

Food Biochemistry And Food Processing 2nd Edition

Rapid and continued developments in electronics, optics, computing, instrumentation, spectroscopy, and other branches of science and technology resulted in considerable improvements in various methodologies. Due to this revolution in methodology, it is now possible to solve problems which were previously considered difficult to solve. These new methods have led to a better characterization and understanding of foods. The aim of this book is to assemble, for handy reference, various emerging, state-of-the-art methodologies used for characterizing foods. Although the emphasis is on real foods, model food systems are also considered. Methods pertaining to interfaces (food emulsions, foams, and dispersions), fluorescence, ultrasonics, nuclear magnetic resonance, electron spin resonance, Fourier-transform infrared and near infrared spectroscopy, small-angle neutron scattering, dielectrics, microscopy, rheology, sensors, antibodies, flavor and aroma analysis are included. This book is an indispensable reference source for scientists, engineers, and technologists in industries, universities, and government laboratories who are involved in food research and/or development, and also for faculty, advanced undergraduate, graduate and postgraduate students from Food Science, Food Engineering, and Biochemistry departments. In addition, it will serve as a valuable reference for analytical chemists and surface and colloid scientists.

Food Process Engineering: Safety Assurance and Complements pursues a logical sequence of coverage of industrial processing of food and raw material where safety and complementary issues are germane. Measures to guarantee food safety are addressed at start, and the most relevant intrinsic and extrinsic factors are reviewed, followed by description of unit operations that control microbial activity via the supply of heat supply or the removal of heat. Operations prior and posterior are presented, as is the case of handling, cleaning, disinfection and rinsing, and effluent treatment and packaging, complemented by a brief introduction to industrial utilities normally present in a food plant. Key Features: Overviews the technological issues encompassing properties of food products Provides comprehensive mathematical simulation of food processes Analyzes the engineering of foods at large, and safety and complementary operations in particular, with systematic derivation of all relevant formulae Discusses equipment features required by the underlying processes

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

This is the first book for some years that provides a comprehensive overview of food oral processing. It includes fundamental chapters at the beginning of each section to aid the understanding of the later more specific oral processing chapters. The field is rapidly developing, and the systems researched in the context of food oral processing become increasingly complex and therefore the fundamental sections include information on how to build complex food systems. The main coverage includes the biomechanics of swallowing, the biophysics of mouthfeel and texture as well as the biochemistry of flavours and how food microstructures can be manipulated. It contains up-to-date research findings, looking at consumer preferences and the response to these preferences by food process technologists and those developing new foods. The book will be of interest to postgraduate students and researchers in academia and industry who may be from very diverse backgrounds ranging from food process engineers to functional food developers and professionals concerned with swallowing and taste disorders.

Food Biochemistry and Food Processing

Algae for Food

Flavor, Stability, Nutrition and Safety

Cultivation, Processing and Nutritional Benefits

Properties of Water in Foods

Food Chemistry

Plant foods are an essential part of our daily diet and constitute one of the highest contributors to the world economy. These foods are rich in phenolic compounds, which play a significant role in maintaining our health. This textbook presents a comprehensive overview of the chemistry, biochemistry and analysis of phenolic compounds present in a variety of foods plant food science and technology, covering all of the important chemical, biochemical and analytical aspects needed for a thorough understanding of phenolic antioxidants in foods. Phenolic Antioxidants In Foods: Chemistry, Biochemistry, and Analysis is comprised of three sections. The first section covers the basic concepts of antioxidants, their chemistry and their introduction to the concept. The second section covers the biochemical aspects of phenolic antioxidants, including their biosynthetic pathways, biological effects and the molecular mechanism of antioxidant effects in the biological system. This section promotes an understanding of the fundamental biochemical reactions that take place in foods and after digestion chemistry used in the analysis of phenolic antioxidants in foods, including the basic analytical procedures, methods for analysis and chromatographic and spectroscopic analyses. This section is significant for aspiring food chemists and manufacturers to evaluate the nature and chemistry of phenolic antioxidants in foods. Featuring helpful quizzes, section summaries, and a glossary, this book is an essential tool for advanced chemistry undergraduates and post-graduates looking to gain a fundamental understanding of phenolic antioxidants in food products.

