

Food Analysis Food Science Text Series

Innovative Food Analysis presents a modern perspective on the development of robust, effective and sensitive techniques to ensure safety, quality and traceability of foods to meet industry standards. Significant enhancements of analytical accuracy, precision, detection limits and sampling has expanded the practical range of food applications, hence this reference offers modern food analysis in view of new trends in

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analytical techniques and applications to support both the scientific community and industry professionals. This reference covers the latest topics across existing and new technologies, giving emphasis on food authenticity, traceability, food fraud, food quality, food contaminants, sensory and nutritional analytics, and more. Covers the last ten years of applications across existing and new technologies of food analytics Presents an emphasis on techniques in food authenticity, traceability and food fraud Discusses bioavailability testing and product analysis of

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food allergens and foodomics

Updated to reflect changes in the industry during the last ten years, The Handbook of Food Analysis, Third Edition covers the new analysis systems, optimization of existing techniques, and automation and miniaturization methods. Under the editorial guidance of food science pioneer Leo M.L. Nollet and new editor Fidel Toldra, the chapters take an in

Wiley's landmark food chemistry textbook that provides an all-in-one reference book, revised and updated The revised second edition of The Chemistry of Food provides a comprehensive

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overview of important compounds constituting of food and raw materials for food production. The authors highlight food's structural features, chemical reactions, organoleptic properties, nutritional, and toxicological importance. The updated second edition reflects the thousands of new scientific papers concerning food chemistry and related disciplines that have been published since 2012. Recent discoveries deal with existing as well as new food constituents, their origin, reactivity, degradation, reactions with other compounds, organoleptic, biological, and other important properties. The second edition extends

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and supplements the current knowledge and presents new facts about chemistry, legislation, nutrition, and food safety. The main chapters of the book explore the chemical structure of substances and subchapters examine the properties or uses. This important resource:

- *Offers in a single volume an updated text dealing with food chemistry*
- *Contains complete and fully up-to-date information on food chemistry, from structural features to applications*
- *Features several visual aids including reaction schemes, diagrams and tables, and nearly 2,000 chemical structures*
- *Written by internationally*

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recognized authors on food chemistry Written for upper-level students, lecturers, researchers and the food industry, the revised second edition of *The Chemistry of Food* is a quick reference for almost anything food-related as pertains to its chemical properties and applications.

The field of sensory science has grown exponentially since the publication of the previous version of this work. Fifteen years ago the journal *Food Quality and Preference* was fairly new. Now it holds an eminent position as a venue for research on sensory test methods (among many other topics). Hundreds of articles relevant

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to sensory testing have appeared in that and in other journals such as the Journal of Sensory Studies. Knowledge of the intricate cellular processes in chemoreception, as well as their genetic basis, has undergone nothing less than a revolution, culminating in the award of the Nobel Prize to Buck and Axel in 2004 for their discovery of the olfactory receptor gene super family. Advances in statistical methodology have accelerated as well. Sensometrics meetings are now vigorous and well-attended annual events. Ideas like Thurstonian modeling were not widely embraced 15 years ago, but now seem to be part

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of the everyday thought process of many sensory scientists. And yet, some things stay the same. Sensory testing will always involve human participants. Humans are tough measuring instruments to work with. They come with varying degrees of acumen, training, experiences, differing genetic equipment, sensory capabilities, and of course, different preferences. Human foibles and their associated error variance will continue to place a limitation on sensory tests and actionable results. Reducing, controlling, partitioning, and explaining error variance are all at the heart of

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good test methods and practices.

Electronic Noses and Tongues in Food Science

Understanding Food Systems

Proteomics in Food Science

The Chemistry of Food

Food Protein Analysis

Vitamin Analysis for the Health and Food

Sciences, Second Edition

This book reviews methods of analysis and detection in the area of food science and technology. Each chapter deals with determination/quantification analyses of quality parameters in food, covering topics such as

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lipids, color, texture, and rheological properties in different food products. The book focuses on the most common methods of analysis, p
Ideal for planning, performing, and interpreting food protein analyses, especially as it relates to the effect of food processing on protei
investigation results. Delineates basic research principles, practices, and anticipated outcomes in each of the illustrated protein assays.

