



Book Reviews

Thermal Analysis of Food. Edited by V. R. Harwalkar & C.-Y. Ma. Elsevier Science Publishers, London, 1990. 362 pp. Price: £55.00 (hardback).

This attractively bound book is the editors' answer to the dearth of information on thermal analytical techniques, and is aimed specifically at food research. The ten reviews stress the advantages of using thermal analysis. They contain sufficient information on a range of thermal techniques to enable the investigator (unfamiliar with this rapidly expanding field) to consider a thermal approach to problem solving. The authors successfully introduce the novice to the subject without traumatising him with detail. Any reader hungry for more detailed information is directed towards the appropriate literature. This is an excellent book for the science graduate who is newly interested in the field and needs a springboard into the subject. This volume is indexed and recommended as a handy reference source.

In the first chapter, the editors, together with fellow Canadian T. J. Maurice, briefly describe the most common thermal analytical techniques available to researchers. They succinctly describe the following techniques: Differential Scanning Calorimeter (DSC), Differential Thermal Analysis (DTA), Thermogravimetry, Thermal Mechanical Analysis and Dynamic Mechanical Thermal Analysis. Each description is accompanied by straightforward, easy-to-follow schematic diagrams and discussions on food applications.

The next four reviews (also by Canadian authors) are mainly concerned with the application of thermal analysis to proteins. Stability studies and the effects of processing on protein functionality are considered. The fourth and fifth chapters are devoted to the thermal analysis of meat and egg proteins respectively. Vegetable proteins and vegetable protein-based foods are

considered in the sixth chapter. DSC thermograms for wheat proteins and protein fractions from oats and other cereals are compared and discussed alongside problems associated with water activity and the changes that occur during baking.

The wealth of information on thermal analysis of food carbohydrates is surveyed in the seventh chapter. This review covers the behaviour of starch, sol-gel transitions of polysaccharides and phase behaviour of frozen systems. The water sorption phenomena and thermal degradation of carbohydrates are also considered.

The last three chapters are written by American authors. Cryostabilization technology: thermoanalytical evaluation of food ingredients and systems is reviewed (for the specialist more than the novice) using material updated from previous reports by the same authors. They discuss the physiochemical basis of cryostabilization technology; the theory of, and methods for, low-temperature DSC on carbohydrate and amino acid/protein systems; the theoretical basis of cryostabilization technology related to collapse processes; the practical aspects of cryostabilization technology related to real food applications. This review contains useful tables summarising the thermal properties of commercial ice cream products, commercial starch hydrolysis products, sugars, glycosides and polyhydric alcohols as well as for wheat flours and bread formula additives.

Applications of thermal scanning rheology to the study of food gels and the applications of thermogravimetry in food technology are reviewed in the last two chapters. Rheometers employing small strain dynamic measurements are clearly, but briefly, described. In the last chapter it is argued that thermogravimetry and pyrolysis cover food technology from the raw material to packaging.

This book is recommended to researchers interested in food research. Food processing usually involves a heating or cooling step which makes thermal analysis perhaps more appropriate to food research than other scientific disciplines.

Barbara Brockway

Food Science Source Book (2nd Edn). Part 1: Terms and Descriptions. Part 2: Composition, Properties and General Data. By Herbert W. Ockerman. AVI Van Nostrand, 1991. 1492 pp. ISBN (Part 1) 0-442-0076-0. (Part 2) 0-442-2333854.

What is so convenient about these two volumes is their alphabetical listing and hence their practicality for use. Part 1 is effectively a food dictionary