This advanced textbook for teaching and continuing studies provides an in-depth coverage of modern food chemistry. Food constituents, their chemical structures, functional properties and their interactions are given broad coverage as they form the basis for understanding food production, processing, storage, handling, analysis, and the underlying chemical and physical changes. Food additives, food contaminants and tho understanding the important processing parameters in food production. Logically organized (according to food constituents and commodities) and extensively illustrated with more than 450 tables and 340 figures this completely revised and updated edition provides students and researchers in food science or agricultural chemistry with a comprehensive reference text for advanced students in food technology and a valuable on-the-job reference for chemists, engineers, biochemists, nutritionists, and analytical chemists in food industry and in research as well as in food control and other service labs.

A wide-ranging exploration of the science and practice of food frying Frying is one of the world's most popular methods of food preparation. Whether using oils or fats, it is valued for the particular flavors and textures it can bring, and represents a multibillion-dollar sector of the global economy. Food Frying: Chemistry, Biochemistry and Safety explores this important area, detailing the relationships between the chemical reactions produced during frying, the changes in food quality that these engender, and associated digestive and health-related issues. By outlining these connections, the author provides an aid to a safer, healthier approach to food frying. Topics covered range from culturally specific forms of frying to detailed analyses of the underlying science. Delivering these insights in a practical and easy-to-follow manner, this unique text includes: A complete survey of food frying, encompassing cultural, chemical, biochemical, and toxicological concerns Guidance on the accurate assessment of health, quality, and safety issues associated with food frying Coverage of the latest technologies and methods involved with food frying foods Food Frying: Chemistry, Biochemistry and Safety is an invaluable resource for all those who work with fried foods, whether they be food industry professionals, food scientists, or workers in the oil and fat industries.

"Reviews specific enzymes and enzyme groups studied in recent years, delves into the relationship between enzymes and seafood quality, covers the application of enzymes as seafood processing aids, and focuses on the recovery of useful enzymes as by-products from seafood waste. Details the control of enzyme activity in seafood products."

in Relation to Quality and Stability

Chemical, Biochemical, and Microbiological Changes

Encyclopedia of Food Chemistry

Carbohydrate Chemistry for Food Scientists

Mechanism and Theory in Food Chemistry

Seafood Enzymes

Proteins in Food Processing, Second Edition, reviews how proteins may be used to enhance the nutritional, textural and other qualities of food products. After two introductory chapters, the book discusses sources of proteins, examining the caseins, whey, muscle and soy proteins, and proteins from oil-producing plants, cereals and seaweed. Part Two illustrates the analysis and modification of proteins, with chapters on testing protein functionality, modeling protein behavior, extracting and purifying proteins and reducing their allergenicity. A final group of chapters delves into the functional value of proteins and how they are used as additives in foods. Completely revised and updated with new developments on all food protein analysis and applications, such as alternative proteins sources, proteins as emulsifiers, proteins in nanotechnology and egg proteins Reviews the wide range of protein sources available Examines ways of modifying protein sources Discusses the use of proteins to enhance the nutritional, textural and other qualities of food products

Advances in Food and Nutritiion Research, Volume 81 provides updated knowledge on nutrients in foods and how to avoid deficiencies, paying special attention to the essential nutrients that should be present in the diet to reduce disease risk and optimize health. The series provides the latest advances on the identification and characterization of emerging bioactive compounds with putative health benefits, as well as up-to-date information on food science, including raw materials, production, processing, distribution, and consumption. Contains contributions that have been carefully selected based on their vast experience and expertise on the subject Includes updated, in-depth, and critical discussions of available information, giving the reader a unique opportunity to learn Encompasses a broad view of the topics at hand

For nearly a century, scientific advances have fueled progress in U.S. agriculture to enable American producers to deliver safe and abundant food domestically and provide a trade surplus in bulk and high-value agricultural commodities and foods. Today, the U.S. food and agricultural enterprise faces formidable challenges that will test its long-term sustainability, competitiveness, and resilience. On its current path, future productivity in the U.S. agricultural system is likely to come with trade-offs. The success of agriculture is tied to natural systems, and these systems are showing signs of stress, even more so with the change in climate. More than a third of the food produced is unconsumed, an unacceptable loss of food and nutrients at a time of heightened global food demand. Increased food animal production to meet greater demand will generate more greenhouse gas emissions and excess animal waste. The U.S. food supply is generally secure, but is not immune to the costly and deadly shocks of continuing outbreaks of food-borne illness or to the constant threat of pests and pathogens to crops, livestock, and poultry. U.S. farmers and producers are at the front lines and will need more tools to manage the pressures they face. Science Breakthroughs to Advance Food and Agricultural Research by 2030 identifies innovative, emerging scientific advances for making the U.S. food and agricultural system more efficient, resilient, and sustainable. This report explores the availability of relatively new scientific developments across all disciplines that could accelerate progress toward these goals. It identifies the most promising scientific breakthroughs that could have the greatest positive impact on food and agriculture, and that are possible to achieve in the next decade (by 2030).

