

## Milk And Dairy Product Technology By Edgar Spreer

Whilst milk fat has always been appreciated for its flavour, the market had suffered from concerns over cardiovascular diseases associated with the consumption of animal fats. However, recent clinical studies have indicated benefits, particularly in relation to conjugated linoleic acids (CLA), in the prevention of certain diseases. The range of spreads has also increased, including the addition of probiotic organisms and/or plant extracts to reduce serum cholesterol levels. The primary aim of this publication is to detail the state-of-the-art manufacturing methods for: Cream Butter Yellow fat spreads, both pure milk fat based and mixtures with other fats Anhydrous milk fat and its derivatives Coverage of the manufacturing technologies is complemented by examinations of the relevant nutrition issues and analytical methods. The authors, who are all specialists in their fields in respect to these products, have been chosen from around the world. It is hoped that the book will provide a valuable reference work for dairy scientists and technologists within the dairy industry and those with similar processing requirements, as well as researchers and students, thus becoming an important component of the SDT's Technical Series. The Editor Dr Adnan Y. Tamime is a Consultant in Dairy Science and Technology, Ayr, UK. He is the Series Editor of the SDT's Technical Book Series. For information regarding the SDT, please contact Maurice Walton, Executive Director, Society of Dairy Technology, P.O. Box 12, Appleby in Westmorland CA16 6YJ, UK. email: [execdirector@sdt.org](mailto:execdirector@sdt.org) Also available from Wiley-Blackwell Milk Processing and Quality Management Edited by A.Y. Tamime ISBN 978 1 4051 4530 5 Cleaning-in-Place Edited by A.Y. Tamime ISBN 978 1 4051 5503 8 Advanced Dairy Science and Technology Edited by T. Britz and R. Robinson ISBN 978 1 4051 3618 1 International Journal of Dairy Technology Published quarterly Print ISSN: 1364 727X Online ISSN: 1471 0307

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. Biochemistry of milk products documents advances in the field and focuses on the two most active areas of research areas, which are starter cultures and enzymes for use in cheese and other foods, and factors influencing the functional properties of milk. The book covers the current thinking and research on the roles of proteinases and peptidases in the milk clotting process and in texture and flavour development during maturation of product. It also covers the protein engineering of enzymes and molecular biological manipulation of microorganisms, including the use of protein engineering to clarify the molecular basis of functional behavior and to manipulate protein properties in a defined and planned way. Biochemistry of milk products provides important reading for research workers, lecturers, graduates and final year undergraduates with interest in the practical applications of molecular biology, enzymology, and protein chemistry, not just in improving the quality and performance of dairy foods and ingredients but also in a much wider context. 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 economic importance of dairy powders and concentrated products to dairy-producing countries is very significant, and there is a large demand for them in

countries where milk production is low or non-existent. In these markets, dairy products are made locally to meet the demand of consumers from recombined powders, anhydrous milk fat and concentrated dairy ingredients (evaporated and sweetened condensed milk). This volume is the latest book in the Technical Series of The Society of Dairy Technology (SDT). Numerous scientific data have been available in journals and books in recent years, and the primary aim of this text is to detail in one publication the manufacturing methods, scientific aspects, and properties of milk powders (full-fat, skimmed and high protein powders made from milk retentates), whey powders (WP) including WP concentrates, lactose, caseinates, sweetened condensed milk, evaporated milk and infant baby feed. The book also covers the international standards relating to these products for trading purposes, as well as the hazards, such as explosion and fire, that may occur during the manufacture of dairy powders. The authors, who are all specialists in these products, have been chosen from around the world. The book will be of interest to dairy scientists, students, researchers and dairy operatives around the world. For information regarding the SDT, please contact Maurice Walton, Executive Director, Society of Dairy Technology, P.O. Box 12, Appleby in Westmorland, CA16 6YJ, UK. email: [execdirector@sdt.org](mailto:execdirector@sdt.org) Also available from Wiley-Blackwell Milk Processing and Quality Management Edited by A.Y. Tamime ISBN 978 1 4051 4530 5 Cleaning-in-Place Edited by A.Y. Tamime ISBN 978 1 4051 5503 8 Advanced Dairy Science and Technology Edited by T. Britz and R. Robinson ISBN 978 1 4051 3618 1 International Journal of Dairy Technology Published quarterly Print ISSN: 1364 727X Online ISSN: 1471 0307 Milk is nature's most complete food, and dairy products are considered to be the most nutritious foods of all. The traditional view of the role of milk has been greatly expanded in recent years beyond the horizon of nutritional subsistence of infants: it is now recognized to be more than a source of nutrients for the healthy growth of children and nourishment of adult humans. Alongside its major proteins (casein and whey), milk contains biologically active compounds, which have important physiological and biochemical functions and significant impacts upon human metabolism, nutrition and health. Many of these compounds have been proven to have beneficial effects on human nutrition and health. This comprehensive reference is the first to address such a wide range of topics related to milk production and human health, including: mammary secretion, production, sanitation, quality standards and chemistry, as well as nutrition, milk allergies, lactose intolerance, and the bioactive and therapeutic compounds found in milk. In addition to cow's milk, the book also covers the milk of non-bovine dairy species which is of economic importance around the world. The Editors have assembled a team of internationally renowned experts to contribute to this exhaustive volume which will be essential reading for dairy scientists, nutritionists, food scientists, allergy specialists and health professionals. 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. 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.

