

Infrared Heating In Food Processing An Overview

This book has been written for those whose interests bridge food processing and physicochemical aspects of radiation. It is not intended to be a comprehensive review of publications concerning foods and radiations. Instead, it is an attempt to familiarize the reader with pertinent knowledge of a unified, interdisciplinary concept of various electromagnetic radiations and corresponding effects on foods. Consideration was given to similarities and differences between various segments of the electromagnetic spectrum. The broad approach of this book was considered to be crucial for cross-discipline comparisons. The reader is introduced to the electromagnetic spectrum in the Prologue and then the book follows the wavelengths, from short to long values. Chapter 1 deals with ionizing radiation: historical background, sources of radiation employed in food treatment, units of measurement, and fundamentals of radiation chemistry. A survey of potential applications of ionizing radiation in food technology is followed by a description of methods for radiation dosimetry. Safety and wholesomeness of irradiated foods, analytical methods for postirradiation dosimetry in foods, and consumer acceptance of food irradiation conclude this section. Chapter 2 intrudes into the next segment of the spectrum: ultra violet-visible radiation. The general presentation of this electromagnetic emission and illumination source enables the discussion of its effects on foods, including applications in food analysis.

Lipid peroxidation is the major molecular mechanism that induces oxidative damage to cell structures and is also involved in the toxicity process that leads to cell death. Lipid peroxidation is a chain reaction initiated by the hydrogen abstraction or addition of an oxygen radical, resulting in the oxidative damage of polyunsaturated fatty acids (PUFA). PUFAs are more sensitive than saturated fatty acids because of the presence of a double bond adjacent to a methylene group that makes the methylene C-H bond weaker and therefore the hydrogen is more susceptible to abstraction. This leaves an unpaired electron on the carbon, forming a carbon-centered radical, which is stabilized by a molecular rearrangement of the double bonds to form a conjugated diene, which then combines with oxygen to form a peroxy-radical. In pathological situations the reactive oxygen and nitrogen species are generated at higher than normal rates, and as a consequence, lipid peroxidation occurs with deficiency of endogenous antioxidants as alpha-tocopherol deficiency or reduced glutathione. In addition to containing high concentrations of PUFAs and transition metals, biological membranes of cells and organelles are constantly being subjected to various types of damage. This book presents systematic and comprehensive reviews on free radicals and their involvement in lipid peroxidation with special emphasis on their important role in different diseases.

Pyrolysis is an irreversible thermochemical treatment process of materials at elevated temperatures in an inert atmosphere. It is basically a carbonisation process where an organic material is decomposed to produce a solid residue with high (or higher) carbon content and some volatile products. The decomposition reactions are accompanied in general with polymerisation and isomerisation reactions. The end products of pyrolysis can be controlled by optimizing pyrolysis parameters such as temperature and residence time. Pyrolysis is used heavily in the chemical industry to produce many forms of carbon and other chemicals from

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petroleum, coal, wood, oil shale, biomass or organic waste materials, and it is the basis of several methods for producing fuel from biomass. Pyrolysis also is the process of conversion of buried organic matter into fossil fuels.

The processing of food generally implies the transformation of the perishable raw food to value-added products. It imparts benefits, such as the destruction of surface microflora, and inactivation of deleterious enzymes, such as peroxidase, leading to a greater shelf life of the food. It also enhances color and texture while maintaining quality of products and makes them edible. However, it also has an inevitable impact on nutritional quality attributes, such as increase or decrease in certain vitamins and bioactive metabolites among others. *Food Processing Technologies: Impact on Product Attributes* covers a range of food processing technologies and their effect on various food product attributes, such as bioactive compounds, safety, and sensory and nutritional aspects of the food upon processing. There are eight major parts in the book. Part I covers the conventional processing technologies. Parts II, III, IV, and V deal with various novel processing technologies, including impingement processing technologies, electro-magnetic processing technologies, physico-mechanical processing technologies, and electro-technologies. Part VI introduces chemical processing technologies. Part VII comprise irradiation processing technology, and the final part is focused on biological processing technology, detailing the application of enzymes in food processing. Numerous studies were carried out to find the impact of these processing technologies on various aspects of food and associated health promotion properties. Both positive and negative results were obtained based on nature of foods, processing type, and duration of processing, and this book covers these results in depth.