This second edition laboratory manual was written to accompany Food Analysis, Fourth Edition, ISBN 978-1-4419-1477-4, by the same author. The 21 laboratory exercises in the manual

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cover 20 of the 32 chapters in the textbook. Many of the laboratory exercises have multiple sections to cover several methods of analysis for a particular food component of characteristic. Most of the laboratory exercises include the following: introduction, reading assignment, objective, principle of method, chemicals, reagents, precautions and waste disposal, supplies, equipment, procedure, data and calculations, questions, and references. This laboratory manual is ideal for the laboratory portion of undergraduate courses in food analysis. Advanced Food Analysis Tools: Biosensors and

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Nanotechnology provides the latest information on innovative biosensors and tools that are used to perform on-site detection tests. Food safety is a global health goal, with the food industry providing testing and guidance to keep the population safe. Food contamination is mainly caused by harmful substances and biological organisms, including bacteria, viruses and parasites, which can all have a major impact on human health. The lack of specific, low-cost, rapid, sensitive and easy detection of harmful compounds has resulted in the development of the electrochemical technologies that are

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presented in this book. Includes the most recent and innovative biosensor and nanotechnology for the food industry Applies the most current trends in food analysis research Presents opportunities for unique electrochemical tools to enhance performance

Properties, Analysis And Applications

Omic Strategies and Applications in Food Science

Sensory Analysis, Chemistry, and Physiology

Handbook of Water Analysis, Third Edition

Handbook of Flavor Characterization

Statistical Methods for Food Science

Proteins in Food Processing, Second Edition, reviews

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how proteins may be used to enhance the nutritional, textural and other qualities of food products. After two introductory chapters, the book discusses sources of proteins, examining the caseins, whey, muscle and soy proteins, and proteins from oil-producing plants, cereals and seaweed. Part Two illustrates the analysis and modification of proteins, with chapters on testing protein functionality, modeling protein behavior, extracting and purifying proteins and reducing their allergenicity. A final group of chapters delves into the functional value of proteins and how they are used as additives in foods. Completely revised and updated

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with new developments on all food protein analysis and applications, such as alternative proteins sources, proteins as emulsifiers, proteins in nanotechnology and egg proteins Reviews the wide range of protein sources available Examines ways of modifying protein sources Discusses the use of proteins to enhance the nutritional, textural and other qualities of food products

Understanding Food Systems: Agriculture, Food Science, and Nutrition in the United States explores the complex and evolving system from which the United States gets its food. From farm, to home, and

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everything in-between, the authors use a scientific perspective that explains the fundamentals of agricultural production, food science, and human nutrition that will guide readers through the issues that shape our food system, including political, societal, environmental, economic, and ethical concerns. Presenting the role and impact of technology, from production to processing and safety, to cultural and consumer behavior perspectives, the book also explores the link between food systems and the history of nutrients and diet patterns, and how these influence disease occurrence. Current topics of

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concern and debate, including the correlations between food systems and diet-related diseases, such as obesity and diabetes are explored, as are the history and current status of food insecurity and accessibility. Throughout the text, readers are exposed to current topics that play important roles in personal food choices and how they influence components of the food system. Presents the evolution of the US food system, from historical beginnings, to current consumer and political roles and responsibilities Provides farm to fork insights on production and consumption practices in the United States Explores

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complex topics in call-out boxes throughout the text to help readers understand the various perspectives on controversial topics

Presenting an up-to-date review of the state-of-the-art and main applications of omics technologies to current hot topics in food sciences, this book is divided into four convenient sections. The first section represents an introduction to the development of foodomics and will provide a general overview of DNA-based and protein-based methods. The second section is focused on the main applications of omics to food safety issues, such as chemical hazards, foodborne

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pathogens, phages, food authentication or GMO detection. The third section is focused on specific food groups and how omics have revolutionized the investigation of dairy and meat products, seafood, agricultural and fermented food products. Finally, the fourth section is devoted to the link between foodomics and health: hot topics such as nutrimetabolomics, food allergy or probiotics are reviewed here. The book brings together work from top international scientists to produce the most significant academic book for some years on omics and food for a broad audience. It presents unique

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features not covered so far by other books, such as a detailed description of different strategies and applications of omics techniques to many food sectors and provides a welcome addition to the cutting-edge literature in this area for researchers and professionals in food science and food chemistry. Food engineering is a required class in food science programs, as outlined by the Institute for Food Technologists (IFT). The concepts and applications are also required for professionals in food processing and manufacturing to attain the highest standards of food safety and quality. The third edition of this successful

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textbook succinctly presents the engineering concepts and unit operations used in food processing, in a unique blend of principles with applications. The authors use their many years of teaching to present food engineering concepts in a logical progression that covers the standard course curriculum. Each chapter describes the application of a particular principle followed by the quantitative relationships that define the related processes, solved examples, and problems to test understanding. The subjects the authors have selected to illustrate engineering principles demonstrate the relationship of engineering to the

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chemistry, microbiology, nutrition and processing of foods. Topics incorporate both traditional and contemporary food processing operations.

