
Chiral Separations By Liquid Chromatography And Related Technologies

Chromatographic Science Series

Chiral Separation of Pharmaceutical Compounds by High Performance Liquid Chromatography
Chiral Separation Techniques
Chiral Separations by Chromatography
Chiral Separations
Chiral HPLC
Chiral Separations
New Bio-analytical Separations Utilizing Chiral Mobile Phase Additives in Thin Layer Chromatography and Chiral Stationary Phases in High Performance Liquid Chromatography
Chiral separation by liquid chromatography
Chiral Separation
Chiral Separation of Drugs and Related Compounds by High-performance Liquid Chromatography
Chiral Separations by HPLC
A Practical Approach to Chiral Separations by Liquid Chromatography
Chiral Separations by Capillary Electrophoresis
Investigation of Achiral/chiral Separations by High Performance Liquid Chromatography and Capillary Zone Electrophoresis
Introduction to Modern Liquid Chromatography
Liquid Chromatography
Chiral Recognition in Separation Methods
Chiral Separation Methods for Pharmaceutical and Biotechnological Products
Chromatographic Methods Development
Recent Advances in Chiral Separations
Chiral Separations Using Bile Salt Solutions in High Performance Liquid Chromatography and Micellar Electrokinetic Capillary Chromatography
Chiral Separations and Stereochemical Elucidation
Optimization of Chiral Separations in High Performance Liquid Chromatography Using Polysaccharide Chiral Stationary Phases
Chiral Separation of Pharmaceutical Compounds Using Electrochemically Modulated Liquid Chromatography (EMLC).
Thin Layer Chromatography in Chiral Separations and Analysis
Chiral Separations by Liquid Chromatography
Chiral Chromatography
The Use of Liquid Chromatography and Subcritical Fluid Chromatography for Chiral Separations Using Macrocyclic Chiral Stationary Phases
Advances in Chromatography
Studies of Enhanced-fluidity Liquid Chromatography for Chiral Separations and Nucleotides, Nucleosides Separations
Chiral Separations
Chiral Liquid Chromatography
Fundamental Studies on Ultrafast Chiral and Achiral Separations in Liquid Chromatography and Sub/supercritical Fluid Chromatography
Design of Chiral Separations by Liquid Chromatography and Capillary Electrophoresis for Amlodipine and Derivatives
Chiral Separations By Liquid Chromatography And Related Technologies

Chiral Separation Techniques
Modified Cyclodextrins for Chiral Separation
Studies of Enhanced-fluidity Liquids for Chiral Separations
Enantioselective Synthesis, Enantiomeric Separations and Chiral Recognition

*Chiral Separations By Liquid
Chromatography And Related
Technologies Chromatographic Science
Series*

Downloaded from
ecobankpayservices.ecobank.com by guest

KODY PONCE

Chiral Separation of Pharmaceutical Compounds by High Performance Liquid Chromatography CRC Press

While working as a chromatographer in the pharmaceutical industry, it became apparent to the editor that there was a pressing need for a comprehensive reference text for analysts working on the resolution of enantiomers by liquid chromatography (LC). This need arises from the fact that, whereas previously it was very difficult to determine enantiomers by direct means, there is now a wide choice of direct LC methods. At the same time, regulatory authorities have been changing their attitudes towards the administration of pharmaceuticals as racemates, partly because it is now possible to study the individual enantiomers. Clearly this abundance of new information needs to be rationalized. More importantly, the chiral LC systems which are commercially available or readily accessible to the practising chromatographer needed to be reviewed and, to a much greater extent than in existing reviews or books, discussed in terms of their practical application. Accordingly this book is very much orientated towards the practical aspects of these commercially available and readily accessible chiral LC systems. To this end, it is written for practising chromatographers by a team of practising, experienced chromatographers who have spent many years tackling the problems presented by resolving enantiomers by LC. The practical aspects of common chiral LC systems cannot be fully understood if discussed in isolation. *Chiral Separation Techniques* Springer Science & Business Media This chapter summarizes major developments in the field of liquid chromatographic separation of enantiomers. After a short historical overview, the materials and technologies used for analytical and preparative scale separation of enantiomers in high-performance liquid chromatography, nano liquid

chromatography, simulated moving-bed chromatography, and supercritical fluid chromatography are briefly discussed. In the final part, some future trends in liquid chromatographic separation of enantiomers are overviewed.

