

1. Record Nr.	UNINA9910684596903321
Titolo	Chiral separations and stereochemical elucidation : fundamentals, methods, and applications / / edited by Joao Marcos Batista Junior [and three others]
Pubbl/distr/stampa	Hoboken, New Jersey : , : John Wiley & Sons, Inc., , [2023] ©2023
ISBN	1-119-80228-8 1-119-80227-X
Descrizione fisica	1 online resource (643 pages)
Disciplina	541.223
Soggetti	Chirality Stereochemistry
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Cover -- Title Page -- Copyright Page -- Contents -- List of Contributors -- Preface -- Part I Fundamentals of Chiral Separation -- Chapter 1 Chiral Separation by LC -- 1.1 Introduction -- 1.2 Workflow for LC Chiral Method Development -- 1.3 New Column Technologies -- 1.4 Selected Examples of Fast Separation -- 1.5 Chiral 2D-LC -- 1.5.1 LC-LC and mLC-LC -- 1.5.2 LC × LC and sLC × LC -- 1.6 Future and Perspectives -- References -- Chapter 2 Chiral Separation by GC -- 2.1 Introduction -- 2.2 Chiral Recognition in Gas Chromatography -- 2.2.1 Chiral Recognition by Hydrogen Bonding -- 2.2.2 Chiral Recognition Using Chiral Metal Complexes -- 2.2.3 Chiral Recognition by Host-Guest Interactions -- 2.3 Preparation of Fused-Silica Capillaries for GC with CSPs -- 2.4 Application of CSPs in Chiral Gas Chromatography -- 2.4.1 CSPs with Diamide Selectors -- 2.4.1.1 Chirasil-Val -- 2.4.2 CSPs with CD Selectors -- 2.4.2.1 Heptakis(2,3,6-tri-O-Methyl)--Cyclodextrin(Permethy--Cyclodextrin) -- 2.4.2.2 Heptakis(2,3,6-tri-O-Methyl)--Cyclodextrin Immobilized to Hydrido Dimethyl Polysiloxane (Chirasil--Dex) -- 2.4.2.3 Heptakis(2,6-di-O-Methyl-3-O-Pentyl)--Cyclodextrin -- 2.4.2.4 Hexakis-(2,3,6-tri-O-Pentyl)--Cyclodextrin -- 2.4.2.5 Heptakis(2,3,6-tri-O-Pentyl)--Cyclodextrin -- 2.4.2.6 Hexakis-(3-O-Acetyl-2,6-di-O-Pentyl)--Cyclodextrin --

2.4.2.7 Heptakis(3-O-Acetyl-2,6-di-O-Pentyl)--Cyclodextrin --
 2.4.2.8 Octakis(3-O-Butyryl-2,6-di-O-Pentyl)--Cyclodextrin --
 2.4.2.9 Hexakis/Heptakis/Octakis(2,6-di-O-Alkyl-3-O-Trifluoroacetyl)
 -//Cyclodextrins -- 2.4.2.10 Heptakis(2,3-di-O-Acetyl-6-O-tert-
 Butyldimethylsilyl)--Cyclodextrin (DIAC-6-TBDMS--CD) -- 2.4.2.11
 Heptakis(2,3-di-O-Methyl-6-O-tert-Butyldimethylsilyl)--Cyclodextrin
 (DIME-6-TBDMS--CD) -- 2.4.3 Cyclofructans -- 2.4.4 CSPs with Metal
 Complexes -- 2.5 Conclusion -- References.