Analysis, Content and Potential Health Effects

Sensory Evaluation of Food

Food Flavors: Formation, Analysis and Packaging Influences

Sensory Analysis for Food and Beverage Quality Control

Foodomics

Vitamins In Foods

The food analyst plays an important role in modern society.

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Stricter control over additives in food and concern about the effects of contamination of food by industrial and agricultural chemicals are among the developments which are leading to an increasing emphasis on detailed and accurate analysis of food. However, analysis of food is required for many reasons, including detection of toxic components, monitoring legislation, detecting adulteration, formulation of controlled diets, controlling formulation during product development and detecting changes in food during storage and processing. Foods comprise a complex mixture of components and food analysis requires efficient methods of separation with high sensitivity or specificity of detection. Although many food components are involatile or thermally labile and therefore not suitable for analysis by

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gas chromatography, other components are volatile and this technique is the preferred analytical method.

Developments in methods of derivatization, injector design and column technology have also extended the applicability of gas chromatography to the analysis of relatively involatile compounds.

Explore the Pros and Cons of Food Analysis Instruments
The identification, speciation, and determination of components, additives, and contaminants in raw materials and products will always be a critical task in food processing and manufacturing. With contributions from leading scientists, many of whom actually developed or refined each technique or

Introduction to the Chemistry of Food describes the

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molecular composition of food and the chemistry of its components. It provides students with an understanding of chemical and biochemical reactions that impact food quality and contribute to wellness. This innovative approach enables students in food science, nutrition and culinology to better understand the role of chemistry in food. Specifically, the text provides background in food composition, demonstrates how chemistry impacts quality, and highlights its role in creating novel foods. Each chapter contains a review section with suggested learning activities. Text and supplemental materials can be used in traditional face-to-face, distance, or blended learning formats. Describes the major and minor components of food Explains the functional properties contributed by proteins, carbohydrates and lipids

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in food Explores the chemical and enzymatic reactions affecting food attributes (color, flavor and nutritional quality) Describes the gut microbiome and influence of food components on its microbial population Reviews major food systems and novel sources of food protein

This fifth edition provides information on techniques needed to analyze foods for chemical and physical properties. The book is ideal for undergraduate courses in food analysis and is also an invaluable reference to professionals in the food industry. General information chapters on regulations, labeling, sampling, and data handling provide background information for chapters on specific methods to determine chemical composition and characteristics, physical properties, and objectionable matter and constituents.

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Methods of analysis covered include information on the basic principles, advantages, limitations, and applications. Sections on spectroscopy and chromatography along with chapters on techniques such as immunoassays, thermal analysis, and microscopy from the perspective of their use in food analysis have been expanded. Instructors who adopt the textbook can contact the editor for access to a website with related teaching materials.

Food Carbohydrates

Methods in Food Analysis

Biosensors and Nanotechnology

Answers to Study Questions

Introduction to Food Chemistry

Introduction to Food Engineering

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The shelf-life of a product is critical in determining both its quality and profitability. This important collection reviews the key factors in determining shelf-life and how it can be measured. Part one examines the factors affecting shelf-life and spoilage, including individual chapters on the major types of food spoilage, the role of moisture and temperature, spoilage yeasts, the Maillard reaction and the factors underlying lipid oxidation. Part two addresses the best ways of measuring the shelf-life of foods, with chapters on modelling food spoilage, measuring and modelling glass

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transition, detecting spoilage yeasts, measuring lipid oxidation, the design and validation of shelf-life tests and the use of accelerated shelf-life tests. Understanding and measuring the shelf-life of food is an important reference for all those concerned with extending the shelf-life of food. Reviews the key factors in determining shelf-life and how they can be measured Examines the importance of the shelf-life of a product in determining its quality and profitability Brings together the leading international experts in the field