Chiral Separations by Chromatography MDPI

This volume represents the proceedings of a two-day international meeting on chiral chromatography held at the University of Surrey between 3-4 September 1987. The meeting was jointly organized by the Chromatographic Society and the Robens Institute of the University of Surrey in response to the burgeoning interest in this rapid maturing field of chromatography. Nowhere is this interest more evident than in the agrochemical and pharmaceutical industries where the implications of different pharmacological and toxicological activity for the individual enantiomers present in a racemic drug or insecticide is an increasing area of concern. Developments in the area of chiral separations are at last beginning to provide Scientists with the necessary tools to study how animals and man handle racemates and relate their observations to the observed biological effects of these substances. The development of robust and simple methods for the separation of enantiomers will therefore have a profound impact on safety evaluation and drug design. The meeting proved to be very successful. With over 160 delegates from thirteen countries in Europe and America present to learn from the experiences of experts in the field of chiral chromatography and to hear about the latest developments. Hopefully, in future symposia on chiral separations at the University of Surrey.

Chiral Separations John Wiley & Sons

"The problem addressed by this dissertation is the separation of optical isomers in commercial as well as biological samples. The chromatographic separation of enantiomers is an important and rapidly developing field of study. Chiral separations of pharmaceutical compounds and important organic intermediates in high performance liquid chromatography (HPLC) and thin layer chromatography (TLC) were achieved. Two methods were

employed for the direct liquid chromatographic resolution of chiral analytes: chiral stationary phases (CSPs) and chiral mobile phase additives (CMAs). Native and derivatized [β]-cyclodextrins ([β]-CD) were used as chiral stationary phases in reverse phase and normal phase HPLC, respectively. This study marked the first use of derivatized [β]-CDs for chiral separations in normal phase media. N-carbobenzoxy-glycyl-L-proline and (1R)-(-)-ammonium-10-camphorsulfonate were utilized as CMAs in normal phase TLC for the resolution of several aromatic amino alcohols. Maltosyl-[β]-CD and hydroxypropyl-[β]-CD were employed as CMAs in reverse phase TLC. A study was conducted with hydroxypropyl-[β]-CD to determine how the degree of substitution of a derivatized CD could effect development time, the viscosity of the solution and the enantioselectivity. In addition, studies were initiated to determine the presence of trace levels of D-amino acids in: amniotic fluid, blood serum and urine. The blood and urine of healthy young adults were analyzed and found to contain trace to percent levels of D-amino acids. The human amniotic fluid samples did not have detectable levels of D-amino acids"--Abstract, page iv.

Chiral HPLC LAP Lambert Academic Publishing

An expert resource for chemists using stereochemical analysis methods In *Chiral Separations and Stereochemical Elucidation: Fundamentals, Methods, and Applications*, a team of distinguished researchers delivers a robust and authoritative discussion of the theoretical fundamentals of chiral separation, the most commonly used chiral selectors, and stereochemical elucidation methods. The book offers expert discussions of a variety of chiral separation methods by gas chromatography (GC), supercritical fluid chromatography (SFC), capillary electrophoresis (CE), and liquid chromatography (LC). The authors also describe several methods for stereochemical elucidation, including X-ray crystallography, nuclear magnetic resonance spectroscopy, and chiroptical methods. The explored material is ideal for practicing chemists seeking a resource to help them guide method development and optimization or to explain quality control-complements during