Biootechnology, particularly eco-friendly enzyme technologies, has immense potential for the augmentation of diverse food products utilizing vast biodiversity, resolving environmental problems owing to waste disposal from food and beverage industries. In addition to introducing the basic concepts and fundamental principles of enzymes, Enzymes in Foo

Nanotechnology Applications in Food

Emerging Methods

Biochemistry of Foods

Encapsulation Technologies for Active Food Ingredients and Food Processing

Agriculture, Food Science, and Nutrition in the United States

Fermented Foods, Part I

Food processing is now the biggest industry in the UK and in many other countries. It is also rapidly changing from what was essentially a craft industry, batch processing relatively small amounts of product, to a very highly automated one with continuously operating high speed production lines. In addition, consumers have developed a greater expectation for consistently high standard products and coupled this with demands for such things as a more natural flavour, lower fat etc. The need for an increased knowledge of the scientific principles behind food processing has never been greater. Within the industry itself, increased automation, company diversification and amalgamations etc. have meant that those working in it have often to change their field of operation. Whereas twenty years ago, someone starting work in one branch of the food industry could expect, if he or she so desired, to work there all their working lives, this is now seldom the case. This means that a basic knowledge of the principles behind food processing is necessary both for the student at university or college, and for those already in the industry. It is hoped, therefore, that this book will appeal to both, and prove to be a useful reference over a wide range of food processing.

Food Biochemistry and Food ProcessingJohn Wiley & Sons

Consumers prefer food products that are tasty, healthy, and convenient. Encapsulation is an important way to meet these demands by delivering food ingredients at the right time and right place. For example, encapsulates may allow flavor retention, mask bad tasting or bad smelling components, stabilize food ingredients, and increase their bioavailability. Encapsulation may also be used to immobilize cells or enzymes in the production of food materials or products, such as fermentation or metabolite production. This book provides a detailed overview of the encapsulation technologies available for use in food products, food processing, and food production. The book aims to inform those who work in academia or R&D about both the delivery of food compounds via encapsulation and food processing using immobilized cells or enzymes. The structure of the book is according to the use of encapsulates for a specific application. Emphasis is placed on strategy, since encapsulation technologies may change. Most chapters include application possibilities of the encapsulation technologies in specific food products or processes. The first part of the book reviews general technologies, food-grade materials, and characterization methods for encapsulates. The second part discusses encapsulates of active ingredients (e.g., aroma, fish oil, minerals, vitamins, peptides, proteins, probiotics) for specific food applications. The last part describes immobilization technologies of cells and enzymes for use within food fermentation processes (e.g., beer, wine, dairy, meat), and food production (e.g., sugar conversion, production of organic acids or amino acids, hydrolysis of triglycerides). Edited by two leading experts in the field, Encapsulation Technologies for Food Active Ingredients and Food Processing will be a valuable reference source for those working in the academia or food industry. The editors work in both industry or academia, and they have brought together in this book contributions from both fields.

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

Biochemistry and Biotechnology

Food Safety, Quality, and Manufacturing Processes

Chemical Changes During Processing and Storage of Foods

Advances in Cereal Science

Handbook of Food Science and Technology 3

Biochemical and Processing Aspects

Presents some of the latest research endeavors that aim to improve our understanding of how the chemistry of various grain components can be manipulated to improve contribution of cereals to human health

Nanotechnology Applications in Food: Flavor, Stability, Nutrition, and Safety is an up-to-date, practical, applications-based reference that discusses the advantages and disadvantages of each application to help researchers, scientists, and bioengineers know what and what not to do to improve and facilitate the production of food ingredients and monitor food safety. The book offers a broad spectrum of applications in pharmaceutical, biomedical, and antimicrobial approaches in food, highlighting current concerns regarding safety, regulations, and the restricted use of nanomaterials. Includes how nanobiosensors are useful for the detection of foodborne pathogens Discusses applications of nanotechnology from flavor and nutrition, to stability and safety in packaging Includes nano and microencapsulation, nanotechnology in food packaging systems Identifies practical applications of nanoscience for use in industry today

