

Instrumental Assessment Of Food Sensory Quality A Practical Guide Woodhead Publishing Series In Food Science Technology And Nutrition

A Handbook for Sensory and Consumer Driven New Product Development explores traditional and well established sensory methods (difference, descriptive and affective) as well as taking a novel approach to product development and the use of new methods and recent innovations. This book investigates the use of these established and new sensory methods, particularly hedonic methods coupled with descriptive methods (traditional and rapid), through multivariate data analytical interfaces in the process of optimizing food and beverage products effectively in a strategically defined manner. The first part of the book covers the sensory methods which are used by sensory scientists and product developers, including established and new and innovative methods. The second section investigates the product development process and how the application of sensory analysis, instrumental methods and multivariate data analysis can improve new product development, including packaging optimization and shelf life. The final section defines the important sensory criteria and modalities of different food and beverage products including Dairy, Meat, Confectionary, Bakery, and Beverage (alcoholic and non-alcoholic), and presents case studies indicating how the methods described in the first two sections have been successfully and innovatively applied to these different foods and beverages. The book is written to be of value to new product development researchers working in large corporations, SMEs (micro, small or medium-sized enterprises) as well as being accessible to the novice starting up their own business. The innovative technologies and methods described are less expensive than some more traditional practices and aim to be quick and effective in assisting products to market. Sensory testing is critical for new product development/optimization, ingredient substitution and devising appropriate packaging and shelf life as well as comparing foods or beverages to competitor's products. Presents novel and effective sensory-based methods for new product development—two related fields that are often covered separately Provides accessible, useful guidance to the new product developer working in a large multi-national food company as well as novices starting up a new business Offers case studies that provide examples of how these methods have been applied to real product development by practitioners in a wide range of organizations Investigates how the application of sensory analysis can improve new product development including packaging optimization Ensuring that foods and beverages remain stable during the required shelf life is critical to their success in the market place, yet companies experience difficulties in this area. Food and beverage stability and shelf life provides a comprehensive guide to factors influencing stability, methods of stability and shelf life assessment and the stability and shelf life of major products. Part one describes important food and beverage quality deterioration processes, including microbiological spoilage and physical instability. Chapters in this section also investigate the effects of ingredients, processing and packaging on stability, among other factors. Part two describes methods for stability and shelf life assessment including food storage trials, accelerated testing and shelf life modelling. Part three reviews the stability and shelf life of a wide range of products, including beer, soft drinks, fruit, bread, oils, confectionery products, milk and seafood. With its distinguished editors and international team of expert contributors, Food and beverage stability and shelf life is a valuable reference for professionals involved in quality assurance and product development and researchers focussing on food and beverage stability. A comprehensive guide to factors influencing stability, methods of stability and shelf life assessment and the stability and shelf life of major products Describes important food and beverage quality deterioration processes exploring microbiological spoilage and physical instability Investigate the effects of ingredients, processing and packaging on stability and

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documents methods for stability and shelf life assessment

We are in the midst of an unprecedented era of rapid scientific and technological advances that are transforming the way our foods are produced and consumed. Food architecture is being used to construct healthier, tastier, and more sustainable foods. Functional foods are being created to combat chronic diseases such as obesity, cancer, diabetes, stroke, and heart disease. These foods are fortified with nutraceuticals or probiotics to improve our mood, performance, and health. The behavior of foods inside our guts is being controlled to increase their healthiness. Precision nutrition is being used to tailor diets to our unique genetic profiles, microbiomes, and metabolisms. Gene editing, nanotechnology, and artificial intelligence are being used to address modern food challenges such as feeding the growing global population, reducing greenhouse gas emissions, reducing waste, and improving sustainability. However, the application of these technologies is facing a backlash from consumers concerned about the potential risks posed to human and environmental health. Some of the questions addressed in this book are: What is food architecture? How does sound and color impact taste? Will we all have 3D food printers in all our homes? Should nanotechnology and gene editing be used to enhance our foods? Are these new technologies safe? Would you eat bug-foods if it led to a more sustainable food supply? Should vegetarians eat themselves? Can nutraceuticals and probiotics stop cancer? What is the molecular basis of a tasty sustainable burger? David Julian McClements is a Distinguished Professor in food science who has used physics, chemistry, and biology to improve the quality, safety, and healthiness of foods for over 30 years. He has published over 900 scientific articles and 10 books in this area and is currently the most highly cited food scientist in the world. He has won numerous scientific awards for his work. The aim of this book is to highlight the many exciting advances being made in the science of foods, and to show their application for solving important problems related to the modern food supply, such as tackling chronic diseases, feeding a global population, reducing food waste, and creating healthier and tastier foods.

