

Understanding Food Science And Technology

Food Science and Technology, Second Edition is a comprehensive text and reference book designed to cover all the essential elements of food science and technology, including all core aspects of major food science and technology degree programs being taught worldwide. The book is supported by the International Union of Food Science and Technology and comprises 21 chapters, carefully written in a user-friendly style by 30 eminent industry experts, teachers, and researchers from across the world. All authors are recognized experts in their respective fields, and together represent some of the world's leading universities and international food science and technology organizations. All chapters in this second edition have been fully revised and updated to include all-new examples and pedagogical features (including discussion questions, seminar tasks, web links, and glossary terms). The book is designed with more color to help enhance the content on each page and includes more photos and illustrations to bring the topics to life. Coverage of all the core modules of food science and technology degree programs internationally Crucial information for professionals in the food industry worldwide Chapters written by subject experts, all of whom are internationally respected in their fields A must-have textbook for libraries in universities, food science and technology research institutes, and food companies globally Additional interactive resources on the book's companion website, including multiple choice questions, web links, further reading, and exercises Food Science and Technology, 2nd Edition is an indispensable guide for food science and technology degree programs at the undergraduate and postgraduate level and for university libraries and food research facilities.

Color is one of the most significant cues used by consumers to determine the quality of a food. While color is usually assumed to be a property of the food itself, it is actually the individual's response to the visual signals generated by light on the product. An authoritative reference can best explain the ways that food color and quality are assessed and how they can be improved to benefit consumers and the food industry. This book reviews how color is perceived and measured, discusses food color chemistry and stability, and presents ways that color can be better controlled in food. Part one introduces the concept of the total appearance of food and examines the principles of instrumental color measurement, models of color appearance, color measurement by color reflectance, and sorting by color. Part two covers color control in food, focusing on the chemistry of food colorants, color stability, genetic modification for color enhancement, and developments in natural colorings.

Previous editions of Yoghurt: Science and Technology established the text as an essential reference underpinning the production of yoghurt of consistently high quality. The book has been completely revised and updated to produce this third edition, which combines coverage of recent developments in scientific understanding with information about established methods of best practice to achieve a comprehensive treatment of the subject. General acceptance of a more liberal definition by the dairy industry of the term yoghurt has also warranted coverage in the new edition of a larger variety of gelled or viscous fermented milk products, containing a wider range of cultures. Developments in the scientific aspects of yoghurt covered in this new edition include polysaccharide production by starter culture bacteria and its effects on gel structure, acid gel formation and advances in the analysis of yoghurt in terms of its chemistry, rheology and microbiology. Significant advances in technology are also outlined, for example automation and mechanisation. There has also been progress in understanding the nutritional profile of yoghurt and details of clinical trials involving yoghurts are described. This book is a unique and essential reference to students, researchers and manufacturers in the dairy industry. Includes developments in the understanding of the biochemical changes involved in yoghurt production Outlines significant technological advances in mechanisation and automation Discusses the nutritional value of yoghurt

A comprehensive introductory level text that provides thorough up to date coverage of a broad range of topics in food science and technology.

Characterization of Food

Food Science and Technology

Irish Journal of Food Science and Technology

Antioxidants in Science, Technology, Medicine and Nutrition

The Science of Cooking

Food Science and Technology: Trends and Future Prospects presents different aspects of food science i.e., food microbiology, food chemistry, nutrition, process engineering that should be applied for selection, preservation, processing, packaging, and distribution of quality food. The authors focus on the fundamental aspects of food and also highlight emerging technology and innovations that are changing the food industry. The chapters are written by leading researchers, lecturers, and experts in food chemistry, food microbiology, biotechnology, nutrition, and management. This book is valuable for researchers and students in food science and technology and it is also useful for food industry professionals, food entrepreneurs, and farmers.

