

Book Reviews

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Analysis of Food Constituents, (4th edn). Ed. J.-L. Multon, John Wiley and Sons, Inc., New York, 1997. ISBN 0 471 18966 9, xvii + 510 pp., Price: £100.

This is the fourth edition of *Analysis of Food Constituents*, but the first to be translated into English. It has been written primarily by French scientists, with a bias towards the French analytical and regulatory system. The book is intended for the food industry and the emphasis is on standard quantitative techniques.

The first two chapters (84 pp) are devoted to the analysis of water, the first describing both rapid tests often required by industry, and also the more laborious research methods giving better precision and repeatability. It also includes a well referenced discussion of many of the techniques available. The second chapter is more concerned with the physical and functional properties of water, and is somewhat unexpected, but not unwelcome, in such a text. Mobility, electronic paramagnetic resonance (EPR), differential scanning calorimetry (DSC) and differential thermal analysis (DTA) are all covered. The next chapter is a well referenced review of mineral analysis and chapters 4 and 5 cover carbohydrate analysis both by enzymatic and non-enzymatic methods, the former including useful sections on the causes of error. Chapter 6 is disappointing, primarily because it is not cross-referenced, thus making it hard to find specific solutions (or references) other than the French 'norm', but it does include 10 pages of references.

The next chapter on proteins is a good overview, written with a view to 'directing choice between methods' and Chapter 8 provides an overview of enzymatic activity, incorporating a list of enzyme measurements, but with few cross-references. The chapter on vitamins takes an entirely different approach, listing specific methods in great detail, but avoiding much discussion and again failing to cross-reference. Carotenoids were included in this chapter, but if I'm looking for an analysis of lycopene, this book does not oblige. The chapter on flavourings is good, but perhaps lacking the most up-to-date methods. Solid-phase microextraction is an emerging technique worth a mention. There is a good chapter on N-nitroso compounds, clearly highlighting the pros and cons of the various detectors, followed by concise well-balanced chapters on pesticide residues, antibiotics and antiseptics. There is a long chapter on mycotoxins with no bibliography, but the text comprises practical details and one key reference for each method.

The chapter on antinutritional compounds is diverse, covering topics such as analysis of HCN, alkaloids in lupins, thioglucosides from radishes, the antithyroid effect of thiocyanates, lectins in beans, saponins and proteases. The following chapter covers residual monomers of polyethylene, PVC, polystyrene and also plasticisers. A short succinct chapter on phthalates follows, with a useful list of applications and the final chapter provides an interesting overview of radioactive contamination, particularly with respect to French legislation.

Overall the book is interesting, and contains many good and varied chapters, which are both well referenced reviews of analytical procedures and also a guide to specific official methods. In many cases, those seeking a specific method will find, at least, a reference to consult. In general, however, the book's downfall is its cross-referencing system which is inconsistent and in some cases non-existent. Most of the references are pre-1990, and, whereas many of the standard techniques are not new, a few references to newer techniques would not go amiss. Capillary electrophoresis, for example, is a new technique finding a niche in the food industry, which is not mentioned. This volume is directed at industry, rather than the academic institutions, who would find more appropriate coverage elsewhere. It is, however, a useful volume for those interested in the manufacture, marketing and labelling of food products, particularly those with an interest in exporting to France.

Jane K. Parker

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Food Emulsions—Third Edition, Revised and Expanded. Ed. S. E. Friberg and K. Larsson, Marcel Dekker, New York, 1997. ISBN 0-8247-9983-6, xii + 582 pp., Price: US\$ 175.00.

This well produced reference book provides revised and updated information on the basic and applied aspects of food emulsions *from* crystallization and association phenomena to their influence on applied processes. This edition includes a new chapter on fats and oils in baking. The 12 chapters are well connected, as shown by a large number of inter chapter references. However, not all chapters have updated references.

Chapter 1, by Friberg, gives an excellent review on emulsion stability. This chapter discusses two phase emulsions to exemplify the general phenomena involved in emulsion stability with special attention given to the effect of surfactant/polymer combinations. More complex phenomena are described in three phase emulsions.

Chapter 2, by Bergenståhl and Claesson, discusses surface forces in emulsions. The authors point out how a knowledge of interparticle forces, phase behaviour, and adsorption may provide an understanding and rationalization of many of the properties of food emulsions. The following two chapters discuss the structure of lipids in aqueous systems.

Chapter 3, by Larsson, deals in some detail with the molecular organization in lipids. The article covers lipid behaviour in complex systems, their structures, phase properties exhibited by model systems and briefly the available experimental methods for structural analysis. This chapter is complementary to Chapter 5 by Nylander and Ericsson which describes lipid liquid-crystalline phases.

Chapter 4, by Krog, presents a good general review of the most commonly used emulsifiers in the Food Industry. The article covers their chemical and physical properties and their main functions in food systems with emphasis on emulsions.

Chapter 5, by Nylander and Ericsson, discusses polar lipid-protein interactions and how these can affect the physicochemical properties of lipid-protein systems. Emphasis is placed on aspects relevant to the properties of foams and emulsions.

Chapter 6, by Buchheim and Dejmeek, is devoted to milk and dairy-type emulsions. The authors cover the basic structures of the various types of emulsions, i.e. interfacial layers, protein-lipid interactions and distribution of the lipid phase.

Chapter 7, by Tornberg, Olsson and Persson, gives an excellent summary on the structural and interfacial properties of milk, soy, blood plasma and meat proteins and relates this to their functional roles as emulsifiers.

Chapter 8, by Ford, Borwankar, Martin Jr, and Holcomb, concentrates on the stabilization mechanisms and applications of emulsions to salad dressings and sauces. A special section is added to the edition on challenges encountered with reduced fat and fat-free emulsion-based dressings and sauces.

Chapter 9, by Berger, describes the properties of each ingredient and each processing step, and each of these factors in relation to the structure of ice cream.

Chapter 10, by Tan, mainly deals with beverage emulsions for soft drinks. Ingredients, stability problems, and structures of these emulsions are covered.

Chapter 11, by Eliasson and Silverio, is on fats and oils in baking. The role of fat at the colloidal level and molecular interactions between fat and other components are discussed.

Chapter 12, by Mizukoshi, describes the baking mechanisms of cake production.

The book is a useful starting point for researchers moving into the area. Overall it is a valuable and useful addition to the literature.

Vanda B. Galazka