

Reviews High Performance Capillary Electrophoresis

Over the last decade, high performance Capillary electrophoresis (HPCE) has emerged as a powerful and versatile separation technique that promises to rival high performance liquid chromatography when applied to the separation of both charged and neutral species. The high speed and high separation efficiency which can be attained using any of the various modes of HPCE has resulted in the increased use of the technique in a range of analytical environments. The procedures are, however, still in the early stages of development and several barriers remain to their adoption as the technique of choice for a range of analytical problems. One such barrier is the selection and optimization of the conditions required to achieve reproducible separations of analytes and it is in this area that this new book seeks to give assistance. The book is written by an international team of authors, drawn from both academic and industrial users, and the manufacturers of instruments. At its heart are a number of tables, divided into specific applications. These give details of published separations of a wide range of archetypal analytes, the successful separation conditions and the matrix in which they were presented. These tables are based on separations reported since 1992 and are fully referenced to the original literature. The tables are supported by discussions of the problems that a particular area presents and the strategies and solutions adopted to overcome them. The general areas covered are biochemistry, pharmaceutical science, bioscience, ion analysis, analysis and environmental science.

Reports up-to-date research developments on purifying and isolation large organic molecules. The text provides information on high-performance liquid chromatography and capillary electrophoresis (CE) as tools for analyzing biomacromolecules and developing new biochemical and medicinal compounds. It applies biochemical separation technology to the study of macromolecules such as proteins, polysaccharides, nucleic acids and more.

Capillary Electromigration Separation Methods is a thorough, encompassing reference that not only defines the concept of contemporary practice, but also demonstrates its implementation in laboratory science. Chapters are authored by recognized experts in the field, ensuring that the content reflects the latest developments in research. Thorough, comprehensive coverage makes this the ideal reference for project planning, and extensive selected referencing facilitates identification of key information. The book defines the concept of contemporary practice in capillary electromigration separation methods, also discussing its applications in small mass ions, stereoisomers, and proteins. Edited and authored by world-leading capillary electrophoresis experts Presents comprehensive coverage on the subject Includes extensive referencing that facilitates the identification of key research developments Provides more than 50 figures and tables that aid in the retention of key concepts

The Industry-University Cooperative Chemistry Program (IUCCP) has sponsored eight previous international symposia covering a range of topics of interest to industrial and academic chemists. The ninth IUCCP Symposium, held March 18-21, 1991 at Texas A&M University was the second in a two part series focusing on Biotechnology. The title for this Symposium "Applications of Enzyme Biotechnology" was by design a rather all encompassing title, similar in some respects to the discipline. Biotechnology refers to the application of biochemistry for the development of a commercial product. Persons employed in or interested in biotechnology may be chemists, molecular biologists, biophysicists, or physicians. The breadth of biotech research projects requires close collaboration between scientists of a variety of backgrounds, prejudices, and interests. Biotechnology is a comparatively new discipline closely tied to new developments in the fields of chemistry, biochemistry, molecular biology and medicine. The primary function of Texas A&M University is to educate students who will be appropriately trained to carry out the mission of biotechnology. The IUCCP Symposium serves as an important forum for fostering closer ties between academia and industry and exchanging ideas so important to this evolving area.

A Balance of Theory and Practice

Chemical Analysis of Food

Analysis of Chiral Organic Molecules

High-Performance Capillary Electrophoresis

Applications of Enzyme Biotechnology

Presenting recent developments in various spectroscopic techniques such as NMR Spectroscopy, mass spectroscopy etc. in the form of comprehensive reviews written by leading authorities in the field. This monograph should prove exceedingly useful to both research students and postdoctoral workers who wish to keep abreast with frontiers in analytical techniques.

Chromatography has emerged as the most important and versatile analytical method. The book is not only an updated version of Hefmann's classical text, but it covers areas of future importance, such as microfluidics and computer resources. Under his experienced guidance, authorities in each field have contributed their practical experience to an integrated treatment of modern micro analysis. In Part A the theoretical basis of individual separation methods is explained and the technical aspects are illustrated. It includes the theory of gas and liquid chromatography as well as specific chromatographic techniques, such as size-exclusion, planar, ion, and affinity chromatography as well as various electrokinetic separation techniques. Microfluidics are covered for the first time and useful sources of analytical instruments are listed and evaluated. 1. Each chapter written by an authority 2. Thorough treatment of the theoretical basis of separation methods 3. Practical guide for performing analyses

This new book on capillary electrophoresis (CE) is unique in its focus on biotechnology. It is devoted to proteins, peptides, and techniques especially useful in the area of recombinant DNA products. Emphasis is also placed on glycoproteins. Because of the growing role of the glycosylation process in CE, a comprehensive chapter on the subject acts as a book within a book. Although this well-known researcher in biotechnology presents a number of chapters extensively discussing theories, important practical aspects in the routine use of capillary electrophoresis are also covered.