This textbook presents the scientific basis for understanding the nature of food and the principles of experimental methodology as applied to food. It reviews recent research findings and specific technological advances related to food. Taking an experimental approach, exercises are included at the end of each chapter to provide the needed experience in planning experiments. Emphasizing the relationships between chemical and physical properties, basic formulas and procedures are included in the appendix. Demonstrates the relationships among composition, structure, physical properties, and functional performance in foods Suggested exercises at the end of each chapter provide students with needed experience in designing experiments Extensive bibliographies of food science literature Appendix of basic formulas and procedures

In order for food businesses, scientists and policy makers to develop successful products, services and policies, it is essential that they understand food consumers and how they decide which products to buy. Food consumer behaviour is the result of various factors, including the motivations of different consumers, the attributes of specific foods, and the environment in which food choices occur. Recognising diversity between individual consumers, different stages of life, and different cultural contexts is increasingly important as markets become increasingly diverse and international. The book begins with a comprehensive introduction and analysis of the key drivers of consumer food choices, such as the environment and sensory product features. Part two examines the role of consumers' attitudes towards quality and marketing, and their views on food preparation and technology. Part three covers cultural and individual differences in food choice as well as addressing potentially influential factors such as age and gender. Important topics such as public health and methods to change consumers' preferences for unhealthy foods are discussed in part four. The final section concludes with advice on developing coherent safety policies and the consumers' responsibility for food production and consumption. Understanding consumers of

food products is a standard reference for all those in the food industry concerned with product development and regulation. Develop an understanding of buyer behaviour to assist developing successful products Recognise the diversity between consumers and learn how to cater for their needs Covers cultural and individual differences in food choice

This book explores the interrelations between food, technology and knowledge-sharing practices in producing digital food cultures. Digital Food Cultures adopts an innovative approach to examine representations and practices related to food across a variety of digital media: blogs and vlogs (video blogs), Facebook, Instagram, YouTube, technology developers' promotional media, online discussion forums and self-tracking apps and devices. The book emphasises the diversity of food cultures available on the internet and other digital media, from those celebrating unrestrained indulgence in food to those advocating very specialised diets requiring intense commitment and focus. While most of the digital media and devices discussed in the book are available and used by people across the world, the authors offer valuable insights into how these global technologies are incorporated into everyday lives in very specific geographical contexts. This book offers a novel contribution to the rapidly emerging area of digital food studies and provides a framework for understanding contemporary practices related to food production and consumption internationally.

Understanding the Science of Food

Using and Understanding Data

Understanding and Measuring the Shelf-Life of Food

Routledge Handbook of Food Waste

Improving Quality

Building upon the scope of its predecessor, Dairy Science and Technology, Second Edition offers the latest information on the efficient transformation of milk into high-quality products. It focuses on the principles of physical, chemical, enzymatic, and microbial transformations. The authors, highly regarded educators and researchers, divide the content of this book into four parts. Part I, Milk, discusses the chemistry, physics, and microbiology of milk. In addition to providing knowledge of milk properties, this section forms the basis for understanding what happens during processing, handling, and storage. Part II, Processes, illustrates the main unit operations used to manufacture milk products and highlights the influence certain product and process variables have on resulting products. In Part III, Products, the book integrates information on raw materials and processing as they relate to the manufacture of products. This section also explains the procedures necessary to ensure consumer safety, product quality, and process efficiency. Part IV, Cheese, describes the processes and transformations (physical, biochemical, and microbial) relating to the manufacture and ripening of cheese, starting with generic aspects and later discussing specific groups of cheeses. An important resource, Dairy Science and Technology, Second Edition provides a thorough understanding of milk's composition and properties and the changes that occur in milk and its products during processing and storage.

Evaluation Technologies for Food Quality summarizes food quality evaluation technologies, which include sensory evaluation techniques and chemical and physical analysis. In particular, the book introduces many novel micro and nano evaluation techniques, such as atomic force microscopy, scanning electron microscopy, and other nanomaterial-based methods. All topics cover basic principles, procedures, advantages, limitations, recent technology development, and application progress in different types of foods. This book is a valuable resource for scientists in the field of food science, engineering, and professionals in the food industry, as well as for undergraduate and postgraduate students studying food quality evaluation technology. Explains basic principles, procedures, advantages, limitations, and current applications of recent food quality technologies Provides guidance on the understanding and application of food quality evaluation technology in the field of food research and food industry Introduces many novel micro/nano evaluation techniques, such as atomic force and scanning electron microscopies and other nanomaterial-based methods

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).

