



Emerging food packaging technologies

Principles and practice

Edited by Kit L. Yam and Dong Sun Lee

Emerging Food Packaging Technologies 1 Editon

Basharat Nabi Dar, Shabir Ahmad Mir



Emerging Food Packaging Technologies 1 Editon:

Emerging Food Packaging Technologies Kit L Yam, Dong Sun Lee, 2012-03-15 The successful employment of food packaging can greatly improve product safety and quality making the area a key concern to the food processing industry 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 packaging material are analysed 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 bio based 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 Examines developments in packaging materials nanocomposites emerging coating technologies light protective and non thermal process packaging and the safety of plastics as food packaging materials

Edible Food Packaging Miquel Angelo Parente Ribeiro Cerqueira, Ricardo Nuno Correia Pereira, Oscar Leandro da Silva Ramos, Jose Antonio Couto Teixeira, Antonio Augusto Vicente, 2017-12-19 The edible food packaging industry has experienced remarkable growth in recent years and will continue to impact the food market for quite some time going into the future Edible Food Packaging Materials and Processing Technologies provides a broad and comprehensive review on recent aspects related to edible packaging from processing to potential applications and covering the use of nanotechnology in edible packaging The book s 14 chapters promote a comprehensive review on such subjects as materials used their structure function relationship and new processing technologies for application and production of edible coatings and films Specific topics include edible film and packaging using gum polysaccharides protein based films and coatings and edible coatings and films from lipids waxes and resins The book also reviews stability and application concerns mass transfer measurement and modeling for designing protective edible films and edible packaging as a vehicle for functional compounds The authors explore antimicrobial edible packaging nanotechnology in edible packaging and nanostructured multilayers for food packaging by electrohydrodynamic processing Additionally they show how to evaluate the needs for edible packaging of

respiring products and provide an overview of edible packaging for fruits vegetables and dairy products Lastly they examine edible coatings and films for meat poultry and fish

Food Processing and Packaging Technologies Jaya Shankar

Tumuluru,2023-04-05 Food processing preservation and packaging is a highly interdisciplinary science Various techniques and technologies have been developed to extend food shelf life minimize the risk of contamination protect the environment and improve foods functional sensory and nutritional properties Some of the many benefits of food processing preservation and packaging include increased food safety improved nutrition longer shelf life and increased economic opportunities In addition food processing and preservation help to reduce post harvest losses Developing novel food processing preservation and packaging technologies is critical to preserving food quality improving sensory characteristics and reducing losses At present there is a great emphasis on developing novel biobased and intelligent packaging technologies that are safe for food and reduce environmental pollution This book provides a comprehensive overview of food processing and preservation packaging to tackle the challenges of food safety nutritional security and sustainability Chapters address such topics as edible packaging materials intelligent packaging materials nanotechnology for enhancing the shelf life of food products advanced food packaging systems green materials for food packaging antimicrobial packaging materials food drying technologies methods of food processing food analysis using acoustic and thermal methods food formulations and functional foods This volume is a useful resource for students researchers and food processing preservation professionals It highlights advances in food processing and packaging systems to increase food quality and preserve food longer without generating waste

Non-Thermal Technologies for the Food Industry C. Anandharamakrishnan,V. R. Sinija,R.

Mahendran,2024-02-29 Depending on the mechanisms involved in non thermal technologies such as ozonization irradiation ultrasound processing plasma processing and advanced oxidative processes interaction with food molecules differs which might lead to desirable reactions Non Thermal Technologies for the Food Industry Advances and Regulations explores the possibility of using non thermal technologies for various purposes such as shelf life extension reduced energy consumption adhesion and safety improvement Further it reviews the present status of these technologies international regulations and sustainability aspects in food processing including global case studies Features Provides a comprehensive overview of all the non thermal processing technologies that have potential for use within food manufacturing Covers novel disinfectant technologies and packaging methods for non thermal processing Includes electro spraying and electrospinning low temperature drying techniques cold plasma techniques hydrodynamic cavitation oscillating magnetic field processing and so forth Focus on topics such as the valorization of agri food wastes and by products and sustainability Reviews ClO₂ in combined hybrid technologies for food processing This book is aimed at researchers and graduate students in food and food process engineering

Sustainable Material, Design, and Process Ravi Kant,Hema Gurung,Shashikant Yadav,2023-09-07

