The packaging value chain should be seen as an innovation process that involves the whole supply chain, from raw materials to the final product. This process is complex and requires the cooperation of various players, including manufacturers, retailers, and consumers. The successful employment of food packaging can greatly improve product safety and quality, making the area a key concern to the food processing industry.

Packaging technology continues to be one of the most important and innovative areas in food processing. Edited by a leading expert in the field, and with its distinguished international team of contributors, Novel food packaging techniques provides an authoritative and comprehensive review of the key trends of food packaging. The book is divided into seven chapters, written by worldwide experts. The book is an ideal reference source for university students, food engineers and researchers from R&D laboratories working in the area of food science and technology. Professionals from institutions related to food packaging.

Packaging plays an essential role in protecting and extending the shelf life of a wide range of foods, beverages and other fast-moving consumer goods. There have been many key developments in packaging materials and technologies in recent years, and food packaging continues to be one of the most important and innovative areas in food processing. Emerging food packaging technologies reviews advances in packaging materials, the design and implementation of smart packaging techniques, and developments in response to growing concerns about packaging sustainability. Part one of Emerging food packaging technologies focuses on developments in active packaging, reviewing controlled release packaging, active antimicrobials and nanocomposites in packaging, and edible chitosan coatings. Part two goes on to consider intelligent packaging and how advances in the consumer/packaging interface can improve food safety and quality. Developments in intelligent packaging are considered in part three, with nanocomposites, emerging coating technologies, light-protective and non-thermal process packaging discussed, alongside a consideration of the safety of plastics as food packaging materials. Finally, part four explores the use of eco-design, life cycle assessment, and the utilisation of biobased polymers in the production of smarter, environmentally-compatible packaging. With its distinguished editors and international team of expert contributors, Emerging food packaging technologies is an indispensable reference work for all those responsible for the design, production, and use of food and beverage packaging, as well as a key source for researchers in this area. Reviews advances in packaging materials, the design and implementation of smart packaging techniques, and developments in response to growing concerns about packaging sustainability. Considers intelligent packaging and how advances in the consumer/packaging interface can improve food safety and quality. Examinations in packaging materials, nanocomposites, emerging coating technologies, light-protective and non-thermal process packaging and the safety of plastics as food packaging materials.

The packaging value chain should be seen as an innovation process that involves the whole supply chain, from raw materials to the final product. This process is complex and requires the cooperation of various players, including manufacturers, retailers, and consumers. The successful employment of food packaging can greatly improve product safety and quality, making the area a key concern to the food processing industry.
Innovations in Technologies for Fermented Food and Beverage Industries

This book discusses the various aspects of sustainable packaging edibles in food industry. It is divided into five main parts. The first section of the book addresses details of edible films, various sources, origin, scope and functions. Second section covers different sustainable alternatives such as sea moss, fruits and vegetables, seeds, woods, straw, bubbles, and dairy products. An important feature of this book is the provision of a comprehensive overview of emerging packaging technologies and markets. It also provides insights into the large quantity of waste and by-products generated by food processing industries. It concludes by considering future trends in materials and technologies. This book is highly useful for researchers, food scientists, students and food packaging industry experts.

Edible Food Packaging

This book is a one-stop-shop for anyone in the food industry seeking to understand how bioengineering can foster research and innovation. It presents cutting-edge technologies and approaches utilized in current and future food preservation for both food and beverages. It offers research methods for the creation of novel preservatives and packaging materials to improve the quality and lifespan of preserved foods. It features essential information and practical guidance for engineers and scientists working at all stages of the food packaging lifecycle: from design through manufacture to recycling. It includes key published material on plastic films in food packaging, updated specifically for this Handbook, and new material on the regulatory framework and safety aspects. It covers materials and applications for packaging industry experts.