Specialty Oils and Fats in Food and Nutrition: Properties, Processing and Applications examines the main specialty oils and fats currently in use in food processing, as well as those with significant potential. Specialty oils and fats have an increasing number of applications in the food industry, due to growing consumer interest in “clean label functional foods and the emerging markets in “free-from and specialist foods. Part One of this book covers the properties and processing of specialty oils and fats, with a focus on the chemistry, extraction, and quality of different fats and oils, including chapters on shea butter, tropical exotic oils, and structured triglycerides. Part Two looks at the applications of specialty oils and fats in different food and nutraceutical products, such as confectionary, ice cream, and margarine. **Specialty Oils and Fats in Food and Nutrition** is a key text for R&D managers and product development personnel working in the dairy, baking, and dairy analogue sectors, or any sector using fats and oils. It is a particularly useful reference point for companies reformulating their products or developing new products to alter fat content, as well as academics with a research interest in the area, such as lipid scientists or food scientists. Authored by an industry expert with 35 years of experience working for Unilever and Lodders Croklaan Broad coverage encompasses tropical exotic oils, tree nut oils, algal oils, GM vegetable oils, and more Addresses growing application areas including nutraceuticals, infant formula, and ice cream and confectionery A much-needed guide to in vitro food functionality evaluation principles, processes, and state-of-the-art modeling There are more than a few books devoted to the assessment of food functionality but, until now, there were no comprehensive guides focusing on the increasingly important subject of in vitro food evaluation. With contributions from the world’s foremost experts in the field, this book brings readers up to speed on the state-of-the-art in in vitro modeling, from its physiological bases to its conception, current uses, and future developments. Food functionality is a broad concept encompassing nutritional and health

functionality, food safety and toxicology, as well as a broad range of visual and organoleptic properties of food. In vitro techniques bridge the gap between standard analytical techniques, including chemical and biochemical approaches and in vivo human testing, which remains the ultimate translational goal for evaluation of the functionality of food. Although it is a well-established field, in vitro food testing continues to evolve toward ever more accurate predictions of in vivo properties and outcomes. Both ethical and highly economical, these approaches allow for detailed mechanistic insights into food functionalities and, therefore, a better understanding of the interactions of food and human physiology. Reviews the core concepts of food functionality and functionality evaluation methodologies Provides an overview of the physiology of the gastrointestinal tract, including host-microbial interactions within it Delves into the physiology of sensory perception of food, taste and texture as they relate to in vitro modeling Explores the challenges of linking in vitro analysis of taste, aroma and flavor to their actual perception Addresses in vitro models of the digestion and absorption of macronutrients, micronutrients, and phytonutrients Describes in vitro evaluations of toxicants, allergens and other specific food hazards Functional Foods and Beverages is an indispensable working resource for food scientists as well as researchers working in government facilities dedicated to tracking food safety.

The concept behind this book is to take a holistic view of food texture, starting with the determination of food texture, its perception in the mouth, and its measurement by both sensory and instrumental methods, and to examine the relation between those methods. The book has been divided into two sections. The first deals with perception of food texture and techniques for its measurement. The second focuses on individual groups of food commodities. The first section is interlaced with appropriate food-related examples to reinforce the applied nature of the subject.

Non-equilibrium States and Glass Transitions in Foods: Processing Effects and Product Specific Implications presents the tactics needed to understand and control non-equilibrium states and glass transitions in food, an essential element in maintaining the shelf-life and quality of foods. After brief introductory chapters introduce the science behind non-equilibrium states and glass transitions in foods, the book details how glass transition temperature is affected by composition and the ways it influences processability and physico-chemical changes during the storage of foods, also exploring how these effects can be controlled. The second section looks at individual foods, highlighting the implications of non-equilibrium states and glass transitions within these foods. Maintaining and improving the quality of food is of upmost importance to food companies who have to ensure that the shelf life of their products is as long as possible. A large amount of research has been performed into glass transitions in food over the last few years, however there has not been a comprehensive review. This book fills that gap. Provides the only book on the market that covers non-equilibrium states and glass transitions in food from a practical standpoint Presents food industry professionals in the area of food quality with essential information on the effects of glass transitions and non-equilibrium states on the shelf life of specific products Edited by global leaders in glass transition technology in foods