Increased knowledge of the number, potency, and importance of bioactive compounds in fermented milk and dairy products has spiked their popularity across the globe. And the trend shows no sign of abating any time soon. An all-in-one resource, *Fermented Milk and Dairy Products* gathers information about different fermented milk and dairy products, th

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.

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 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 world'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

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.

Milk and Dairy Product Technology Routledge

The Society of Dairy Technology (SDT) has joined with Wiley-Blackwell 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 fifth volume in the series, Milk Processing and Quality Management, provides timely and comprehensive guidance on the processing of liquid milks by bringing together contributions from leading experts around the globe. This important book covers all major aspects of hygienic milk production, storage and processing and other key topics such as: Microbiology of raw and market milks Quality control International legislation Safety HACCP in milk processing All those involved in the dairy industry including food scientists, food technologists, food microbiologists, food safety enforcement personnel, quality control personnel, dairy industry equipment suppliers and food ingredient companies should find much of interest in this commercially important book which will also provide libraries in dairy and food research establishments with a valuable reference for this important area.

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.

#### Expert Insight into the Engineering Aspects of Dairy Products

Manufacturing Consumer demand is constantly on the rise for better and more nutritious dairy products, from traditional milk to new, high-value added products like meal-replacement drinks. This changing market preference reinforces the importance of milk as a raw material in the food indu

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.

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.

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

Food-borne diseases, including those via dairy products, have been recognised as major threats to human health. The causes associated with dairy food-borne disease are the use of raw milk in the manufacture of dairy products, faulty processing conditions during the heat treatment of milk, post-processing contamination, failure in due diligence and an unhygienic water supply. Dairy food-borne diseases affecting human health are associated with certain strains of bacteria belonging to the genera of *Clostridium*, *Bacillus*, *Escherichia*, *Staphylococcus* and *Listeria*, which are capable of producing toxins, plus moulds that can produce mycotoxins such as aflatoxins, sterigmatocytin and ochratoxin. *Microbial Toxins in Dairy Products* reviews the latest scientific knowledge and developments for detecting and studying the presence of these toxins in dairy products, updating the analytical techniques required to examine bacterial and mould toxins and the potential for contamination of milk as it passes along the food chain, i.e. from 'farm-to-fork'. This comprehensive and accessible collection of techniques will help dairy processors, food scientists, technologists, researchers and students to further minimise the incidences of dairy food-borne illnesses in humans. 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.

Milk processing is energy intensive and contributes significantly to greenhouse gas (GHG) emissions, 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 presents the state of the art research and technologies that might be sustainable replacements for high temperature-short time (HTST) and ultra-high temperature (UHT) milk processing. 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. This book is part of Wiley's series IFST Advances in Food Science, which all focus on emerging technologies in various sectors of the food industry. Previously commissioned titles in the series have covered emerging technologies in meat, seafood, and functional foods.