Gastronomy and Food Science fills the transfer knowledge gap between academia and industry by covering the interrelation of gastronomy and food and culinary science in one integral reference. Coverage of the holistic cuisine, culinary textures with food ingredients, the application of new technologies and gastronomy in shaping a healthy diet, and the recycling of culinary by-products using new is also covered in this important reference. Written for food scientists and technologists, food chemists, and nutritionists, researchers, academics, and professionals working in culinary science, culinary professionals and other food industry personnel, this book is sure to be a welcomed reference. Discusses the role of gastronomy and new technologies in shaping healthy diets Describes a toolkit to capture diversity and drivers of food choice of a target population and to identify entry points for nutrition interventions Presents the experiential value of the Mediterranean diet, elaiio-gastronomy, and bioactive food ingredients in culinary science Explores gastronomic tourism and the senior foodies market

From molecules to mouthfeel

Science and Technology

Computer Vision Technology for Food Quality Evaluation

Biochemistry of Foods

Science Breakthroughs to Advance Food and Agricultural Research by 2030

Food Process Engineering and Technology, Third Edition combines scientific depth with practical usefulness, creating a tool for graduate students and practicing food engineers, technologists and researchers looking for the latest information on transformation and preservation processes and process control and plant hygiene topics. This fully updated edition provides recent research and developments in the area, features sections on elements of food plant design, an introductory section on the elements of classical fluid mechanics, a section on non-thermal processes, and recent technologies, such as freeze concentration, osmotic dehydration, and active packaging that are discussed in detail. Provides a strong emphasis on the relationship between engineering and product quality/safety Considers cost and environmental factors Presents a fully updated, adequate review of recent research and developments in the area Includes a new, full chapter on elements of food plant design Covers recent technologies, such as freeze concentration, osmotic dehydration, and active packaging that are discussed in detail

Widely regarded as a standard work in its field, this book introduces the range of processing techniques that are used in food manufacturing. It explains the principles of each process, the processing equipment used, operating conditions and the effects of processing on micro-organisms that contaminate foods, the biochemical properties of foods and their sensory and nutritional qualities. The book begins with an overview of important basic concepts. It describes unit operations that take place at ambient temperature or involve minimum heating of foods. Subsequent chapters examine operations that heat foods to preserve them or alter their eating quality, and explore operations that remove heat from foods to extend their shelf life with minimal changes in nutritional quality or sensory characteristics. Finally, the book reviews post-processing operations, including packaging and distribution logistics. The third edition has been substantially rewritten, updated and extended to include the many developments in food technology that have taken place since the second edition was published in 2000. Nearly all unit operations have undergone significant developments, and these are reflected in the large amount of additional material in each chapter. In particular, advances in microprocessor control of equipment, 'minimal' processing technologies, genetic modification of foods, functional foods, developments in 'active' or 'intelligent' packaging, and storage and distribution logistics are described. Developments in technologies that relate to cost savings, environmental improvement or enhanced product quality are highlighted. Additionally, sections in each chapter on the impact of processing on food-borne micro-organisms are included for the first time.

This comprehensive handbook represents a definitive state of the current art and science of food waste from multiple perspectives. The issue of food waste has emerged in recent years as a major global problem. Recent research has enabled greater understanding and measurement of loss and waste throughout food supply chains, shedding light on contributing factors and practical solutions. This book includes perspectives and disciplines ranging from agriculture, food science, industrial ecology, history, economics, consumer behaviour, geography, theology, planning, sociology, and environmental policy among others. The Routledge Handbook of Food Waste addresses new and ongoing debates around systemic causes and solutions, including behaviour change, social innovation, new technologies, spirituality, redistribution, animal feed, and activism. The chapters describe and evaluate country case studies, waste management, treatment, prevention, and reduction approaches, and compares research methodologies for better understanding food wastage. This book is essential reading for the growing number of food waste scholars, practitioners, and policy makers interested in researching, theorising, debating, and solving the multifaceted phenomenon of food waste.