Thermal technologies have long been at the heart of food processing. The application of heat is both an important method of preserving foods and a means of developing texture, flavour and colour. An essential issue for food manufacturers is the effective application of thermal technologies to achieve these objectives without damaging other desirable sensory and nutritional qualities in a food product. Edited by a leading authority in the field, and with a distinguished international team of contributors, *Thermal technologies in food processing* addresses this major issue. Part one of the collection begins with reviews of conventional retort and continuous heat technologies. Part two then looks at the key issues of effective measurement and control in ensuring that a thermal process is effective whilst minimising any undesirable changes in a food. There are chapters on temperature and pressure measurement, validation of heat processes, modelling and simulation of thermal processes, and the measurement and control of changes in a food during thermal processing. The final part of the book looks at emerging thermal technologies which becoming more widely used in the food industry. There are chapters on radio frequency heating, microwave processing, infrared heating, instant and high-heat infusion, and ohmic heating. A final chapter considers how thermal processing may be combined with high pressure processing in producing safe, minimally-processed food products. *Thermal technologies in food processing* provides food manufacturers and researchers with an authoritative review of thermal processing and food quality.

The second edition of *Emerging Technologies in Food Processing* presents essential, authoritative, and complete literature and research data from the past ten years. It is a complete resource offering the latest technological innovations in food processing

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today, and includes vital information in research and development for the food processing industry. It covers the latest advances in non-thermal processing including high pressure, pulsed electric fields, radiofrequency, high intensity pulsed light, ultrasound, irradiation, and addresses the newest hurdles in technology where extensive research has been carried out. Provides an extensive list of research sources to further research development Presents current and thorough research results and critical reviews Includes the most recent technologies used for shelf life extension, bioprocessing simulation and optimization

Consumers increasingly demand foods that retain their natural flavor, color, and texture and contain fewer additives such as preservatives. In response to those needs, one of the most important recent developments in the food industry has been the development of minimal processing technologies designed to limit the impact of processing on nutritional and sensory quality and to preserve food without the use of synthetic additives. This important collection reviews the range of minimal processing techniques, their advantages and disadvantages, and their use in food production.

A resource for individuals responsible for siting decisions, this guidelines book covers siting and layout of process plants, including both new and expanding facilities. This book provides comprehensive guidelines in selecting a site, recognizing and assessing long-term risks, and the optimal lay out of equipment facilities needed within a site. The information presented is applicable to US and international locations. Note: CD-ROM/DVD and other supplementary materials are not included as part of eBook file.

Level up your outdoor grilling game with this chef-approved cookbook and guide to the red-hot infrared grilling tech that guarantees consistent and juicy steaks, ribs, burgers, seafood, and more. Infrared grilling is the best way to make perfectly cooked, flavor-packed versions of your favorite barbecue standards without the pillowing smoke, dangerous flare-ups, or piles of coal needed for traditional outdoor grills. Whether you're an avid griller or experimenting for the first time, The Infrared Grill Master will help you master grilling with delicious recipes, including: - "Faux" Dry-Aged Steak - Lamb Chops with Chimichurri - Classic Baby Back Ribs - Grilled Avocado Toast - Corn "Off the Cob" - Lobster with Charred Lemon - and even Grilled Banana Ice Cream Grilling with infrared technology takes a short learning curve, but is different from the classic method: Once you're comfortable setting up your outdoor grill, this book will walk through the best types of items to grill to best capture infrared technology, certain limitations to keep in mind, and clever ways to infuse the subtleties of smoking with little additional work.

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.

Presents recipes ranging in difficulty with the science and technology-minded cook in mind, providing the science behind cooking, the physiology of taste, and the techniques of molecular gastronomy.

Advances in Thermal and Non-Thermal Food Preservation provides current, definitive and factual material written by experts on different thermal and non-thermal food preservation technologies. Emphasizing inactivation of microorganisms through the application of traditional as well as newer and novel techniques and their combinations, the book's chapters cover: thermal food preservation techniques (e.g., retorting, UHT and aseptic processing), minimal thermal processing (e.g., sous-vide processing), and non-thermal food preservation techniques (e.g., high pressure processing and pulsed technologies). Editors Tewari and Juneja give special emphasis to the commercial aspects of non-conventional food preservation techniques. As the most comprehensive and contemporary resource of its kind, Advances in Thermal and Non-Thermal Food Preservation is the definitive standard in describing the inactivation of microorganisms through conventional and newer, more novel techniques.

