Environmental Technologies in Food Technology offers a comprehensive overview of the latest developments in non-thermal processing of foods. It covers various topics such as high-pressure processing, ultrasound, pulsed electric field, ozone processing, electron beam processing, and plasma processing. The book provides information on new technologies and innovative applications, such as high-pressure homogenization, pulsed electric field treatment, and plasma processing. It also discusses the role of emerging technologies in food safety and quality assurance. The book is a valuable resource for food engineers, technologists, and researchers in the food processing industry.
technology brings the currently tested product and future uses to potential future use within the food industry.

**Non-thermal Food Engineering Operations**

The food sector is changing. Consumers want not only tasty and healthy food products, but products that are sustainable and authentic. At the same time, new developments in food processing, food processing, and retailing open up new opportunities in the development of food products. Bridging these challenges and opportunities is a major task for food marketing. This book traces consumer trends regarding healthiness, sustainability, authenticity, and convenience. It gives an introduction to current developments in farming, in food processing technology, and in retailing. It also explains how segmentation and consumer-led product development can lead to new food products in response to these trends.

**Novel Food Processing Technologies**

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 technologies, such as dense phase carbon dioxide, ozone, ultrasonics, cold plasma, and infrared technologies, which are applied in food preservation sectors ranging from fresh produce, to juices, to distillation. Part three covers novel food preservation techniques using natural antimicrobials, novel food packaging technologies, and oxygen depletion technologies. Part four contains case studies of innovations in hot technology, microwave heating, and predictive modelling that compare thermal versus non-thermal processes, and evaluate 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 technologies, such as dense phase carbon dioxide, ozone, ultrasonics, cold plasma, and infrared technologies utilised in food preservation sectors.

**Food Processing Technology**

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 property addressing new challenges facing the food industry. It also provides specific examples on how these alternatives can be utilized in specific food products. This book presents a comprehensive review of new technologies to preserve foods, especially those based on nonthermal technologies. It covers a wide range of methods, including high pressure, pulsed electric fields, and hurdle technologies. Other chapters include information on the trends in novel food technologies over the past 40 years and predictive models that describe microbial growth. Expert contributors present thorough research results and critical reviews of each covered technology. The innovative approaches presented in Innovations in Food Processing will result in sound alternatives for addressing the ever-increasing demand for quality foods at a reasonable cost.

**Food Processing**

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 processing. 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, and ohmic heating. A final chapter considers how thermal processing may be combined with high pressure processing in producing safe, minimally-processed foods. Thermal technologies in food processing provides food manufacturers and researchers with an authoritative review of thermal processing and food quality.

**Innovations in Food Processing**

Traditional thermal and freezing processing techniques have been effective in maintaining a safe high-quality food supply. However, increasing energy costs and the desire to purchase environmentally responsible products have been a stimulus for the development of alternative technologies. Furthermore, some products can undergo quality degradation during processing, which can be avoided by many alternative processing methods. This second edition of Alternatives to Conventional Food Processing provides a review of the current major technologies that reduce energy cost and reduce environmental impact while maintaining food safety and quality. New technologies have been added and relevant legal issues have been updated. Each technology available to the food industry is discussed by leading international experts who outline the main principles and applications of each. The degree to which they are already in commercial use and developments needed to extend their use further are addressed. This updated reference will be of interest to academic and industrial scientists and engineers across disciplines in the global food industry and in research, and to those needing information in greener or more sustainable technologies.

**Novel Thermal and Non-thermal Technologies for Fluid Foods**

This multi-authored book is edited by an expert in the field and includes chapters from international contributors. It is fully cross-disciplinary relating green principles to the food industry, covering policy and legal issues, engineering, food processing and food science. It addresses the alternatives to conventional food processing that have reduced energy use, and how they affect final food quality. Initially, the principles of green chemistry and technologies are outlined to provide a justification and basis for the processing methods that are addressed. This is followed by a discussion of legal and policy issues in both the EU and the US which provide further justification for such technologies and the constraints and benefits of current policies and regulations. The major green technologies available to the food industry are discussed, outlining the main principles and applications of each. The degree to which they are already in commercial use and developments needed to extend their use further are also covered.

