of carbohydrates including mono- and disaccharides; linear and cyclic oligosaccharides; branched heterooligosaccharides (e.g., glycans, plant-derived oligosaccharides); glycoconjugates (e.g., glycolipids, glycoproteins); carbohydrates in food and beverage; compositional carbohydrates of polysaccharides; carbohydrates in biomass degradation; etc. The book will be of interest to a wide audience, including analytical chemists and biochemists, carbohydrate, glycoprotein and glycolipid chemists, molecular biologists, biotechnologists, etc. It will also be a useful reference work for both the experienced analyst and the newcomer as well as for users of HPLC and HPCE, graduates and postdoctoral students.

Practical High-Performance Liquid

Chromatography - Veronika R. Meyer 2004-10
Publisher Description

Microbore Column Chromatography - F. J. Yang
2020-08-27

This book describes the various aspects of microbore column chromatography. It provides readers with an in-depth understanding of the supercritical fluid chromatography and microbore high-performance liquid chromatography.

HPLC for Pharmaceutical Scientists - Yuri V. Kazakevich 2007-02-16

HPLC for Pharmaceutical Scientists is an excellent book for both novice and experienced pharmaceutical chemists who regularly use HPLC as an analytical tool to solve challenging problems in the pharmaceutical industry. It provides a unified approach to HPLC with an equal and balanced treatment of the theory and practice of HPLC in the pharmaceutical industry. In-depth discussion of retention processes, modern HPLC separation theory, properties of stationary phases and columns are well blended with the practical aspects of fast and effective method development and method validation. Practical and pragmatic approaches and actual examples of effective development of selective

and rugged HPLC methods from a physico-chemical point of view are provided. This book elucidates the role of HPLC throughout the entire drug development process from drug candidate inception to marketed drug product and gives detailed specifics of HPLC application in each stage of drug development. The latest advancements and trends in hyphenated and specialized HPLC techniques (LC-MS, LC-NMR, Preparative HPLC, High temperature HPLC, high pressure liquid chromatography) are also discussed.

[Handbook of Nutraceuticals and Natural Products](#) - Sreerag Gopi 2022-06-29

An essential treatment of nutraceuticals and natural products, their preparation techniques, and applications In Handbook of Nutraceuticals and Natural Products: From Concepts to Application, a team of distinguished researchers delivers a one-stop resource describing the preparation techniques and functional uses of nutraceuticals and natural products with a focus on the technologies involved. The book includes coverage of the biological, medicinal, and nutritional properties and applications of functional foods, as well as the advanced technologies used in the extraction and functionalization of nano components and the nanomaterial and nanochemical aspects of the products. The authors discuss developmental research as well as user-level benefits of nutraceuticals and natural products and thoroughly review the market analyses, quality assurance processes, and regulations relevant to nutraceuticals and natural products. They also cover: Thorough introductions to nutraceuticals, functional foods, liposomal technology, prebiotics, and lycopene and its active drug delivery Comprehensive explorations of nutraceutical compounds from marine microalgae and poly lysine as an antimicrobial agent Practical discussions of a nutraceuticals approach to treating cancer-cachexia and early life nutrition and epigenetics In-depth examinations of encapsulation and delivery of nutraceuticals and bioactive compounds by nanoliposomes and tocosomes as promising nanocarriers Perfect for chemists, biochemists, food scientists, and materials scientists, Nutraceuticals and Natural Products: From Concepts to Application will also earn a place in

the libraries of medical scientists working in academia or industry, as well as nutritionists, dietitians, and biochemistry graduate students studying nutraceuticals.

Handbook of Modern Pharmaceutical Analysis - Satinder Ahuja 2001

This book describes the role modern pharmaceutical analysis plays in the development of new drugs. Detailed information is provided as to how the quality of drug products is assured from the point of discovery until the patient uses the drug. Coverage includes state-of-the-art topics such as analytics for combinatorial chemistry and high-throughput screening, formulation development, stability studies, international regulatory aspects and documentation, and future technologies that are likely to impact the field. Emphasis is placed on current, easy-to-follow methods that readers can apply in their laboratories. No book has effectively replaced the very popular text, *Pharmaceutical Analysis*, that was edited in the 1960s by Tak Higuchi. This book will fill that gap with an up-to-date treatment that is both handy and authoritative.

