

Acrylamide Formation Mechanism In Heated Foods

Acrylamide, a chemical described as 'extremely hazardous' and 'probably carcinogenic to humans', was discovered in food in 2002. Its presence in a range of popular foods has become one of the most difficult issues facing not only the food industry but all stakeholders in the food supply chain and its oversight. Acrylamide is not present in raw food but forms from natural precursors during high-temperature (> 120°C) cooking and food processing. Fried, baked, roasted and toasted potato and cereal products, as well as coffee, are the major contributors to dietary exposure. This book comprehensively describes what is known about the toxicology of acrylamide, how it forms in food, the positions taken by food safety authorities and concurrent regulatory issues. It also covers the food industry's response, the mitigation measures adopted and how successful these have been in reducing our exposure to acrylamide. It then describes the genetic and agronomic approaches that have been taken to reduce the acrylamide-forming potential of major crops. Written by internationally-renowned experts in the field, Acrylamide in Food is detailed and informative, while being accessible to specialists and a general readership. [Related Link\(s\)](#)

This volume discusses recent advancements to the age old practice of using microbial enzymes in the preparation of food. Written by leading experts in the field, it discusses novel enzymes and their applications in the industrial preparation of food to improve taste and texture, while reducing cost and increasing consistency. This book will be of interest to both researchers and students working in food technology.

This book will review the current status of the agriculture and agri-food sector in regard to green processing and provide strategies that can be used by the sector to enhance the use of environmentally-friendly technologies for production, processing. The book will look at the full spectrum from farm to fork beginning with chapters on life cycle analysis and environmental impact assessment of different agri-food sectors. This will be followed by reviews of current and novel on-farm practices that are more environmentally-friendly, technologies for food processing that reduce chemical and energy use and emissions as well as novel analytical techniques for R&D and QA which reduce solvent, chemical and energy consumption. Technologies for waste treatment, "reducing, reusing, recycling", and better water and energy stewardship will be reviewed. In addition, the last section of the book will attempt to look at technologies and processes that reduce the generation of process-induced toxins (e.g., trans fats, acrylamide, D-amino acids) and will address consumer perceptions about current and emerging technologies available to tackle these processing and environmental issues.

Encyclopedia of Food Chemistry is the ideal primer for food scientists, researchers, students and young professionals who want to acquaint themselves with food chemistry. Well-organized, clearly written, and abundantly referenced, the book provides a foundation for readers to understand the principles, concepts, and techniques used in food chemistry applications. Articles are written by international experts and cover a wide range of topics, including food chemistry, food components and their interactions, properties (flavor, aroma, texture) the structure of food, functional foods, processing, storage, nanoparticles for food use, antioxidants, the Maillard and Strecker reactions, process derived contaminants, and the detection of economically-motivated food adulteration. The encyclopedia will provide readers with an introduction to specific topics within the wider context of food chemistry, as well as helping them identify the links between the various sub-topics. Offers readers a comprehensive understanding of food chemistry and the various connections between the sub-topics Provides an authoritative introduction for non-specialists and readers from undergraduate levels and upwards Meticulously organized, with articles structured logically based on the various elements of food chemistry

A comprehensive examination of the chemistry of food toxicants produced during processing, formulation, and storage of food, Food Safety Chemistry: Toxicant Occurrence, Analysis and Mitigation provides the information you need to develop practical approaches to control and reduce contaminant levels in food products and food ingredients, including cooking oils. It discusses each major food chemical contaminant, examining toxic effects and the biological mechanisms behind their toxicity. The book supplies an understanding of the chemical and biochemical mechanisms involved in the formation of certain food contaminants through a systematic review of the appearances of these foodborne chemical toxins as well as the chemical and biochemical mechanisms involved in their formations during food processing and storage. It also details their absorption and distribution profiles and the factors influencing their levels in foods. It includes updated analytical techniques for food quality control, other research efforts on these chemicals, and their regulatory-related concerns and suggestions. Edited by experts in the field, this guide includes a listing of commonly used analytical techniques in food safety and a summary of current research findings related to food chemical contaminants. The book's updated information on potential adverse effects on human health and focus on analytical techniques for food safety analysis and quality control makes it a reference that will spend more time in your hands than on your bookshelf.