Instrumental measurements of the sensory quality of food and drink are of growing importance in both complementing data provided by sensory panels and in providing valuable data in situations in which the use of human subjects is not feasible. Instrumental assessment of food sensory quality reviews the range and use of instrumental methods for measuring sensory quality. After an introductory chapter, part one goes on to explore the principles and practice of the assessment and analysis of food appearance, flavour, texture and viscosity. Part two reviews advances in methods for instrumental assessment of food sensory quality and includes chapters on food colour measurement using computer vision, gas chromatography-olfactometry (GC-O), electronic noses and tongues for in vivo food flavour measurement, and

non-destructive methods for food texture assessment. Further chapters highlight in-mouth measurement of food quality and emerging flavour analysis methods for food authentication. Finally, chapters in part three focus on the instrumental assessment of the sensory quality of particular foods and beverages including meat, poultry and fish, baked goods, dry crisp products, dairy products, and fruit and vegetables. The instrumental assessment of the sensory quality of wine, beer, and juices is also discussed. Instrumental assessment of food sensory quality is a comprehensive technical resource for quality managers and research and development personnel in the food industry and researchers in academia interested in instrumental food quality measurement. Reviews the range and use of instrumental methods for measuring sensory quality Explores the principles and practice of the assessment and analysis of food appearance, flavour, texture and viscosity Reviews advances in methods for instrumental assessment of food sensory quality

Nowadays, the technological advances allow developing many applications in different fields. In the book Colorimetry and Image Processing, two important fields are presented: colorimetry and image processing. Colorimetry is observed by a visual interactive programming learning system, an approach based on color analysis of Habanero chili pepper, an approach based on scene image segmentation centered on mathematical morphology, other systems based on the simulations of the dichromatic color appearance, and, finally, an approach based on the color reconstruction in order to enhance its using super-resolution methods. On the other hand, image processing is shown by pansharpening algorithms for hyperspectral images, an approach based on the analysis of the low-resolution satellite images and ground-based sky camera for estimating the cloud motion, a hybrid super-resolution framework that combines desirable features of TV and PM models, a study of the real-time video analysis used for anthropometric measurements on agricultural tools and machines, and finally, an approach based on the threshold optimization iterative algorithm using the ground truth data and assessing the accuracy of a range of threshold values through the corresponding Kappa coefficient of concordance.

The third edition of the Encyclopedia of Analytical Science is a definitive collection of articles covering the latest technologies in application areas such as medicine, environmental science, food science and geology. Meticulously organized, clearly written and fully interdisciplinary, the Encyclopedia of Analytical Science provides foundational knowledge across the scope of modern analytical chemistry, linking fundamental topics with the latest methodologies. Articles will cover three broad areas: analytical techniques (e.g., mass spectrometry, liquid chromatography, atomic spectrometry); areas of application (e.g., forensic, environmental and clinical); and analytes (e.g., arsenic, nucleic acids and polycyclic aromatic hydrocarbons), providing a one-stop resource for analytical scientists. Offers readers a one-stop resource with access to information across the entire scope of modern analytical science Presents articles split into three broad areas: analytical techniques, areas of application and analytes, creating an ideal resource for students, researchers and professionals Provides concise and accessible information that is ideal for non-specialists and readers from undergraduate levels and higher

A complete guide to the textural characteristics of an international array of traditional and special foods It is widely recognized that texture has an intrinsic relationship to food preference. A full understanding of its functions and qualities is, therefore, of crucial importance to food technologists and product developers, as well as those working

towards the treatment of dysphagia. Textural Characteristics of World Foods is the first book to apply a detailed set of criteria and characteristics to the textures of traditional and popular foods from across the globe. Structuring chapters by region, its authors chart a journey through the textural landscapes of each continent's cuisines, exploring the complex and symbiotic relationships that exist between texture, aroma, and taste. This innovative text: Provides an overview of the textural characteristics of a wide range of foods Includes descriptions of textures and key points of flavor release Examines the relationships between the texture, taste, and aroma of each food presented Is structured by geographic region Rich with essential insights and important research, Textural Characteristics of World Foods offers all those working in food science and development a better picture of texture and the multifaceted role it can play.

Rheology of Semisolid Foods comprehensively covers the rheological behaviors and rheological testing of semisolid foods. Individual chapters focus on semisolid food structure, rheological and sensory behaviors, testing of various semisolid food behaviors, and factors that impact those behaviors. Special concentration is given to the relationships among semisolid food structures and mechanical properties and textures. The second section of this work presents a series of case studies on acid milk gels and yogurt which provide a practical illustration of the concepts presented in the preceding chapters, allowing readers to gain both conceptual knowledge of semisolid food rheology and an understanding of how that knowledge can be applied to a food system of choice. Individual components, processing parameters, and storage conditions can dramatically impact food functional properties and textures. Changing any of these factors can cause significant microstructural alterations resulting in undesirable changes in product stability, functionality and texture. The lack of knowledge of how these factors impact the final food properties makes development of new food products a process of empirical trial rather than intentional design. A fundamental understanding food structure, function and texture relationships is critical for targeted design of food products. This text is a valuable reference for researchers looking to gain an understanding of how rheology works in semisolid food design and processing.