Essentials in Modern HPLC Separations - Serban C. Moldoveanu 2022-06-24

Essentials in Modern HPLC Separations, Second Edition discusses the role of separation in high performance liquid chromatography (HPLC). This new and updated edition systematically presents basic concepts as well as new developments in HPLC. Starting with a description of basic concepts, it provides important guidance for the practical utilization of various HPLC procedures, such as the selection of the HPLC type, proper choice of the chromatographic column, selection of mobile phase and selection of the method of detection, all of which are in correlation with the physico-chemical characteristics of the compounds separated. Every chapter has been carefully reviewed, with several new sections added to bring the book completely up-to-date. Hence, it is a valuable reference for students and professors in chemistry. Provides a thoroughly updated resource, with an entirely new section on Computer-aided Method Development in HPLC and new subsections on miniaturization and automation in HPLC, chemometric aspects of HPLC, green solvent use in HPLC, and more

Includes insights into the chromatographic process to find the optimum solution for analyzing complex samples Presents a basis for understanding the utilization of modern HPLC for applications, particularly for the analysis of pharmaceutical, biological, food, beverage and environmental samples

Handbook of HPLC, Second Edition - Danilo Corradini 2010-07-14

High performance liquid chromatography (HPLC) is one of the most widespread analytical and preparative scale separation techniques used for both scientific investigations and industrial and biomedical analysis. Now in its second edition, this revised and updated version of the *Handbook of HPLC* examines the new advances made in this field since the publication of the benchmark first edition twelve years ago. It reports detailed information on fundamental and practical aspects of HPLC related to conventional format and sophisticated novel approaches which have been developed to address a variety of separation problems in different fields. The latest concepts New concepts presented in this edition include monolithic columns, bonded stationary phases, micro-HPLC, two-dimensional comprehensive liquid chromatography, gradient elution mode, and capillary electromigration techniques. The book also discusses LC-MS interfaces, nonlinear chromatography, displacement chromatography of peptides and proteins, field-flow fractionation, retention models for ions, and polymer HPLC. Fundamentals and applications The first section of the book explores emerging novel aspects of HPLC and related separation methods based on the differential velocity of analytes in a liquid medium under the action of either an electric field (capillary electromigration techniques) or a gravitational field (field-flow fractionation). The section focusing on applications highlights four significant areas in which HPLC is successfully employed: chiral pharmaceutical, environmental analysis, food analysis, and forensic science. Ideal for a widespread audience Explanatory figures and tables supplement the text and clarify difficult concepts. Extensive references provide gateways to more focused study. Suitable for undergraduates or new practitioners interested in improving their knowledge on the current status and future trends of HPLC, the

book is also a critical resource for researchers looking for solutions to complex separation problems or those who currently use HPLC either as an analytical or a preparative scale tool.

A Practical Handbook of Preparative HPLC - Donald A Wellings 2011-04-18

This book is a distillation of twenty years of practical experience of the high pressure liquid chromatography (HPLC) process. Deliberately steering clear of complex theoretical aspects, this book concentrates on the everyday problems associated with the technique, making it perfect for frequent use in the laboratory and for those in the pharmaceutical, agrochemical and biotechnology industries for the analysis and purification of drugs, small molecules, proteins and DNA. This book...

