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Milk and Dairy Product Technology Milk and Dairy Product Technology Milk and Dairy Product Technology Technology of Dairy Products Robinson: Modern Dairy Technology Advances in Dairy Products Emerging Dairy Processing Technologies Milk and Dairy Product Technology Dairy Science and Technology, Second Edition The Technology of Dairy Products Structure of Dairy Products Modern Dairy Technology Processing Technologies for Milk and Milk Products Dairy Technology Encyclopedia of Dairy Sciences Advanced Dairy Science and Technology Hand Book Of Milk Processing Dairy Products And Packaging Technology Dairy Technology Milk and Milk Products Technological Approaches for Novel Applications in Dairy Processing Glossary of Dairy Technology Structure of Dairy Products Dairy Product Technology Study Notes Engineering Practices for Milk Products Modern Technology Of Milk Processing & Dairy Products (4th Edition) Dairy Processing Dairy Fat Products and Functionality Technological Interventions in Dairy Science Dairy Engineering Novel Dairy Processing Technologies Quality Milk Production and Processing Technology Dairy Technology - Vol.02 Dairy Technology: Evaluation of milk and dairy products Dairy Processing and Quality Assurance Engineering Tools in the Beverage Industry Dairy Science and Technology Handbook, Volume 3 Handbook of Drying for Dairy Products Microbial Cultures and Enzymes in Dairy Technology Dairy Production and Processing Rural Dairy Technology

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Addressing both theoretical and practical issues in dairy technology, this work offers coverage of the basic knowledge and scientific advances in the production of milk and milk-based products. It examines energy supply and electricity refrigeration, water and waste-water treatment, cleaning and disinfection, hygiene, and occupational safety in dairies. This volume covers a selection of important novel technological interventions in dairy science, from the physical properties of milk and other milk products to nonthermal processing of milk. It also discusses safety methods in dairy science, which includes cleaning-in-place and techniques to determine adulteration in milk. Milk is a perishable commodity, and being rich in nutrients, it acts as the perfect substrate for the growth of microflora (sometimes dangerous for consumption). To reduce this, different

thermal and nonthermal techniques are used. Thermal treatments are common techniques used for extending the shelf life of milk, such as, for example, pasteurization, sterilization, and UHT, but loss of nutrients is a concern associated with these treatments. Nonthermal treatments like high-pressure processing, pulse electric field, ultra-sonication, and irradiation are also explored in the processing of milk to minimize the loss of nutrients as compared to thermal treatment. Post-process contamination is also a major factor that can affect the shelf life of milk, and safe packaging plays an important role when the milk and milk products are stored at refrigeration or ambient temperature. Many advances in these dairy technologies are presented in this informative volume. Technological Interventions in Dairy Science: Innovative Approaches in Processing, Preservation, and Analysis of Milk Products will prove valuable for industrial professionals, scientists, regulatory personnel, consultants, academics, students and field-related personnel. The book also attempts to bridge the gap between research and industrial application of recent techniques. Engineering Tools in the Beverage Industry, Volume Three in The Science of Beverages series, is an invaluable resource for anyone in the beverages field who is involved with quality assurance, lab analysis, and the safety of beverage products. The book offers updates on the latest techniques and applications, including extraction, biochemical isotope analysis, metabolomics, microfiltration, and encapsulation. Users will find this book to be an excellent resource for industrial research in an ever-changing field. Provides practical tools and techniques for research and development in beverages. Offers analysis strategies for beverage quality evaluation. Presents analytical methods for ingredient authenticity. Dairy Processing and Quality Assurance, Second Edition describes the processing and manufacturing stages of market milk and major dairy products, from the receipt of raw materials to the packaging of the products, including the quality assurance aspects. The book begins with an overview of the dairy industry, dairy production and consumption trends. Next are discussions related to chemical, physical and functional properties of milk; microbiological considerations involved in milk processing; regulatory compliance; transportation to processing plants; and the ingredients used in manufacture of dairy products. The main section of the book is dedicated to processing and production of fluid milk products; cultured milk including yogurt; butter and spreads; cheese; evaporated and condensed milk; dry milks; whey and whey products; ice cream and frozen desserts; chilled dairy desserts; nutrition and health; sensory evaluation; new product development strategies; packaging systems; non-thermal preservation technologies; safety and quality management systems; and dairy laboratory analytical techniques. This fully revised and