Advances in Food Traceability Techniques and Technologies: Improving Quality Throughout the Food Chain covers in detail a topic of great importance to both the food industry which is obliged to provide clear and accurate labeling of their products and the government and other organizations which are tasked with verification of claims of food quality and safety. The traceability of food products is becoming ever more important as globalization continues to increase the complexity of food chains. Coverage in the book includes the wide range of technologies and techniques which have been utilized in the tracing of food products. In addition, the ways in which the misuse of food traceability will affect the quality of food is also covered throughout. The first part of the book introduces the concept of traceability in the food industry, highlighting advantages of a robust traceability and the difficulties involved in implementing them. The second part looks at the technologies used to trace products, and the third section reviews the legal requirements for food traceability in the EU, the US, and the rest of the world. The final section contains a number of case studies which evaluate how food traceability has been successfully implemented in various foods focusing on the quality of the food. Provides a wide ranging overview of all recent advances in food traceability techniques

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and technologies Presents case studies covering when food traceability techniques have been applied to a range of food stuffs Covers the legal aspects of food traceability in the EU, the USA, and around the world

Of the five senses, smell is the most direct and food aromas are the key drivers of our flavor experience. They are crucial for the synergy of food and drinks. Up to 80% of what we call taste is actually aroma. *Food Aroma Evolution: During Food Processing, Cooking, and Aging* focuses on the description of the aroma evolution in several food matrices. Not only cooking, but also processing (such as fermentation) and aging are responsible for food aroma evolution. A comprehensive evaluation of foods requires that analytical techniques keep pace with the available technology. As a result, a major objective in the chemistry of food aroma is concerned with the application and continual development of analytical methods. This particularly important aspect is discussed in depth in a dedicated section of the book. Features Covers aromatic evolution of food as it is affected by treatment Focuses on food processing, cooking, and aging Describes both classic and new analytical techniques Explains how the flavor perception results are influenced by other food constituents The book comprises a good mix of referenced research with practical applications, also reporting case studies of these various applications of novel technologies. This text represents a comprehensive reference book for students, educators, researchers, food processors, and food industry personnel providing an up-to-date insight. The range of techniques and materials covered provides engineers and scientists working in the food industry with a valuable resource for their work. Also available in the Food Analysis & Properties Series:

Ambient Mass Spectroscopy Techniques in Food and the Environment, edited by Leo M.L. Nollet and Basil K. Munjanja (ISBN: 9781138505568) *Hyperspectral Imaging Analysis and Applications for Food Quality*, edited by N.C. Basantia, Leo M.L. Nollet, and Mohammed Kamruzzaman (ISBN: 9781138630796) *Fingerprinting Techniques in Food Authentication and Traceability*, edited by Khwaja Salahuddin Siddiqi and Leo M.L. Nollet (ISBN: 9781138197671) For a complete list of books in this series, please visit our website at: www.crcpress.com/Food-Analysis--Properties/book-series/CRCFOODANPRO

Producing products of reliable quality is vitally important to the food and beverage industry. In 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 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

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consider when designing a 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

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Food contact materials such as packaging, storage containers and processing surfaces can pose a substantial hazard to both food manufacturer and consumer due to the migration of chemicals or other substances from the material to the food, which can cause tainting of flavours and other sensory characteristics, or even illness. This book reviews the main materials used for food contact in terms of the global legislation in place to ensure their safe and effective use. Part One provides an overview of food contact legislation issues such as chemical migration and compliance testing. Part Two looks in detail at the legislation for specific food contact materials and their advantages, hazards and use in industry. Includes global coverage of food contact legislation Features expert analysis of future trends in global food packaging regulation Focus on specific materials such as plastic, paper and rubber materials in contact with food

Multisensory Flavor Perception: From Fundamental Neuroscience Through to the Marketplace provides state-of-the-art coverage of the latest insights from the rapidly-expanding world of multisensory flavor research. The book highlights the various types of crossmodal interactions, such as sound and taste, and vision and taste, showing their impact on sensory and hedonic perception, along with their consumption in the context of food and drink. The chapters in this edited volume review the existing literature, also explaining the underlying neural and psychological mechanisms which lead to crossmodal perception of flavor. The book brings together research which has not been presented before, making it the first book in the market to cover the literature of multisensory flavor perception by incorporating the latest in psychophysics and neuroscience. Authored by top academics and world leaders in the field Takes readers on a journey from the neurological underpinnings of multisensory flavor perception, then presenting insights that can be used by food companies to create better flavor sensations for consumers Offers a wide perspective on multisensory flavor perception, an area of rapidly expanding knowledge