This latest edition of the most internationally respected reference in food chemistry for more than 30 years, Fennema's Food Chemistry, 5th Edition once again meets and surpasses the standards of quality and comprehensive information set by its predecessors. All chapters reflect recent scientific advances and, where appropriate, have expanded and evolved their focus to provide readers with the current state-of-the-science of chemistry for the food industry. This edition introduces new editors and contributors who are recognized experts in their fields. The fifth edition presents a completely rewritten chapter on Water and Ice, written in an easy-to-understand manner suitable for professionals as well as undergraduates. In addition, ten former chapters have been completely revised and updated, two of which receive extensive attention in the new edition including Carbohydrates (Chapter 3), which has been expanded to include a section on Maillard reaction; and Dispersed Systems: Basic considerations (Chapter 7), which includes thermodynamic incompatibility/phase separation concepts. Retaining the straightforward organization and accessibility of the original, this edition begins with an examination of major food components such as water, carbohydrates, lipids, proteins, and enzymes. The second section looks at minor food components including vitamins and minerals, colorants, flavors, and additives. The final section considers food systems by reviewing basic considerations as well as specific information on the characteristics of milk, the postmortem physiology of

edible muscle, and postharvest physiology of plant tissues.

Understanding the Biology and Chemistry Behind Food and Cooking

Food Biotechnology

Near-Infrared Spectroscopy in Food Science and Technology

Structure, Function and Applications

Emerging Methods

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

The food discussion in America can be quite pessimistic. With high obesity rates, diabetes, climate change, chemical use, water contamination, and farm animal abuse, it would seem that there wasn't very much room for a positive perspective. The fear that there just isn't enough food has expanded to new areas of concern about water availability, rising health care costs, and dying bees. In *Unnaturally Delicious*, Lusk makes room for optimism by writing the story of the changing food system, suggesting that technology and agriculture can work together in a healthy and innovative way to help solve the world's largest food issues and improve the farming system as we know it. This is the story of the innovators and innovations shaping the future of food. You'll meet an ex-farmer entrepreneur whose software is now being used all over the world to help farmers increase yields and reduce nutrient runoff and egg producers who've created new hen housing systems that improve animal welfare at an affordable price. There are scientists growing meat in the lab. Without the cow. College students are coaxing bacteria to signal food quality and fight obesity. Nutrient enhanced rice and sweet potatoes are aiming to solve malnutrition in the developing world. Geneticists are creating new wheat varieties that allow farmers sustainably grow more with less. And, we'll learn how to get fresh, tasty, 3D printed food at the touch of a button, perhaps even delivered to us by a robotic chef. Innovation is the American way. Thomas Jefferson, George Washington Carver, and John Harvey Kellogg were food and agricultural entrepreneurs. Their delicious innovations led to new healthy, tasty, convenient, and environmentally friendly food. The creations were unnaturally delicious. Unnatural because the foods and practices they fashioned were man-made solutions to natural and man-made problems. Now the world is filled with new challenges changing the way we think about food. Who are the scientists, entrepreneurs, and progressive farmers who meet these challenges and search for solutions? *Unnaturally Delicious* has the answers.

The shelf-life of a product is critical in determining both its quality and profitability. This important collection reviews the key factors in determining shelf-life and how it can be measured. Part one examines the factors affecting shelf-life and spoilage, including individual chapters on the major types of food spoilage, the role of moisture and temperature, spoilage yeasts, the Maillard reaction and the factors underlying lipid oxidation. Part two addresses the best ways of measuring the shelf-life of foods, with chapters on modelling food spoilage, measuring and modelling glass transition, detecting spoilage yeasts, measuring lipid oxidation, the design and validation of shelf-life tests and the use of accelerated shelf-life tests. Understanding and measuring the shelf-life of food is an important reference for all those concerned with extending the shelf-life of food. Reviews the key factors in determining shelf-life and how they can be measured Examines the importance of the shelf-life of a product in determining its quality and profitability Brings together the leading international experts in the field

Meat is a unique biological material with a central importance in nutrition and health. *Advances in Meat Processing Technology* merges the expertise of meat scientists and food engineers in a holistic approach toward the processing of meat. The meat industry strives to deliver consistent high quality and safe meat products. Readers can benefit from knowledge generated by meat science researchers by achieving a greater understanding of the nature of meat, and the engineering technology required for meat processing. This book comprises 17 full chapters that provide up-to-date and fundamental information on current topics in meat processing. This includes novel technologies, such as the application of pulsed electric field, meat stretching and shaping, ultrasound and high pressure. In addition, analytical techniques such as Raman spectroscopy and NMR are enabling considerable advancement of knowledge in meat science and in meat processing. Written by world renowned experts in their fields, this contemporary collective work assembles the state of current knowledge that is of importance to both industry and academia.