updated edition highlights the developments which have taken place in the dairy industry since 2008. The book notably includes: New regulatory developments The latest market trends New processing developments, particularly with regard to yogurt and cheese products Functional aspects of probiotics, prebiotics and synbiotics A new chapter on the sensory evaluation of dairy products Intended for professionals in the dairy industry, Dairy Processing and Quality Assurance, Second Edition, will also appeal to researchers, educators and students of dairy science for its contemporary information and experience-based applications. Composites are materials in which two or more distinct materials are combined together but remain uniquely identifiable in the mixture. Composites maintain an interface between components and act in concert to provide improved specific or symbiotic characteristics not obtainable by any of the original components acting alone. This encyclopedia is a compendium of all types of composite materials, covering their analysis, formulation, design, evaluation, processing, manufacture, testing, and reliability. Milk has been an important food for man since the domestication of cattle and the adoption of a pastoralist agriculture. It is also the most versatile of the animal-derived food commodities and is a component of the diet in many physical forms. In addition to milk itself, a rural technology evolved which permitted the manufacture of cheese, fermented milks, cream and butter. At a later date, successive advances in technology were exploited in the manufacture of ice cream, concentrated and dried milks and, at a later date, of ultra-heat-treated dairy products, new dairy desserts and new functional products. At the same time, however, dairy products have been increasingly perceived as unhealthy foods and a number of high quality dairy substitutes, or analogues, have been developed which have made significant inroads into the total dairy food market. Paradoxically, perhaps, the technology which, on the one hand, presents a threat to the dairy industry through making possible high quality substitutes offers, on the other hand, an opportunity to exploit new uses for milk and its components and to develop entirely new dairy products. Further, the development of products such as low fat dairy spreads has tended to blur the distinction between the dairy industry and its imitators and further broadened the range of knowledge required of dairy scientists and technologists. Advances in Dairy Product Science & Technology offers a comprehensive review of the most innovative scientific knowledge in the dairy food sector. Edited and authored by noted experts from academic and industry backgrounds, this book shows how the knowledge from strategic and applied research can be utilized by the commercial innovation of dairy product manufacture and distribution. Topics explored include recent advances in the dairy sector, such as raw materials and milk processing, environmental impact, economic concerns and consumer acceptance. The book includes various emerging technologies applied to milk and starter cultures sources, strategic options for their use, their characterization, requirements, starter growth and delivery and other ingredients used in the dairy industry. The text also outlines a framework on consumer

behavior that can help to determine quality perception of food products and decision-making. Consumer insight techniques can help support the identification of market opportunities and represent a useful mean to test product prototypes before final launch. This comprehensive resource: Assesses the most innovative scientific knowledge in the dairy food sector Reviews the latest technological developments relevant for dairy companies Covers new advances across a range of topics including raw material processing, starter cultures for fermented products, processing and packaging Examines consumer research innovations in the dairy industry Written for dairy scientists, other dairy industry professionals, government agencies, educators and students, Advances in Dairy Product Science & Technology includes vital information on the most up-to-date and scientifically sound research in the field. Handbook of Drying for Dairy Products is a complete guide to the field's principles and applications, with an emphasis on best practices for the creation and preservation of dairy-based food ingredients. Details the techniques and results of drum drying, spray drying, freeze drying, spray-freeze drying, and hybrid drying Contains the most up-to-date research for optimizing the drying of dairy, as well as computer modelling options Addresses the effect of different drying techniques on the nutritional profile of dairy products Provides essential information for dairy science academics as well as technologists active in the dairy industry Structure of Dairy Products SOCIETY OF DAIRY TECHNOLOGY SERIES Edited by A. Y. Tamime The Society of Dairy Technology (SDT) has joined with Blackwell Publishing to produce a series of technical dairy-related handbooks providing an invaluable resource for all those involved in the dairy industry; from practitioners to technologists working in both traditional and modern large-scale dairy operations. The previous 30 years have witnessed great interest in the microstructure of dairy products, which has a vital bearing on, e.g. texture, sensory qualities, shelf life and packaging requirements of dairy foods. During the same period, new techniques have been developed to visualise clearly the properties of these products. Hence, scanning electron microscopy (SEM) and transmission electron microscopy (TEM) have been used as complimentary methods in quality appraisal of dairy products, and are used for product development and in trouble shooting wherever faults arise during manufacturing. Structure of Dairy Products, an excellent new addition to the increasingly well-known and respected SDT series, offers the reader:

- information of importance in product development and quality control
- internationally known contributing authors and book editor
- thorough coverage of all major aspects of the subject
- core, commercially useful knowledge for the dairy industry

Edited by Adnan Tamime, with contributions from international authors, this book is an essential purchase for dairy scientists and technologists, food scientists and technologists, food chemists, physicists, rheologists and microscopists. Libraries in all universities and research establishments teaching and researching in these areas should have copies

of this important work on their shelves. Fluid milk processing is energy intensive, with high financial and energy costs found all along the production line and supply chain. Worldwide, the dairy industry has set a goal of reducing GHG emissions and other environmental impacts associated with milk processing. Although the major GHG emissions associated with milk production occur on the farm, most energy usage associated with milk processing occurs at the milk processing plant and afterwards, during refrigerated storage (a key requirement for the transportation, retail and consumption of most milk products). Sustainable alternatives and designs for the dairy processing plants of the future are now being actively sought by the global dairy industry, as it seeks to improve efficiency, reduce costs, and comply with its corporate social responsibilities. Emerging Dairy Processing Technologies: Opportunities for the Dairy Industry presents the state of the art research and technologies that have been proposed as sustainable replacements for high temperature-short time (HTST) and ultra-high temperature (UHT) pasteurization, with potentially lower energy usage and greenhouse gas emissions. These technologies include pulsed electric fields, high hydrostatic pressure, high pressure homogenization, ohmic and microwave heating, microfiltration, pulsed light, UV light processing, and carbon dioxide processing. The use of bacteriocins, which have the potential to improve the efficiency of the processing technologies, is discussed, and information on organic and pasture milk, which consumers perceive as sustainable alternatives to conventional milk, is also provided. This book brings together all the available information on alternative milk processing techniques and their impact on the physical and functional properties of milk, written by researchers who have developed a body of work in each of the technologies. This book is aimed at dairy scientists and technologists who may be working in dairy companies or academia. It will also be highly relevant to food processing experts working with dairy ingredients, as well as university departments, research centres and graduate students. Addressing both theoretical and practical issues in dairy technology, this work offers coverage of the basic knowledge and scientific advances in the production of milk and milk-based products. It examines energy supply and electricity refrigeration, water and waste-water treatment, cleaning and disinfection, hygiene, and occupational safety in dairies. Technological innovations, customer expectations, and economical situations have been forcing the dairy industry to adapt to changes in technologies and products. The goal of this book is to present some new approaches on dairy processing. It will provide several applications on the use of some novel technologies in various dairy products, the improvement of functionalities and quality systems of dairy products, and the advances in dairy wastewater treatment. The book will be useful for both practicing professionals and researchers in the dairy field. I would like to send my sincere thanks to all the authors for their hard work and contributions. Describes the efficient transformation of milk into a variety of products, focusing on the changes in