Most baking books do not focus on the simultaneous heat and mass transfer that occurs in the baking process, thereby ignoring a fundamental facet of process and product development. Addressing the engineering and science elements often ignored in current baking books, Food Engineering Aspects of Baking Sweet Goods explores important topics in understanding the baking process and reviews recent technological advances. With contributions from various international authorities on food science, engineering, and technology, the book covers the rheology of cake batter and cookie dough, cake emulsions, the physical and thermal properties of sweet goods, and heat and mass transfer during baking. It also presents the science of soft wheat products, including the quality of soft wheat, the functions of ingredients in the baking of sweet goods, and the chemical reactions during processing. In addition, the contributors discuss cake and cookie technologies as well as recent advances in baking soft wheat products. The final chapter examines the nutritional issues of consuming fats and sugars and presents general strategies for substituting fats and sugars in baked products. Taking an engineering approach to the field, this volume delineates the complex food process of baking, from ingredients to production to finished product.

This is the first practical book dedicated to the fundamental and application aspects of two major unit operations in cocoa and coffee processing, namely drying and roasting. The drying and roasting of cocoa and coffee beans play critical roles in governing the formation of flavor precursors in the early stages and also the development of flavor and aroma in the later stages during processing. Hence, qualities of the finished chocolates and coffee powder products are affected greatly by the dried and roasted beans produced. Drying and Roasting of Cocoa and Coffee covers key topics areas ranging from post-harvest processing, equipment selection, physical and chemical changes during processing, flavor development, grading and dried product quality. The book consists of two parts with topics dedicated to the drying/roasting aspects of cocoa and coffee, respectively. Features Provides a comprehensive review on flavor development during cocoa/coffee processing Discusses the impact of processing parameters on cocoa/coffee quality Presents the new trends in drying/roasting techniques and novel technology Examines the concept of coffee quality in light of both paradigms: the traditional coffee and the specialty coffee grading systems No prior knowledge of cocoa and coffee processing is required to benefit from this book, which is written for a variety of readers. It is suitable for undergraduate and postgraduate students, researchers and industrial practitioners/consultants from various domains in the food and beverage industries.

Inherent toxicants and processing contaminants are both non-essential, bioactive substances whose levels in foods can be difficult to control. This volume covers both types of compound for the first time, examining their beneficial as well as their undesirable effects in the human diet. Chapters have been written as individually comprehensive reviews, and topics have been selected to illustrate recent scientific advances in understanding of the occurrence and mechanism of formation, exposure/risk assessment and developments in the underpinning analytical methodology. A wide range of contaminants are examined in detail, including pyrrolizidine alkaloids, glucosinolates, phycotoxins, and mycotoxins. Several process contaminants (eg acrylamide and furan), which are relatively new but which have a rapidly growing literature, are also covered. The book provides a practical reference for a wide range of experts: specialist toxicologists (chemists and food chemists), hygienists, government officials and anyone who needs to be aware of the main issues concerning toxicants and process contaminants in food. It will also be a valuable introduction to the subject for post-graduate students.

This book presents a detailed overview and critical evaluation of recent advances and remaining challenges in improving nutritional quality and/or avoiding the accumulation of undesirable substances in plants using a variety of strategies based on modern biological tools and techniques. Each review chapter provides an authoritative and insightful account of the various aspects of nutritional enhancement of plants. In the course of the last two decades, several food crops rich in macro- and micronutrients have been developed to improve health and protect a large section of the populace in developing countries from chronic diseases. Providing extensive information on these developments, this book offers a valuable resource for all researchers, students and industrialists working in agriculture, the plant sciences, agronomy, horticulture, biotechnology, food and nutrition, and the soil and environmental sciences.

Advances in Molecular Toxicology features the latest advances in all of the subspecialties of the broad area of molecular toxicology. Toxicology is the study of poisons, and this series details the study of the molecular basis by which a vast array of agents encountered in the human environment and produced by the human body itself manifest themselves as toxins. Not strictly limited to documenting these examples, the series is also concerned with the complex web of chemical and biological events that give rise to toxin-induced symptoms and disease. The new technologies that are being harnessed to analyze and understand these events will also be reviewed by leading workers in the field. Advances in Molecular Toxicology will report progress in all aspects of these rapidly evolving molecular aspects of toxicology with a view toward detailed elucidation of both progress on the molecular level and on advances in technological approaches employed. Cutting-edge reviews by leading workers in the discipline In-depth dissection of molecular aspects of interest to a broad range of scientists, physicians and any student in the allied disciplines Leading edge applications of technological innovations in chemistry, biochemistry and molecular medicine