Proteomics in Food Science: From Farm to Fork is

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a solid reference providing concepts and practical applications of proteomics for those in various disciplines of food science. The book covers a range of methods for elucidating the identity or composition of specific proteins in foods or cells related to food science, from spoilage organisms, to edible components. A variety of analytical platforms are described, ranging from the usage of simple electrophoresis, to more sophisticated mass spectrometry and bio-informatic platforms. The book is designed for food scientists, technologists, food industry workers,

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microbiologists, and public health workers, and can also be a valuable reference book for students. Includes a variety of analytical platforms, ranging from simple electrophoresis to more sophisticated mass spectrometry and bio-informatic platforms Presents analytical techniques for each food domain, including beverages, meats, dairy and eggs, fruit, fish/seafood, cereals, nuts, and grains that range from sample collection, proportion, and storage analysis Provides applications of proteomics in hot topics area of food safety, including food spoilage, pathogenic organisms, and allergens

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***Covers major pathogens of concern e.g., Salmonella and applications to animal husbandry
A fundamental understanding of polymers has evolved in recent years concurrent with advances in analytical instrumentation. The theories and methodologies developed for the galacturonan biopolymers (collectively called pectins) have seldom been discoursed comprehensively in the context of the new knowledge. This text explains the scientific and technical basis of many of the practices followed in processing and preparing foods fabricated with or containing pectin. The material is***

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presented in a very readable fashion for those with limited technical training. Structural analysis Commercial extractions methods Pectin formulations and tropical fruit analysis Molecular mechanisms of gelatin Enzymology Polymer conformation techniques Analytical methods of polymer analysis

Electronic Noses and Tongues in Food Science describes the electronic products of advanced chemical and physical sciences combined with intuitive integration of microprocessors, advanced bioinformatics and statistics. These include, for example, voltammetric, bio-

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electronic, piezoelectric platforms made from a variety of components including, nanoparticles, enzyme biosensors, heavy metals, graphite-epoxy composites, metal oxide semiconductors, microelectrodes, microfluidic channels, pre-manufactured gas sensors, redox enzymes and others and is an ideal resource for understanding and utilizing their power in Food Science settings. Devices used to analyse one particular food item can theoretically be adapted for other food items or components. This does not just mean the re-deploying the physical platforms but also the mode of bioinformatic and statistical

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analysis. This includes artificial neural networks (ANN), linear discriminant analysis (LDA), partial least squares (PLS), principal component analysis (PCA) etc. In other words, there is cross transference of chemistry, physics, concepts, techniques, findings and approaches from one food to another. Electronic noses and tongues are two of these devices but are advancing in application and importance. This book provides examples of the use of electronic noses and tongues to characterise components that contribute to sensory or compositional profiles, from ripening to harvesting and from storage of

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raw materials to packaging and consumption. These devices are suitable for high-throughput analysis, quality control or to determine the nature and extent of spoilage and adulteration, and have also been used to ascertain the geographical origins of food and mixtures. Presents latest developments in the application of electronic nose and tongue technologies to a variety of food-specific needs Includes both electronic nose, electronic tongue and combined technology insights Each chapter has sections on: The physical and chemical platforms; Analysis of specific foods; Applications to other

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foods and areas of food science

Chemical Analysis of Food: Techniques and Applications

A Practical Guide

Acrylamide in Food

Sensory-Directed Flavor Analysis

Instructor's Manual for Food Analysis

Innovative Food Analysis

Advances in food science, technology, and engineering are occurring at such a rapid rate that obtaining current, detailed information is challenging at best. While almost everyone engaged in these disciplines has accumulated a vast variety of data

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over time, an organized, comprehensive resource containing this data would be invaluable to have.

The

Easy Statistics for Food Science with R presents the application of statistical techniques to assist students and researchers who work in food science and food engineering in choosing the appropriate statistical technique. The book focuses on the use of univariate and multivariate statistical methods in the field of food science. The techniques are presented in a simplified form without relying on complex mathematical proofs. This book was written to help researchers from different fields to analyze their data

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and make valid decisions. The development of modern statistical packages makes the analysis of data easier than before. The book focuses on the application of statistics and correct methods for the analysis and interpretation of data. R statistical software is used throughout the book to analyze the data. Contains numerous step-by-step tutorials help the reader to learn quickly Covers the theory and application of the statistical techniques Shows how to analyze data using R software Provides R scripts for all examples and figures Producing products of reliable quality is vitally important to the food and beverage industry. In