Innovations in Technologies for Fermented Food and Beverage Industries

This book concludes with consideration potential future trends in materials and technologies across the international packaging market. With its distinguished editor and international team of expert contributors, Trends in packaging of food, beverages and other fast-moving consumer goods (FMCG) is an important reference tool, providing a practical overview of emerging packaging technologies and market trends for research and design professionals in the food and packaging industry, and academics working in this field. It presents an overview of the current state and status of the food industry in this area. It introduces the present status, current trends and new innovations in the field while considering future trends in materials and technologies. This book covers life-cycle costing, life-cycle assessment, and externality assessment to help readers understand the economical reliability of the innovations presented.

Food Industry Design, Technology and Nutrition

The value of the groceries purchased in the USA is over $500 billion annually, most of which is accounted for by packaging. The packaging of foods is not only ubiquitous in developed economies, but increasingly commonplace in the developing world, where plastic packaging is instrumental in decreasing the proportion of the food supply lost to spoilage. This new handbook is a combination of new material and updated chapters, chosen by Dr. Sina Ehmansajjad, free recently published on this subject. Plastic Films in Food Packaging offers a practical handbook for engineers, scientists and managers working in the food packaging industry, providing a tailor-made package of science and engineering fundamentals, best practice techniques and guidance on new and emerging technologies. By covering materials, design, packaging processes, machinery and waste management together in one book, the authors enable the reader to take a lifecycle approach to food packaging. The handbook addresses questions related to film grades, types of packages for different types of foods, packaging technologies, machinery and waste management. Additionally, the book provides a review of new and emerging technologies. Two chapters cover the development of barrier films for food packaging and the regulatory and safety aspects of packaging. Essential information and practical guidance for food packaging and the regulatory and safety aspects of packaging is essential for food technologists and the integration of food science and technology knowledge into the food chain. This handbook is ideal for all relevant actors in the food sector (professors, researchers, students and professionals) as well as for anyone dealing with packaging in the food industry.

Sustainable Innovations in Food Packaging

This handbook explores the latest innovations in the sustainable production of packaged foods. For example, the European Union recommends packaging from renewable sources, with a focus on bio-based materials. Sustainable packaging practices guarantee the reuse of the entire waste material and at the same time, bring safety and quality assurance to the consumer. Sustainable packaging is important to protect the environment, which is essential for the future of food and plastic products. This handbook presents eco-friendly packaging strategies to reduce food and plastic waste and address the end-of-life issues of persistent materials. It particularly focuses on the production of biodegradable microbial polymers and materials from agricultural and food industries. Packaging innovation comes from the fact that packaging materials can be biodegradable and allow bio-polymers to return to the soil. Lastly, the book covers life-cycle assessment, life-cycle costing, and external assessment to help readers understand the economical reliability of the innovations presented.

Food Packaging: The Smarter Way

This book explores the latest advances in the sustainable production of packaged foods. Packaging plays an important role in sustainable food production and consumption in industrialized countries, where there is an increasing pressure to reduce the environmental impact of packaged foods. For example, the European Union recommends packaging from renewable sources, with a focus on biobased materials. Sustainable packaging practices guarantee the reuse of the entire waste material and at the same time, bring safety and quality assurance to the consumer. Sustainable packaging is important to protect the environment, which is essential for the future of food and plastic products. This handbook presents eco-friendly packaging strategies to reduce food and plastic waste and address the end-of-life issues of persistent materials. It particularly focuses on the production of biodegradable microbial polymers and materials from agricultural and food industries. Packaging innovation comes from the fact that packaging materials can be biodegradable and allow bio-polymers to return to the soil. Lastly, the book covers life-cycle assessment, life-cycle costing, and external assessment to help readers understand the economical reliability of the innovations presented.
Food Quality and Shelf life covers all aspects and challenges of food preservation, packaging and shelf-life. It provides information on the most important pillars in the field, starting with active and smart packaging materials, novel technologies, and control tools in all stages between production and consumer. This book gives emphasis to broad view of important developments in food packaging. Presents an extensive survey of food packaging materials and modern technologies demonstrates the potential of various materials for use in demanding applications. Discusses the use of polymers, composites, nanotechnology, hybrid materials, coatings, wood-based, and other materials in packaging describes biodegradable packaging, antimicrobial studies, and environmental issues related to packaging materials. Offers current status, trends, opportunities, and future directions. Aimed at advanced students, research scholars, and professionals in food packaging development, this application-oriented book will help expand the reader's knowledge of advanced materials and their use in innovation for food packaging.