- Provides practical, hands-on advice based on years of experience
- Will help ensure optimal design, equipment and separation results for your particular task
- Presents system layouts from laboratory to process scale
- Will help you to devise or improve record-keeping and documentation systems
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Practice of High Performance Liquid Chromatography - Heinz Engelhardt 2012-12-06

During its short 20 year history High Performance Liquid Chromatography (HPLC) has won itself a firm place amongst the instrumental methods of analysis. HPLC has caused a revolution in biological and pharmaceutical chemistry. Approximately two thirds of the publications on HPLC are concerned with problems from this area of life science. Biotechnology, where it is necessary to isolate substances from complicated mixtures, is likely to give further impetus to the dissemination of modern liquid chromatography in columns, particularly on the preparative scale. This book presents, by means of examples, the application of HPLC to various fields, as well as fundamental discussions of chromatographic methods. The quality of the analytical result is

decisively dependent on the qualities of the equipment employed (by Colin, Guiochon, and Martin). Especially the demands are discussed that are placed on the components of the instrument including those for data acquisition and processing. The section on "quantitative analysis" (by ABhauer, Ullner) covers besides the principles also the problems of ensuring the quality of the data in detail. The basic problems arising by enlarging the sample size to preparative dimensions and the requirements put on the apparatus are discussed in the section on "preparative applications" (by Wehrli).

Applied Polymer Science - Ulf W. Gedde 2021-10-29

This companion volume to "Fundamental Polymer Science" (Gedde and Hedenqvist, 2019) offers detailed insights from leading practitioners into experimental methods, simulation and modelling, mechanical and transport properties, processing, and sustainability issues. Separate chapters are devoted to thermal analysis, microscopy, spectroscopy, scattering methods, and chromatography. Special problems and pitfalls related to the study of polymers are addressed. Careful editing for consistency and cross-referencing among the chapters, high-quality graphics, worked-out examples, and numerous references to the specialist literature make "Applied Polymer Science" an essential reference for advanced students and practicing chemists, physicists, and engineers who want to solve problems with the use of polymeric materials.

Handbook of Process Chromatography - Gunter Jagschies 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

HPLC - Marvin C. McMaster 2007-01-29

This Second Edition of the classic handbook details how to set up an HPLC system that capitalizes on the latest innovations. It covers new techniques in high-temperature, micro-flow, and ultra-fast chromatography, the linking of an HPLC to a mass spectrometer, and more. Complete with a CD-ROM and appendices, this guide has everything chromatographers need to know to confidently separate, identify, purify, and quantify compounds. Note: CD-ROM/DVD and other supplementary materials are not included as part of eBook file.

Practical HPLC Method Development - Lloyd R. Snyder 2012-12-03

This revision brings the reader completely up to date on the evolving methods associated with increasingly more complex sample types analyzed using high-performance liquid chromatography, or HPLC. The book also incorporates updated discussions of many of the fundamental components of HPLC systems and practical issues associated with the use of this analytical method. This edition includes new or expanded treatments of sample preparation, computer assisted method development, as well as biochemical samples, and chiral separations.

The HPLC-MS Handbook for Practitioners - Stavros Kromidas 2017-10-16

Filling the gap for an expert text dealing exclusively with the practical aspects of HPLC-MS coupling, this concise, compact, and clear book provides detailed information to enable users to employ the method most efficiently. Following an overview of the current state of HPLC-MS and its instrumentation, the text goes on to discuss all relevant aspects of method development. A chapter on tips and tricks is followed by user reports on the advantages - and

pitfalls - of applying the method in real-life scenarios. The whole is rounded off by a look at future developments by renowned manufacturers.

Preparative Liquid Chromatography - B.A. Bidlingmeyer 1987-07-01

This volume provides a straightforward approach to isolation and purification problems with a thorough presentation of preparative LC strategy including the interrelationship between the input and output of the instrumentation, while keeping to an application focus. The book stresses the practical aspects of preparative scale separations from TLC isolations through various laboratory scale column separations to very large scale production. It also gives a thorough description of the performance parameters (e.g. throughput, separation quality, etc.) as a function of operational parameters (e.g. particle size, column size, solvent usage, etc.). Experts in the field have contributed a well balanced presentation of separation development strategies from preparative TLC to commercial preparative process with practical examples in a wide variety of application areas such as drugs, proteins, nucleotides, industrial extracts, organic chemicals, enantiomers, polymers, etc.