**Green Food Processing Techniques**

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 biodesirability of micronutrients 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 minimizing 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.

**Advances in Food Processing Technology**

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 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 foremost 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 include the most recent technologies used for shelf life extension, biprocessing simulation and optimization

**Case Studies in Novel Food Processing Technologies**

Widely regarded as a standard work in its field, this book brings the introduction of alternative changes 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 microorganisms that contaminate foods, the biochemical properties of foods and their storage 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 after their eating quality, and explore operations that remove heat from foods to extend 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 2010. 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 microbioprocess 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.

**Innovative and Emerging Technologies in the Bio-marine Food Sector**

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 property addressing new challenges facing the food industry. It also provides specific examples on how these alternatives can be utilized in specific food products. This book presents a comprehensive review of innovations in food processing, stresses topics vital to the food industry today, and presents the trends in future research and development. This volume contains 27 chapters, and is divided into six parts covering topics such as the latest advances in non-thermal processing, alternative technologies and strategies for thermal processing, the latest developments in food refrigeration, and current topics in minimally-processed vegetables, fruits, juices and cook-ready meals and modified atmosphere packaging for minimally processed foods. Each chapter is written by international experts, and the book includes case studies from the world over.
experts presenting thorough research results and critical reviews. Includes a comprehensive list of recently published literature. Covers topics such as high pressure, pulsed electric fields, recent developments in microwave heating, and vacuum cooling.

**Technologies for Value Addition in Food Products and Processes**

Membrane processing techniques are used to help separate chemical components based on molecular size under specific pressure. A great advantage of membrane processing techniques is that it is a non-thermal processing technique, which can retain enormous bioactive constituents to a greater extent. Being a less energy intensive process, this technique is widely used in several food processing industries such as in the clarification of fruit juices and wine, the concentration of milk, the preparation of whey protein concentrate, and water and waste treatment, among others. Applications of Membrane Technology for Food Processing Industries introduces membrane processing techniques such as crossflow, dead-end, and tangential flow, theory and operational conditions for achieving efficient quality product. It discusses different types of membrane processing techniques viz., reverse osmosis, nanofiltration, ultrafiltration, electric dialysis, microfiltration, pervaporation, including its applications, advantages and disadvantages. Key Features: Details of the retention of antioxidants by using novel membrane processing techniques Includes the application of membrane processing techniques in whey processing Explains the method for degumming, dewaxing and decolorization of edible crude oils Names application of membrane processing techniques in waste water treatment for efficient use Readers, such as professors, scientist, research scholars, students and industrial personnel, will come to know about the current trends in use of membrane processing techniques for its application in several food processing industries. This book can be a ready reference for the food industrialists for manufacturing of deacidified clarified fruit juices and wine using membrane integrated membrane technique approach. In a nutshell, this book will benefit food scientists, academicians, students and food industrial persons by providing in-depth knowledge about membrane processing of foods for quality retention and also for efficient consumer acceptability.