Comprehensive Foodomics offers a definitive collection of over 150 articles that provide researchers with innovative answers to crucial questions relating to food quality, safety and its vital and complex links to our health. Topics covered include transcriptomics, proteomics, metabolomics, genomics, green foodomics, epigenetics and noncoding RNA, food safety, food bioactivity and health, food quality and traceability, data treatment and systems biology. Logically structured into 10 focused sections, each article is authored by world leading scientists who cover the whole breadth of Omics and related technologies, including the latest advances and applications. By bringing all this information together in an easily navigable reference, food scientists and nutritionists in both academia and industry will find it the perfect, modern day compendium for frequent reference. List of sections and Section Editors: Genomics - Olivia McAuliffe, Dept of Food Biosciences, Moorepark, Fermoy, Co. Cork, Ireland Epigenetics & Noncoding RNA - Juan Cui, Department of Computer Science & Engineering, University of Nebraska-Lincoln, Lincoln, NE Transcriptomics - Robert Henry, Queensland Alliance for Agriculture and Food Innovation, The University of Queensland, St Lucia, Australia Proteomics - Jens Brockmeyer, Institute of Biochemistry and Technical Biochemistry, University Stuttgart, Germany Metabolomics - Philippe Schmitt-Kopplin, Research Unit Analytical BioGeoChemistry, Neuherberg, Germany Omics data treatment, System Biology and Foodomics - Carlos Leon Canseco, Visiting Professor, Biomedical Engineering, Universidad Carlos III de Madrid Green Foodomics - Elena Ibanez, Foodomics Lab, CIAL, CSIC, Madrid, Spain Food safety and Foodomics - Djuro Josi?, Professor Medicine (Research) Warren Alpert Medical School, Brown University, Providence, RI, USA & Sandra Kraljevi? Paveli?, University of Rijeka, Department of Biotechnology, Rijeka, Croatia Food Quality, Traceability and Foodomics - Daniel Cozzolino, Centre for Nutrition and Food Sciences, The University of Queensland, Queensland, Australia Food Bioactivity, Health and Foodomics - Miguel Herrero, Department of Bioactivity and Food Analysis, Foodomics Lab, CIAL, CSIC, Madrid, Spain Brings all relevant foodomics information together in one place, offering readers a 'one-stop,' comprehensive resource for access to a wealth of information Includes articles written by academics and practitioners from various fields and regions Provides an ideal resource for students, researchers and professionals who need to find relevant information quickly and easily Includes content from high quality authors from across the globe

Calcium's importance in health and disease is clear when listing its multiple roles in the body, which include building strong bones and teeth, vascular calcification, muscle function, hormonal regulation and maintaining a normal heartbeat. This book will examine these roles and will also cover areas such as chemical analysis, sources of calcium based on geography, influence of Vitamin D, hypercalcemia and the effects of dietary calcium. This edited volume will pool knowledge across scientific disciplines in a way that increases its applicability to a wide range of audiences and fills the gap identified in providing comprehensive synopses of food substances. Chemists, analytical scientists, forensic scientists, food scientists, as well as course lecturers and university librarians, will all benefit from this title.

Although the aim of cooking foods is to make them more appetizing and microbiologically safe, it is now known that cooking and food

processing at high temperatures generate various kinds of toxic substances, such as heterocyclic amines and acrylamide, via the Maillard reaction. Summarising the latest research in this field, this important collection discusses both the formation of health-hazardous compounds during heat treatment of foods and practical methods to minimise their formation. Part one analyses the formation of hazardous compounds in heat-treated foods such as meat, potatoes, cereal and coffee. Part two discusses the health risks posed by heat-induced toxicants. It includes chapters on bio-monitoring, exposure assessment and risk assessment, as well as chapters on the risks of specific compounds. The final part of the book is concerned with the key area of minimising the formation of harmful compounds in food products. This can be achieved by controlling processing conditions and modifying ingredients, among other methods. With its distinguished editors and international team of contributors with unrivalled academic and industry experience, Acrylamide and other hazardous compounds in heat-treated foods, is invaluable for all those concerned with this crucial safety issue throughout the food industry. Analyses the formation of health hazardous compounds during heat treatment of foods Discusses practical methods to minimise formation Distinguished editors and international team of contributors