raw material, and intermediate and final products, as well as the interactions between products and processing equipment. The book details the procedures for ensuring processing efficiency and product quality. The Book Covers Technological Innovations In Indian Dairy Products, Milk And Milk Products, Techniques Of Products And Process, Global Export Potentia L, Milk, Its Composition And Processing Characteristics, Dairy Products Ingredients, Milk Based Products (Desiccated), Heat-Acid Coagulated Products, Fat-Rich Products, Cultured/Fermented Products, Milk-Based Puddings/Desserts, Plan For Product Manufacturing, Details Of Plant And Equipments, Packaging, Processing Of Milk And Milk Products Etc. As with the products and processes described in Volume I of this book, many of the technical changes associated with, for example, the manufacture of cheeses or fermented milks have been subtle rather than dramatic. Nonetheless, the importance for the dairy industry has often been profound. The market demand for dairy products containing 'health-promoting' cultures is a development that was barely discernible 10 years ago, and yet many manufacturers are now generating a whole range of bio-yoghurts and similar retail items. Similarly, the legislation covering food hygiene has been modified to place additional demands upon manufacturers, a move that has in turn encouraged the further development of analytical methods for quality control. These modifications to manufacturing practices are, along with many others, reflected in this second edition, and I acknowledge with gratitude the enthusiastic co-operation of all the authors associated with this project in bringing their disparate contributions up-to-date. R. K. ROBINSON v Preface to the First Edition Retail sales of most dairy products are still on the increase world-wide, and this expansion is, at least in part, a reflection of the fact that prices have tended to remain at a competitive level. Dairy Technology is the industrial, non-farm phase of the tremendously large, dynamic and complex dairy industry. This phase represents a combination of science, engineering, business, and art as applied to all dairy and dairy-type foods and their industries. Dairy and dairy-type foods represent a major segment of the vast and varied food industry. This comprehensive book has been written encompassing entire gamuts of manufacture of dairy products, functional foods, utilization of dairy byproducts, cleaning and sanitization and quality assurance. The main objective of the book is to provide the latest information in a consolidated form at one point to meet the requirements of not only undergraduate and postgraduates students but also teachers and dairy professionals. Structure of Dairy Products SOCIETY OF DAIRY TECHNOLOGY SERIES Edited by A. Y. Tamime The Society of Dairy Technology (SDT) has joined with Blackwell Publishing to produce a series of technical dairy-related handbooks providing an invaluable resource for all those involved in the dairy industry; from practitioners to technologists working in both traditional and modern large-scale dairy operations. The previous 30 years have witnessed great interest in the microstructure of dairy products, which has a vital bearing on, e.g. texture, sensory qualities, shelf life and packaging requirements of dairy foods. During

the same period, new techniques have been developed to visualise clearly the properties of these products. Hence, scanning electron microscopy (SEM) and transmission electron microscopy (TEM) have been used as complimentary methods in quality appraisal of dairy products, and are used for product development and in trouble shooting wherever faults arise during manufacturing. Structure of Dairy Products, an excellent new addition to the increasingly well-known and respected SDT series, offers the reader: • information of importance in product development and quality control • internationally known contributing authors and book editor • thorough coverage of all major aspects of the subject • core, commercially useful knowledge for the dairy industry Edited by Adnan Tamime, with contributions from international authors, this book is an essential purchase for dairy scientists and technologists, food scientists and technologists, food chemists, physicists, rheologists and microscopists. Libraries in all universities and research establishments teaching and researching in these areas should have copies of this important work on their shelves. This important and comprehensive book covers, in depth, the most important recent advances in dairy technology. Providing core commercially important information for the dairy industry, the editors, both internationally known for their work in this area, have drawn together an impressive and authoritative list of contributing authors. Topics covered include: heat treatment, membrane processing, hygiene by design, application of HACCP, automation, safety and quality, modern laboratory practices and analysis, and environmental aspects. This book is an essential purchase for all dairy technologists worldwide, whether in academic research and teaching, or within food companies. Written for and by dairy and food engineers with experience in the field, this new volume provides a wealth of valuable information on dairy technology and its applications. The book covers devices, standardization, packaging, ingredients, laws and regulatory guidelines, food processing methods, and more. The coverage of each topic is comprehensive enough to serve as an overview of the most recent and relevant research and technology. The demand for quality milk products is increasing throughout the world. Food patterns are changing from eating plant protein to animal protein due to increasing incomes around the world, and the production of milk and milk products is expanding with leaps and bounds. This book presents an array of recent developments and emerging topics in the processing and manufacturing of milk and dairy products. The volume also devotes a special section on alternative energy sources for dairy production along with solutions for energy conservation. With contributions for leading scientists and researchers in the field of dairy science and technology, this valuable compendium covers innovative techniques in dairy engineering processing methods and their applications in dairy industry energy use in dairy engineering: sources, conservation, and requirements In line with the modern industrial trends, new processes and corresponding new equipment are reviewed. The volume also looks at the development of highly sensitive