**The Role of Alternative and Innovative Food Ingredients and Products in Consumer Wellness**

Food processing, a branch of both food science and chemical engineering, has evolved over the years since its inception and still is a rapidly changing discipline. While traditionally the main objective of food processing was preservation and stabilization, the focus today has shifted to enhance health aspects, flavour and taste, nutrition, sustainable production, food security and also to ensure more diversity for the increasing demand of consumers. The food industry is becoming increasingly competitive and dynamic, and strives to develop high quality, freshly prepared food products. To achieve this objective, food manufacturers are today presented with a growing array of new technologies that have the potential to improve, or replace, conventional processing technologies, to deliver higher quality and better consumer targeted food products, which meet many, if not all, of the demands of the modern consumer. These new, or innovative, technologies are in various stages of development, including some still at the R&D stage, and others that have been commercialized as alternatives to conventional processing technologies. Food processing engineers comprises a series of unit operations traditionally applied in the food industry. One major component of these operations relates to the application of heat, directly or indirectly, to provide foods free from pathogenic microorganisms, but also to enhance or intensify other processes, such as extraction, separation or modification of components. The last three decades have also witnessed the advent and adaptation of several operations, processes, and techniques aimed at producing high quality foods, with minimum alteration of sensory and nutritive properties. Some of these innovative technologies have significantly reduced the thermal component in food processing, offering alternative nonthermal methods. Food Processing Technologies: A Comprehensive Review covers the latest advances in innovative and nonthermal processing, such as high pressure, pulsed electric fields, radiofrequency, high intensity pulsed light, ultrasound, irradiation and new hurdle technology. Each section will have an introductory article covering the basic principles and applications of each technology, and in-depth articles covering the currently available equipment (and/or the current state of development), food quality and safety, application in several sectors, food laws and regulations, consumer acceptance, advancements in food science, and future scope. It will also contain case studies and examples to illustrate state-of-the-art applications. Each section will serve as an excellent reference to food industry professionals involved in the processing of a wide range of food categories, e.g., meat, seafood, beverage, dairy, eggs, fruits and vegetable products, spices, herbs among others.

**Sustainable Production Technology in Food**

The dairy industry usually adopts conventional methods of processing various milk-based products, which can destroy nutrients and minimize organoleptic qualities. An alternative approach for this is the non-conventional method of non-thermal processing techniques. Not only does this enhance the nutritional profile of the various processed products, but increases the consumer acceptability. There are some emerging non-thermal processing techniques such as pulsed light, cold plasma, high pressure processing, ultrasonic, UV pasteurization, or ozone treatments, which can be successfully employed in dairy processing industries to ensure product acceptability, safety, and quality aspects. Non-thermal Processing Technologies for the Dairy Industry describes several emerging non-thermal processing technologies. This book contains the benefits of using pulsed light, cold plasma, high pressure and ultrasonic during processing of various dairy products. Key Features: Addresses techniques used for extraction of functional food components from various dairy products by using super critical CO2 extraction technology. Explains application of ozone and cold plasma technology for treating dairy processing waste waters with efficient recycling aspects. Discusses the importance of using biopreservatives in shelf life extension of several dairy food products. Portrays scope and significance importance of adopting UV pasteurization in processing market milk along with safety and environmental impacts over processing. This book solves the issue of waste generation in dairy industries and further advises recovery of such waste for efficient recycling process. In addition to being useful for dairy technologists, it is a great source for academic scientists and students looking to gain knowledge and excel in the non-thermal processing.

**Improving Food Quality with Novel Food Processing Technologies**

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

**Ultrasound: Advances in Food Processing and Preservation**

Innovative and Emerging Technologies in the Bio-marine Food Sector: Applications, Regulations, and Prospects provides the use of technologies and recent advances in the emerging marine food industry. Written by renowned scientists in the field, this book focuses primarily on the principles of application and the main technological developments achieved in recent years. It includes technological design, equipment and applications of these technologies in multiple processes. Extraction, preservation, microbiology and processing of food are extensively covered in the wide range of marine food products, including fish, crustaceans, seafood preservation, seaweed, microalgae and other derived by-products. This is an interdisciplinary resource that highlights the potential of technology for multiple purposes in the marine food industry as these technological approaches represent a future alternative to develop more efficient industrial processes. Researchers and scientists in the areas of food microbiology, food chemistry, new product development, food processing, food technology, bio-engineers in marine based industries and scientists in marine related areas will all find this a novel resource. Presents novel innovative technologies in the bio-marine food sector, including principles, equipment, advantages, disadvantages, and future technological prospects Explores multi-purpose uses of technologies for extraction, functional food generation, food preservation, food microbiology and food processing Provides industrial applications tailored for the marine biological market to foster new innovative applications and regulatory requirements.

**Innovative Technologies in Seafood Processing**

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

**Trends in Fish Processing Technologies**

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