Thoroughly revised and expanded, the third edition of the Encyclopedia of Chromatography is an authoritative source of information for researchers in chemistry, biology, physics, engineering, and materials science. This quick reference and guide to specific chromatographic techniques and theory provides a basic introduction to the science and techn

This book on Acrylic Polymers for Healthcare presents eight chapters organised into three parts by providing new ideas in design, synthesis and a detailed study of new acrylate materials in healthcare applications. Part I represents Chapters 1, 2, 3 and 4 focussing on toning up of technologies for making dental dentures with better properties. Part II comprises Chapters 5 and 6 dealing with synthetic polymer-based nanoparticles as intelligent drug delivery systems and bismuth nanoparticles for improved green light emission. Part III represents Chapters 7 and 8 describing the aspects of mitigation of acrylamide in foods in the context of an African perspective and the importance of acrylic-based polymeric adsorbents so that the reader can get an idea about the various types and forms of polymeric materials used for the removal of heavy metals from water.

Increasing public health concern about healthy lifestyles has sparked a greater demand among consumers for healthy foods. Natural ingredients and environmental friendly food production and processing chains are more aligned to meeting the demand for healthy food. There is a wide array of food additives and chemicals that have nutritional value. The biotechnological food production processes, therefore, vary for different types of food chemicals and ingredients accordingly. Biotechnological Production of Natural Ingredients for Food Industry explains the main aspects of the production of food ingredients from biotechnological sources. The book features 12 chapters which cover the processes for producing and adding a broad variety of food additives and natural products, such as sweeteners, amino acids, nucleotides, organic acids, vitamins, nutraceuticals, aromatic (pleasant smelling) compounds, colorants, edible oils, hydrocolloids, antimicrobial compounds, biosurfactants and food enzymes. Biotechnological Production of Natural Ingredients for Food Industry is a definitive reference for students, scientists, researchers and professionals seeking to understand the biotechnology of food additives and functional food products, particularly those involved in courses or activities in the fields of food science and technology, food chemistry, food biotechnology, food engineering, bioprocess engineering, biotechnology, applied microbiology and nutrition.

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.

Capillary electrophoresis (CE) and microfluidic chip (MC) devices are relatively mature technologies, but this book demonstrates how they can be integrated into a single, revolutionary device that can provide on-site analysis of samples when laboratory services are unavailable. By introducing the combination of CE and MC technology, Microfluidic Ch

The need to reduce saturated fat levels in food and the different ways of doing this are among the most important issues facing the food industry. Reducing saturated fats in foods reviews the sources and effects of saturated fats in food and the ways in which the food industry can effectively reduce saturates. Part one covers the functional and nutritional aspects of saturated fats in foods, with chapters covering sources of dietary saturated fats, their functional attributes and the health issues associated with saturated fatty acids. Part two focuses on reducing saturated fats through food reformulation, concentrating on both the technologies used and the food categories affected. Chapters cover topics such as emulsion technology for reduction of saturated fats and the application of diacylglycerol oils, as well as different food categories including milk and dairy products, processed meats, fried foods and pastry products. With its distinguished editor and international team of contributors, Reducing saturated fats in foods is an essential reference for oils and fats processors and food manufacturers, as well as those researching saturated fats in the academic sector. Reviews the sources and effects of saturated fats in food and the ways in which the food industry can effectively reduce saturates Explores the functional and nutritional aspects of saturated fats in foods, covering sources of dietary saturated fats and their functional attributes Focuses on reducing saturated fats through food reformulation, concentrating on both the

technologies used and the food categories affected

Advances in Food Science and Nutrition covers topics such as food safety objectives, risk assessment, quality assurance and control, good manufacturing practices, food processing systems, design and control, and rapid methods of analysis and detection, as well as sensor technology, environmental control, and safety. The thirteen chapters are written by prominent researchers from industry, academia, and government/private research laboratories around the world. The book details many of the recent technical research accomplishments in the areas food science, including: • Potato production, composition, and starch processing • Milk and different types of milk products • Processing and preservation of meat, poultry, and seafood • Food ingredients including additives and natural plant-based ingredients • Fruits and fruit processing • Antioxidant activity of phytochemicals and their method of analysis • The effect of food processing on bioactive compounds • Food safety regulations including foodborne pathogens, probiotics, genetically modified foods, and bioavailability of nutrients • Trends in sensory characterization of food products • Ultrasound applications in food technology • Transformations of food flavor including aroma compounds and chemical reactions that influence flavor • Storage technologies for fresh fruits

Due to the increase in world population (more than seven billion inhabitants) the global food industry has the largest number of demanding and knowledgeable consumers. This population requires food products that fulfill the high quality standards established by the food industry organizations. Food shortages threaten human health, and also the disastrous extreme climatic events make food shortages even worse. This collection of articles is a timely contribution to issues relating to the food industry. The objective of this book is to provide knowledge appropriate for students, university researchers, and in general, for anyone wishing to obtain knowledge of food processing and to improve the food product quality.