Light Scattering Technology for Food Property, Quality and Safety Assessment discusses the development and application of various light scattering techniques for measuring the structural and rheological properties of food, evaluating composition and quality attributes, and detecting pathogens in food. The first four chapters cover basic concepts, principles, theories, and modeling of light transfer in food and biological materials. Chapters 5 and 6 describe parameter estimation methods and basic techniques for determining optical absorption and scattering properties of food products. Chapter 7 discusses the spatially-resolved measurement technique for determining the optical properties of food and biological materials, whereas Chapter 8 focuses on the time-resolved spectroscopic technique for measuring optical properties and quality or maturity of horticultural products. Chapter 9 examines practical light scattering techniques for nondestructive quality assessment of fruits and vegetables. Chapter 10 presents the theory of light transfer in meat muscle and the measurement of optical properties for determining the postmortem condition and textural properties of muscle foods and meat analogs. Chapter 11 covers the applications of spatially-resolved light scattering techniques for assessing quality and safety of animal products. Chapter 12 looks into light scattering for milk and dairy processing. Chapter 13 examines the applications of dynamic light scattering for measuring the microstructure and rheological properties of food. Chapter 14 shows the applications of a biospeckle technique for assessing the quality and condition of fruits and vegetables. Chapter 15 provides a detailed description of Raman scattering spectroscopic and imaging techniques in food quality and safety assessment. Chapter 16, the

final chapter, focuses on applications of light scattering techniques for the detection of food-borne pathogens.

Improving and Tailoring Enzymes for Food Quality and Functionality provides readers with the latest information on enzymes, a biological processing tool that offers the food industry a unique means to control and tailor specific food properties. The book explores new techniques in the production, engineering, and application of enzymes, covering sourcing, isolation, and production of enzymes for food applications. In addition, chapters include detailed discussions of enzyme processing, analytical and diagnostic applications of enzymes in the food industry, and enzyme applications in specific food commodities. Provides readers with the latest information on enzymes and their unique applications in the food industry Explores new techniques in the production, engineering, and application of enzymes, covering sourcing, isolation, and production of enzymes for food applications Chapters include detailed discussions of enzyme processing, engineering and analytical and diagnostic applications of enzymes in the food industry, and enzyme applications in specific food commodities

The sensory properties of foods are the most important reason people eat the foods they eat. What those properties are and how we best measure those properties are critical to understanding food and eating behavior. Appearance, flavor, texture, and even the sounds of food can impart a desire to eat or cause us to dismiss the food as unappetizing, stale, or even inappropriate from a cultural standpoint. This Special Issue focuses on how sensory properties are measured, the specific sensory properties of various foods, and consumer behavior related to which properties might be most important in certain situations and how consumers use sensory attributes to make decisions about what they will eat. This Special Issue contains both research papers and review articles.

Sensory Evaluation Practices examines the principles and practices of sensory evaluation. It describes methods and procedures for the analysis of results from sensory tests; explains the reasons for selecting a particular procedure or test method; and discusses the organization and operation of a testing program, the design of a test facility, and the interpretation of results. Comprised of three parts encompassing nine chapters, this volume begins with an overview of sensory evaluation: what it does; how, where, and for whom; and its origin in physiology and psychology. It then discusses measurement, psychological errors in testing, statistics, test strategy, and experimental design. The reader is also introduced to the discrimination, descriptive, and affective methods of testing, along with the criteria used to select a specific method, procedures for data analysis, and the communication of actionable results. The book concludes by looking at problems where sensory evaluation is applicable, including correlation of instrumental and sensory data, measurement of perceived efficacy, storage testing, and product optimization. This book is a valuable resource for sensory professionals, product development and production specialists, research directors, technical managers, and professionals involved in marketing, marketing research, and advertising.

Salt, Fat and Sugar Reduction: Sensory Approaches for Nutritional Reformulation of Foods and Beverages explores salt, sugar, fat and the current scientific findings that link them to diseases. The sensory techniques that can be used for developing consumer appealing nutritional optimized products are also discussed, as are other aspects of shelf life and physicochemical analysis, consumer awareness of the negative nutritional impact of these ingredients, and taxes and other factors that are drivers for nutritional optimization. This book is ideal for undergraduate and postgraduate students and academics, food scientists, food and nutrition researchers, and those in the food and beverage industries. Provides a clear outline of current legislation on global ingredient taxes Demonstrates effective protocols, sensory, multivariate and physico-chemical for salt, fat and sugar reduction Outlines reduction protocols, with and without the use of replacer ingredients for salt, fat and sugar reduction Illustrates the full process chain, consumer to packaging, and the effects of reformulation by reduction of