 Chapter 3 Chiral Separation by Supercritical Fluid Chromatography --
 3.1 Introduction -- 3.2 Characteristics and Properties of Supercritical
 Fluids -- 3.3 Development of a Chiral SFC Method -- 3.3.1 Chiral
 Stationary Phases -- 3.3.2 Mobile Phases -- 3.3.2.1 Mobile Phase: Type
 of Co-solvent Used -- 3.3.2.2 Mobile Phase: Percentage of Co-solvent
 Used -- 3.3.2.3 Mobile Phase: Use of Additives -- 3.4 Operating
 Parameters -- 3.4.1 Effect of the Flow Rate -- 3.4.2 Effect of the Outlet
 Pressure (Back-pressure) -- 3.4.2.1 Effect of Pressure When the Mobile
 Phase is a Gas-Like Fluid -- 3.4.2.2 Effect of Pressure When the Mobile
 Phase is a Liquid-Like Fluid -- 3.4.3 Effect of Temperature -- 3.4.3.1
 Effect of Temperature When the Mobile Phase is a Gas-Like Fluid --
 3.4.3.2 Effect of Temperature When the Mobile Phase is a Liquid-Like
 Fluid -- 3.5 Detection -- 3.6 Scale-Up to Preparative Separation -- 3.7
 Conclusion -- References -- Chapter 4 Chiral Separation by Capillary
 Electrophoresis and Capillary Electrophoresis-Mass Spectrometry:
 Fundamentals, Recent Developments, and Applications -- 4.1
 Introduction -- 4.2 Principles of Chiral CE -- 4.2.1 Electrophoretic
 Mobility -- 4.2.2 CE Separation Efficiency -- 4.2.3 Chiral Resolution in
 CE -- 4.2.4 Chiral Micellar Electrokinetic Chromatography and Capillary
 Electrochromatography -- 4.3 Short History of Chiral CE Modes --
 4.3.1 Chiral CE -- 4.3.2 Chiral MEKC and Chiral CEC -- 4.4 State of the
 Art and Recent Developments -- 4.4.1 Common Chiral Selectors --
 4.4.2 Ionic Liquids as Chiral Selectors -- 4.4.3 Nanoparticles as Chiral
 Selector Carriers -- 4.4.4 Microfluidic Chiral CE -- 4.5 Applications of
 Chiral CE -- 4.5.1 Pharmaceutical Analysis -- 4.5.2 Food Analysis --
 4.5.3 Environmental Analysis -- 4.5.4 Bioanalysis -- 4.5.5 Forensic
 Analysis -- 4.6 Chiral CE-MS: Strategies and Challenges.
 4.6.1 Hyphenation Approaches -- 4.6.1.1 Sheath-Liquid and
 Sheathless CE-MS Interfacing -- 4.6.1.2 Partial-Filling Techniques --
 4.6.1.3 Counter-Migration Techniques -- 4.6.2 Chiral MEKC-MS --
 4.6.3 Chiral CEC-MS -- 4.7 Conclusions and Perspectives -- References
 -- Chapter 5 Chiral Separations at Semi and Preparative Scale -- 5.1
 Introduction -- 5.2 Selection of Operating Conditions -- 5.3 Batch
 HPLC Purification -- 5.3.1 Analytical Method Development for
 Preparative Separations -- 5.3.2 Batch HPLC Examples -- 5.3.2.1 Batch
 HPLC Example 1 -- 5.3.2.2 Batch HPLC Example 2 -- 5.4 Steady-State
 Recycle Introduction -- 5.4.1 SSR Example 1 -- 5.5 Simulated Moving
 Bed Chromatography - Introduction -- 5.5.1 SMB Examples for R&
 -- D and Separation of Compound 2 -- 5.5.2 Development of a
 Manufacturing SMB Process (Compound 1) -- 5.5.3 Cost for SMB
 Processes -- 5.6 Introduction to Supercritical Fluid Chromatography --
 5.6.1 Analytical Method Development for Scale-up to Preparative SFC
 -- 5.6.2 Preparative SFC Example 1 -- 5.6.3 Preparative SFC Example 2
 -- 5.7 Options for Increasing Purification Productivity -- 5.7.1 Closed-
 Loop Recycling -- 5.7.2 Stacked Injections -- 5.7.3 Choosing the Best
 Synthetic Intermediate for Separation -- 5.7.3.1 Choosing Synthetic
 Step for Separation - HPLC/SMB Example -- 5.7.3.2 Choosing Synthetic
 Step for Separation - SFC Example -- 5.7.4 Use of Non-
 Commercialized CSP -- 5.7.5 Immobilized CSP for Preparative
 Resolution -- 5.7.5.1 Processing of Low Solubility Racemate -- 5.7.5.2