Covers a Host of Groundbreaking Techniques Thermal processing is known to effectively control microbial populations in food, but the procedure also has a downside?it can break down the biochemical composition of foods, resulting in a marked loss of sensory and nutritional quality. Processing Effects on Safety and Quality of Foods delineates three decades of advances made in processing techniques that produce microbiologically safe foods, while maintaining their sensory and nutritive properties.

Addresses the Entire Food Processing Industry With an international team of more than 35 renowned contributors, this book presents evaluation techniques that yield reliable estimations of microbiological, physicochemical, nutritive, and sensory characteristics. Each chapter discusses the processing effects of relevant technologies and includes the basics of microbial kinetics, sensory evaluation, and the perception of food quality. A sampling of the techniques covered: Hermetically sealed containers Acrylamide formation Dried foods Irradiated foods Pressure-assisted thermal processing Pulsed electric field processing Processing Effects on Safety and Quality of Foods addresses the entire food processing industry, including food modeling, optimization, and proper design of manufacturing plants. It is the first of its kind?a single, sound reference that explores all of the different aspects involved in evaluating processing effects in food safety and quality.

The second edition of this successful book highlights thewidespread use of enzymes in food processing improvement andinnovation, explaining how they bring advantages. The properties ofdifferent enzymes are linked to the physical and biochemical eventsthat they influence in food materials and products, while these inturn are related to the key organoleptic, sensory and shelf lifequalities of foods. Fully updated to reflect advances made in the field over recentyears, new chapters in the second edition look at the use ofenzymes in the reduction of acrylamide, in fish processing and innon-bread cereal applications such as flour confectionery. Geneticmodification of source organisms (GMO) has been used to improveyields of purer enzymes for some time now but the newer technologyof protein engineering (PE) of enzymes has the potential to producepurer, more targeted products without unwanted side activities, anda chapter is also included on this important new topic. Authorshave been selected not only for their practical working knowledgeof enzymes but also for their infectious enthusiasm for thesubject. The book is aimed at food scientists and technologists,ingredients suppliers, geneticists, analytical chemists and qualityassurance personnel.

This volume is a comprehensive introduction to the techniques and information required for the testing and analysis of cereals throughout the entire grain chain, from breeding through harvesting and storage to processing and the manufacture of cereal-based food products. The book describes testing protocols in detail, offering many practical pointers for testing in fields, food plants, and in stores. It shows how data from the tests are acquired, interpreted, and linked to a range of global testing standards. The book covers wheat, barley, sorghum and other non-wheat cereals and a wide range of baked products, including breads, extruded products, and animal feeds. A final section introduces the entire spectrum of analytical devices for grain analysis from all major international equipment manufacturers. This is a practical and comprehensive reference designed for specialists responsible for ensuring the safety of, and adding value to, cereals, including cereal scientists, technologists, and producers.

Interest in the chemistry, biochemistry, and safety of acrylamide is running high. These proceedings contain presentations by experts from eight countries on the chemistry, analysis, metabolism, pharmacology, and toxicology of the compound.

This book presents five chapters, organised into two sections, on the latest developments in acrylate polymers materials in terms of properties, new ideas in design, synthesis and detailed applications. Section I presents three chapters on acrylate polymer properties and advanced applications such as pH dependence acrylate-derivative polyelectrolyte properties and polymer material classification as acrylic heat resistant glass and polycarbonate antiballistic glass. Section II includes two chapters on acrylic-based materials in the form of hydrogels, interpenetrated polymer networks, composites and nanocomposites for biomedical and bioengineering applications such as tissue engineering, antimicrobial therapy, orthopaedics and ophthalmologic devices.