Handbook of HPLC - Danilo Corradini 2016-04-19

High performance liquid chromatography (HPLC) is one of the most widespread analytical and preparative scale separation techniques used for both scientific investigations and industrial and biomedical analysis. Now in its second edition, this revised and updated version of the Handbook of HPLC examines the new advances made in this field since the *Assessing and Measuring Environmental Impact and Sustainability* - Jiří J Klemeš 2015-01-20 *Assessing and Measuring Environmental Impact and Sustainability* answers the question "what are the available methodologies to assess the environmental sustainability of a product, system or process? Multiple well-known authors share their expertise in order to give a broad perspective of this issue from a chemical and environmental engineering perspective. This mathematical, quantitative book includes many case studies to assist with the practical application of environmental and sustainability

methods. Readers learn how to efficiently assess and use these methods. This book summarizes all relevant environmental methodologies to assess the sustainability of a product and tools, in order to develop more green products or processes. With life cycle assessment as its main methodology, this book speaks to engineers interested in environmental impact and sustainability. Helps engineers to assess, evaluate, and measure sustainability in industry Provides workable approaches to environmental and sustainability assessment Readers learn tools to assess the sustainability of a process or product and to design it in an environmentally friendly way

Introduction to Modern Liquid Chromatography
- Lloyd R. Snyder 2011-09-20

The latest edition of the authoritative reference to HPLC High-performance liquid chromatography (HPLC) is today the leading technique for chemical analysis and related applications, with an ability to separate, analyze, and/or purify virtually any sample. Snyder and Kirkland's *Introduction to Modern Liquid Chromatography* has long represented the premier reference to HPLC. This Third Edition, with John Dolan as added coauthor, addresses important improvements in columns and equipment, as well as major advances in our understanding of HPLC separation, our ability to solve problems that were troublesome in the past, and the application of HPLC for new kinds of samples. This carefully considered Third Edition maintains the strengths of the previous edition while significantly modifying its organization in light of recent research and experience. The text begins by introducing the reader to HPLC, its use in relation to other modern separation techniques, and its history, then leads into such specific topics as: The basis of HPLC separation and the general effects of different experimental conditions Equipment and detection The column—the "heart" of the HPLC system Reversed-phase separation, normal-phase chromatography, gradient elution, two-dimensional separation, and other techniques Computer simulation, qualitative and quantitative analysis, and method validation and quality control The separation of large molecules, including both biological and synthetic polymers Chiral separations,

preparative separations, and sample preparation Systematic development of HPLC separations—new to this edition Troubleshooting tricks, techniques, and case studies for both equipment and chromatograms Designed to fulfill the needs of the full range of HPLC users, from novices to experts, *Introduction to Modern Liquid Chromatography, Third Edition* offers the most up-to-date, comprehensive, and accessible survey of HPLC methods and applications available.

HAZOP: Guide to Best Practice - Frank Crawley
2015-04-08

HAZOP: Guide to Best Practice, 3rd Edition describes and illustrates the HAZOP study method, highlighting a variety of proven uses and approaches. This updated edition brings additional experience with which to assist the reader in delivering optimum safety and efficiency of performance of the HAZOP team. HAZOP is the most widely-used technique in the process industries for the identification of hazards and the planning of safety measures. This book explains how to implement HAZOP techniques in new facilities and apply it to existing facilities. The content covers many of the possible applications of HAZOP and takes you through all the stages of a study. This simple, easily digestible book is a favorite in the chemical and process industries. A concise and clear guide to the do's and don'ts in HAZOP New edition brings additional experience to help you deliver optimum safety and efficiency of performance. Updated material includes a section on HAZOP study of a procedure with a detailed example, new sections on pre-meeting with the client auditing a study, human factors and linking HAZOP study to LOPA. A section on start-up and shutdown has been added to the chapter on specific applications of HAZOP.

HPLC Made to Measure - Stavros Kromidas
2008-06-05

The only topical HPLC book to focus on optimization, this volume addresses the needs of HPLC users who wish to constantly improve their methods, in particular in terms of throughput, accuracy and cost-effectiveness. This handbook features contributions from such bestselling authors as John W. Dolan, Michael McBrien, Veronika R. Meyer, Uwe D. Neue, Lloyd R. Snyder, and Klaus K. Unger, as well as

from scientists working for major companies, including Agilent, AstraZeneca, Merck, Schering, Tosoh Biosep, VWR, and Waters. It covers essential aspects of optimization in general, optimization in different LC-modi, hyphenated techniques and computer-aided optimization. The whole is rounded off with a section of user reports.