Capillary electrophoresis (CE) is a powerful analytical technique that is widely used in research and development and in quality control of pharmaceuticals. Many reports of highly efficient separations and methods have been published over the past 15 years. CE offers several advantages over high-pressure or high-performance liquid chromatography (HPLC). These include simplicity, rapid analysis, automation, ruggedness, different mechanisms for selectivity, and low cost. Moreover, EC requires smaller sample size and yet offers higher efficiency and thus greater resolution power over HPLC.

These characteristics are very attractive in research and development, even more so in pharmaceutical quality control (QC) and stability monitoring (SM) studies. This book will provide busy pharmaceutical scientists a complete yet concise reference guide for utilizing the versatility of CE in new drug development and quality control. - Provides current status and future developments in CE analysis of pharmaceuticals. - Explains how to develop and validate methods. - Includes major pharmaceutical applications including assays and impurity testing.

New Advances in Analytical Chemistry

Analysis of Pharmaceuticals by Capillary Electrophoresis

Handbook of Capillary Electrophoresis, Second Edition

High Performance Liquid Chromatography & Capillary Electrophoresis

Clinical and Forensic Applications of Capillary Electrophoresis

This book is designed to be a practical guide, used by wide audience, including those new to CE, those more experienced, routine users, those interested in technology development, and those involved with applications research. References have been emphasized to allow the reader to explore the detailed specifics and theoretical foundations. This book draws together the rapidly evolving, diverse, and multidisciplinary subject of capillary electrophoresis (CE). It is designed as a practical guide to be used by a wide audience, including those new to CE as well as more experienced users. This volume presents the capabilities, limitations, potentials, and future challenges facing each area of CE. Key aspects of this technique, such as high resolution capability, full automation, high speed separations, quantification of nanoliter sample volumes, and simultaneous multiple detection capabilities are presented in a concise and logical fashion. This book is designed to help you make the most of your CE separations, and includes comprehensive information on: Electroosmosis, separation efficiency, and Joule heating Detection methods In-depth discussion of the separation principles and capabilities of the major modes of CE Sieving gel electrophoresis Isoelectric focusing Free solution CE Micellar electrokinetic capillary chromatography Entangled polymer matrix-based separation Detailed treatment of the application of CE to a wide range of molecules, supplemented with extensive "hands-on" illustrations

"The book contains twenty three chapters written by experts on the subject is structured in two parts: the first one describes the role of the latest developments in analytical and bioanalytical techniques, and the second one deals with the most innovative applications and issues in food analysis. The two first introductory chapters about sampling technique, from basic one to the most recent advances, which is still a food challenge because is responsible of the quality and assurance of the analysis, andon data analysis and chemometrics are followed by a review of the most recently applied techniques in process (on-line) control and in laboratories for the analysis of major or minor compounds of food. These techniques ranged from the non-invasive and non-destructive ones, such as infrared spectroscopy, magnetic resonance and ultrasounds, to emerging areas as nanotechnology, biosensors and electronic noses and tongues, including those already well-established in food analysis, such as chromatographic andelectrophoretic techniques. These chapters also include two important tools for solving problems in chemical and biological analysis such as mass spectrometry and molecular-based techniques"

High performance capillary electrophoresis (HPCE) is the newest and perhaps most powerful separation technique available today. This single-authored text provides an integrated, comprehensive, and clearly illustrated look at the field. Users of HPCE will gain a basic understanding of principles underlying electrophoresis and go on to learn about mode selection, methods development, detection, and quantitative analysis. Ideally suited for analytical chemists and analytical biochemists with applications involving small molecules, proteins, peptides, DNA, and ion separations, this book provides a comparative assessment of related techniques. The author is an internationally recognised scientist and serves as the instructor for short courses on HPCE as offered by the American Chemical Society. * Stresses basic principles and applications * Helps users select appropriate HPCE modes and develop methods * Describes how to perform quantitative analyses * Reinforces concepts with clear illustrations

This handbook is a guide for workers in analytical chemistry who need a starting place for information about a specific instrumental technique. It gives a basic introduction to the techniques and provides leading references on the theory and methodology for an instrumental technique. This edition thoroughly expands and updates the chapters to include concepts, applications, and key references from recent literature. It also contains a new chapter on process analytical technology.