This text emphasizes the importance of sustainable material design and manufacturing processes and how the needs are

changing day by day It comprehensively covers important topics including material recycling optimal utilization of resources green materials biocomposites clean and green synthesis stable material properties utilization of renewable energy sources ergonomic design and sustainable design The text examines the design process manufacturing and upscaling of next generation materials and their application in diverse industries The text is primarily written for graduate students and academic researchers in the fields of manufacturing engineering materials science mechanical engineering and environmental engineering Presents an in depth understanding of the progress of the need for new innovative and next generation materials Discusses biocomposites and green materials for eco friendly products in a comprehensive manner Explores recycling techniques of materials for sustainable manufacturing Presents conceptual framework of sustainable product development Covers important topics such as process optimization renewable energy and 3D printing in detail The text discusses the designing process of these new materials manufacturing and upscaling of these materials along with their selection for industrial applications It further focuses on improving surface homogeneity in nanoparticle scattering during dip coating for stable and efficient wettability during oil water separation It will serve as an ideal reference text for graduate students and academic researchers in the fields of manufacturing engineering materials science mechanical engineering and environmental engineering Advances in Processing Technologies for Bio-based Nanosystems in Food Óscar L.

Ramos,Ricardo N. Pereira,Miguel A. Cerqueria,José A. Teixeira,António A. Vicente,2019-07-25 Nanotechnology can be used to address challenges faced by the food and bioprocessing industries for developing and implementing improved or novel systems that can produce safer nutritious healthier sustainable and environmental friendly food products This book overviews the most recent advances made on the field of nanoscience and nanotechnology that significantly influenced the food industry Advances in Processing Technologies for Bio Based Nanosystems in Food provides a multidisciplinary review of the complex mechanisms involved in the research development production and legislation of food containing nanostructures systems Features Presents the most recent advances made in the field of nanoscience and nanotechnology as applied to the food industry Discusses innovative approaches and processing technologies Shows how nanotechnology can be used to produce safer nutritious healthier sustainable and environmental friendly food products Covers the complex mechanisms involved in the research development production and legislation of food containing nanostructures Selected examples of nanotechnology applications in food industry are shown focusing on advanced aspects of food packaging processing and preservation followed by one contribution that presents the potential commercialization and the main challenges for scale up Comprised of 15 chapters this book provides much needed and up to date information on the use of emergent technologies in bio based nanosystems for foods and serves as an ideal reference for scientists regulators industrialists and consumers that conduct research and development in the food processing industry *Food Process Engineering and Quality Assurance* C.O. Mohan,Elizabeth Carvajal-Millan,C.N. Ravishankar,A. K. Haghi,2018-02-28 This new book Food Process Engineering and

Quality Assurance provides an abundance of valuable new research and studies in novel technologies used in food processing and quality assurance issues of food The 750 page book gives a detailed technical and scientific background of various food processing technologies that are relevant to the industry The food process related application of engineering technology involves interdisciplinary teamwork which in addition to the expertise of interdisciplinary engineers draws on that of food technologists microbiologists chemists mechanical engineers biochemists geneticists and others The processes and methods described in the book are applicable to many areas of the food industry including drying milling extrusion refrigeration heat and mass transfer membrane based separation concentration centrifugation fluid flow and blending powder and bulk solids mixing pneumatic conveying and process modeling monitoring and control Food process engineering know how can be credited with improving the conversion of raw foodstuffs into safe consumer products of the highest possible quality This book looks at advanced materials and techniques used for among other things chemical and heat sterilization advanced packaging and monitoring and control which are essential to the highly automated facilities for the high throughput production of safe food products With contributions from prominent scientists from around the world this volume provides an abundance of valuable new research and studies on novel technologies used in food processing and quality assurance issues It gives a detailed technical and scientific background of various food processing technologies that are relevant to the industry Special emphasis is given to the processing of fish candelilla dairy and bakery products Rapid detection of pathogens and toxins and application of nanotechnology in ensuring food safety are also emphasized Key features Presents recent research development with applications Discusses new technology and processes in food process engineering Provides several chapters on candelilla which is frequently used as a food additive but can also be used in cosmetics drugs etc covering its characteristics common uses geographical distribution and more *Food Packaging* Sanjay Mavinkere Rangappa, Jyotishkumar Parameswaranpillai, Senthil Muthu Kumar Thiagamani, Senthilkumar Krishnasamy, Suchart Siengchin, 2020-10-20 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 government and private research 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 of innovation in food packaging Encyclopedia of Food Chemistry, 2018-11-22 Encyclopedia of Food Chemistry Three Volume Set 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 Emerging Technologies in Food Science Monika Thakur,V. K. Modi,2020-06-02 This book provides a comprehensive review of recent innovations in food science that are being used to tackle the challenges of food safety nutritional security and sustainability With a major focus on developing nations like India the book is divided into four main sections The first section provides an overview of the food industry while the second explores food safety in various segments with an interesting account of street food safety an important yet often neglected aspect for safety parameters The third section on nutritional security and sustainability explores various ways of maximizing nutrition and optimizing waste management in the food industry The book closes with a section on emerging technologies and innovations which introduces readers to some of the latest technologies in the food industry including advances in food processing packaging nanotechnology etc The topics have been divided into 25 different chapters which offer a diverse blend of perspectives on innovations in the developing world Ideally suited for students and researchers in the food sciences the book is also an interesting read for industry experts in Food Science and Technology **Nanotechnology for Sustainable Food**

