

potassium bicarbonate which could be used as a substitute for conventional baking powder.

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Computer-Aided Techniques in Food Technology. Edited by Israel Saguy. Marcel Dekker, New York and Basle, 1983. 512 pp. Price: Swiss Fr 187.

This is Volume 8 in the series of monographs in Food Science and contains a series of chapters written by specialist authors covering mathematical and numerical methods and the application of computer methods to food technology. This is potentially an extensive field and is supported with over 500 pages of closely typed print and a wealth of information that would make this into a useful reference book.

The book consists of 15 chapters, titled respectively: (1) Introduction to Computers and Programming (I. Saguy); (2) Numerical Techniques (R. P. Singh); (3) Development and Analysis of Empirical Mathematical Kinetic Models Pertinent to Food Processing and Storage (W. M. Rand); (4) Reaction Kinetics and Accelerated Tests Simulation as a Function of Temperature (T. P. Labuza and J. F. Kamman); (5) Quantitative Analysis and Simulation of Food Quality Losses During Processing and Storage (M. Kavel); (6) Heat Transfer and Related Topics (D. B. Lund and J. P. Norback); (7) Linear Programming and its Implementation (F. E. Bender and A. Kramer); (8) Production Control, PERT and Transportation Problems (F. E. Bender and A. Kramer); (9) Application of Computers in Food Rheology Studies (M. Peleg); (10) Optimisation Methods and Applications (I. Saguy); (11) Optimisation of Dynamic Systems Utilising the Maximum Principle (I. Saguy); (12) Process Control (M. C. Beaverstock); (13) Computer Analysis of Food Chromatographic and Electrophoretic Data of Protein (N. C. Catsimpoolas); (14) Computer System Development: A New Approach (E. W. Burnside and S. C. Nicholson); (15) The Changing Interface to Computation, Super-Routines and Professional Responsibility (R. I. Frank).

From the titles above it can be seen that the text attempts to cover both the principles and the applications of mathematical methods and computers. As each chapter is self-contained with its own references there inevitably follows a certain amount of repetition. Thus the three chapters covering kinetic phenomena might have been more suited for single

authorship bringing out the general principles involved in modelling rate processes and then linking examples from different areas. To counter this one must state, however, that these three chapters do give a somewhat different perspective and approach to similar problems.

The introductory chapter with the extensive glossary at the end of the book covers quite efficiently many aspects of system design, programming languages and other jargon and the novice in this area would find this a useful summary.

The second chapter of numerical techniques covers methods for solution of linear equations, numerical integration, approximations, solutions to ordinary and partial differential equations and finite element methods in 23 pages. As such it does not do more than state the mathematical problem and the numerical equivalent. This will often understate the problem as often these simple algorithms are, at the best, inefficient and at the worst do not work. One could take as an example the numerical solution to a system of ordinary differential equations with several radically different time constants. A reference to the many library routines (as occurs in the chapter on optimisation) would have benefited the user.

The book and many of the chapters are very practical in approach. Examples and case studies are worked through with clarity and the reader with real application will find this approach useful. Some of the chapters include listings of computer programs although the use of BASIC for some and FORTRAN for others is regretted.

The application of computers to process control is covered rather briefly. The control strategies and hardware configuration, sensors and examples are covered in 22 pages of text. Perhaps this reflects the lack of current use of computers in food manufacturing processes but as this will be the major area of impact of this technology one would have hoped this area could have been explored in more detail.

The book finishes off with two forward-looking chapters covering implementation of computer systems and the use of future main frame computer programs for friendly use. Some food for thought.

On the whole, this book is a valuable contribution to the use of computers in food science and technology. Its limitations are those of many books of this nature; specialist readers would need to go elsewhere quite quickly for more extensive background information although as a first reference book the informed reader would find it a compendium of useful data and methods.

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