

Preface to the Second Edition

In this second edition two chapters have been added. Chapter 15 covers some of the mass transfer operations used in the food industry but which are not always considered to be core food processes: distillation (including both batch and continuous operation), leaching (or solid–liquid extraction) and supercritical fluid extraction, a process of increasing importance in the food industry. In the case of distillation and leaching the outline of the relevant theory is supported by detailed worked examples to illustrate the common graphical methods which are used to determine the number of ideal or equilibrium stages.

The growing demand for safer food of ever higher quality has led to the investigation of a range of techniques which may together be labelled as minimum processing technologies. The principles of some of these techniques are outlined in Chapter 16, including ohmic heating, pulsed electric field heating (PEF), radio frequency heating (RF), high-pressure processing, irradiation and ultrasound.

The content of a number of other chapters has been updated or amended. Methods of temperature measurement, especially the details of various types of thermocouples in use, have been included in Chapter 7. A new section on the application of mass transfer to food packaging has been added to Chapter 8; data on the permeability of packaging films are presented. The coverage of freeze drying (Chapter 12) has been extended considerably to include the use of heat and mass transfer models in the prediction of drying time. The section on fluidisation in Chapter 13 has been rewritten to include more information on the estimation of heat and mass transfer coefficients in fluidised beds used in food processes.

In addition to these changes, the opportunity has been taken to review all the worked examples and problems in the book and to correct a number of errors in the first edition. The reading lists at the end of each chapter have been updated where appropriate.

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