measuring and control devices have made it possible to incorporate automatic operation with high degree of mechanization to meet the huge demand of quality milk and milk products. Processing Technologies for Milk and Milk Products: Methods, Applications, and Energy Usage will be a valuable resource for those in those involved in the research and production of milk and milk products. Dairy science includes the study of milk and milk-derived food products, examining the biological, chemical, physical, and microbiological aspects of milk itself, as well as the technological (processing) aspects of the transformation of milk into its various consumer products, including beverages, fermented products, concentrated and dried products, butter and ice cream. This encyclopedia includes information on the possible impact of genetic modification of dairy animals, safety concerns of raw milk and raw milk products, peptides in milk, dairy-based allergies, packaging and shelf-life and other topics of importance and interest to those in dairy research and industry. The Encyclopedia of Dairy Sciences is the only work available that covers in detail the entirety of dairy science, from husbandry of dairy animals, milk production, through the processing of milk into a myriad of dairy products and ingredients, to the effect of dairy foods on human health. The third edition of Encyclopedia of Dairy Sciences will retain the split that characterized the earlier editions - one-third primary production, two-thirds dairy food. Unlike earlier editions, in which articles were arranged in alphabetical order by topic, this edition will be optimally organized into 9 coherent sections. This new edition contains 500 articles, the vast majority of which has been significantly revised or is completely new. Only 40 chapters have been retained from the earlier edition as they cover basic science areas still relevant and important today. All articles have been reviewed by specialists in their area. Comprehensive and authoritative introductory articles on all aspects of dairy science from on-farm aspects, to processing, to consumers Content is written and edited by leading authorities from across the globe making this the go-to foundational reference in the dairy science community Articles are intuitively and meticulously organized into 9 coherent sections on key topics, making it easier for the reader to access relevant information quickly The dairy industry is, in many countries, a major contributor to the manufacturing capacity of the food sector, and as more components of milk are utilised in processed foods, so this importance is likely to grow. Already dairy operations range from the straightforward handling of liquid milk through to the production of highly sophisticated consumer items, and it is of note that all this activity is based on a raw material that is readily perishable at ambient temperatures. This competitive, commercial position, together with the fact that the general public has a high regard for dairy products, is an indication of the extent to which milk producers and processors have combined to ensure that retail products are both nutritious and hygienically acceptable. Achievement of these aims, and at reasonable cost, has depended in large measure on the advances that have been made in the handling of large volumes of milk. Thus, factories designed to handle millions of litres of