target compound production. Readers will also find: A thorough introduction to the most important advances and applications in LC, GC, CE, SFC, and preparative chromatography Comprehensive explorations of the role of 2D-LC for chiral separation methods development and applications Practical discussions of the design, mechanisms, and applications of the most commonly used chiral selectors Fulsome treatments of the theoretical backgrounds, advantages, limitations, and applications of stereochemical elucidation methods Perfect for academic and industrial chemists specially in organic, analytical chemistry and pharmaceutical analysis. *Chiral Separations and Stereochemical Elucidation: Fundamentals, Methods, and Applications* will also benefit biochemists, environmental analysts, forensic and medicinal chemists as well as natural product chemists and those involved with stereochemistry or structural elucidation.

Chiral Separations Elsevier Inc. Chapters

A large number of examples are given that will assist in the selection of a method, including thin-layer chromatography, capillary electrophoresis and membrane separations." "This book will be a reliable guide for those just starting out in pharmaceutical and related industries, as well as those with experience in the field."--Jacket.

New Bio-analytical Separations Utilizing Chiral Mobile Phase Additives in Thin Layer Chromatography and Chiral Stationary Phases in High Performance Liquid Chromatography Wiley-VCH

The design of chiral separations in liquid chromatography (LC) and capillary electrophoresis (CE) involves the selection of chiral selectors and eluent parameters, often on a purely empirical basis. It would be desirable if rapid screening methods could be designed to rationalise the choice of these chiral selectors. With reference to the use of cyclodextrin (CD) derivatives as chiral selectors, nuclear magnetic resonance spectroscopy (NMR) can play an important role in screening the extent of interactions with chiral solutes, and in probing the nature of the stereoselective interactions involved. Data from high-field NMR on drugs and their derivatives have been explored for screening a number of potential chiral recognition agents, as an aid to the rational design of chiral separations by LC and CE, based on cyclodextrins (alpha, beta, gamma, hydroxypropyl-beta and hydroxyethyl-beta) bonded to silica (LC) and in free solution (CE). In this investigation high-field FT-NMR is used to examine the interaction mechanism

between these cyclodextrins and the calcium channel blocker Amlodipine together with a series of its structural analogues. Enantiomeric interactions between the cyclodextrins and Amlodipine are explored using ROESY (rotating frame nuclear Overhauser effect spectroscopy) in order to determine the inclusion mechanism involved.....

Chiral separation by liquid chromatography Springer Science & Business Media

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.

Chiral Separation John Wiley & Sons

Abstract: Enhanced-fluidity liquids (EFLs) are a mixture of liquefied gases (typically carbon dioxide or fluoroform) and commonly-used liquids such as methanol and water. EFLs have the advantages of both supercritical fluids (low viscosity and high diffusivity) and pure liquid solvents (high solvent polarity). The high solvent polarity of EFLs enables the application of enhanced-fluidity liquid chromatography (EFLC) on a wide range of compounds. The low viscosity and high diffusivity allow higher separation efficiencies in EFLC than in high performance liquid chromatography (HPLC). In this study, EFLs were applied as mobile phases for chiral separations (under both normal- and reversed-phase modes) and nucleotides and nucleoside separations (by using a porous glassy carbon column, under reversed-phase mode). The separation results under EFLC conditions were compared with those under HPLC conditions. For chiral separations under both separation modes, higher resolution was always observed under EFLC conditions. Higher efficiency was observed under EFLC conditions with carbon dioxide in the range of 0-60 mol% in the mobile phase. For nucleotides and nucleosides separations, most of sample mixtures were better separated under EFLC conditions compared to HPLC condition. *Chiral Separation of Drugs and Related Compounds by High-performance Liquid Chromatography* CRC Press

