

SECOND EDITION

# FOOD PROCESSING OPERATIONS MODELING

Design and Analysis



EDITED BY  
Soojin Jun  
Joseph M. Irudayaraj



CRC Press  
Taylor & Francis Group

# Food Processing Operations Modeling Design And Analysis

**Padhraic Smyth**



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Handbook of Food Process Design Jasim Ahmed, Mohammad Shafiur Rahman, 2012-02-27 In the 21st Century processing food is no longer a simple or straightforward matter Ongoing advances in manufacturing have placed new demands on the design and methodology of food processes A highly interdisciplinary science food process design draws upon the principles of chemical and mechanical engineering microbiology chemistry nutrition and economics and is of central importance to the food industry Process design is the core of food engineering and is concerned at its root with taking new concepts in food

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human and animal disease in under developed ones In addition to aflatoxins the presence of other mycotoxins particularly fumonisins brings additional concerns about the safety of food and field supplies The **Food Plant Sanitation** Y. H. Hui, L. Bernard Bruinsma, J. Richard Gorham, Wai-Kit Nip, Phillip S. Tong, Phil Ventresca, 2002-09-13 Comprehensive and accessible Food Plant Sanitation presents fundamental principles and applications that are essential for food production safety It provides basic practical information on the daily operations in a food processing plant and reviews some of the industry's most recent developments The book is unique from others on the topic in the *Postharvest Physiology and Pathology of Vegetables* Jerry A. Bartz, Jeffrey K. Brecht, 2002-12-04 Focusing exclusively on postharvest vegetable studies this book covers advances in biochemistry plant physiology and molecular physiology to maximize vegetable quality The book reviews the principles of harvest and storage factors affecting postharvest physiology calcium nutrition and irrigation control product quality changes during handling and storage technologies to improve quality spoilage factors and biocontrol methods and storage characteristics of produce by category It covers changes in sensory quality such as color texture and flavor after harvest and how biotechnology is being used to improve postharvest quality *Handbook of Food Toxicology* S.S. Deshpande, 2002-08-29 From health and economic consequences to exposure assessment and detoxification this reference comprehensively covers the formation characteristics and control of various toxins that occur in the production storage handling and preparation of food The author discusses toxin sources mechanisms routes of exposure and absorption and their chemical and biochemical components to prevent contamination of food products and reduce epidemics of foodborne disease The book contains more than 3000 references to facilitate further research as well as recent guidelines from the FDA and World Health Organization regarding food hygiene and safety Heat and Mass Transfer Modelling During Drying Mohammad U.H. Joardder, Washim Akram, Azharul Karim, 2021-09-30 Most conventional dryers use random heating to dry diverse materials without considering their thermal sensitivity and energy requirements for drying Eventually excess energy consumption is necessary to attain a low quality dried product Proper heat and mass transfer modelling prior to designing a drying system for selected food materials can overcome these problems Heat and Mass Transfer Modelling During Drying Empirical to Multiscale Approaches extensively discusses the issue of predicting energy consumption in terms of heat and mass transfer simulation A comprehensive mathematical model can help provide proper insight into the underlying transport phenomena within the materials during drying However drying of porous materials such as food is one of the most complex problems in the engineering field that is also multiscale in nature From the modelling perspective heat and mass transfer phenomena can be predicted using empirical to multiscale modelling However multiscale simulation methods can provide a comprehensive understanding of the physics of drying food materials KEY FEATURES Includes a detailed discussion on material properties that are relevant for drying phenomena Presents an in depth discussion on the underlying physics of drying using conceptual visual content Provides appropriate formulation of mathematical modelling from empirical to

multiscale approaches Offers numerical solution approaches to mathematical models Presents possible challenges of different modelling strategies and potential solutions The objective of this book is to discuss the implementation of different modelling techniques ranging from empirical to multiscale in order to understand heat and mass transfer phenomena that take place during drying of porous materials including foods pharmaceutical products paper leather materials and more

Antimicrobials in Food P. Michael Davidson, John N. Sofos, A. Larry Branen, 2005-04-28 Twelve years have passed since its last edition making *Antimicrobials in Foods* Third Edition the must have resource for those interested in the latest information on food antimicrobials During that time complex issues regarding food preservation and safety have emerged A dozen years ago major outbreaks of *Escherichia coli* O157 H7 and *Listeria* *Encapsulated and Powdered Foods* Charles Onwulata, 2005-05-26 *Encapsulated and Powdered Foods* is a practical guide to the characterization and applications of the powdered form of foods It details the uses of food powder as well as the physical chemical and functional properties of particular food powders such as milk cocoa salts and sugars The author describes the powder manufacturing processes

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