Handbook of Synthetic Organic Chemistry -
Michael C. Pirrung 2016-08-30

Handbook of Synthetic Organic Chemistry, Second Edition updates and expands the author's popular 2007 work, Synthetic Organic Chemist's Companion. This new handbook provides valuable, practical guidance; incorporates corrections, and includes coverage on important topics, such as lyophilization, crystallization, precipitation, HPLC detectors, gases, and microwave reactions. The book maintains the useful organization of the author's earlier work, beginning with a basic overview and walking through every practical step of the process of organic synthesis, from reagents, solvents, and temperature control, to documentation, implementation, purification, and analytical methods for the product. From planning and setting up reactions, to recording them, the book provides insight and valuable guidance into every step of the process.

Practical guidance for planning, working up, documenting, analyzing, and improving reactions in synthetic organic chemistry

HPLC Columns - Uwe D. Neue 1997-07-28

An in-depth guide to HPLC column technology High-performance liquid chromatography and its derivative techniques have become the dominant analytical separation tools in the pharmaceutical, chemical, and food industries; environmental laboratories; and therapeutic drug monitoring. Although the column is the heart of the HPLC instrument and essential to its success, until now, no book has focused on the theory and practice of column technology. HPLC Columns provides thorough, state-of-the-art coverage of HPLC column technology for the practicing technician and academician alike. Along with a comprehensive discussion of the chemical and physical processes of the HPLC column, it includes fundamental principles, separation mechanisms and available technologies, column selection criteria, and

special techniques. Special features include: * Comprehensive overview of state-of-the-art HPLC column technology * Explanation of the underlying principles of HPLC columns * Methods for selecting columns * Practical advice on using and applying columns, including examples * Section by M. Zoubair El Fallah on methods development * Special techniques, including preparative chromatography, continuous chromatography, and the simulated moving bed * Troubleshooting section HPLC Columns helps laboratory practitioners make better choices in column selection, methods development, and troubleshooting: it is also an excellent textbook for graduate-level courses and HPLC short courses.

Methods of Protein Microcharacterization -
John E. Shively 2008-02-22

Milestones in the techniques and methodology of polypeptide structure determination include the determination of the sequence of insulin by Sanger in 1951 (1) and the introduction of the repetitive degradation of proteins with phenylisothiocyanate by Edman in 1959 (2). The automation of Edman chemistry (3) played a major role in the determination of polypeptide structures. Important modifications of Edman chemistry include the solid-phase approach by Laursen in 1971 (4) and the use of modified Edman reagents such as 4-N, N-dimethylaminoazobenzene-4'-isothiocyanate (DABITC) for manual sequencing by Chang et al. (5) in 1976. A second major breakthrough in the analysis of polypeptides was automated amino acid analysis described by Spackman et al. in 1958 (6). However, during the period from 1975 to 1980, it became increasingly clear that the amount of material required for structural analysis was more than could be easily isolated for the vast majority of proteins. The field was criticized for its lack of sensitive techniques for the analysis of growth factors, immune modulators, membrane receptors, and peptide hormones. In addition, very little had been done to modernize and improve the original instruments introduced in the mid-1960s. The first indications of improved instrumentation for Edman chemistry came from Wittmann-Liebold's laboratory (7), followed by the introduction of a "micro" sequencer by Hunkapiller and Hood in 1978 (8). The movement toward improved

instrumentation culminated in the "gas"-Phase sequencer of Hewick et al. (9) in 1981

Principles and Practice of Modern Chromatographic Methods - Kevin Robards 2021-05-01