Process-Induced Food Toxicants combines the analytical, health, and risk management issues relating to all of the currently known processing-induced toxins that may be present in common foods. It considers the different processing methods used in the manufacture of foods, including thermal treatment, drying, fermentation, preservation, fat processing, and high hydrostatic pressure processing, and the potential contaminants for each method. The book discusses the analysis, formation, mitigation, health risks, and risk management of each hazardous compound. Also discussed are new technologies and the impact of processing on nutrients and allergens.

This book provides information on the advances in blanching and its effect on food. The author presents the concepts involved in old and novel blanching processes, the typical effects of blanching and the studies on novel blanching

technologies.

Bread Making: Improving Quality quickly established itself as an essential purchase for baking professionals and researchers in this area. Fully revised and updated and with new chapters on Flour Lipids, and the dietary and nutritional quality of bread, this new edition provides readers with the information they need on the latest developments in bread making science and practice. The book opens with two introductory chapters providing an overview of the breadmaking process. Part one focuses on the impacts of wheat and flour quality on bread, covering topics such as wheat chemistry, wheat starch structure, grain quality assessment, milling and wheat breeding. Part two covers dough development and bread ingredients, with chapters on dough aeration and rheology, the use of redox agents and enzymes in breadmaking and water control, among other topics. In part three, the focus shifts to bread sensory quality, shelf life and safety. Topics covered include bread aroma, staling and contamination. Finally, part four looks at particular bread products such as high fiber breads, those made from partially baked and frozen dough and those made from non-wheat flours. With its distinguished editor and international team of contributors, **Bread Making: Improving Quality, Third Edition**, continues to serve as the standard reference for researchers and professionals in the bread industry and all those involved in academic research on breadmaking science and practice. Discusses dough development and bread ingredients, with new chapters on flour lipids and improving the nutrition and dietary quality of breads. Comprehensively updated and revised coverage, outlines the latest developments in breadmaking science and practice. Covers topics such as wheat chemistry, wheat starch structure, grain quality assessment, milling, and wheat breeding.

Advances in Potato Chemistry and Technology, Second Edition, presents the latest knowledge on potato chemistry, including the identification, analysis, and uses of chemical components in potatoes. Beginning with a brief description of potato components, the book then delves into their role during processing, then presenting information on strategies for quality optimization that provides students, researchers, and technologists working in the area of food science with recent information and updates on state-of-the-art technologies. The updated edition includes the latest information related to the identification, analysis, and use of chemical components of potatoes, carbohydrate and non-carbohydrate composition, cell wall chemistry, an analysis of glycoalkaloids, phenolics and anthocyanins, thermal processing, and quality optimization. In addition, new and sophisticated methods of quality determination of potatoes and their products, innovative and healthy potato-based foods, the future of genetically modified potatoes, and the non-food use of potatoes and their products is discussed. Includes both the emerging non-food uses of potato and potato-by-products as well as the expanding knowledge on the food-focused use of potatoes. Presents case studies on the problems, factors, proposed solutions, and pros and cons of each, allowing readers facing similar concerns and issues to effectively and efficiently identify an appropriate solution. Written by a global collection of experts in both food and non-food potato science.

Coffee: Emerging Health Benefits and Disease Prevention presents a comprehensive overview of the recent scientific advances in the field. The book focuses on the following topics: coffee constituents; pro- and antioxidant properties of coffee constituents; bioavailability of coffee constituents; health benefits and disease prevention effects of coffee; and potential negative impacts on health. Multiple chapters describe coffee's positive impact on health and various diseases: type 2 diabetes; neurodegenerative diseases (Parkinson's and Alzheimer's); cancer (prostate, bladder, pancreatic, breast, ovarian, colon and colorectal); cardiovascular health; and liver health. Coffee's positive effects on mood, suicide rate and cognitive performance are addressed as are the negative health impacts of coffee on pregnancy, insulin sensitivity, dehydration, gastric irritation, anxiety, and withdrawal syndrome issues. Written by many of the top researchers in the world, **Coffee: Emerging Health Benefits and Disease Prevention** is a must-have reference for food professionals in academia, industry, and governmental and regulatory agencies whose work involves coffee.