Carbohydrate Chemistry for Food Scientists, Third Edition, is a complete update of the critically acclaimed authoritative carbohydrate reference for food scientists. The new edition is fully revised, expanded and redesigned as an easy-to-read resource for students and professionals who need to understand this specialized area. The new edition provides practical information on the specific uses of various carbohydrate sources, and the process for choosing carbohydrate ingredients for specific product applications. Readers will learn basic and specific applications of food carbohydrate organic and physical chemistry through clearly explained presentations of mono-, oligo-, and polysaccharides and their chemistry. This new edition includes expanded sections on Maillard browning reaction, dietary fiber, and discussions of physical properties, imparted functionalities, and actual applications. It is an invaluable resource on the chemistry of food carbohydrates for advanced undergraduate and graduate students, and a concise, user-friendly, applied reference book for food science professionals. Identifies structures and chemistry of all food carbohydrates – monosaccharides, oligosaccharides and polysaccharides within foods Contains extensive coverage of the structures and properties of individual polysaccharides, including cellulose, inulin, gellans and pectins, amongst others

This resource examines trends in modern biotechnology, covering all aspects of this interdisciplinary field.

Handbook of Food Processing

Safety Assurance and Complements

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

Physico-Chemical Aspects of Food Processing

Enzymes in Food Biotechnology

Food Biochemistry and Technology

Enzymes in Food Biotechnology: Production, Applications, and Future Prospects presents a comprehensive review of enzyme research and the potential impact of enzymes on the food sector. This valuable reference brings together novel sources and technologies regarding enzymes in food production, food processing, food preservation, food engineering and food biotechnology that are useful for researchers, professionals and students. Discussions include the process of immobilization, thermal and operational stability, increased product specificity and specific activity, enzyme engineering, implementation of high-throughput techniques, screening to relatively unexplored environments, and the development of more efficient enzymes. Explores recent scientific research to innovate novel, global ideas for new foods and enzyme engineering Provides fundamental and advanced information on enzyme research for use in food biotechnology, including microbial, plant and animal enzymes Includes recent cutting-edge research on the pharmaceutical uses of enzymes in the food industry

Nonthermal Processing Technologies for Food offers a comprehensive review of nonthermal processing technologies that are commercial, emerging or over the horizon. In addition to the broad coverage, leading experts in each technology serve as chapter authors to provide depth of coverage. Technologies covered include: physical processes, such as high pressure processing (HPP); electromagnetic processes, such as pulsed electric field (PEF), irradiation, and UV treatment; other nonthermal processes, such as ozone and chlorine dioxide gas phase treatment; and combination processes. Of special interest are chapters that focus on the "pathway to commercialization" for selected emerging technologies where a pathway exists or is clearly identified. These chapters provide examples and case studies of how new and nonthermal processing technologies may be commercialized. Overall, the book provides systematic knowledge to industrial readers, with numerous examples of process design to serve as a reference book. Researchers,

professors and upper level students will also find the book a valuable text on the subject.

Green Food Processing Techniques: Preservation, Transformation and Extraction advances the ethics and practical objectives of "Green Food Processing" by offering a critical mass of research on a series of methodological and technological tools in innovative food processing techniques, along with their role in promoting the sustainable food industry. These techniques (such as microwave, ultrasound, pulse electric field, instant controlled pressure drop, supercritical fluid processing, extrusion...) lie on the frontier of food processing, food chemistry, and food microbiology, and are thus presented with tools to make preservation, transformation and extraction greener. The Food Industry constantly needs to reshape and innovate itself in order to achieve the social, financial and environmental demands of the 21st century. Green Food Processing can respond to these challenges by enhancing shelf life and the nutritional quality of food products, while at the same time reducing energy use and unit operations for processing, eliminating wastes and byproducts, reducing water use in harvesting, washing and processing, and using naturally derived ingredients. Introduces the strategic concept of Green Food Processing to meet the challenges of the future of the food industry Presents innovative techniques for green food processing that can be used in academia, and in industry in R&D and processing Brings a multidisciplinary approach, with significant contributions from eminent scientists who are actively working on Green Food Processing techniques