Principles and Practice of Modern Chromatographic Methods, Second Edition takes a comprehensive, unified approach in its presentation of chromatographic techniques. Like the first edition, the book provides a scientifically rigid, but easy-to-follow presentation of chromatography concepts that begins with the purpose and intent of chromatographic theory - the "what and why" that are left out of other books attempting to cover these principles. This fully revised second edition brings the content up-to-date, covering recent developments in several new sections and an additional chapter on composite methods. New topics include sample profiling, sample preparation, sustainable green chemistry, 2D chromatography, miniaturization/nano-LC, HILIC, and more. Contains thorough chapters that begin with an updated schematic overview and a visual representation of the content. Avoids the obfuscation of different terminologies and classification systems that are prevalent in the area, such as the relationship between liquid chromatography and column chromatography. Provides integrated and comprehensive topic coverage based on chromatographic bibliometrics and survey reports on the relative usage of chromatographic techniques.

Preparative Chromatography for Separation of Proteins - Arne Staby 2017-02-02

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 pharmaceutical researchers

Quality Control Applications in the Pharmaceutical and Medical Device

Manufacturing Industry - Carrillo-Cedillo, Eugenia Gabriela 2022-03-18

Quality control in pharmaceutical products and medical devices is vital for users as failing to comply with national and international regulations can lead to accidents that could easily be avoided. For this reason, manufacturing a quality medical product will support patient safety. Microbiologists working in both the pharmaceutical and medical device industries face considerable challenges in keeping abreast of the myriad microbiological references available to them and the continuously evolving regulatory requirements. Quality Control Applications in the Pharmaceutical and Medical Device Manufacturing Industry presents the importance of quality control in pharmaceutical products and medical devices, which must have very high-quality standards to not cause problems to the health of patients. It reinforces and updates the knowledge of analytical, instrumental, and biological methods to demonstrate the correct quality control and good manufacturing practice for pharmaceutical products and medical devices. Covering topics such as pharmaceutical nano systems, machine learning, and software validation, this book is an essential resource for managers, engineers, supervisors, pharmacists, chemists, academicians, and researchers.

HPLC - Marvin C. McMaster 2006-12-18

This Second Edition of the classic handbook details how to set up an HPLC system that capitalizes on the latest innovations. It covers new techniques in high-temperature, micro-flow, and ultra-fast chromatography, the linking of an HPLC to a mass spectrometer, and more. Complete with a CD-ROM and appendices, this guide has everything chromatographers need to know to confidently separate, identify, purify, and quantify compounds. Note: CD-ROM/DVD and other supplementary materials are not included as part of eBook file.

Practical HPLC Methodology and Applications - Brian A. Bidlingmeyer 1993-05-06

Of related interest. Trace and Ultratrace Analysis by HPLC Satinder Ahuja Written by a leading scientist in the field, this monograph provides the first definitive and technically up-to-date treatment of the theory, equipment, and

applications of chemistry's most powerful reliable analytical technique. Coverage includes an encyclopedic compendium of common substances that require trace and ultratrace analysis, and features clear discussion of such important topics as considerations for HPLC equipment, sensitive detectors, sample preparation, method development, selectivity and computer-based optimizations, optimizing detectability, and much more. 1991 (0 471-51419-5) 432 pp. High Performance Liquid Chromatography in Biotechnology Edited by William S. Hancock Analytical chemists, biochemists, and chemical engineers will find this up-to-date guide to HPLC's recent developments essential for enhancing on-the-job technical expertise. Extensive coverage includes the broad applications of HPLC, ranging from major chromatographic techniques (including reversed phase, ion exchange, affinity and

hydrophobic interaction chromatography) to specific separations such as those in monoclonal antibody and nucleic acid purification. Techniques for quality control programs and advanced technology are also discussed. 1990 (0 471-82584-0) 564 pp. Unified Separation Science J. Calvin Giddings This advanced text/monograph brings together for the first time the variety of techniques used for chemical separations by outlining their common underlying mechanisms. The mass transport phenomena underlying all separation processes are developed in a simple physical-mathematical form, facilitating analysis of alternative separation techniques and the factors integral to separation power. The first six chapters provide background material applicable to a wide range of separation methods, while the final five chapters illustrate specific techniques and methods. 1991 (0 471-52089-6) 320 pp.