Advances in Food Biochemistry

Sustainable Production Technology in Food

Tamime and Robinson's Yoghurt

Agriculture, Food Science, and Nutrition in the United States

A Simple Guide to Technology and Analytics

This reference gives food science professionals a working understanding of near-infrared spectroscopy (NIRS) and its role in maximizing food potential. It explains the technical aspects of NIRS, including: basic principles; characteristics of the NIR spectra; instrumentation; sampling techniques; and chemometrics. The book details applications of NIRS in agricultural and marine products, foodstuffs and processed foods, engineering and process monitoring, and food safety and disease diagnosis.

Sustainable Production Technology in Food explores several important scientific and practical aspects related to sustainable technologies in food production in both the farm and industry contexts. The book contains 18 chapters that describe the current scenario of technological advances within the food production system, focusing on the context of sustainability and offering future perspectives for the sustainable production of food. Presents a comprehensive discussion around the multidisciplinary aspects of technological advances for sustainable food production Addresses the current

relationship between food production and sustainability Closes the gap between the recent technological advances in sustainability by focusing on the food production system

The use of antioxidants is widespread throughout the rubber, plastics, food, oil and pharmaceutical industries. This book brings together information generated from research in quite separate fields of biochemical science and technology, and integrates it on a basis of the common mechanisms of peroxidation and antioxidant action. It applies present knowledge of antioxidants to our understanding of their role in preventing and treating common diseases, including cardiovascular disease, cancer, rheumatoid arthritis, ischemia, pancreatitis, hemochromatosis, kwashiorkor, disorders of prematurity and disease of old age. Antioxidants deactivate certain harmful effects of free radicals in the human body due to biological peroxidation, and thus prevent protection against cell damage. The book is of considerable interest to scientists working in the materials and foodstuff industries, and to researchers seeking information on the connection between diet and health, and to those developing new drugs to combat diseases associated with oxidative stress. It is important also throughout the non-medical world, especially to the work force within the affected industries. Examines research in separate fields of biochemical science and technology and integrates it on a basis of the common mechanisms of peroxidation and antioxidant action Applies present knowledge of antioxidants to our understanding of their role in preventing and treating common diseases, including cardiovascular disease, cancer, rheumatoid arthritis and others

The first book in this rapidly expanding area, Computer Vision Technology for Food Quality Evaluation thoroughly discusses the latest advances in image processing and analysis. Computer vision has attracted much research and development attention in recent years and, as a result, significant scientific and technological advances have been made in quality inspection, classification and evaluation of a wide range of food and agricultural products. This unique work provides engineers and technologists working in research, development, and operations in the food industry with critical, comprehensive and readily accessible information on the art and science of computer vision technology. Undergraduate and postgraduate students and researchers in universities and research institutions will also find this an essential reference source. · Discusses novel technology for recognizing objects and extracting quantitative information from digital images in order to provide objective, rapid, non-contact and non-destructive quality evaluation. · International authors with both academic and professional credentials address in detail one aspect of the relevant technology per chapter making this ideal for textbook use · Divided into three parts, it begins with an outline of the fundamentals of the technology, followed by full coverage of the application in the most researched areas of meats and other foods, fruits, vegetables and grains.

Experimental Food Science

Information Technology and Data in Healthcare

Understanding and Controlling the Microstructure of Complex Foods

Understanding Food Science and Technology

Innovative Food Science and Emerging Technologies

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

The Essence of Gastronomy: Understanding the Flavor of Foods and Beverages presents a new comprehensive and unifying theory on flavor, which answers ancient questions and offers new opportunities for solving food-related issues. It presents gastronomy as a holistic concept, focusing not only on the food and its composition but also on the human who eats it. This book defines gastronomy as the science of flavor and tasting, where flavor is a broadly interpreted objective characteristic that refers to product quality, and tasting is defined as the human perception of flavor registered by all the human senses. Understanding tasting and flavor and how humans react to it is not merely hedonistic. It relates to larger societal issues such as nourishing the elderly and the food children eat at school, and it offers a practical advantage to the hospitality industry of comprehending why customers enjoy their food and beverages. The book presents gastronomy as a discipline that combines natural sciences and human-related sciences. Following an introduction that sets the stage for the author's groundbreaking research on gastronomy, the book describes flavor perception, the sensorial act of tasting, how it works, and what neural systems are involved. It then focuses on understanding flavor, discussing universal flavor factors and the new flavor theory. The book also examines food and beverages from a flavor standpoint, including the effects of ingredients and techniques that are used. It also explores liking, primarily at the flavor level, which includes practical guidelines for matching food and beverages.