Packed with case studies and problem calculations, Handbook of Food Processing: Food Safety, Quality, and Manufacturing Processes presents the information necessary to design food processing operations and describes the equipment needed to carry them out in detail. It covers the most common and new food manufacturing processes while addressing rele

Enzymes in Food and Beverage Processing

Food Shelf Life Stability

Food Biotechnology

Food Frying

Biochemical and Processing Aspects, Volume 2

Hydrocolloid Applications

Understanding Food Systems: Agriculture, Food Science, and Nutrition in the United States explores the complex and evolving system from which the United States gets its food. From farm, to home, and everything in-between, the authors use a scientific perspective that explains the fundamentals of agricultural production, food science, and human nutrition that will guide readers through the issues that shape our food system, including political, societal, environmental, economic, and ethical concerns. Presenting the role and impact of technology, from production to processing and safety, to cultural and consumer behavior perspectives, the book also explores the link between food systems and the history of nutrients and diet patterns, and how these influence disease occurrence. Current topics of concern and debate, including the correlations between food systems and diet-related diseases, such as obesity and diabetes are explored, as are the history and current status of food insecurity and accessibility. Throughout the text, readers are exposed to current topics that play important roles in personal food choices and how they influence components of the food system. Presents the evolution of the US food system, from historical beginnings, to current consumer and political roles and responsibilities Provides farm to fork insights on production and consumption practices in the United States Explores complex topics in call-out boxes throughout the text to help readers understand the various perspectives on controversial topics

This third volume in the Handbook of Food Science and Technology Set explains the processing of raw materials into traditional food (bread, wine, cheese, etc.). The agri-food industry has evolved in order to meet new market expectations of its products; with the use of separation and assembly technologies, food technologists and engineers now increasingly understand and control the preparation of a large diversity of ingredients using additional properties to move from the raw materials into new food products. Taking into account the fundamental basis and technological specificities of the main food sectors, throughout the three parts of this book, the authors investigate the biological and biochemical conversions and physicochemical treatment of food from animal sources, plant sources and food ingredients.

Advances in food science, technology, and engineering are occurring at such a rapid rate that obtaining current, detailed information is challenging at best. While almost everyone engaged in these disciplines has accumulated a vast variety of data over time, an organized, comprehensive resource containing this data would be invaluable to have. The

This is a unique book on food chemistry emphasizing modern mechanisms underlying the chemical reactions that occur in food during processing and storage and interactions among the components of foods. The autho r has stressed the principles of the reaction mechanisms, carefully de tailing what is known to occur or is expected to occur based on his de tailed understanding of organic chemical reactions. This unifies the t hemes of oxidation, reduction, hydrolysis, structure, polymerization, emulsification, etc., that are key to the conceptual approach used.

Chemistry, Biochemistry, and Safety

Proteins in Food Processing

Phenolic Antioxidants in Foods: Chemistry, Biochemistry and Analysis

Food Process Engineering

Enzymes in Food Processing

Traditional fermented foods are not only the staple food for most of developing countries but also the key healthy food for developed countries. As the healthy functions of these foods are gradually discovered, more high throughput biotechnologies are being used to promote the fermented food industries. As a result, the microorganisms, process bioc

Recent years have seen a rapid increase in the use of enzymes as food processing tools, as an understanding of their means of control has improved. Since publication of the first edition of this book many new products have been commercially produced and the corresponding number of published papers has swollen. This second edition has been fully revised and updated to cover changes in the last five years. It continues to provide food technologists, chemists, biochemists and microbiologists with an authoritative, practical and detailed review of the subject.

Building upon the success of the bestselling first volume, Functional Foods: Biochemical and Processing Aspects, Volume II explores new sources of nutraceutical and functional food ingredients and addresses crucial issues for product development and processing. It presents the latest developments in the chemistry, biochemistry, pharmacology, epidem