Food processing technologies are an essential link in the food chain. These technologies are many and varied, changing in popularity with changing consumption patterns and product popularity. Newer process technologies are also being evolved to provide the added advantages. Conventional and Advanced Food Processing Technologies fuses the practical (application, machinery), theoretical (model, equation) and cutting-edge (recent trends), making it ideal for industrial, academic and reference use. It consists of two sections, one covering conventional or well-established existing processes and the other covering emerging or novel process technologies that are expected to be employed in the near future for the processing of foods in the commercial sector. All are examined in great detail, considering their current and future applications with added examples and the very latest data. Conventional and Advanced Food Processing

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Technologies is a comprehensive treatment of the current state of knowledge on food processing technology. In its extensive coverage, and the selection of reputed research scientists who have contributed to each topic, this book will be a definitive text in this field for students, food professionals and researchers.

While conventional technologies such as chilling and freezing are used to avoid deteriorative processes like autolytic and microbial spoilage of seafood, innovative technologies have also been developed as a response to economic and environmental demands. Innovative Technologies in Seafood Processing gives information on advances in chilling, freezing, thawing, and packaging of seafood and also updates knowledge of novel process technologies (high-pressure processing, irradiation, ultrasound, pulsed electric field, microwave and radio frequency, sous vide technology, novel thermal sterilization technologies, ozone and nanotechnological applications, and other innovative technologies such as cold plasma, ohmic heating, infrared heating supercritical carbon dioxide, and high-intensity pulsed light) for the seafood industry. Features ? Reviews novel process technologies applied in the seafood industry ? Highlights processing effects on product quality and safety of treated seafood ? Focuses on the development of safe and effective natural antimicrobials and additives ? Assesses alternative techniques to utilize fish discards and waste as high value products Further it highlights aspects related to quality of seafood treated with these innovative technologies, effect on food constituents, possible risk, security/safety both of seafood and consumers, the environmental impact, and the legislative aspects. The book also addresses the growing international environmental concern for fish discards and fish waste generated in the seafood processing industries by including a chapter, Advances in Discard and By-Products Processing, which assesses alternative techniques to utilize fish discards and waste as high value products. This book will be of value to researchers and technicians in the food technology area, especially those dealing with seafood.

Since many processes in the food industry involve fluid flow and heat and mass transfer, Computational Fluid Dynamics (CFD) provides a powerful early-stage simulation tool for gaining a qualitative and quantitative assessment of the performance of food processing, allowing engineers to test concepts all the way through the development of a process or system. Published in 2007, the first edition was the first book to address the use of CFD in food processing applications, and its aims were to present a comprehensive review of CFD applications for the food industry and pinpoint the research and development trends in the development of the technology; to provide the engineer and technologist working in research, development, and operations in the food industry with critical, comprehensive, and readily accessible information on the art and science of CFD; and to serve as an essential reference source to undergraduate and postgraduate students and researchers in universities and research institutions. This will continue to be the purpose of this second edition. In the second edition, in order to reflect the most recent research and development trends in the

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technology, only a few original chapters are updated with the latest developments. Therefore, this new edition mostly contains new chapters covering the analysis and optimization of cold chain facilities, simulation of thermal processing and modeling of heat exchangers, and CFD applications in other food processes.

The goal of all drying research and development is to develop cost-effective innovative processes that yield high-quality dried products with less energy consumption and reduced environmental impact. With the literature on drying widely scattered, *Advanced Drying Technologies for Foods* compiles under one cover concise, authoritative, up-to-date assessments of modern drying technologies applied to foods. This book assembles a number of internationally recognized experts to provide critical reviews of advanced drying technologies, their merits and limitations, application areas and research opportunities for further development. Features: Provides critical reviews of advanced drying technologies Discusses the merits and limitations of a variety of food drying technologies Explains drying kinetics, energy consumption and quality of food products Reviews the principles and recent applications of superheated steam drying The first four chapters deal with recent developments in field-assisted drying technologies. These include drying techniques with the utilization of electromagnetic fields to deliver energy required for drying, for example, microwave drying, radio frequency drying, electrohydrodynamic drying, and infrared radiation drying. The remainder of this book covers a wide assortment of recently developed technologies, which include pulse drying, swell drying, impinging stream drying, and selected advances in spray drying. The final chapter includes some innovative technologies which are gaining ground and are covered in depth in a number of review articles and handbooks, and hence covered briefly in the interest completeness. This book is a valuable reference work for researchers in academia as well as industry and will encourage further research and development and innovations in food drying technologies.