Food Packaging

Food Packaging: Advanced Materials, Technologies, and Innovations is a one-stop reference for packaging materials researchers working across various industries. With chapters written by leading international researchers from industry, academia, governments, and institutions, this book offers a broad view of important developments in food packaging. Presents an extensive survey of food packaging materials and modern technologies. Demonstrates the potential of various materials for use in demanding applications. Discusses the use of polymers, composites, nanotechnology, hybrid materials, coatings, wood-based, and other materials in packaging. Describes biodegradable packaging, antimicrobial studies, and environmental issues related to packaging materials. Offers current status, trends, opportunities, and future directions. Aimed at advanced students, research scholars, and professionals in food packaging development, this application-oriented book will help expand the reader's knowledge of advanced materials and their use in innovation for food packaging.

Food Packaging

Innovations in food labelling provides information about the principles and requirements of food labelling and reviews the latest trends in this important area. Following an introduction on the evolution of food labelling, further chapters cover the Code of Practice, illustrations, labels and environmental social labels, among other topics. An essential reference for food industry professionals, food law experts and professionals in the food industry responsible for labelling as well as consumer and environmental associations with an interest in labelling. Provides important information about the principles and requirements of food labelling and reviews the latest trends in food labelling and the evolution of food labelling. Includes updates on label evolution and considers standards and legal issues, as well as protection of the environment and sustainable food production. Features labels for a variety of different markets, including organic foods, and addresses social issues such as an association of food quality with location.

Leading the Pack

On August 7â€”8, 2019, the National Academies of Sciences, Engineering, and Medicine hosted a public workshop in Washington, DC, to review the status of current and emerging knowledge about innovations for modern food systems and strategies for meeting future needs. This workshop addressed different perspectives on the topic of food systems, and it would build on a workshop on the topic of sustainable diets held on the Forum in August 2018. This publication summarizes the presentations and discussions from the workshop.

Food and Beverage Packaging Technology

At the 50th Anniversary Meeting of the Institute of Food Technologists the ten most significant innovations in food science developed during the past 50 years were named (Food Technology, September 1999). Among the "Top 10" innovations, innovations, innovations, etc. For example, fresh fruits and vegetables was listed 5th in order of importance. Of course, CAP is a forerunner of MAP (modified atmosphere packaging) in which a variety of food products are packaged under selective mixtures of atmospheric gases, but without the on-going maintenance (control) of the gas mixture. Development of packaging systems and films that are selectively permeable to specific gases has been the key element in the commercialization of controlled and modified atmosphere packaging of foods. It may not be far from the truth to say that since then there has been an explosion of activities around MAP/CAP, especially in research and development into various aspects of this technology. The application of MAP to some dry products, fresh fruits and salads and fresh meats and fish products has reached a significant level both in Europe and North America. The increasing consumer demand for fresh or near-fresh products and convenient, microwavable foods has added impetus to the growth of MAP/CAP technology. It is, therefore, timely that a comprehensive book that provides scientific background and practical applications of the technology should be written.

Innovative Packaging of Fruits and Vegetables: Strategies for Safety and Quality Maintenance

The food world has a number of options available to make the food industry more diverse, competitive, and efficient. Innovations in Food Processing investigates some of these options, alternative technologies, and strategies for properly addressing new challenges facing the food industry. It also provides specific examples on how these alternatives can be applied. It brings the integration of on-farm with food factory operations, the inclusion of Industry 4.0 sensing technologies and Internet of Things (IoT) across the food chain to reduce food wastage, water and energy inputs Make a full intersection into other science domains (operations research, informatics, agriculture and agronomy, machine learning, artificial intelligence and robotics, intelligent packaging, among others).