Packaging C. Anandharamakrishnan,Jeyan A. Moses,M. Maria Leena,2025-03-11 Latest techniques for the development of biodegradable food packaging casings with commentary on safety concerns and regulatory frameworks Nanotechnology for Sustainable Food Packaging covers the latest techniques and applications of nanotechnology demonstrating capabilities to revolutionize the food packaging sector This includes concepts of biodegradable food packaging approaches to improve material functionality robust sensing systems and the scope of employing advanced analytical and computational approaches to support progress in the field Throughout the text focuses on the United Nations Sustainable Development Goals including life cycle analysis biodegradability green practices eco friendliness and sustainability This book explores the major food packaging matrixes polymers edible films and multilayers different categories of advances composites active and intelligent packaging labeling considerations region and country specific regulatory frameworks and safety concerns Readers will also

find a futuristic preview of this rapidly advancing field and an overview of lab ready technologies with the potential for commercialization Written by a team of highly qualified authors Nanotechnology for Sustainable Food Packaging discusses sample topics including Nanotechnology s potential to improve the shelf life of food products the chemistry and functionality of different materials based on merits and possible challenges Sources chemistry and functionality of various bio based sources and their usage as nanocomposites and bio based alternatives drawbacks and research trends Bioactive compounds in food packaging and their benefits preparation methods characterization approaches delivery and assessment Surface modification approaches through sustainable physico chemical approaches and the development of flexible packaging materials suitable for specific requirements such as nonthermal processing Nanotechnology for Sustainable Food Packaging is an essential scientific and technological reference for scientists and R D personnel who are interested in advancing food packaging technologies The book is also valuable for students researchers and food industry professionals studying nanotechnology in food food packaging and food science and technology

Emerging Technologies for Shelf-Life Enhancement of Fruits Basharat Nabi Dar, Shabir Ahmad Mir, 2020-05-05 Focusing on new technological interventions involved in the postharvest management of fruits this volume looks at the research on maintaining the quality of fruits from farm to table The volume examines the factors that contribute to shortening shelf life as well as innovative solutions to maintaining quality while increasing the length of time fruit remains fresh nutritious and edible The volume considers the different needs of the diversity of fruits and covers a variety of important topics including factors affecting the postharvest quality of fruits microbial spoilage decontamination of fruits by non thermal technologies new kinds of packaging and edible coatings ozone as shelf life extender of fruits **Emerging Technologies for Shelf Life Enhancement of Fruits** considers the fundamental issues and will be an important reference on shelf life extension of fruits Highlighting the trends in future research and development it will provide food technologists food engineers and food industry professionals with new insight for prolonging the shelf life of fruits Emerging food marketing technologies : a preliminary analysis. ,

Biomedical Textiles Mohd Yusuf, Shumaila Kiran, 2025-08-06 For millennia textiles have been an integral part of human civilization evolving from basic clothing to advanced applications catering to modern societal needs The intersection of textiles and medical science has given rise to biomedical textiles which are defined as fibrous textile structures prepared from synthetic or natural materials that are used internally or externally in a biological environment inside or outside the body as a medical or care device to improve health hygiene and medical conditions The book discusses the need for flexibility and shape transformation capabilities in today s textiles such as being engineered for insertion through a small catheter or expanded within the vessels to allow minimally invasive delivery methods without sacrificing mechanical integrity and healthcare capabilities It presents the recent research and developments that will benefit academicians scientists researchers and post graduate students in the field of textile science and technology The book will prove to be a useful instrument in the rapid and

efficient entry of new researchers into the emerging field of textile engineering and technology

Valorization of Wastes/By-Products in the Design of Functional Foods/Supplements, 2023-10-27 Valorization of Wastes By Products in the Design of Functional Foods Supplements Volume 106 provides up to date information on the valorization and application of by products wastes from fruit vegetable oil cocoa tea coffee nuts seeds cereals legumes citrus and animal based products Moreover safety aspects as well as bioaccessibility bioavailability of bioactives obtained from by products wastes are covered As agricultural and food wastes constitute a significant problem worldwide because of their adverse effects on the environment economy and society this book studies the management and valorization of food wastes and their increasing significance worldwide As it is expected that the importance given to waste valorization will increase in the near future contributing greatly to sustainability and circular economy this book will help stakeholders such as governments legislative bodies policymakers companies the public and all others place special emphasis on this topic Covers valorization of by products wastes obtained from a variety of food products Provides detailed information about the applications of components extracted from wastes Presents a comprehensive evaluation of by products wastes by ensuring data on their safety aspects bioaccessibility and bioavailability