Interpol's Forensic Science Review

Handbook of Dairy Foods Analysis

Capillary Electrophoresis in Analytical Biotechnology

Ewing's Analytical Instrumentation Handbook, Fourth Edition

Since its inception in the early 1980s, capillary electrophoresis (CE) offers a great deal of flexibility as a modern analytical technique, and has found applications within many fields of analysis, particularly pharmaceutical science and biochemistry. Until now, food analysts have had difficulties in adopting the technique due to the lack of written guidance. Capillary Electrophoresis for Food Analysis: Method Development provides basic information and the support needed to enable food analysts to utilise the technique for the development of new separation methods. Designed specifically for the needs of food analysts, the book takes the reader through the process of developing and troubleshooting CE methods. Worked examples are included to make it ideal as a laboratory companion as well as a library reference source.

Every three years, worldwide forensic science experts gather at the Interpol Forensic Science Symposium to exchange ideas and discuss scientific advances in the field of forensic science and criminal justice. Drawn from contributions made at the latest gathering in Lyon, France, Interpol's Forensic Science Review is a one-source reference providing a comp

Capillary electrophoresis (CE) is a brand-new analytical me- hod with the capability of solving many analytical separa- tion problems very fast and economically. This method gives new information about the investigated substances which can- not easily be obtained by other means. CE has become an established method only recently, but will be implemented in almost every analytical laboratory in industry, service units and academia in the near future. The most important fields of CE application are pharmaceutical and biochemical research and quality control. The authors have exhaustive practical experience in the application of CE methods in the pharmaceutical industry and provide the reader with a comprehensive treatment of this method. The main focus is on how to solve problems when applying CE in the laboratory. Physico-chemical theory is only dealt with in depth when necessary to understand the underlying separation mechanisms in order to solve your problems at the analytical bench. An addendum includes tables on the preparation of buffers and recommended further reading.

Recent developments clearly indicate that speciation studies in biological and environmental matrices are much more important than the total element determination due to the tremendous difference in bioavailability and toxicity of various chemical forms of a particular element. Different separation-detection techniques and hyphenated systems—each with its own advantages and disadvantages with respect to precision, sensitivity and detection limit—have been developed for the identification and quantification of the species present in systems at ultra-trace levels. This book aims to evaluate the speciation analysis in depth and present a comprehensive review of state-of-the-art analytical approaches used for the speciation of elements in environmental samples.

Chromatography-A Century of Discovery 1900-2000.The Bridge to The Sciences/Technology

Method Development

Capillary Electrophoresis

Theory and Practice

Behavior, Separation and Characterisation

This book is intended to be a working guide to the operation of capillary electrophoresis (CE) instrumentation. Since CE is still a rap idly maturing technique, detailed validated protocols are not widely established. Therefore, extensive experimental procedures are not provided for individual analyses. The intention is to provide general guide lines on the principles and practice of CE and to give an overview of the specific technologies and important application areas. Part I provides operating instructions for standard capillary, method development, quantitative procedures, optimization of precision and sensitivity, and the validation of meth ods, fraction collection, and troubleshooting, as well as a quick guide to running a separation. The application range of CE is possibly the most diverse of all analytical techniques and ranges from large, complex macromolecules, such as proteins and nucleic acids, to small solutes, such as organic drugs and inorganic anions and cations.

Chromatography - A Century of Discovery 1900-2000 represents the combined thinking and contributions of many chromatographers. It includes several in-depth feature chapters covering the Beginnings of Chromatography, which highlights M.S. Tswett, the inventor of chromatography, and several other early pioneers. Included are the contributions of several Nobel Laureates, and 125 Chromatography Award Winners and contributors, an extensive bibliography of publications on the History of the Evolution of Chromatography, and as a bridge to selected sciences. Special chapters are written by well-known Chromatographers on Support and Stationary Phases, and Separations followed by a chapter on Milestones and Paradigm Shifts in Science. New discoveries in the life sciences and medicine, agriculture, the environment and separations technology in the 21st century will rely immeasurably on the 20th century research tools in chromatography and those yet to be developed.

Dairy foods account for a large portion of the Western diet, but due to the potential diversity of their sources, this food group often poses a challenge for food scientists and their research efforts. Bringing together the foremost minds in dairy research, Handbook of Dairy Foods Analysis compiles the top dairy analysis techniques and methodologies from around the world into one, well-organized volume. Co-Edited by Fidel Toldra - Recipient of the 2010 Distinguished Research Award from the American Meat Science Association, this handbook includes tools for analyzing chemical and biochemical compounds and also bioactive peptides, prebiotics, and probiotics. It describes noninvasive chemical and physical sensors and starter cultures used in quality control. Covers the Gamut of Dairy Analysis Techniques The book discusses current methods for the detection of microorganisms, allergens, and other adulterations, including those of environmental origin or introduced during processing. 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