Innovations in Food Processing

Innovations in Food Labelling

Towards more sustainable packaging with biodegradable materials! The combination of the continuously increasing food packaging waste with the non-biodegradable nature of the plastic materials that have a big slice of the packaging market makes it necessary to find environmentally and biodegradable packaging for the benefit of the environment and human health. Sustainable packaging is the type of packaging that can provide to food the necessary protection conditions, but at the same time is biodegradable and can be disposed as organic waste to the landfills in order to biodegrade through a natural procedure. In this way, sustainable packaging becomes part of the circular economy. Sustainable Food Packaging Technology? deals with packaging solutions that use engineered biomolecules for biodegradable food packaging for the benefit of the environment and human health. The book covers new packaging solutions that have suitable physical-chemical properties for food contact and protection and originate both from renewable or non-renewable resources, but in both cases are compostable or biodegradable. Modified paper and cardboard with increased environmental properties towards food while keeping their compostability are presented as well. The book also covers composites, that can be used to provide protection against the food indicating food spoilage. * Addresses urgent problems: food packaging creates a lot of hard-to-recycle waste - this book puts forward more sustainable solutions using biodegradable materials * State-of-the-art: Sustainable Food Packaging Technology offers current status, trends, opportunities, and future directions. Aimed at advanced students, research scholars, and professionals in food packaging development, this application-oriented book will help expand the reader's knowledge of advanced materials and their use in innovation for food packaging.
This new edition of Innovations in Food Packaging ensures that readers have the most current information on food packaging options, including active packaging, intelligent packaging, edible/biodegradable packaging, nanocomposites and other options for sustainable packaging. As packaging not only protects food from the environmental conditions of transport and market environment, it also plays a crucial role in influencing consumer’s perception of the quality, safety and value of the food product. As nanotechnology and other technologies have developed, new and important options for maximizing the role of packaging have emerged. This book specifically examines the whole range of modern packaging options. It covers edible packaging, intelligent packaging, sustainable, biodegradable packaging and others. The book includes case studies of successful food and packaging, such as plasticization and polymer morphology. Professionals involved in food safety and shelf life, as well as researchers and students of food science, will find great value in this complete and updated overview. New to this edition: Over 60 updated content — including nine completely new chapters — with the latest developments in technology, processes and materials which now includes bioplastics, biopolymers, nanomaterials, and eco-design of packaging.

Case Studies in Novel Food Processing Technologies

This book explores the latest advances in the sustainable production of packaged foods. Packaging plays an important role in sustainable food production and consumption in industrialized countries, where there is an increasing pressure to reduce the environmental impact of packaging, benefit the well-being of the consumer Union recommends packaging from renewable sources, with a focus on bio-based materials. Sustainable packaging processes can be the use of the entire waste material and at the same time avoid the loss of food safety and quality during storage by preventing food-borne diseases and chemical contamination. Furthermore, the dramatic problem of plastic waste accumulation and the conservation of oil and food resources need to be taken into consideration. This book presents eco-friendly packaging strategies to reduce food and plastic waste and address the end-of-life issues of persistent materials. A large range

Sustainable Packaging

Food Packaging: Nanotechnology in the Agri-Food Industry, Volume 7, focuses on the development of novel nanomaterials, the enhancement of barrier performance of non-degradable and biodegradable plastics, and their fabrication and application in food packaging. The book brings together fundamental information and the most recent advances in the synthesis, design, and impact of alternative food packaging. Special attention is offered on smart materials and nanodiamonds that can detect quality parameters in packaged food, such as freshness, degradation, and contamination, etc. In addition, ecological approaches aiming to obtain bioplastic packages from waste materials are highlighted and discussed as a novel approach in modern food packaging. This book also discusses the applications of employing advanced food packages, such as active, semi-active, composite active packaging, smart materials, and magnetic nanoparticles, for the preservation of nutrients ingredients, and therapeutic food compounds. It includes fabrication techniques, such as melt, film, inkjet, and spray coating, nanomaterials, nanocomposites, multi-layered structures, and layer-by-layer selfassembly from synthetic and bio-based polymers. This book presents the latest information on new biodegradable materials using fabrication of new high barrier plastics to enhance research.