milk per week are now commonplace, and it is the plant and equipment involved that provides the factual background for this two-volume book. The dairy sector continues to be at the forefront of innovation in food processing. With its distinguished editor and international team of contributors, Dairy processing: improving quality reviews key developments and their impact on product safety and quality. The first two chapters of part one provide a foundation for the rest of the book, summarising the latest research on the constituents of milk and reviewing how agricultural practice influences the quality of raw milk. This is followed by three chapters on key aspects of safety: good hygienic practice, improvements in pasteurisation and sterilisation, and the use of modelling to assess the effectiveness of pasteurisation. A final sequence of chapters in part one discuss aspects of product quality, from flavour, texture, shelf-life and authenticity to the increasingly important area of functional dairy products. Part two reviews some of the major technological advances in the sector. The first two chapters discuss developments in on-line control of process efficiency and product quality. They are followed by chapters on new technologies to improve qualities such as shelf-life, including high pressure processing, drying and the production of powdered dairy products, and the use of dissolved carbon dioxide to extend the shelf-life of milk. Part three looks in more detail at key advances in cheese manufacture. Dairy processing: improving quality is a standard reference for the dairy industry in improving process efficiency and product quality. Reviews key developments in dairy food processing and their impact on product safety and quality Summarises the latest research on the constituents of milk and reviews how agricultural practice influences the quality of raw milk Outlines the key aspects of safety: good hygienic practice, improvements in pasteurisation and sterilisation, and the use of modelling to assess the effectiveness of pasteurisation Addressing both theoretical and practical issues in dairy technology, this work offers coverage of the basic knowledge and scientific advances in the production of milk and milk-based products. It examines energy supply and electricity refrigeration, water and waste-water treatment, cleaning and disinfection, hygiene, and occupational safety in dairies. The objective of this book is to provide single platform for giving knowledge about the Dairy Technology discipline. This book contains about 1000 technical and general terms frequently used in the dairy sector. The terms in the book covers market milk, dairy processing, fat rich dairy products, cheese and fermented milks technology, traditional dairy and food products, ice cream and frozen desserts, condensed and dried milk, by-products technology and packaging technology. Building upon the scope of its predecessor, Dairy Science and Technology, Second Edition offers the latest information on the efficient transformation of milk into high-quality products. It focuses on the principles of physical, chemical, enzymatic, and microbial transformations. The authors, highly regarded educators and researchers, divide the content of this book into four parts. Part I, Milk, discusses the chemistry, physics, and microbiology of milk. In addition to providing

knowledge of milk properties, this section forms the basis for understanding what happens during processing, handling, and storage. Part II, Processes, illustrates the main unit operations used to manufacture milk products and highlights the influence certain product and process variables have on resulting products. In Part III, Products, the book integrates information on raw materials and processing as they relate to the manufacture of products. This section also explains the procedures necessary to ensure consumer safety, product quality, and process efficiency. Part IV, Cheese, describes the processes and transformations (physical, biochemical, and microbial) relating to the manufacture and ripening of cheese, starting with generic aspects and later discussing specific groups of cheeses. An important resource, Dairy Science and Technology, Second Edition provides a thorough understanding of milk's composition and properties and the changes that occur in milk and its products during processing and storage. Dairying is an integral part of the diverse system of agriculture that prevails in India and therefore, plays a vital role in agricultural economy and food Production of the country. It provides essential food value in the form of milk and milk products to the millions of the country's inhabitants. Dairying is the major source of Income for the rural masses, as about 70% of the population comprises of small, marginal and br> Landless farmers who benefit directly from dairying activities. India has about 15% of the global cattle population, 56% of the world's buffalo population and accounts for 15-16% of the word's annual milk production. The growth in milk production is about 4%. India stands tall among the milk producing countries with an annual production of about 120 million metric tons, though the organized sector handles only about 30% of the total milk produced. The authors with their strengths of academics and research in the discipline of dairy technology have been involved in developing manpower for the dairy industry and imparting training at an Institute of National repute. This book is the result of their strong feeling of the need to compile information and integrate traditional and novel technologies that exist worldwide in the processing of liquid milk. The book has been organized in various chapters that include the history of dairy development in India, procurement and consumption pattern of milk, processing, quality assurance and packaging of fluid milk products and food safety laws. The authors hope that this work will serve the students of dairy technology in the country and also provide a ready reference to the teachers involved in shaping the human Resource needs of the Indian dairy industry. The dairy industry plays an important role in our daily life. It is difficult to realize how fast changes are taking place in the dairy industry. Milk is an important human food, it is palatable, easy to digest and highly nutritive. One of the important factors affecting the total amount of milk produced and the way in which this milk is utilized is the demand for the various products. In order to prepare such a diversity of products, many different processes have been developed by the industry. There are numerous types of milk products such as ghee, butter, paneer, cheese, yogurt, ice cream powder, baby cereal food,