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particular, companies often fail to ensure that the sensory quality of their products remains consistent, leading to the sale of goods which fail to meet the desired specifications or are rejected by the consumer. This book is a practical guide for all those tasked with using sensory analysis for quality control (QC) of food and beverages. Chapters in part one cover the key aspects to consider when designing a sensory QC program. The second part of the book focuses on methods for sensory QC and statistical data analysis. Establishing product sensory specifications and combining instrumental and sensory methods are also covered. The final

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part of the book reviews the use of sensory QC programs in the food and beverage industry. Chapters on sensory QC for taint prevention and the application of sensory techniques for shelf-life assessment are followed by contributions reviewing sensory QC programs for different products, including ready meals, wine and fish. A chapter on sensory QC of products such as textiles, cosmetics and cars completes the volume. Sensory analysis for food and beverage quality control is an essential reference for anyone setting up or operating a sensory QC program, or researching sensory QC. Highlights key aspects to consider when designing a

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quality control program including sensory targets and proficiency testing Examines methods for sensory quality control and statistical data analysis Reviews the use of sensory quality control programs in the food and beverage industry featuring ready meals, wine and fish

The first and second editions of Food Analysis were widely adopted for teaching the subject of Food Analysis and were found useful in the food industry. The third edition has been revised and updated for the same intended use, and is being published with an accompanying laboratory manual. Food Analysis, Third Edition, has a general information section that

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includes governmental regulations related to food analysis, sampling, and data handling as background chapters. The major sections of the book contain chapters on compositional analysis and on chemical properties and characteristics of foods. A new chapter is included on agricultural biotechnology (GMO) methods of analysis. Large sections on spectroscopy, chromatography, and physical properties are included. All topics covered contain information on the basic principles, procedures, advantages, limitation, and applications. This book is ideal for undergraduate courses in food analysis and also is an invaluable reference to

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professions in the food industry.

Analysis, Bioavailability, and Stability

Proteins in Food Processing

The Chemistry and Technology of Pectin

Easy Statistics for Food Science with R

Understanding and Measuring the Shelf-Life of Food

Introductory Procedures for the Food Practitioner

The 9th International Flavor Conference: George Charalambous Memorial Symposium was held July 1-4, 1997 at the Porto Myrina Palace on the Island of Limnos, Greece. This conference was organized as a tribute to Dr. George Charalambous organizer of the previous eight conferences, who passed away in

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November of 1994. The symposium brought together a group of international experts in food science and human nutrition to discuss their latest findings in a broad area of food science. Particular emphasis was placed on state-of-the-art instrumentation and methods. The 9th Conference followed the format and traditions of the previous meetings. More than 90 papers/posters were presented by scientists from nineteen countries. Dr. Apostolos Grimanis, a radioanalytical chemist and retired Director of the Radioanalytical Laboratory at the National Center for Scientific Research "Demokritos" in Athens opened the meeting with a tribute to Dr. Charalambous. The

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Conference Committee announced that the Division of Agricultural and Food Chemistry (American Chemical Society) has agreed to sponsor a Fellowship in Dr. Charalambous' honor in recognition of his tremendous contributions to the Division over many years.

Acrylamide in Food: Analysis, Content and Potential Health Effects provides the recent analytical methodologies for acrylamide detection, up-to-date information about its occurrence in various foods (such as bakery products, fried potato products, coffee, battered products, water, table olives etc.), and its interaction mechanisms and health effects.

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The book is designed for food scientists, technologists, toxicologists, and food industry workers, providing an invaluable industrial reference book that is also ideal for academic libraries that cover the domains of food production or food science. As the World Health Organization has declared that acrylamide represents a potential health risk, there has been, in recent years, an increase in material on the formation and presence of acrylamide in different foods. This book compiles and synthesizes that information in a single source, thus enabling those in one discipline to become familiar with the concepts and applications in other

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disciplines of food science. Provides latest information on acrylamide in various foods (bakery products, fried potato products, coffee, battered products, water, table olives, etc.) Explores acrylamide in the food chain in the context of harm, such as acrylamide and cancer, neuropathology of acrylamide, maternal acrylamide and effects on offspring and its toxic effects in tissues Touches on a variety of subjects, including acrylamide, high heated foods, dietary acrylamide, acrylamide formation, N-acetyl-S-(2-carbamoylethyl)-cysteine (AAMA), acrylamide removal, L-asparaginase, and acrylamide determination Presents recent analytical