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ingredients

This book addresses an important, but so far neglected, topic: the application of sensory evaluation to quality control. Although several articles have been published that have discussed concepts of quality control/sensory evaluation (QC/sensory) programs, *Sensory Evaluation in Quality Control* is the first publication that addresses this topic in a comprehensive and practical way. This book is comprehensive, in that it presents the sensory and statistical information that is needed to design and implement several types of QC/sensory programs at the plant level. The book is practical, in that it provides a step-by-step description of the complete process to implement such programs, and it illustrates this process through real examples encountered by various consumer products companies (e. g. , foods, personal care products, paper products). With this practical information, sensory and quality professionals can design and implement sound QC/sensory programs at the plant level. This book was developed to provide the sensory and quality professional with an overview and guide to apply, in a production facility, the unique techniques that are used to measure sensory responses. Therefore, the book is intended for QC and/or R&D personnel (e. g. , sensory managers and analysts, and quality professionals) in charge of implementing an in-plant program, as well as for the plant management and plant technical personnel (sensory coordinator and quality professionals) who are ultimately responsible for the routine operation of the established program.

Sensory and Instrumental Evaluation of Alcoholic Beverages introduces the value of sensory analysis to the alcoholic beverage industry through the detailed lens of sensory analysis techniques. From traditional methods, to the most modern rapid methods, this book presents comprehensive insights and applications. Analytical methods for identifying and assessing the flavor compounds present in the beverages are included that address both volatile and non-volatile techniques, along with rapid methods of assessment. Case studies highlight the testing of different types of alcoholic beverages running the entire gamut of methods and the appropriate subset of methods. Also included is information of data analyses with the appropriate R-codes to allow practitioners to use the book as a handbook to analyze their own data. Uniquely focused on alcoholic beverages and their assessment Includes real-world information for practical application Presents a full range of methodologies, providing key comparative insights

This book is a practical guide to sensory evaluation methods and techniques in the food, cosmetic and household product industries. It explains the suitability of different testing methods for different situations and offers step-by-step instructions on how to perform the various types of tests. Covering a broad range of food and non-food product applications, the book is designed to be used as a practical reference in the testing environment; a training manual for new recruits into sensory science, and a course book for students undertaking industrial training or academic study.

Computer Vision Technology for Food Quality Evaluation, Second Edition continues to be a valuable resource to engineers, researchers, and technologists in research and development, as well as a complete reference to students interested in this rapidly expanding field. This new edition highlights the most recent developments in imaging processing and analysis techniques and methodology, captures cutting-edge developments in computer vision technology, and pinpoints future trends in research and development for food quality and safety evaluation and control. It is a unique reference that provides a deep understanding of the issues of data acquisition and image analysis and offers techniques to solve problems and further develop efficient

methods for food quality assessment. Thoroughly explains what computer vision technology is, what it can do, and how to apply it for food quality evaluation Includes a wide variety of computer vision techniques and applications to evaluate a wide variety of foods Describes the pros and cons of different techniques for quality evaluation 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 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 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 good test methods and practices.

Modifying Food Texture, Volume 1: Novel Ingredients and Processing Techniques discusses texture as an important aspect of consumer food acceptance and preference, and the fact that specific consumer groups, including infants, the elderly, and dysphagia patients require texture-modified foods. Topics covered include ingredients and processing techniques used in texture modification of foods, an overview of food texture issues, the novel use of processing techniques for texture modification, and the uses of food ingredients in texture-modified foods. Discusses texture as an important aspect of consumer food acceptance and preference Presents findings and tactics that address the special needs of infants, the elderly, and dysphagia patients Topics covered include ingredients and processing techniques used in texture modification of foods, along with an overview of food texture issues, amongst others

The determination of food authenticity is a vital component of quality control. Its importance has been highlighted in recent years by high-profile cases in the global supply chain such as the European horsemeat scandal and the Chinese melamine scandal which led to six fatalities and the hospitalisation of thousands of infants. As well as being a safety concern, authenticity is also a quality criterion for food and food ingredients. Consumers and retailers demand that the products they purchase and sell are what they purport to be. This book covers the most advanced techniques used for the authentication of a vast number of products around the world. The reader will be informed about the latest pertinent analytical techniques. Chapters focus on the novel techniques & markers that have emerged in recent years. An introductory section presents the concepts of food authentication while the second section examines in detail the analytical techniques for the detection of fraud relating to geographical,

botanical, species and processing origin and production methods of food materials and ingredients. Finally, the third section looks at consumer attitudes towards food authenticity, the application of bioinformatics to this field, and the Editor's conclusions and future outlook. Beyond being a reference to researchers working in food authentication it will serve as an essential source to analytical scientists interested in the field and food scientists to appreciate analytical approaches. This book will be a companion to under- and postgraduate students in their wander in food authentication and aims to be useful to researchers in universities and research institutions.