Preparative Resolution of EMD 53986 -- 5.8 Choosing a Technique for Preparative Enantioseparation -- 5.9 Conclusion -- References -- Part II Chiral Selectors -- Chapter 6 Polysaccharides -- 6.1 Introduction -- 6.2 The Early Years -- 6.3 Polysaccharide Chiral Separation Mechanism -- 6.4 Coated Chiral Stationary Phases. 6.5 Immobilized Chiral Stationary Phases -- 6.6 Applications of Polysaccharide-Derived CSPs -- 6.6.1 Analytical Applications -- 6.6.1.1 Pharmaceuticals -- 6.6.1.2 Agrochemicals -- 6.6.1.3 Food Analysis -- 6.6.2 Preparative Applications -- 6.7 Summation -- References -- Chapter 7 Macrocyclic Antibiotics and Cyclofructans -- 7.1 Introduction -- 7.2 Macrocyclic Glycopeptides Physicochemical Properties -- 7.3 Using the Chiral Macrocyclic Glycopeptides Stationary Phases -- 7.3.1 Mobile Phases and Chromatographic Modes -- 7.3.2 Chromatographic Enantioseparations -- 7.3.2.1 Amino Acids and Peptides -- 7.3.2.2 Chiral Compounds -- 7.3.2.3 Particle Structure -- 7.4 Using and Protecting Macrocyclic Glycopeptide Chiral Columns -- 7.4.1 Operating Conditions -- 7.4.2 Storage -- 7.5 Cyclofructans -- 7.5.1 Cyclofructan Structure and Properties -- 7.5.2 Chiral Separations with Cyclofructan-Based Stationary Phases -- 7.5.3 Cyclofructan Stationary Phases Used in the HILIC Mode -- 7.5.4 Cyclofructan Stationary Phases Used in Supercritical Fluid Chromatography -- 7.6 Conclusions -- References -- Chapter 8 Cyclodextrins -- 8.1 Introduction -- 8.2 Structure and Properties -- 8.3 Cyclodextrin Complexes -- 8.4 Application in Separation Science -- 8.4.1 Gas Chromatography -- 8.4.1.1 Types of Cyclodextrins -- 8.4.1.2 Types of Columns -- 8.4.1.3 Separation Mechanisms -- 8.4.1.4 Applications -- 8.4.2 Thin-Layer Chromatography -- 8.4.3 High-Performance Liquid Chromatography -- 8.4.3.1 Types of Columns -- 8.4.3.2 Types of Cyclodextrins -- 8.4.3.3 Separation Mechanisms -- 8.4.3.4 Applications -- 8.4.4 Supercritical Fluid Chromatography -- 8.4.5 Capillary Electromigration Techniques -- 8.4.5.1 Types of Cyclodextrins -- 8.4.5.2 Separation Mechanisms -- 8.4.5.3 Migration Modes and Enantiomer Migration Order Using CDs as Selectors -- 8.4.5.4 Applications -- 8.4.6 Membrane Technologies. 8.5 Miscellaneous Applications -- 8.6 Conclusions and Outlook -- References -- Chapter 9 Pirkle Type -- 9.1 Introduction -- 9.2 CSPs Developed by Pirkle's Group: Chronological Evolution -- 9.3 Pirkle-Type CSPs Developed by Other Research Groups -- 9.4 Example of Applications in Analytical and Preparative Scales -- 9.4.1 Analytical Applications -- 9.4.2 Preparative Applications -- 9.5 Conclusions and Perspectives -- References -- Chapter 10 Proteins -- 10.1 Introduction -- 10.2 Preparation of Protein-and Glycoprotein-Based Chiral Stationary Phases -- 10.3 Types of Protein-and Glycoprotein-Based Chiral Stationary Phases -- 10.3.1 Proteins -- 10.3.1.1 Bovine Serum Albumin -- 10.3.1.2 Human Serum Albumin -- 10.3.1.3 Trypsin and -Chymotrypsin -- 10.3.1.4 Lysozyme and Pepsin -- 10.3.1.5 Fatty Acid-Binding Protein -- 10.3.1.6 Penicillin G Acylase -- 10.3.1.7 Streptavidin -- 10.3.1.8 Lipase -- 10.3.2 Glycoproteins -- 10.3.2.1 Human 1-Acid Glycoprotein -- 10.3.2.2 Chicken Ovomucoid -- 10.3.2.3 Chicken 1-Acid Glycoprotein -- 10.3.2.4 Avidin -- 10.3.2.5 Riboflavin-Binding Protein and Ovotransferrin -- 10.3.2.6 Cellobiohydrolase -- 10.3.2.7 Glucoamylase -- 10.3.2.8 Antibody (Immunoglobulin G) -- 10.3.2.9 Nicotinic Acetylcholine Receptor and Human Liver Organic Cation Transporter -- 10.4 Chiral Recognition Mechanisms on Protein-and Glycoprotein-Based Chiral Stationary Phases -- 10.4.1 Human Serum Albumin -- 10.4.2 Penicillin G Acylase -- 10.4.3 Human 1-Acid Glycoprotein -- 10.4.4 Turkey Ovomucoid -- 10.4.5 Chicken 1-Acid Glycoprotein -- 10.4.6 Cellobiohydrolase

-- 10.4.7 Antibody -- 10.4.8 Nicotinic Acetylcholine Receptor and Human Liver Organic Cation Transporter -- 10.5 Conclusions -- References -- Chapter 11 Chiral Stationary Phases Derived from Cinchona Alkaloids -- 11.1 Introduction -- 11.2 Cinchona Alkaloid-Derived Chiral Stationary Phases.
11.3 Chiral Recognition.