Chiral Separations By Liquid Chromatography And Related Technologies CRC Press

Chiral Separations by HPLC Springer Science & Business Media

Modified Cyclodextrins for Chiral Separation offers a review of the latest advances in developing modified cyclodextrins as chiral selectors for various chromatographic and electromigration techniques. Over the years, many descriptions of chiral separation have appeared in academic journals and books, but most of them have been devoted to either the development of analytical methods and protocols or the summary of different chiral selectors, including cyclodextrins for chiral separation applications. This is in marked contrast to this volume which focuses on the research endeavors concerning the development of cyclodextrin derivatives specifically as either chiral mobile phases for capillary electrophoresis, or chiral stationary phases for various chromatographic techniques including gas chromatography, or high-performance liquid chromatography and supercritical fluid chromatography. The ongoing thread in this

book is the synthesis of structurally-defined cyclodextrin derivatives and their applications in enantiomer separation by means of different analytical techniques. Modified Cyclodextrins for Chiral Separation is intended for those who are interested in expanding their knowledge of cyclodextrin chemistry and chiral separation, and in what cyclodextrin modification can be made to suit the needs of chiral selectors for different analytical techniques. It primarily focuses on the state-of-the-art cyclodextrin chemistry which is the basis for all chiral selectors used in these chiral separation techniques. Weihua Tang, PhD, is a professor at the Key Laboratory of Soft Chemistry and Functional Materials, Ministry of Education, Nanjing University of Science and Technology, China. Siu-Choon Ng, PhD, is a professor at the Division of Chemical and Biomedical Engineering, School of Chemical and Biomedical Engineering, Nanyang Technological University, Singapore. Dongping Sun, PhD, is a professor at the Key Laboratory of Soft Chemistry and Functional Materials, Ministry of Education, Nanjing University of Science and Technology, China.

Wiley-VCH

Chiral Chromatography Thomas E. Beesley Advanced Separation Technologies Inc., Whippany, New Jersey, USA Raymond P. W. Scott Chemistry Department, Georgetown University, Washington DC, USA and Chemistry Department, Birkbeck College, University of London, UK Analytical techniques based on separation processes, such as chromatography and electrophoresis, are finding a growing range of applications in chemical, pharmaceutical and clinical laboratories. The Wiley Separation Science Series provides the analyst in these laboratories with well-focused books covering individual techniques, so that they can be applied more efficiently and effectively to contemporary analytical problems. The different enantiomers of a drug can exhibit widely different physiological activity in degree and nature. As a result, the separation and identification of enantiomers is now a very important analytical problem and chiral chromatography is the natural technique to apply to the resolution of such mixtures. Chiral Chromatography provides the reader with a basic understanding of the nature of chromatographic separations and relates the principles specifically to the separation of enantiomers. The following information is included: * chiral separations involving both gas

and liquid chromatography * descriptions of the apparatus used for both techniques * detailed discussion on the retention mechanism that results in chiral selectivity * the structure and synthesis of a wide range of chirally active stationary phases used in both gas and liquid chromatography * preparative applications for large scale purification of enantiomers * applications of capillary electrophoresis and capillary electrochromatography. In addition to the above, a large number of examples of the separation of both commercially and physiologically interesting chiral mixtures are given, as is a detailed discussion on the mechanism of selectivity of each example. Thomas Beesley was founder and is the CEO for a leading manufacturer of chiral stationary phases and has published papers on TLC, HPLC and chiral separations involving cyclodextrins. He has also coauthored papers with Daniel W. Armstrong, an expert on modern cyclodextrin columns. Raymond Scott has worked in the field of separation science for over 40 years and has contributed extensively to the development of both gas and liquid chromatography publishing over 160 papers on the subjects.