Sensory analysis is an important tool in new product development. There has recently been significant development in the methods used to capture sensory perception of a product. Rapid Sensory Profiling Techniques provides a comprehensive review of rapid methods for sensory analysis that can be used as alternatives or complementary to conventional descriptive methods. Part one looks at the evolution of sensory perception capture methods. Part two focuses on rapid methods used to capture sensory perception, and part three covers their applications in new product development and consumer research. Finally, part four explores the applications of rapid methods in testing specific populations.

The second volume of Foods, nutrients and food ingredients with authorised EU health claims continues from Volume 1, which provided a comprehensive overview of many of the permitted health claims for foods and nutrients approved under European Regulation EC 1924/2006. This new volume discusses more of the health claims authorised to date for use in the EU. The chapters cover details of various permitted claims, such as the approved wording, conditions of use, the target group for the claims, the evidence for the claimed health benefits, and where appropriate details of other relevant legislation, consumer-related issues and future trends. The book opens with an overview of regulatory developments relating to health claims. Part One reviews authorised disease risk reduction claims and proprietary claims. The second part investigates ingredients with permitted 'general function' claims, with chapters examining ingredients such as red yeast rice, glucomannan and guar gum. The final section of the book explores foods and nutrients with permitted health claims, including chapters on authorised EU health claims for prunes, foods with low or reduced sodium or saturated fatty acids, and claims for essential and long chain polyunsaturated fatty acids. Building on volume 1, this title ensures that the area of EU health claims in food is comprehensively covered. Chapters are devoted to individual food ingredients and substances, covering the range of issues related to health claims. Health-promoting products are an increasing consumer trend in product development and this book provides key information on these advances.

Recent advances in array-based detectors and imaging technologies have provided high throughput systems that can operate within a substantially reduced timeframe and other techniques that can detect multiple contaminants at one time. These technologies are revolutionary in terms of food safety assessment in manufacturing, and will also have a significant impact on areas such as public health and food defence. This book summarizes the latest research and applications of sensor technologies for online and high throughput screening of food. The book first introduces high throughput screening strategies and technology platforms, and discusses key issues in sample collection and preparation. The subsequent chapters are then grouped into four sections: Part I reviews biorecognition techniques; Part II covers the use of optical biosensors and hyperspectral imaging in food

safety assessment; Part III focuses on electrochemical and mass-based transducers; and finally Part IV deals with the application of these safety assessment technologies in specific food products, including meat and poultry, seafood, fruits and vegetables. Summarises the latest research on sensor technologies for online and high-throughput screening of food Covers high-throughput screening and the current and forecast state of rapid contaminant detection technologies Looks at the use of optical and electrochemical biosensors and hyperspectral imaging in food safety assessment and the application of these technologies in specific food products

Metabolomics enables valuable information about the biochemical composition of foods to be rapidly obtained. Since the biochemical profile of food largely determines key food properties such as flavour and shelf life, the information gained using metabolomics-based methods will enable greater control of food quality and also help to determine the relationship between diet and health. Metabolomics in food and nutrition provides an overview of their current and potential use in the food industry. Part one reviews equipment, methods and data interpretation in metabolomics including the use of nuclear magnetic resonance (NMR), statistical methods in metabolomics, and metabolic reconstruction databases and their application to metabolomics research. Part two explores applications of metabolomics in humans, plants and food.

Chapters discuss metabolomics in nutrition, human samples for health assessments, and current methods for the analysis of human milk oligosaccharides (HMOs) and their novel applications. Further chapters highlight metabolomic analysis of plants and crops, metabolomics for the safety assessment of genetically modified (GM) crops, and applications of metabolomics in food science including food composition and quality, sensory and nutritional attributes. With its distinguished editors and team of expert contributors, Metabolomics in food and nutrition is a technical resource for industrial researchers in the food and nutrition sectors interested in the potential of metabolomics methods and academics and postgraduate students working in the area. Provides an overview of the current and potential future use of metabolomics in the food industry Chapters focus on key applications and review the analytical methods used and the bioinformatics techniques involved in processing the results Discusses metabolomics in nutrition, human samples for health assessments, and current methods for the analysis of human milk oligosaccharides (HMOs) and their novel applications