The final chapter looks at the interpretation of sensorial signals in the brain and addresses issues such as food choice, preferences, and palatability. Offering a new approach, this book provides readers with a roadmap for finding their way into the gastronomic world.

Revised and updated to reflect the latest research and advances available, Food Biotechnology, Second Edition demonstrates the effect that biotechnology has on food production and processing. It is an authoritative and exhaustive compilation that discusses the bioconversion of raw food materials to processed products, the improvement of food

Everyday technology is constantly changing, and it's hard to keep up with it at times. What is all this talk about automation, STEM, analytics and super-computers, and how will it really affect my daily life at work and in the home? This book is a simple guide to everyday technology and analytics written in plain language. It starts with explaining how computer networks are increasing in speed so fast that we can do more in less time than ever before. It explains the analytical jargon in plain English and why robotics in the home will be aided by the new technology of the quantum computer. Richly furnished with over 200 illustrations, photos and with minimal equations, A Simple Guide to Technology and Analytics is a ready reference book for those times when you don't really understand the technology and analytics being talked about. It explains complicated topics such as automated character recognition in a very simple way, and has simple exercises for the reader to fully understand the technology (with answers at the back). It even has explanations on how home appliances work, which are very useful the next time you go shopping for a microwave or TV. Even the Glossary at the back can be used as a quick look-up explanation for those on the go.

Food Process Engineering and Technology

Gastronomy and Food Science

Understanding the Flavor of Foods and Beverages

Evaluation Technologies for Food Quality

Advances in Meat Processing Technology

Written as a textbook with an online laboratory manual for students and adopting faculties, this work is intended for non-science majors / liberal studies science courses and will cover a range of scientific principles of food, cooking and the science of taste and smell. Chapters include: The Science of Food and Nutrition of Macromolecules; Science of Taste and Smell; Milk, Cream, and Ice Cream, Metabolism and Fermentation; Cheese, Yogurt, and Sour Cream; Browning; Fruits and Vegetables; Meat, Fish, and Eggs; Dough, Cakes, and Pastry; Chilies, Herbs, and Spices; Beer and Wine; and Chocolate, Candy and Other Treats. Each chapters begins with biological, chemical, and /or physical principles underlying food topics, and a discussion of what is happening at the molecular level. This unique approach is unique should be attractive to chemistry, biology or biochemistry departments looking for a new way to bring students into their classroom. There are no pre-requisites for the course and the work is appropriate for all college levels and majors.

Starch is both a major component of plant foods and an important ingredient for the food industry. Starch in food reviews starch structure and functionality and the growing range of starch ingredients used to improve the nutritional and sensory quality of food. Part one illustrates how plant starch can be analysed and modified, with chapters on plant starch synthesis, starch bioengineering and starch-acting enzymes. Part two examines the sources of starch, from wheat and potato to rice, corn and tropical supplies. The third part of the book looks at starch as an ingredient and how it is used in the food industry. There are chapters on modified starches and the stability of frozen foods, starch-lipid interactions and starch-based microencapsulation. Part four covers starch as a functional food, investigating the impact of starch on physical and mental performance, detecting nutritional starch fractions and analysing starch digestion. Starch in food is a standard reference book for those working in the food industry. Reviews starch structure and functionality Extensive coverage of the growing range of starch ingredients Examines how starch ingredients are used to improve the nutritional and sensory quality of food

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.