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methodologies for acrylamide determination, including liquid chromatographic tandem mass spectrometry and gas chromatography-mass spectrometry

This latest edition of the most internationally respected reference in food chemistry for more than 30 years, Fennema's Food Chemistry, 5th Edition once again meets and surpasses the standards of quality and comprehensive information set by its predecessors. All chapters reflect recent scientific advances and, where appropriate, have expanded and evolved their focus to provide readers with the current state-of-the-science of chemistry for the food

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industry. This edition introduces new editors and contributors who are recognized experts in their fields. The fifth edition presents a completely rewritten chapter on Water and Ice, written in an easy-to-understand manner suitable for professionals as well as undergraduates. In addition, ten former chapters have been completely revised and updated, two of which receive extensive attention in the new edition including Carbohydrates (Chapter 3), which has been expanded to include a section on Maillard reaction; and Dispersed Systems: Basic considerations (Chapter 7), which includes thermodynamic incompatibility/phase

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separation concepts. Retaining the straightforward organization and accessibility of the original, this edition begins with an examination of major food components such as water, carbohydrates, lipids, proteins, and enzymes. The second section looks at minor food components including vitamins and minerals, colorants, flavors, and additives. The final section considers food systems by reviewing basic considerations as well as specific information on the characteristics of milk, the postmortem physiology of edible muscle, and postharvest physiology of plant tissues.

Chemical Analysis of Food: Techniques and

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Applications reviews new technology and challenges in food analysis from multiple perspectives: a review of novel technologies being used in food analysis, an in-depth analysis of several specific approaches, and an examination of the most innovative applications and future trends. This book won a 2012 PROSE Award Honorable Mention in Chemistry and Physics from the Association of American Publishers. The book is structured in two parts: the first describes the role of the latest developments in analytical and bio-analytical techniques and the second reviews the most innovative applications and issues in food analysis. Each chapter is written by

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experts on the subject and is extensively referenced in order to serve as an effective resource for more detailed information. The techniques discussed range from the non-invasive and non-destructive, such as infrared spectroscopy and ultrasound, to emerging areas such as nanotechnology, biosensors and electronic noses and tongues. Important tools for problem-solving in chemical and biological analysis are discussed in detail. Winner of a PROSE Award 2012, Book: Honorable Mention in Physical Sciences and Mathematics - Chemistry and Physics from the American Association of Publishers Provides researchers with a single source for up-to-

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date information in food analysis Single go-to reference for emerging techniques and technologies Over 20 renowned international contributors Broad coverage of many important techniques makes this reference useful for a range of food scientists

Introduction to the Chemistry of Food

Advanced Food Analysis Tools

From Farm to Fork

Characterization of Cereals and Flours

Bacteriological Analytical Manual

Principles and Applications of Gas Chromatography in Food Analysis

Advances in instrumentation and applied

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instrumental analysis methods have allowed scientists concerned with food and beverage quality, labeling, compliance, and safety to meet ever increasing analytical demands. Texts dealing with instrumental analysis alone are usually organized by the techniques without regard to applications. The biannual review issue of Analytical Chemistry under the topic of Food Analysis is organized by the analyte such as N and protein, carbohydrate, inorganics, enzymes, flavor and odor, color, lipids, and vitamins. Under 'flavor

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and odor' the subdivisions are not along the lines of the analyte but the matrix (e.g. wine, meat, dairy, fruit) in which the analyte is being determined. In "Instrumentation in Food and Beverage Analysis" the reader is referred to a list of 72 entries entitled "Instrumentation and Instrumental Techniques" among which molecular spectroscopy, chromatographic and other sophisticated separations in addition to hyphenated techniques such as GS-Mass spectrometry. A few of the entries appear under a chapter named for the

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technique. Most of the analytical techniques used for determination, separations and sample work prior to determination are treated in the context of an analytical method for a specific analyte in a particular food or beverage matrix with which the author has a professional familiarity, dedication, and authority. Since, in food analysis in particular, it is usually the food matrix that presents the research analytical chemist involved with method development the greatest challenge.