cream, and so on. Each of these has been designed to take advantage of some particular property of milk. Dairy products are generally defined as food produced from the milk of mammals; they are usually high energy yielding food products. Enzymes play an important role in the production of cheese. Raw milk contains several native enzymes some of which can be used for analytical and quality purposes for example pasteurization can be assessed by determining indigenous alkaline phosphate activity. India is known as the Oyster of the global dairy industry, with opportunities galore to the entrepreneurs globally. Anyone might want to capitalize on the largest and fastest growing milk and milk products market. The dairy industry in India has been witnessing rapid growth. The liberalized economy provides more opportunities for MNCs and foreign investors to release the full potential of this industry. The main aim of the Indian dairy industry is only to better manage the national resources to enhance milk production and upgrade milk processing using innovative technologies. The major contents of the book are cholesterol, coronary heart disease and mil fat, cholesterol and cardio vascular diseases, fatty acids & cholesterol, factors affecting cardio vascular disease, application of enzymes in dairy and food processing, utilisation of milk components: casein, advances in the heat treatment of milk, varieties of sheep's cheese, whey cheese, potted cheese, filled cheese, testing butter at different stages, presentation of butter at different stages, condensed and evaporated milk, dried milk powder, skimmed powder, malted powder, butter powder, ghee yoghurt, technology processing of dairy and dairy products, dried milk shake, milk powder, dahi from sweet cream butter milk, packaging of dairy and milk products, dairy farm, dairy products & milk packaging in pouches, etc. Developments in the dairy industry are enough to justify a revision of a considerable amount of material in this book. This book deals with processes, formulae, project profiles, details of plant, machinery & raw materials with their resources etc. of various dairy products. This book will help all its readers from entrepreneurs to food industries, technocrats and scientists. While also addressing the need for more effective processing technologies for increased safety and quantity, the dairy industry needs to address the growing customer demand for new and innovative dairy foods with enhanced nutritional value. This volume looks at new research, technology, and applications in the engineering of milk products, specifically covering functional bioactivities to add value while increasing the quality and safety of milk and fermented milk products. Chapters in the book look at the functional properties of milk proteins and cheese, functional fermented milk-based beverages, biofunctional yoghurt, antibiotic resistant pathogens, and other probiotics in dairy food products. Milk as a food; The composition of milk; Genetic factors; Breed and individuality of the cow; Environmental factors; Milk chemistry; Physical status of milk; pH and acidity; Milk constituents; Microbiology; Bacteria; Moulds; Yeasts; Viruses; Milk microbiology; Microbiology of butter; Clean milk production; Sources of contamination; Cooling milk; Milk reception, dairy accounting

and record keeping; Reception; Dairy accounting and record keeping; Milk processing; Milk separation; Buttermaking with fresh milk or cream; Buttermaking with sour whole milk; Ghee, butter oil and dry butterfat; Cheesemaking using fresh milk; Cheesemaking with sour skim milk; Milk fermentations; Cleaning, sanitising and sterilising dairy equipment; Dairy water supplies; Chemical used for cleaning; Cleaning procedure; Sampling and analysis of milk, milk products and water; Sampling; Milk pH; Titratable acidity test; Alcohol test; Clot-on-boiling test; Fat determination; Specific gravity of milk; Total solids (TS) in milk; Formaldehyde in milk; Methylene blue reduction test; Resazurin 10-minute test; Sediment or visible dirt test; Moisture content of butter; Salt content of butter; Protein content of milk by formaldehyde titration; Estimation of hardness in water; Dairy building design and construction; Site selection; Type of building; Arrangement and installation of equipment. A productive dairy industry is vital to providing safe, high-quality milk that fulfills the nutritional needs of people of all ages around the world. In order to achieve that goal, Campbell and Marshall present a timely, lucid, and comprehensive look at today's dairy industry. Dairy Production and Processing offers not only a fundamental understanding of dairy animals, dairy products, and the production aspects of each, but also a wealth of applied information on the scope of the current milk and milk products industry. The application of basic sciences and technologies throughout the text will serve students well not only as they learn the first principles of dairy science, but also as a professional reference in their careers. Study questions can be found at the conclusion of each chapter, along with relevant and informative websites. An extensive glossary is provided to enable readers to expand their knowledge of selected terms. Topics found in this instructive and insightful text include: • an overview of the dairy industry, • dairy herd breeding and records, • the feeding and care of dairy cattle, sheep, goats, and water buffalo, • important principles of milking and milking facilities, • dairy farm management, • milk quality and safety, and • the production of milk and milk products. Microorganisms are an integral part of the fermentation process in food products and help to improve sensory and textural properties of the products. As such, it is vital to explore the current uses of microorganisms in the dairy industry. Microbial Cultures and Enzymes in Dairy Technology is a