A Practical Approach to Chiral Separations by Liquid

Chromatography Springer Science & Business Media

Discusses chiral separations and offers guidance for selecting the optimum method for desired results Chiral separations represent the most intriguing and, by some measures, most difficult separations of chemical compounds. This book provides researchers and students an understanding of chiral separations and offers a convenient route to selecting the best separation method, saving considerable time and cost in product development. Considering chiral separations in the biotechnological and pharmaceutical industries, as well as for food applications, Dr. Ahuja provides insights into a broad range of topics. Opening with a broad overview of chiral separations, regulatory considerations in drug product development, and basic issues in method development, the book: Covers a variety of modern methods such as gas chromatography, high performance liquid chromatography, supercritical fluid chromatography, and capillary electrophoresis Deals with the impact of chirality on the biological activity of small and large molecules Provides detailed information on useful chiral stationary phases (CSPs) for HPLC Includes handy information on selection of an appropriate CSP, including mechanistic studies Offers strategies for fast

method development with HPLC, SFC, and CE Discusses preparatory methods utilized in the pharmaceutical industry With in-depth discussions of the current state of the field as well as suggestions to assist future developments, Chiral Separation Methods for Pharmaceutical and Biotechnological Products is an essential text for laboratory investigators, managers, and regulators who are involved in chiral separations in the pharmaceutical industry, as well as students preparing for careers in these fields.

Chiral Separations by Capillary Electrophoresis Springer

This is a completely revised and updated sequel to 'A Practical Approach to Chiral Separations by Liquid Chromatography' by the same editor. The scope has been extended to further chiral separation techniques like electrophoresis, membrane separations, or biological assays. More emphasis is put on preparative separation techniques. From reviews of the previous edition: 'A team of experts from academic and industrial laboratories throughout the world have compiled their findings and experience to make this book an exceptionally timely and unique contribution to the field' European Journal of Drug Metabolism 'The dense mass of information contained in this book will make it a valuable resource ...' Chemical Engineering Research '... this is a worthwhile addition to the expanding chiral literature and the book should be of value to those working in this field' The Analyst

Investigation of Achiral/chiral Separations by High Performance Liquid Chromatography and Capillary Zone Electrophoresis CRC Press

This book includes both fundamental studies and applications in a multidisciplinary research field involving a high diversity of chiral compounds, including commercial substances with industrial applications, pharmaceuticals, and new chiral compounds with promising biological activities.

Introduction to Modern Liquid Chromatography Springer

Enantiomeric separations are an essential component of pharmaceutical drug development, not only at the analytical scale, but also to separate usable quantities for further analysis. The field of asymmetric synthesis is also heavily dependent on chromatographic methods to separate and quantify the results of asymmetric transformations as well as characterize new ligands and catalysts. This dissertation focuses on the use of

macrocyclic chiral stationary phases for use in high performance liquid chromatography as well as subcritical fluid chromatography to separate individual enantiomers of molecules of importance to the scientific community. Optimized separation conditions are provided for many of these important analytes, which will expedite the evaluation of their usefulness in a variety of applications. Particular emphasis is put on elucidating the mechanism of interaction between analyte and stationary phase. In chapters two and three, principle component analysis is applied to the chromatographic data to gain better understanding of the factors contributing to retention and enantioselectivity. It was shown that optimized separation conditions are also provided for newly synthesized isochromene and Tröger base derivatives using cyclodextrin and cyclofructan based chiral stationary phases. The fourth chapter provides separation conditions for a variety of novel synthetic biaryl atropisomers, which have the potential to serve as useful ligands in asymmetric transformations as well as possessing antibiotic/antimicrobial properties. Preparative scale separation conditions are also provided allowing for these important analytes to be prepared and evaluated in their enantiomerically pure form. Insight into the mechanism of analyte retention is provided indicating that dipolarity/polarizability is the primary retentive interaction between substituted biaryls and derivatized cyclofructans. Chapter five provided a valuable comparison of commonly used chromatographic conditions for the separation of primary amines using cyclofructan based chiral stationary phases. The effect of various additives and polar modifiers was investigated and the results indicate that a combination of acidic and basic additives is necessary to obtain optimal separations. The advantages of individual chromatographic modes are also provided. Normal phase separations provided the greatest selectivities at the cost of longer analysis times while modified carbon dioxide mobile phases provided excellent peak profiles and short analysis times. Preparative scale separations are also provided using modified carbon dioxide mobile phases allowing for enantiopure

compounds to be prepared in an environmentally friendly manner without the use of petroleum based solvents.