Flavour is a critical aspect of food production and processing, requiring careful design, monitoring and testing in order to create an appealing food product. This book looks at flavour generation, flavour analysis and sensory perception of food flavour and how these techniques can be used in the food industry to create new and improve existing products. Part one covers established and emerging methods of characterising and analysing taste and aroma compounds. Part two looks at different factors in the generation of aroma. Finally, part three focuses on sensory analysis of food flavour. Covers the analysis and characterisation of aromas and taste compounds Examines how aromas can be created and predicted Reviews how different flavours are perceived

In this book, a wide range subjects in biorheology are dealt with, from fundamentals to applications. The inclusion of quite substantial chapters concerned with application aspects such as the latest studies on foods, cosmetics, personal care products, and biological tissues, related regenerative medicine, is one of the features of the book. For the fundamental aspects, studies on the physicochemical characteristics of biopolymer, the key substance of soft matter, are listed. By contrast, in the application aspect, although the main topic is the rheology of foods, focusing on the "texture" of mastication or swallowing, novel studies on cosmetics and personal care products concerning feeling during the lubrication by those products are also considered. This book will engage both a professional and an academic audience interested in soft matter, especially as related to food, cosmetics, and personal care products. In particular, this work will have a special appeal to scientists and engineers in the food and cosmetics

industries and to graduate students preparing for those fields.

Food process engineering, a branch of both food science and chemical engineering, has evolved over the years since its inception and still is a rapidly changing discipline. While traditionally the main objective of food process engineering was preservation and stabilization, the focus today has shifted to enhance health aspects, flavour and taste, nutrition, sustainable production, food security and also to ensure more diversity for the increasing demand of consumers. The food industry is becoming increasingly competitive and dynamic, and strives to develop high quality, freshly prepared food products. To achieve this objective, food manufacturers are today presented with a growing array of new technologies that have the potential to improve, or replace, conventional processing technologies, to deliver higher quality and better consumer targeted food products, which meet many, if not all, of the demands of the modern consumer. These new, or innovative, technologies are in various stages of development, including some still at the R&D stage, and others that have been commercialised as alternatives to conventional processing technologies. Food process engineering comprises a series of unit operations traditionally applied in the food industry. One major component of these operations relates to the application of heat, directly or indirectly, to provide foods free from pathogenic microorganisms, but also to enhance or intensify other processes, such as extraction, separation or modification of components. The last three decades have also witnessed the advent and adaptation of several operations, processes, and techniques aimed at producing high quality foods, with minimum alteration of sensory and nutritive properties. Some of these innovative technologies have significantly reduced the thermal component in food processing, offering alternative nonthermal methods. Food Processing Technologies: A Comprehensive Review covers the latest advances in innovative and nonthermal processing, such as high pressure, pulsed electric fields, radiofrequency, high intensity pulsed light, ultrasound, irradiation and new hurdle technology. Each section will have an introductory article covering the basic principles and applications of each technology, and in-depth articles covering the currently available equipment (and/or the current state of development), food quality and safety, application to various sectors, food laws and regulations, consumer acceptance, advancements and future scope. It will also contain case studies and examples to illustrate state-of-the-art applications. Each section will serve as an excellent reference to food industry professionals involved in the processing of a wide range of food categories, e.g., meat, seafood, beverage, dairy, eggs, fruits and vegetable products, spices, herbs among others.

The development of high-quality foods with desirable properties for both consumers and the food industry requires a comprehensive understanding of food systems and the control and rational design of food microstructures. Food microstructures reviews best practice and new developments in the determination of food microstructure. After a general introduction, chapters in part one review the principles and applications of various spectroscopy, tomography and microscopy techniques for revealing food microstructure, including nuclear magnetic resonance (NMR) methods, environmental scanning electron, probe, photonic force, acoustic, light, confocal and infrared microscopies. Part two explores the measurement, analysis and modelling of food microstructures. Chapters focus on rheology, tribology and methods for modelling and simulating the molecular, cellular and granular microstructure of foods, and for developing relationships between microstructure and mechanical and rheological properties of food structures. The book concludes with a useful case study on electron microscopy. Written by leading professionals and academics in the field, Food microstructures is an essential reference work for researchers and professionals in the processed foods and nutraceutical industries concerned with complex structures, the delivery and controlled release of nutrients, and the generation of improved foods. The book will also be of value to academics working in food science and the emerging field of soft matter.

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Reviews best practice and essential developments in food microstructure microscopy and modelling Discusses the principles and applications of various microscopy techniques used to discover food microstructure Explores the measurement, analysis and modelling of food microstructures

Continuing the mission of the first two editions, Food Emulsions: Principles, Practices, and Techniques, Third Edition covers the fundamentals of emulsion science and demonstrates how this knowledge can be applied to control the appearance, stability, and texture of emulsion-based foods. Initially developed to fill the need for a single resource co

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