Food processing is the step of the food chain that principally affects a food's physical or biochemical properties, along with determining the safety and shelf life of the product. This book provides a comprehensive overview of innovations in non-thermal technologies specifically for fluid foods, recognized for their high bioavailability of macronutrients and micronutrients. Considerable resources and expertise has been devoted to the processing of safe and wholesome foods. Non-thermal technologies have been developed as an alternative to thermal processing, while still meeting required safety or shelf-life demands and minimising the effects on its nutritional and quality attributes. Examines non-thermal processing techniques specifically applied to fluid foods Includes methods for mathematically evaluating each technique Addresses global regulatory requirements for fluid foods Provides recommendations and opportunities for various safety-related issues

This book introduces readers to essential advances in the application of physical processing technology in food processing that have been made in recent years. It analyzes and describes the application of Power Ultrasound, Pulsed Electric Field, Supercritical-CO₂, and Infrared Heating in the contexts of food sterilization, extraction, modification, drying and safety control. Covering all aspects of food physical

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processing, from basic principles to the latest technological developments, it offers a valuable application guide for food engineers and food researchers alike.

The first book to apply the latest scientific research to America's favorite form of cooking, by the curator of the highly successful website Amazingribs.com, with 175 sure-fire recipes

Heat Transfer is important in food processing. This edited book presents a review of ongoing activities in a broad perspective.

Radio-Frequency Heating in Food Processing: Principles and Applications covers the fundamentals of radio-frequency (RF) heating and the use of RF-heating technologies in modern food processing, preservation, and related industries. Focusing on industrial and lab-scale applications where RF heating has been employed successfully or reported to have potential benefits over conventional heating options, this state-of-the-art reference: Explains the similarities, differences, advantages, and limitations of RF and microwave heating as applied to agricultural products Describes fiber-optics temperature sensors and their utility in monitoring temperature during RF and microwave heating Discusses the dielectric and thermo-physical properties of agricultural products amenable to RF and microwave heating, presenting measurement techniques, mathematical concepts, and computer simulation models Provides practical perspectives on industrial RF units used in manufacturing food products, addressing free-running oscillators and 50-? designs for RF heaters and applicators Uses finite-element formulations to determine design parameters including resonant modes, circuit impedance, and electric field distribution in RF applicators Examines RF-heating effects on microorganisms, enzymes, and food quality attributes for products such as poultry, beef, pork, eggs, fish, milk, fruits, vegetables, and seafood Explores RF-heating applications beyond food processing, such as agricultural product deinfestation, waste treatment, counterfeit prevention, package tracking, and transportation of food from farm to table Radio-Frequency Heating in Food Processing: Principles and Applications supplies an in-depth overview of the fundamental science and engineering principles governing RF applications, as well as a solid understanding of industrial RF unit design options, challenges, and opportunities for development.

The food industry is on the verge of making some serious advances in the food processing sector. If successful, tomorrow's consumers will have unhindered access to safe, nutritious, and high-quality products via novel food processing technologies. Food Processing Operations Modeling: Design and Analysis, Second Edition demonstrates how to effectively use numerical modeling to predict the effects of food processing on targeted components. This non-destructive testing method virtually eliminates the health risks of under-processed food and maintains high nutritional values that are often lost in overcooked food. Using a task-oriented approach, this second edition discusses basic and advanced modeling tools that allow researchers to predict and prevent worse-case scenarios, perform comprehensive analyses, and optimize system design and efficiency. Contains Selected Applications of Thermal and Non-Thermal Processing Operations NEW TO THIS EDITION: Six new chapters on radio frequency heating, high-pressure processing, pulsed electric field treatment, fouling model on heat exchangers, ozone treatment, and UV radiation Expanded scope to address innovative and up-to-date food processing technologies Numerous real-world case studies Updated information on infrared heating of biological materials and modeling electrical resistance heating of foods Electromagnetic treatments (RF, Infrared, and UV) and fundamentals relative to heat and mass transfer, fluid flow, and stochastic processes Synergistic effect of combined food processing techniques and its numerical simulation Food processing methods are constantly improving in an effort to maintain safe, high-quality, and fresh-tasting products. Providing the theoretical basis for these cutting-edge techniques, this tried-and-tested reference provides indispensable insight into food systems modeling, while exploring applications for further research.