Liquid Chromatography Springer Science & Business Media

This volume represents the proceedings of the second international meeting on chiral separations held at the University of Surrey between the 12th and 15th of September 1989. Like the preceding meeting, it was jointly organised by the Chromatographic Society and the Robens Institute of the University of Surrey in response to the continued interest in this area of separation science. Of particular interest to the organisers was the very clear change in the nature of the delegates attending this second symposium as compared with the first. At the previous meeting the majority of the delegates were composed of chromatographers with problems in the area of chiral separations who were keen to learn as much as possible about these techniques from the handful of recognised experts in this area. In this second symposium the divide between expert and novice was much less apparent, with the latter providing many interesting and useful contributions to the scientific programme in terms of both oral and poster presentations.

Chiral Recognition in Separation Methods American Chemical Society

This book is a comprehensive compilation of modern and cutting-edge chromatographic techniques written by pharmaceutical industry experts, academics, and vendors in the field. This book is an inclusive guide to developing all chromatographic methods (such as liquid chromatography and gas chromatography). It covers modern techniques for developing methods using chromatographic development software, requirements for validations, discussion on orthogonality, and how to transfer methods from HPLC to UHPLC. The text introduces some newer techniques that are heavily employed by chemists analyzing proteins and RNAi, as well as novel techniques such as counter current chromatography. This book is valuable for both the novice starting out in undergraduate labs and those who are new to the pharmaceutical industry and is a useful reference for seasoned

analysts.

Chiral Separation Methods for Pharmaceutical and Biotechnological Products CRC Press

This book is a resource for scientists with interests in chiral separation using high-performance liquid chromatography (HPLC). The practical approach helps chromatographers in the lab so that they may be able to deal with this aspect of their job. It provides extensive coverage of up-to-date development, applications and information in the area of chiral HPLC that are useful for analytical chemists, organic chemists, chemical engineers, professionals in pharmaceutical, biotech and other industry as well as regulatory bodies and policy makers.

Chromatographic Methods Development John Wiley & Sons

This volume represents the proceedings of a two-day international meeting on chiral chromatography held at the University of Surrey between 3-4 September 1987. The meeting was jointly organized by the Chromatographic Society and the Robens Institute of the University of Surrey in response to the burgeoning interest in this rapid maturing field of chromatography. Nowhere is this interest more evident than in the agrochemical and pharmaceutical industries where the implications of different pharmacological and toxicological activity for the individual enantiomers present in a racemic drug or insecticide is an increasing area of concern. Developments in the area of chiral separations are at last beginning to provide Scientists with the necessary tools to study how animals and man handle racemates and relate their observations to the observed biological effects of these substances. The development of robust and simple methods for the separation of enantiomers will therefore have a profound impact on safety evaluation and drug design. The meeting proved to be very successful, with over 160 delegates from thirteen countries in Europe and America present to learn from the experiences of experts in the field of chiral chromatography and to hear about the latest developments. Hopefully, in future symposia on chiral separations at the University of Surrey.

Related with Chiral Separations By Liquid Chromatography And Related Technologies Chromatographic Science Series:

© [Chiral Separations By Liquid Chromatography And Related Technologies Chromatographic Science Series Ap Calculus Ab Exam Practice](#)

© [Chiral Separations By Liquid Chromatography And Related Technologies Chromatographic Science Series Ap Biology Unit 2 Cell Structure And Function](#)

© [Chiral Separations By Liquid Chromatography And Related Technologies Chromatographic Science Series Ap Calculus Bc Practice Multiple Choice](#)