Chemistry and Safety of Acrylamide in Food Springer Science & Business Media

This book summarizes the types, contents, analytical methods, formation mechanisms and control strategies for hazardous substances produced during the thermal processing of foods. In each chapter, hazardous substances such as dicarbonyl compounds, acrylamide, furan, heterocyclic amines, trans-fatty acids, and advanced glycation end products (AGEs) are covered and discussed in terms of analytical methods, formation mechanisms and mitigation strategies. The content chiefly focuses on how these hazardous substances are formed during thermal processing and what can be done to mitigate or eliminate them in food products (e.g. those prepared at higher temperatures by baking, frying or roasting). The major objective of this book is to provide a timely and informative guide for researchers and graduate students in the fields of food chemistry, food ingredients, food analysis, food safety, food processing, chemical toxicology, disease prevention and health promotion.

This is the latest and most authoritative documentation of current scientific knowledge regarding the health effects of thermal food processing. Authors from all over Europe and the USA provide an international perspective, weighing up the risks and benefits. In addition, the contributors outline those areas where further research is necessary.

The second edition of the **Food Processing Handbook** presents a comprehensive review of technologies, procedures and innovations in food processing, stressing topics vital to the food industry today and pinpointing the trends in future research and development. Focusing on the technology involved, this handbook describes the principles and the equipment used as well as the changes - physical, chemical, microbiological and organoleptic - that occur during food preservation. In so doing, the text covers in detail such techniques as post-harvest handling, thermal processing, evaporation and dehydration, freezing, irradiation, high-pressure processing, emerging technologies and packaging. Separation and conversion operations widely used in the food industry are also covered as are the processes of baking, extrusion and frying. In addition, it addresses current concerns about the safety of processed foods (including HACCP systems, traceability and hygienic design of plant) and control of food processes, as well as the impact of processing on the environment, water and waste treatment, lean manufacturing and the roles of nanotechnology and fermentation in food processing. This two-volume set is a must-have for scientists and engineers involved in food manufacture, research and development in both industry and academia, as well as students of food-related topics at undergraduate and postgraduate levels. From Reviews on the First Edition: "This work should become a standard text for students

of food technology, and is worthy of a place on the bookshelf of anybody involved in the production of foods." *Journal of Dairy Technology*, August 2008 "This work will serve well as an excellent course resource or reference as it has well-written explanations for those new to the field and detailed equations for those needing greater depth." *CHOICE*, September 2006

This volume covers many new trends and developments in food science, including preparation, characterization, morphology, properties, and recyclability. The volume considers food quality, shelf life, and manufacturing in conjunction with human nutrition, diet, and health as well as the ever-growing demand for the supply and production of healthier foods. Distinguished scientists specializing in various disciplines discuss basic studies, applications, recent advances, difficulties, and breakthroughs in the field. The volume includes informative discussions and new research on food formulations, manufacturing techniques, biodegradably flexible packaging, packaged foods, beverages, fruits and vegetable processing, fisheries, milk and milk products, frozen food and thermo processing, grain processing, meat and poultry processing, rheological characteristics of foods, heat exchangers in the food industry, food and health (including natural cures and food supplements), spice and spice processing, and more.

Understanding the biochemistry of food is basic to all other research and development in the fields of food science, technology, and nutrition, and the past decade has seen accelerated progress in these areas. *Advances in Food Biochemistry* provides a unified exploration of foods from a biochemical perspective. Featuring illustrations to elucidate m

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

Food Hygiene and Toxicology in Ready-to-Eat Foods is a solid reference for anyone in the food industry needing to understand the complex issues and mechanisms of biological control and chemical hazards to ensure food safety. infectious and non-infectious contaminants in raw, minimally processed, and prepared foods are covered in detail, as well as effective measures to avoid foodborne infections and intoxications. The book is written by an international team of experts presenting the most up-to-date research in the field, and provides current applications and guidance to enhance food safety in the food industry. Strategies and recommendations for each food category include, among others, how to avoid cross-contamination of pathogens, the proper uses of antimicrobial coatings and spray cleanings of fresh produce, and acrylamide reduction during processing. leafy vegetables, fruit juices, nuts, meat and dairy products are some of the ready-to-eat foods covered. Provides the latest on research and development in the field of food safety incorporating practical real life examples for microbiological risk assessment and reduction in the food industry Includes specific aspects of potential contamination and the importance of various risks associated with ready-to-eat foods Describes potential harmful agents that may arise in foods during processing and packaging Presents information on psychrotropic pathogens and food poisoning strains, effect of temperature, Salmonella, Listeria, Escherichia coli, Bacillus cereus, Norovirus, parasites, fungal microbiota, enterotoxins, and more

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