Food Quality and Shelf Life

Packaging plays a major role in the environmental footprints of products from any industrial sector, and thus is important to address the sustainability issues of packaging. Packaging and the packaging sector have to be eco-conscious as there are many types of packaging across various industrial sectors and so are their environmental impacts as well. Plastic packaging is one of the most common element and the packaging sector accounts for almost 40% of plastic pollution in the world.

Trends in Packaging of Food, Beverages and Other Fast-Moving Consumer Goods (FMCG)

A complete guide to the principles and practical application of modified atmosphere packaging. Modified atmosphere packaging (MAP) is one of the most cost-effective, versatile, and commonly used methods of preserving food products available today. Employed in both ambient and chilled conditions, it can prolong shelf life and preserve the quality of a wide array of items via careful processes of atmospheric engineering. The essential scientific principles underlying this technology can, however, be difficult to grasp and effectively apply. With Modified Atmosphere Packaging of Foods, esteemed food science professor Doug Son Lee provides a thorough and practical explanation of all aspects of MAP. Chapters cover the development, implementation, stability, and performance of the technique. Using a straightforward, easy-to-understand approach, this book delivers detailed guidance on all aspects of MAP — from its scientific background to its practical application. Information on how specific MAP products may be developed according to their particular engineering principles.

Innovation in Healthy and Functional Foods

Food Packaging: Innovations and shelf-life covers recently investigated developments in food packaging and their influence in food quality preservation, shelf-life extension, and simulation techniques. Additionally, the book discusses the sustainability and innovative solutions for food packaging. This book is divided into seven chapters, written by worldwide experts. This book is an ideal reference source for university students, food engineers and researchers from R&D laboratories working in the area of food science and technology. Professionals from institutions related to food packaging.

Innovations in the Food System

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 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.

Food Packaging

Consumer-driven products have kept the food industry at the forefront of technological innovations. For example, the redefinition of the once accepted compromise between convenience and quality is just one of the current issues driving the development of new products. An overview of a range of solutions for these challenges, Innovation in Food Engineering: New Techniques and Products addresses not only new or alternative technologies but also new products, materials, and additives that have emerged as a response to current and emerging issues faced by the food industry. This book provides a comprehensive overview of modern processing technologies and materials that meet consumers increased demands for quality and safety. Each chapter in the Innovative Techniques section begins with a critical review of the fundamentals of the new or modified technique, its advantages, and relevant results. The book also contains the scientific background to its practical application information on how specific MAP products may be developed according to their particular engineering principles.

Emerging Technologies in Food Science

The book reviews the science and technology of food packaging and covers the potential innovations in the food packaging sector. It provides the latest insights and speculations for linking the laboratory research to the market. In addition to the traditional packaging technologies, this book also includes intelligent, edible, shelf-life, biodegradable, nanocomposite, and nanodevices such as plasticization and polymer morphology. A wide range of food products has been kept in focus and includes animal-based food products such as dairy products and sea foods. The book presents the most advanced packaging solutions i.e., smart packaging with the applications of potential tools such as intelligent and active packaging, and includes the latest research on emerging digital technologies for packaging research. The book provides the latest insights and speculations for linking the laboratory research to the market. In addition to the traditional packaging technologies, this book also includes intelligent, edible, shelf-life, biodegradable, nanocomposite, and nanodevices such as plasticization and polymer morphology. A wide range of food products has been kept in focus and includes animal-based food products such as dairy products and sea foods. The book presents the most advanced packaging solutions i.e., smart packaging with the applications of potential tools such as intelligent and active packaging, and includes the latest research on emerging digital technologies for packaging research.
light applications, chemical, and enzymatic methods and explores the new opportunities leading to improvement in the packaging performance. Smart freshness indicator applications, including gas and time-temperature indicators for quality and safety of packaged products, have been covered in detail. The book also includes the functional characteristics of edible films and coatings, including their bioactive characteristics. Finally, the book presents the rules and regulation related to packaging.