The Dairy Industries In Many Countries A Major Contributor To The Manufacturing Capacity Of The Food Sector, And As More Components Of Milk Are Utilized In Processed Food, So This Importance Is Likely To Grow. The Book Is Devoted Solely To Milk And Its Products. The Book Deals With Processes, Formulae, Project Profiles, Details Of Plant Machinery And Raw Materials With Their Resources Etc. Of Various 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. With more than 12M tons of dairy powders produced each year at a global scale, the drying sector accounts to a large extent for the processing of milk and whey. It is generally considered that 40% of the dry matter collected overall ends up in a powder form. Moreover, nutritional dairy products presented in a dry form (eg, infant milk formulae) have grown quickly over the last decade, now accounting for a large share of the profit of the sector. *Drying in the Dairy Industry: From Established Technologies to Advanced Innovations* deals with the market of dairy powders issues, considering both final product and process as well as their interrelationships. It explains the different processing steps for the production of dairy powders including membrane, homogenisation, concentration and agglomeration processes. The book includes a presentation of the current technologies, the more recent development for each of them and their impact on the quality of the final powders. Lastly, one section is dedicated to recent innovations and methods directed to more sustainable processes, as well as latter developments at lab scale to go deeper in the understanding of the phenomena occurring during spray drying. **Key Features:** Presents state-of-the-art information on the production of a variety of different dairy powders Discusses the impact of processing parameters and drier design on the product quality such as protein denaturation and viability of probiotics Explains the impact of drying processes on the powder properties such as solubility, dispersibility, wettability, flowability, floodability, and hygroscopicity Covers the technology, modelling and control of the processing steps This book is a synthetic and complete reference work for researchers in academia and industry in order to encourage research and development and innovations in drying 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.

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.

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.

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.

This foods Special Issue contains seven papers on a range of technical dairy topics. Three involve beneficial uses of proteolytic enzymes, two involve the use of membrane technology in cheese making, while two deal with the role of ingredients, raw milk in the

UHT paper and apricot fibre in the yogurt paper, in product quality. In all, the papers demonstrate the breadth of on-going research for an industry based on just one raw material, milk.

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.

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.

There continues to be strong interest within the food industry in developing new products which offer functional health benefits to the consumer. The premium prices that can be charged make these added-value products lucrative for manufacturers, and they are also commercially popular. Dairy foods are central to this sector: they are good delivery systems for functional foods (yoghurts, milk drinks, spreads) and are also rich in compounds which can be extracted and used as functional ingredients in other food types. Milk and Dairy Products as Functional Foods draws together a wealth of information regarding the functional health benefits of milk and dairy products. It examines the physiological role and the claimed health effects of dairy constituents such as proteins, bioactive peptides, conjugated linoleic acid (CLA), omega 3 fatty acids vitamin D and calcium. These constituents have been shown to be, for example, anticarcinogenic, anti-inflammatory, antihypertensive, hypocholesterolemic, immune-modulating and antimicrobial. This book examines the evidence for these claims, and investigates practical approaches for utilising these attributes. The book is aimed at dairy scientists and technologists in industry and academia, general food scientists and technologists, microbiologists and nutritionists together with all those involved in the formulation and production of functional food products.

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 dairy industry usually adopts conventional methods of processing various milk-based food 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 enhance product acceptability, safety, and quality aspects. *Non-Thermal Processing Technologies for the Dairy Industry* describes several emerging non-thermal processing techniques that can be specially employed for the dairy processing industry. The book narrates 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 CO<sub>2</sub> 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 significant 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 scholars and students looking to gain knowledge and excel in the non-thermal processing area.

*High Temperature Processing of Milk and Milk Products* covers many aspects of thermal processing of milk and milk products with particular focus on UHT processing. The book begins with an overview of the major thermal processing technologies: thermisation, pasteurisation, extended-shelf-life (ESL), UHT and in-container sterilisation. It discusses the principles of the technologies, the processing and packaging equipment used, processing issues such as temperature-time profiles, heat stability, fouling and cleaning, and the quality and safety aspects of the products produced. It provides a balance of the engineering aspects of the processes and the chemical, microbiological and sensory aspects of the products. The changes that occur in products during processing and storage, and the related defects which can arise, are central to the book. The discussions of these changes will be an aid to industry personnel in identifying the causes of quality defects in these products and devising measures which can be taken to eliminate or minimise the defects. A unique feature is a chapter on analytical methodologies applicable to thermally processed dairy products. There are also chapters on high-temperature processed products other than white cows' milk, including products based on plant materials, and on non-thermal technologies which may be used in place of or as adjuncts to thermal processing. The book concludes with a chapter outlining some of the challenges with the technologies and treated products, and a compendium of relevant reviews,