Quenched-phosphorescence Detection of Molecular Oxygen Dmitri B Papkovsky, Ruslan I Dmitriev, 2018-05-25 Significant progress has been made in recent years in quenched phosphorescence oxygen sensing particularly in the materials and applications of this detection technology that are open to commercialization like uses in brain imaging and food packaging Prompted by this the editors have delivered a dedicated book that brings together these developments provides a comprehensive overview of the different detection methodologies and representative examples and applications This book is intended to attract new researchers from various disciplines such as chemistry physics biology and medicine stimulate further progress in the field and assist in developing new applications Providing a concise summary at the cutting edge this practical guide for current experts and new potential users will increase awareness of this versatile sensing technology

Antimicrobial Food Packaging Jorge Barros-Velazquez, 2025-02-26 Antimicrobial Food Packaging Second Edition continues to be an essential resource covering all aspects in the development and application of novel antimicrobial films to all types of packaged foods The book is organized in six parts to include the main backgrounds and frameworks of the topic types of packaging materials and packaging systems and the migration of packaging elements into food the most relevant established and emerging technologies for microbial detection in food systems the development and application of antimicrobial packaging strategies to specific food sectors and the most promising combinational approaches also including combinational edible antimicrobial coatings Useful to a wide audience of researchers scientists and students the new edition brings five new chapters that include the latest information on smart packaging for monitoring food quality postbiotics in antimicrobial packaging applications emerging hydrocolloids from food processing waste or novel antimicrobial packaging strategies in dairy products Provides basic information on the potential use of antimicrobial agents

in food packaging and films and describes the applicability of such techniques to the food industry Discusses the uses of natural and synthetic compounds for food safety and shelf life extension Presents information on monitoring microbial activity for the detection of foodborne pathogens using biosensors and other advanced molecular techniques Offers food safety good manufacturing practices GMPs sanitation standard operating procedures SSOPs and hazard analysis and critical control point HACCP Includes updated research on resistant foodborne pathogens and fungal bacterial and viral food contamination

Research Anthology on Food Waste Reduction and Alternative Diets for Food and Nutrition Security Management Association, Information Resources,2020-09-17 The world population is expected to increase exponentially within the next decade which means that the food demand will increase and so will waste production The increasing demand for food as well as changes in consumption habits have led to the greater availability and variety of food with a longer shelf life However there is a need for effective food waste management and food preservation as wasted food leads to overutilization of water and fossil fuels and increasing greenhouse gas emissions from the degradation of food The Research Anthology on Food Waste Reduction and Alternative Diets for Food and Nutrition Security explores methods for reducing waste and cutting food loss in order to help the environment and support local communities as well as solve issues including that of land space It also provides vital research on the development of plant based foods meat alternative diets and nutritional outcomes Highlighting a range of topics such as agricultural production food supply chains and sustainable diets this publication is an ideal reference source for policymakers sustainable developers politicians ecologists environmentalists corporate executives farmers and academicians seeking current research on food and nutrition security

Postharvest Handling Ibrahim Kahramanoglu,2017-09-13 The world population has been increasing day by day and demand for food is rising Despite that the natural resources are decreasing and production of food is getting difficult At the same time about one quarter of what is produced never reaches the consumers due to the postharvest losses Therefore it is of utmost importance to efficiently handle store and utilize produce to be able to feed the world reduce the use of natural resources and help to ensure sustainability At this point postharvest handling is becoming more important which is the main determinant of the postharvest losses Hence the present book is intended to provide useful and scientific information about postharvest handling of different produce

Tropical and Subtropical Fruits Muhammad Siddiq,Jasim Ahmed,Maria Gloria Lobo,Ferhan Ozadali,2012-08-07 Tropical and sub tropical fruits have gained significant importance in global commerce This book examines recent developments in the area of fruit technology including postharvest physiology and storage novel processing technologies applied to fruits and in depth coverage on processing packaging and nutritional quality of tropical and sub tropical fruits This contemporary handbook uniquely presents current knowledge and practices in the value chain of tropical and subtropical fruits world wide covering production and post harvest practices innovative processing technologies packaging and quality management Chapters are devoted to each major and minor tropical fruit mango pineapple banana

papaya date guava passion fruit lychee coconut logan carombola and each citrus and non citrus sub tropical fruit orange grapefruit lemon lime mandarin tangerine melons avocado kiwifruit pomegranate olive fig cherimoya jackfruit mangosteen

Topical coverage for each fruit is extensive including current storage and shipping practices shelf life extension and quality microbial issues and food safety aspects of fresh cut products processing operations such as grading cleaning size reduction blanching filling canning freezing and drying and effects of processing on nutrients and bioavailability With chapters compiled from experts worldwide this book is an essential reference for all professionals in the fruit industry

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