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The new volume looks at some important emerging food processing technologies in light of the demand for functional food products and high-value and nutritionally rich products. Technologies for Value Addition in Food Products and Processes covers a selection of important recent developments in food processing that work to enrich or maintain nutritional value of food products, including such applications as non-thermal plasma, refractance window drying, extrusion, enzyme immobilization, and dry fractionation. Dry fractionation, in particular, has emerged as a sustainable alternative to wet processes in last three decades for producing protein concentrates from legumes. Several chapters on fish processing cover both traditional knowledge and advances in fish processing technologies. A chapter on bioethanol production discusses the past and present status of the industry, focusing on economic feasibility and environmental viability. A chapter also discusses traditional fermentation process and nutritional aspects of ethnic foods followed by the Rabha-Hasong, Mishing and Karbi communities of Assam, India. With the contribution from experts in their respective fields, this volume provides new information on novel food processing technologies. Part of the IFT (Institute of Food Technologists) series, this book discusses multiphysics modeling and its application in the development, optimization, and scale-up of emerging food processing technologies. The book covers recent research outcomes to demonstrate process efficiency and the impact on scalability, safety, and quality, and technologies including High Pressure Processing, High Pressure Thermal Sterilization, Radiofrequency, Ultrasound, Ultraviolet, and Pulsed Electric Fields Processing. Ideal for food and process engineers, food technologists, equipment designers, microbiologists, and research and development personnel, this book covers the importance and the methods for applying multiphysics modeling for the design, development, and application of these technologies.

Authored by world experts, the Handbook of Food Processing, Two-Volume Set discusses the basic principles and applications of major commercial food processing technologies. The handbook discusses food preservation processes, including blanching, pasteurization, chilling, freezing, aseptic packaging, and non-thermal food processing. It describes com

Food safety is a constant challenge for the food industry, and food irradiation technology has developed significantly since its introduction, moving from isotope irradiation to the use of electron beam technology. Electron Beam Pasteurization and Complementary Food Processing Technologies explores the application of electron beam pasteurization in conjunction with other food processing technologies to improve the safety and quality of food. Part one provides an overview of the issues surrounding electron beam pasteurization in food processing. Part two looks at different thermal and non-thermal food processing technologies that complement irradiation. Finally, a case study section on the commercial applications of e-beam processing provides examples from industry.

UV light is one of a number of emerging non-thermal food processing technologies that can be used in a broad range of applications producing food products with longer shelf-life, more safe, and with higher nutritional quality. The new edition of Ultraviolet Light in Food Technology: Principles and Applications will present recent understanding of the fundamentals of UV light along with new applied knowledge that has accumulated during the 7 years since the first edition published in 2009. The new edition of the book will have 11 chapters including 2 new chapters--on chemical destruction with UV light

and food plant safety—along with 6 chapters greatly expanded and updated.

A comprehensive survey of thermal processing and modelling techniques in food process engineering. It combines theory and practice to solve actual problems in the food processing industry - emphasizing heat and mass transfer, fluid flow, electromagnetics, stochastic processes, and neural network analysis in food systems. There are specific case studies. Natural foods, like fruits and vegetables, represent the simplest form of functional foods and provide excellent sources of functional compounds. Maximizing opportunities to make use of and incorporate these compounds requires special processing. Fortunately, technologies available to produce food with enhanced active compounds have advanced significantly over the last few years. This book covers the fundamentals as well as the innovations made during the last few years on the emerging technologies used in the development of food with bioactive compounds.

The necessity of prediction and fine control in the food manufacturing process is becoming more important than ever before, and food researchers and engineers must confront difficulties arising from the specificity of food materials and the sensitivity of human beings to taste. Fortunately, an overview of world research reveals that the mechanisms of the many complex phenomena found in the food manufacturing process have been gradually elucidated by skilful experiments using new analytical tools, methods and theoretical analyses. This book, the proceedings of the 6th International Congress on Engineering and Food (ICEF6), held for the first time in Asia - in Chiba, Japan May 23 -27, 1993 - summarizes the frontiers of world food engineering in 1993. Congress was joined by the 4th International Conference on Fouling and Cleaning. There were 476 active members from 31 countries participating in the Congress. The editors hope that readers will find this book to be a useful review of the current state of food engineering, and will consider future developments in this research field. The editors extend thanks to the members of the organizing committee of ICEF6, and the advisors, Dr. Ryoze Toei, Professor Emeritus of Kyoto University and Dr. Masao Fujimaki, Professor Emeritus of the University of Tokyo. They also acknowledge the international advisory board members who helped the organizing committee in many ways, and the 10 foundations and 66 companies that financially supported the ICEF6. Finally, the editors are indebted to the reviewers of the manuscripts of these proceedings.