Being able to understand the principles of food science is vital for the study of food, nutrition and the culinary arts. In this innovative text, the authors explain in straightforward and accessible terms the theory and application of chemistry to these fields. The key processes in food preparation and the chemistry behind them are described in detail, including denaturation and coagulation of proteins, gelatinisation, gelation and retrogradation of starches, thickening and gelling, browning reactions, emulsification, foams and spherification, chemical, mechanical and biological leaveners and fermentation and preservation. The text also describes the science of key cooking techniques, the science of the senses and the experience of food, food regulations and the future of healthy food. The origins of food are explored through a focus on the primary production of key staples and their journey to the table. Tips and advice from leading chefs as well as insights into emerging food science and cutting-edge nutrition research from around the world are included throughout, and reveal both the practical application of food chemistry and the importance of this field. Featuring explanatory diagrams and illustrations throughout, Understanding the Science of Food is destined to become an essential reference for both students and professionals. 'An

innovative and informative text that will address the need for a food science text suitable for nutrition and dietetics students in Australia.' - Katherine Hanna, Faculty of Health, Queensland University of Technology. 'A unique and timely text that will be welcomed by students, instructors, and scientists in multiple disciplines. I am thrilled to see such a modern take on the subject, blending the fundamentals of food science and chemistry with the insights and experience of practitioners from the culinary arts.' - Patrick Spicer, lecturer and researcher in food science

The Essence of Gastronomy

Unnaturally Delicious

Fennema's Food Chemistry

Introduction to Food Engineering

Principles and Practice, Third Edition

Healthcare transformation requires us to continually look at new and better ways to manage insights - both within and outside the organization. Increasingly, the ability to glean and operationalize new insights efficiently as a byproduct of an organization's day-to-day operations is becoming vital for hospitals and health systems to survive and prosper. One of the long-standing challenges in healthcare informatics has been the ability to deal with the sheer variety and volume of disparate healthcare data and the increasing need to derive veracity and value out of it. This book addresses several topics important to the understanding and use of data in healthcare. First, it provides a formal explanation based on epistemology (theory of knowledge) of what data actually is, what we can know about it, and how we can reason with it. The culture of data is also covered and where it fits into healthcare. Then, data quality is addressed, with a historical appreciation, as well as new concepts and insights derived from the author's 35 years of experience in technology. The author provides a description of what healthcare data analysis is and how it is changing in the era of abundant data. Just as important is the topic of infrastructure and how it provides capability for data use. The book also describes how healthcare information infrastructure needs to change in order to meet current and future needs. The topics of artificial intelligence (AI) and machine learning in healthcare are also addressed. The author concludes with thoughts on the evolution of the role and use of data and information going into the future.

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.

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.

Food engineering is a required class in food science programs, as outlined by the Institute for Food Technologists (IFT). The concepts and applications are also required for professionals in food processing and manufacturing to attain the highest standards of food safety and quality. The third edition of this successful textbook succinctly presents the engineering concepts and unit operations used in food processing, in a unique blend of principles with applications. The authors use their many years of teaching to present food engineering concepts in a logical progression that covers the standard course curriculum. Each chapter describes the application of a particular principle followed by the quantitative relationships that define the related processes, solved examples, and problems to test understanding. The subjects the authors have selected to illustrate engineering principles demonstrate the relationship of engineering to the chemistry, microbiology, nutrition and processing of foods. Topics incorporate both traditional and contemporary food processing operations.

Colour in Food

Starch in Food

Digital Food Cultures

Trends and Future Prospects

How Science and Technology Are Serving Up Super Foods to Save the World

A fundamental understanding of polymers has evolved in recent years concurrent with advances in analytical instrumentation. The theories and methodologies developed for the galacturonan biopolymers (collectively called pectins) have seldom been discoursed comprehensively in the context of the new knowledge. This text explains the scientific and technical basis of many of the practices followed in processing and preparing foods fabricated with or containing pectin. The material is presented in a very readable fashion for those with limited technical training. Structural analysis Commercial extractions methods Pectin formulations and tropical fruit analysis Molecular mechanisms of gelatin Enzymology Polymer conformation techniques Analytical methods of polymer analysis

With its distinguished editor and array of international contributors, this book provides a review of current understanding of significant aspects of food structure and methods for its control. It begins with coverage of the fundamental structural elements present in foods and the forces which hold them together, discusses novel analytical techniques which can provide information on the morphology and behaviour of food materials, then examines how the principles of structural design can be employed to improve performance and functionality of foods. The book concludes with a discussion of how this knowledge can be implemented to improve properties of foods.

Understanding Consumers of Food Products

Food Processing Technology

The Chemistry and Technology of Pectin

Understanding Food Systems

Dairy Science and Technology, Second Edition