Chemical Changes During Processing and Storage of Foods: Implications for Food Quality and Human Health presents a comprehensive and updated discussion of the major chemical changes occurring in foods during processing and storage, the mechanisms and influencing factors involved, and their effects on food quality, shelf-life, food safety, and health. Food components undergo chemical reactions and interactions that produce both positive and negative consequences. This book brings together classical and recent knowledge to deliver a deeper understanding of this topic so that desirable alterations can be enhanced and undesirable changes avoided or reduced. Chemical Changes During Processing and Storage of Foods provides researchers in the fields of food science, nutrition, public health, medical sciences, food security, biochemistry, pharmacy, chemistry, chemical engineering, and agronomy with a strong knowledge to support their endeavors to improve the food we consume. It will also benefit undergraduate and graduate students working on a variety of disciplines in food chemistry Offers a comprehensive overview of the major chemical changes that occur in foods at the molecular level and discusses the positive and negative effects on food quality and human health Describes the mechanisms of these chemical changes and the factors that impede or accelerate their occurrence Helps to solve daily industry problems such as loss of color and nutritional quality, alteration of texture, flavor deterioration or development of off-flavor, loss of nutrients and bioactive compounds or lowering of their bioefficacy, and possible formation of toxic compounds

Gum technology in the food and other industries

Functional Foods

Biophysics, Food Microstructures and Health

Implications to Food Processing and Health Promotion

Oral Processing and Consumer Perception

Characterization of Food

Food Shelf Life Stability provides a unique approach to understanding this critical subject by examining physical, chemical, and biochemical factors affecting food quality. The first section emphasizes the effects that water activity, glass transition, and plasticization have on temperature, water content, and time-dependant phenomena affecting

Water is recognized as being an important factor in numerous pheno mena connected with the quality of food. For instance, it plays a part in the textural properties of several commodities. Moreover, water is an essential parameter determining the behaviour of food products in the course of many processing operations : on water, will depend the amount of energy necessary for freezing or dehydrating the product; water will strongly influence the evolution of physical, chemical and biochemical phenomena taking place in the product during processing operations such as heating, drying, etc. Water will also influence the same reactions, as well as the activity of microorganisms, during the storage of food products under various conditions. As a result, all aspects of quality - sensory, nutritional and hygienic properties of the food - will be affected. In all these circumstances, the water content of a product is obviously an important factor, but equally important may be the physical properties of this water, such as its thermodynamic activity and its mobility. Actual ly, the concept of water activity (a) is now widely used by the food industry and in the legislation of sever'ly countries. The idea of a small, international meeting devoted to a synthetic review and discussion of knowledge on these various matters, was first developed by Dr. R. B.

This major reference provides a comprehensive treatment of the physiological effects of foods and food components capable of promoting good health and preventing or alleviating diseases. It assembles, in one volume, extensive recent information on the nature and physiological effects of biologically-active components of major plant foods-cereals, oilseeds, fruits, and vegetables-and dairy and fish products. For the first time in any reference work, internationally renowned specialists discuss how to manufacture and evaluate food products with health enhancing effects, using both traditional and novel processing methods. Entire chapters are devoted to functional food products from oats, wheat, rice, flaxseed, mustard, fruits, vegetables, fish, and dairy products. The chapter on designer vegetable oils covers all the recent developments in vegetable oils, including genetically modified oils and engineering and production of structured lipids. Functional products from quinoa, amaranth, beans, ginseng, echinacea, and other botanicals are covered in separate chapters. An authoritative final chapter discusses the present regulatory status of functional foods in the U. S., Japan, Canada, and the European Union. This chapter also discusses the assessment of natural products for use in promoting human health and as medicinal agents, considers where the burden of proof lies for showing the effect of a food product on a physiological or biochemical process, and explores the costs of making health claim. This comprehensive volume serves the information needs of food scientists and technologists, food process engineers, biochemists, nutritionists, public health professionals, and entrepreneurs involved in the design, processing, and marketing of new functional food products. Anyone who believes in the need for real foods that combine nutritional and medical benefits and who believes that such foods can be produced, will find this book invaluable.