This book provides a broad-based foundation of knowledge about brown rice, including the latest information on health benefits and disease prevention resulting from consumption of brown rice, and information on consumer knowledge, attitudes, and behaviors towards brown rice. It is the first book of its kind to provide a comprehensive review of current brown rice science and technology, regulatory/policy issues, dietary intake, consumer interest and health promotion. The edited volume focuses on the latest developments in breeding varieties for high quality brown rice, varietal variations, defects, milling, cooking quality, eating quality, post-harvest management and methods to improve shelf life. Contributing

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authors address the physical, chemical, engineering, nutritional and glycemic qualities of brown rice in different chapters. Authors also discuss the physiological functions of brown rice in vivo and radical scavenging activity, emphasizing their importance to growers, technologists and consumers, and providing insight into future advances. This comprehensive collection benefits scientists, nutritionists, dieticians, diabetic educators, and professionals in the food industry. The information covered is valuable for food scientists and technologists working to develop new brown rice products and enhancing the taste, quality, and health profile of brown rice.

Written by international experts from industry, research centers, and academia, *Mathematical Modeling of Food Processing* discusses the physical and mathematical analysis of transport phenomena associated with food processing. The models presented describe many of the important physical and biological transformations that occur in food during proces

It's been nearly 40 years since the last book on infrared heating for food processing was published, and in the meantime, the field has seen significant progress in understanding the mechanism of the infrared (IR) heating of food products and interactions between IR radiation and food components. *Infrared Heating for Food and Agricultural Processing* presents the latest applications of IR heating technology, focusing on thermal processing of food and agricultural products. Coverage Ranges from Fundamentals to Economic Benefits With an emphasis on novel application, the text includes chapters that address such topics as: Infrared heating system design Drying Blanching Baking Thawing Pest management Food safety improvement Where applicable, this readily accessible guide reviews case studies to address specific industrial issues and the economic benefits of IR heating. *Infrared Heating for Food and Agricultural Processing* is a well-organized resource for food processing engineers and also quality control and safety managers in food processing and food manufacturing operations.

Still the Most Complete, Up-To-Date, and Reliable Reference in the Field Drying is a highly energy-intensive operation and is encountered in nearly all industrial sectors. With rising energy costs and consumer demands for higher quality dried products, it is increasingly important to be aware of the latest developments in industrial drying technolog

The problem of creating microbiologically-safe food with an acceptable shelf-life and quality for the consumer is a constant challenge for the food industry. *Microbial decontamination in the food industry* provides a comprehensive guide to the decontamination problems faced by the industry, and the current and emerging methods being used to solve them. Part one deals with various food commodities such as fresh produce, meats, seafood, nuts, juices and dairy products, and provides background on contamination routes and outbreaks as well as proposed processing methods for each commodity. Part two goes on to review current and emerging non-chemical and non-thermal decontamination methods such as high hydrostatic pressure, pulsed electric fields, irradiation, power ultrasound and non-thermal plasma. Thermal methods such as microwave, radio-frequency and infrared heating and food surface pasteurization are also explored in detail. Chemical decontamination methods with ozone, chlorine dioxide, electrolyzed oxidizing water, organic acids and dense phase CO₂ are discussed in part three. Finally, part four focuses on current and emerging packaging technologies and post-packaging decontamination. With its distinguished editors and international team of expert contributors, *Microbial decontamination in the food industry* is an indispensable guide for all food industry professionals involved in the design or use of novel food decontamination techniques, as well as any academics

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researching or teaching this important subject. Provides a comprehensive guide to the decontamination problems faced by the industry and outlines the current and emerging methods being used to solve them Details backgrounds on contamination routes and outbreaks, as well as proposed processing methods for various commodities including fresh produce, meats, seafood, nuts, juices and dairy products Sections focus on emerging non-chemical and non-thermal decontamination methods, current thermal methods, chemical decontamination methods and current and emerging packaging technologies and post-packaging decontamination

Thermal processing remains one of the most important processes in the food industry. Now in its second edition, Thermal Food Processing: New Technologies and Quality Issues continues to explore the latest developments in the field. Assembling the work of a worldwide panel of experts, this volume highlights topics vital to the food industry today an

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The challenge of maintaining both quality and safety in the thermal processing of foods results from the degradation of heat-sensitive quality attributes during processing. The editor of Thermal Food Processing: New Technologies and Quality Issues presents a comprehensive reference through authors that assist in meeting this challenge by explaining

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