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To achieve and maintain optimal health, it is essential that the vitamins in foods are present in sufficient quantity and are in a form that the body can assimilate. Vitamins in Foods: Analysis, Bioavailability, and Stability presents the latest information about vitamins and their analysis, bioavailability, and stability in foods. The contents of the book is divided into two parts to facilitate accessibility and understanding. Part I, Properties of Vitamins, discusses the effects of food

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processing on vitamin retention, the physiology of vitamin absorption, and the physiochemical properties of individual vitamins. Factors affecting vitamin bioavailability are also discussed in detail. The second part, Analysis of Vitamins, describes the principles of analytical methods and provides detailed methods for depicting individual vitamins in foods. Analytical topics of particular interest include the identification of problems associated with quantitatively extracting vitamins from the food matrix;

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assay techniques, including immunoassays, protein binding, microbiological, and biosensor assays; the presentation of high-performance liquid chromatography (HPLC) methodology illustrated in tables accompanied by step-by-step details of sample preparation; the explanation of representative separations (chromatograms) taken from original research papers are reproduced together with ultraviolet and fluorescence spectra of vitamins; the appraisal of various analytical approaches that are currently employed. Comprehensive

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and complete, Vitamins in Foods: Analysis, Bioavailability, and Stability is a must have resource for those who need the latest information on analytical methodology and factors affecting vitamin bioavailability and retention in foods. Employing a uniform, easy-to-use format, Vitamin Analysis for the Health and Food Sciences, Second Edition provides the most current information on the methods of vitamin analysis applicable to foods, supplements, and pharmaceuticals. Highlighting the rapid advancement of

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vitamin assay methodology, this edition emphasizes the use of improved and sophisticated instrumentation including the recent applications and impact of the widely adopted LC-MS. Designed as a bench reference, this volume gives you the tools to make efficient and correct decisions regarding the appropriate analytical approach--saving time and effort in the lab. Each chapter is devoted to a particular vitamin and begins with a brief review of its uniqueness and its role in metabolism. The authors stress a thorough

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understanding of the chemistry of each compound in order to effectively analyze it and to this end provide the chemical structure and nomenclature of each vitamin, along with tabular information on spectral properties. They supply extensive insight into practical problem-solving including an awareness of the stability of vitamins and their extraction from different biological matrices. All information is heavily documented with the latest scientific papers and organized into easily read tables covering topics

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necessary for accurate analytical results. After presenting the chemistry and biochemistry of the vitamin, each chapter details the commonly used analytical and regulatory methods. A summary table gives at-a-glance information on many of these sources, as well as several of the AOAC International Methods. In addition the authors apply their extensive experience in the field to create a critical, interpretive review of the advanced methods of vitamin analysis with sufficient detail to be a valuable guide

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to cutting-edge methodology.

Today, flavor chemists can generate copious amounts of data in a short time with relatively little effort using automated solid phase micro-extraction, Gerstel-Twister and other extraction techniques in combination with gas chromatographic (GC) analysis. However, more data does not necessarily mean better understanding. In fact, the ability to extr

Instrumental Methods in Food and Beverage Analysis

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Handbook of Food Analysis - Two Volume Set
Food Analysis

Fennema's Food Chemistry

Handbook of Food Science, Technology, and Engineering - 4 Volume Set

Agriculture, Food Science, and Nutrition in the United States

This multidisciplinary resource details the challenges and analytical methodologies utilized to determine the effect of chemical composition, genetics, and human physiology on aroma and flavor perception. Identifying emerging analytical methods and future research paths, the Handbook of Flavor Characterization studies the interpretation and

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Providing a thorough introduction to the core areas of food science specified by the Institute of Food Technologists, Introduction to Food Chemistry focuses on principles rather than commodities and balances facts with explanations. The text covers the major areas of food science, including food chemistry, food analysis and methods for quality assurance. Food and Feed Safety Systems and Analysis discusses the integration of food safety with recent research developments in food borne pathogens. The book covers food systems, food borne ecology, how to conduct research on food safety and food borne pathogens, and developing educational materials to train incoming professionals in the field. Topics include data analysis and cyber security for food safety systems, control of food borne pathogens and supply chain

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logistics. The book uniquely covers current food safety perspectives on integrating food systems concepts into pet food manufacturing, as well as data analyses aspects of food systems. Explores cutting edge research about emerging issues associated with food safety Includes new research on understanding foodborne Salmonella, Listeria and E. coli Presents foodborne pathogens and whole genome sequencing applications Provides concepts and issues related to pet and animal feed safety