Algae for Food: Cultivation, Processing and Nutritional Benefits Algae are a primitive, living photosynthetic form and they are the oldest living organism. In the marine ecosystem, algae are the primary producers that supply energy required to a diverse marine organism and especially seaweed provides a habitat for invertebrates and fishes. There have been significant advances in many areas of phycology. This book describes the advances related to food and nutrition of algae achieved during the last decades, it also identifies gaps in the present knowledge and needs for the future. The 17 chapters, grouped into 6 parts, are written by phycologists. More insight on industrial exploitation of algae and their products is supported by current studies and will help academia. The first part explains new technologies to improve the microalgal biomass, strain improvement and different methods of seaweed cultivation. In the second part, food and nutraceutical applications of algae, food safety aspects, green nanotechnology and formulation methods for the extraction and isolation of algal functional foods are described. The third part deals with pigments and carotenoids while the fourth part exploits the isolation and application of hydrocolloids, nutritional implications of algal polysaccharides and the characterization and bioactivity of fucoidans. In the fifth part, the biomedical potential of seaweed followed by agricultural applications of algae are well described. The book is an important resource for scholars that provides knowledge on wide range of topics. Key Features Covers important fields of algae from biomass production to genetic engineering aspects of algae Useful in the field of algal biotechnology, aquaculture, marine micro and macrobiology, microbial biotechnology and bioprocess technology Focuses on the therapeutic and nutritional areas of algae

Advances in Food Biochemistry

Advances in Food and Nutrition Research

Production, Applications, and Future Prospects

Utilization and Influence on Postharvest Seafood Quality

Understanding Food Systems

Transport Phenomena of Foods and Biological Materials

This book offers a comprehensive introduction to the technological applications of these fascinating materials. It introduces sources, structures, properties, and food uses, and describes gums in non-food areas, their applications and their multi-disciplinary contribution to these fields, as well as examples of their uses.

Transport Phenomena of Foods and Biological Materials provides comprehensive coverage of transport phenomena modeling in foods and other biological materials. The book is unique in its consideration of models ranging from rigorous mathematical to empirical approaches, including phenomenological and semi-empirical models. It examines cell structure and descriptions of other non-traditional models, such as those based on irreversible thermodynamics or those focused on the use of the chemical and electrochemical potential as the driving forces of transport. Other topics discussed include the source term (important for the coupling transport phenomena-reaction or other intentional/unintentional phenomena) and the connections between transport phenomena modeling and design aspects. Some 100 tables provide useful summaries of the characteristics of each model and provide data about the transport properties of an extensive variety of foods. Transport Phenomena of Foods and Biological Materials will benefit a broad audience of chemists, biochemists, biotechnologists, and other scientists in the academic and industrial realm of foods and biological materials.

The biochemistry of food is the foundation on which the research and development advances in food biotechnology are built. In Food Biochemistry and Food Processing, lead editor Y.H. Hui has assembled over fifty acclaimed academicians and industry professionals to create this indispensable reference and text on food biochemistry and the ever-increasing development in the biotechnology of food processing. While biochemistry may be covered in a chapter or two in standard reference books on the chemistry, enzymes, or fermentation of food, and may be addressed in greater depth by commodity-specific texts (e.g. the biotechnology of meat, seafood, or cereal), books on the general coverage of food biochemistry are not so common. Food Biochemistry and Food Processing effectively fills this void. Beginning with sections on the essential principles of food biochemistry, enzymology and food processing, the book then takes the reader on commodity-by-commodity discussions of biochemistry of raw materials and product processing. Later sections address the biochemistry and processing aspects of food fermentation, microbiology, and food safety. As an invaluable reference tool or as a state-of-the-industry text, Food Biochemistry and Food Processing fully develops and explains the biochemical aspects of food processing for scientist and student alike.

Biochemistry of Foods attempts to emphasize the importance of biochemistry in the rapidly developing field of food science, and to provide a deeper understanding of those chemical changes occurring in foods. The development of acceptable fruits and vegetables on postharvest storage is dependent on critical biochemical transformations taking place within the plant organ. The chapters discuss how meat and fish similarly undergo postmortem chemical changes which affect their consumer acceptability. In addition to natural changes, those induced by processing or mechanical injury affect the quality of foods. Such changes can be controlled through an understanding of the chemical reactions involved, for instance, in enzymic and nonenzymic browning. Increased sophistication in food production has resulted in the widespread use of enzymes in food-processing operations. Some of the more important enzymes are discussed, with an emphasis on their role in the food industry. The final chapter is concerned with the biodeterioration of foods. The various microorganisms involved in the degradation of proteins, carbohydrates, oils, and fats are discussed, with special reference to the individual biochemical reactions responsible for food deterioration.

Green Food Processing Techniques

Nonthermal Processing Technologies for Food

Preservation, Transformation and Extraction

Science Breakthroughs to Advance Food and Agricultural Research by 2030

Implications for Food Quality and Human Health