Innovations in Food Technology

Now in a fully revised and updated second edition, this volume provides a contemporary overview of food processing/packaging technologies. It acquaints the reader with food preservation processes, shelf life and logistical considerations, as well as packaging materials, machines, and processes necessary for a wide range of packaging presentations. The new edition addresses environmental and sustainability concerns, and also examines applications of emerging technologies such as RFID and nanotechnology. It is directed at packaging technologists, those involved in the design and development of packaging, users of packaging in food companies and those who specify or purchase packaging. Key Features: An up-to-date and comprehensive handbook on the most important sector of packaging technology; Links methods of food preservation to the packaging requirements of the common types of food and the available food packages; Covers all the key packaging materials - glass, plastics and paperboard; Fully revised second edition now covers sustainability, nanotechnology and RFID.

Food Technology Disruptions

This volume addresses the challenges of the short shelf life of fruits and vegetables. Innovative packaging technologies are the most promising strategies for overcoming these limitations. This book provides a host of sustainable packaging solutions that deliver protection, branding, consumer attractiveness, and speed to market in a competitive retail environment. Key features of the book: Provides an informative overview of fruit and vegetable requirements and available packaging materials and systems; Provides an understanding of the fundamentals of the impact of packaging on the quality and safety of fruits and vegetables; Covers the fundamental aspects of packaging requirements, including mathematical modeling and mechanical and engineering properties of packaging materials; Presents an in-depth discussion of innovative packaging technologies, such as MA/CA packaging, active packaging, intelligent packaging, and eco-friendly materials applied to fruit and vegetables; Looks at packaging design for better environmental and economic performance.

Emerging Food Packaging Technologies

The focus of food science and technology has shifted from previous goals of improving food safety and enhancing food taste toward providing healthy and functional foods. Today's consumers desire foods that go beyond basic nutrition—foods capable of promoting better health, or even playing a disease-prevention role. To meet this need for innovation, Modified Atmosphere Packaging of Food

Novel food processing technologies have significant potential to improve product quality and process efficiency. Commercialisation of new products and processes brings exciting opportunities and interesting challenges. Case studies in novel food processing technologies provide insightful, first-hand experiences of many pioneering experts involved in the development and commercialisation of foods produced by novel processing technologies. Part one presents case studies of commercial products preserved with the leading nonthermal technologies of high pressure processing and pulsed electric field processing. Part two broadens the case histories to include alternative novel techniques, such as dense phase carbon dioxide, ozone, ultrasonics, cool plasma, and infrared technologies, which are applied in food preservation sectors ranging from fresh produce, to juices, to disinfection. Part three covers novel food preservation techniques using natural antimicrobials, novel food packaging technologies, and oxygen depleted storage techniques. Part four contains case studies of innovations in retort technology, microwave heating, and predictive modelling that compare thermal versus non-thermal processes, and evaluates an accelerated 3-year challenge test. With its team of distinguished editors and international contributors, Case studies in novel food processing technologies is an essential reference for professionals in industry, academia, and government involved in all aspects of research, development and commercialisation of novel food processing technologies. Provides insightful, first-hand experiences of many pioneering experts involved in the development and commercialisation of foods produced by novel processing technologies; Presents case studies of commercial products preserved with the leading nonthermal technologies of high pressure processing and pulsed electric field processing; Features alternative novel techniques, such as dense phase carbon dioxide, ozone, ultrasonics, cool plasma, and infrared technologies utilised in food preservation sectors.