critical scholarly resource that explores multidisciplinary uses of cultures and enzymes in the production of dairy products. Featuring coverage on a wide range of topics such as dairy probiotics, biopreservatives, and fermentation, this book is geared toward academicians, researchers, and professionals in the dairy industry seeking current research on the major role of microorganisms in the production of many dairy products. Milk is nature's perfect food (lacking only iron, copper, and vitamin C) and is highly recommended by nutritionists for building healthy bodies. New technologies have emerged in the processing of milk. This new volume focuses on the processing of milk by novel techniques, emphasizing the conservation of energy and effective methods. This book is divided four parts that cover: applications of novel processing technologies in the dairy industry novel drying techniques in the dairy industry management systems and hurdles in the dairy industry energy conservation and opportunities in the dairy industry This book presents new information on the technology of ohmic heating for milk pasteurization. It goes on to provide an overview of the commercial thermal, non-thermal technologies, and hybrid technologies for milk pasteurization. There are non-thermal technologies such as pulse light, irradiation, ultra violet treatment, etc., that can be used in combination with other technologies for the processing of milk and milk products. This hybrid technology can provide multiple benefits, such extended shelf life, reduced energy costs, reduced heat treatment, and better organoleptic and sensory properties. The book also describes the different aspects of food safety management used in dairy processing. The book also looks at recent advances in microwave-assisted thermal processing of milk and the effects of microwaves on microbiological, physicochemical, and organoleptic properties of processed milk and milk products. Technological advances in value addition and standardization of the products have been reported, but well-established processes for mechanized production are recommended in the book for a uniform quality nutritious product produced under hygienic conditions. This new volume will be of interest to faculty, researchers, postgraduate students, researchers, as well as engineers in the dairy industry. Processing of milk into various dairy foods, i.e. Dairy Technology is underpinned by disciplines such as chemistry and biochemistry, microbiology and process engineering. Strong emphasis on public health aspects and product

quality demands that proper attention be given to the points in the production and processing chain where both pathogenic and spoilage microorganisms can be controlled effectively. Keeping above points in view, a very comprehensive book has been written encompassing entire gamuts of chemical, physical and microbiological characteristics of milk, processing and preservation of milk. The main objective of the book is to provide the latest information in a consolidated form at one point to meet the requirements of not only undergraduate and postgraduates students but also teachers and dairy professionals. This work highlights a new research area driven by a material science approach to dairy fats and dairy fat-rich products where innovative dairy products and ingredients can be tailor-made. Cutting edge topics such as tribology of dairy fats and dairy products, manipulation of differentiated-sized milk fat globules, milk fat interesterification for infant formula, structuring of lipids in dairy products and production of human milk fat substitutes by including dairy fats are featured in dedicated chapters authored by international scientific experts from across the globe. The text also presents in-depth research on proteomic characterization, digestion and the nutritional functionality of milk fat globule membrane. The biosynthesis, chemistry, digestion and nutritional roles of milk lipids, physics of dairy fats, structure and functionality of the milk fat globule membrane, analytical methods, materials science, technology and manufacturing of dairy fat-rich products such as butter, dairy fat spreads, dairy creams, cream powders and ghee are also covered in-depth. Dairy Fat Products and Functionality: Fundamental Science and Technology is a useful reference text for technologists and scientists interested in advancing their fundamental knowledge of dairy fat and dairy products as well as using a materials science and technology approach to guide efforts or widen research opportunities in optimizing the functionality of these products. From their physics and chemistry to their nutritional values and methodologies, this comprehensive and innovative text covers all the necessary information needed to understand the new methods and technologies driving the modern production of milk fat products. This second, revised edition of The technology of dairy products continues to explain methods of milk product manufacture, the technology involved, and how other influences affect finished products.