Characterization of Cereals and Flours is a state-of-the-art reference that details the latest advances to characterize the effects of manufacturing processes and storage conditions on the thermal, mechanical, and structural properties of cereal flours and their products - examining the influence of moisture

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absorption, storage temperature, baking, and extrusion processing on flour and cereal product texture, shelf-life, and quality. The book discusses the influence of additives on pre- and postprocessed food biopolymers; the development of databases and construction of state diagrams to illustrate the state and function of cereal flours before, during, and after production; and the current techniques in image analysis, light and electron microscopy, and NMR spectroscopy used to analyze the microstructure of cereal products. It also discusses the methods used to optimize processing parameters and formulations to produce end-products with desirable sensory and textural properties; the shelf life of cereal products; and the relationships between the sensory and physical characteristics of cereal foods.

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Handbook of Food Analysis Instruments
Food and Feed Safety Systems and Analysis
Chemistry, Physical Properties, and Applications
Food Analysis Laboratory Manual
Quantitative Effects On Processing
Principles and Practices

Extensively revised and updated, Handbook of Water Analysis, Third Edition provides current analytical techniques for detecting various compounds in water samples.

Maintaining the detailed and accessible style of the previous editions, this third edition demonstrates water sampling and

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preservation methods by enumerating different ways to measure chemical and radiological characteristics. It gives step-by-step descriptions of separation, residue determination, and clean-up techniques. See What's New in the Second Edition: Includes five new chapters covering ammonia, nitrates, nitrites, and petroleum hydrocarbons, as well as organoleptical and algal analysis methodology Compares older methods still frequently used with recently developed protocols, and examines future trends Features a new section regarding

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organoleptical analysis of water acknowledging that ultimately the consumers of drinking water have the final vote over its quality with respect to odor, flavor, and color The book covers the physical, chemical, and other relevant properties of various substances found in water. It then describes the sampling, cleanup, extraction, and derivatization procedures, and concludes with detection methods. Illustrated with procedure flow charts and schematics, the text includes numerous tables categorizing methods

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according to type of component, origin of the water sample, parameters and procedures used, and application range. With contributions from international experts, the book guides you through the entire scientific investigation starting with a sampling strategy designed to capture the real-world situation as closely as possible, and ending with an adequate chemometrical and statistical treatment of the acquired data. By organizing data into more than 300 tables, graphs, and charts, and supplementing the text with equations and

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illustrations, the editors distill a wealth of knowledge into a single accessible reference.

Unique in its broad range of coverage, Food Carbohydrates: Chemistry, Physical Properties and Applications is a comprehensive, single-source reference on the science of food carbohydrates. This text goes beyond explaining the basics of food carbohydrates by emphasizing principles and techniques and their practical application in quality control, product development, and research. The editor

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incorporates information on analytical methods, the structural analysis of polysaccharides, physical properties, molecular conformation and characterization, and industrial applications of polysaccharide gums. The analytical methods and structural analysis of polysaccharides are rarely presented in books on food carbohydrates - topics this text fully illustrates. It also presents particulars on starch and starch modification, with a focus on reaction principles, improved functional properties,

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and practical applications. Food Carbohydrates: Chemistry, Physical Properties and Applications is the only known current reference to include basic chemistry, analytical methodologies, structural analysis, conformation and functional properties, and rheological and thermal properties of food carbohydrates all in one text. This book is ideal as a professional reference for researchers, engineers, and those interested in food carbohydrates, as well as a textbook for graduate students.

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The recording and analysis of food data are becoming increasingly sophisticated. Consequently, the food scientist in industry or at study faces the task of using and understanding statistical methods. Statistics is often viewed as a difficult subject and is often avoided because of its complexity and a lack of specific application to the requirements of food science. This situation is changing - there is now much material on multivariate applications for the more advanced reader, but a case exists for a univariate approach aimed at the non-

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statistician. This book provides a source text on accessible statistical procedures for the food scientist, and is aimed at professionals and students in food laboratories where analytical, instrumental and sensory data are gathered and require some form of summary and analysis before interpretation. It is suitable for the food analyst, the sensory scientist and the product developer, and others who work in food-related disciplines involving consumer survey investigations will also find many sections of use. There is an emphasis on a 'hands on'

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approach, and worked examples using computer software packages and the minimum of mathematical formulae are included. The book is based on the experience and practice of a scientist engaged for many years in research and teaching of analytical and sensory food science at undergraduate and post-graduate level.