



## Book Reviews

**Similarity Models in Organic Chemistry, Biochemistry and Related Fields. Studies in Organic Chemistry 42.** Edited by R. I. Zalewski, T. M. Krygowski and John Shorter. Elsevier Science Publishers, Amsterdam, 1991. vi + 688 pp. ISBN 0-444-88161-1. Price: US\$240.00.

It's important to explain at the outset that this book should, despite a somewhat misleading title, be seen as a successor to two useful predecessors, *Advances in Linear Free Energy Relationships* (1972) and *Correlation Analysis in Chemistry—Recent Advances* (1978). Thus it deals for the most part with recent advances in organic chemistry (CAOC).

The eleven camera-ready chapters written by 13 different contributors, including the editors, adopt a variety of different types and formats as almost always in a book of this type. The first chapter, 'Similarity models: statistical tools and problems in using them' (T. M. Krygowski and K. Wozniak), is mathematical in content and much of the material can be found in standard statistical texts. The authors, however, do use chemical examples and this is its main merit. Chapter two, 'Substituent effect parameters and models applied in organic chemistry' (J. Shorter), is a good update and the various parameters and equations used by the author draw on the very latest literature data. In chapter three, 'The transmission of substituent effects in organic systems' (M. Godfrey), the author considers the mode of transmission of substituent effects and looks at some contemporary models. In chapter four 'Properties of hydrogen as a substituent in planar organic pi-systems' (H. Häfelinger) are considered. Chapter five, 'Similarity models in IR and UV spectroscopy' (C. Lawrence), presents some interesting IR frequency shifts for various IR active compounds in different solvents and the second part, which will be more familiar to many readers, deals with the well known solvatochromic scales ( $E_T$ ,  $\pi^*$ ,  $\alpha$ ,  $\beta$ ). The following chapter, 'Description of properties of binary solvent mixtures' (H. Langhals), also deals with empirical solvent polarity scales and explores the effect of molar concentration ( $C_p$ ) of a solvent in a binary mixture on the  $E_T$  value.

'Additivity rules and correlation methods in gas chromatography' (J. Oszczapowicz), are considered in chapter seven and chapter eight (J. S. Jaworski and M.

K. Kalinowski) looks at 'Similarity models in organic electrochemistry'.

In chapter nine (R. I. Zalewski), 'Principal component analysis as a tool in organic chemistry and food chemistry' is considered. Following a good introduction to PCA the author illustrates the use of the technique with many examples for structure-activity studies, spectroscopy and food chemistry. The first 20 pages of the chapter introduce PCA and the remaining 64 deal with application. There is a detailed review covering application especially in the area of foods (> 250 references)

Chapter ten, 'Quantitative structure-activity relationships' (D. J. Livingstone), has the largest reference list in the book with 513 references. It will be of considerable interest to those interested in QSARs and deals with the various types of parameters used, computational chemistry and data analysis methods. In the final chapter, 'The quantitative description of steric effects' (M. Charton), there are sections in the nature of steric effects, steric parameters, multiparametric methods of modelling steric effects, estimation methods for steric parameters and the electrical effects of alkyl groups'.

Mistakes and ambiguities seem to be minimal throughout the book. At the price there are likely to be few individual buyers but workers in the areas covered will want to consult it and therefore it is essential for librarians.

W. J. Spillane

**Sweeteners, Discovery, Molecular Design and Chemo-reception. ACS Symp. Series 450.** Edited by D. E. Walters, F. T. Orthoefer and G. E. DuBois. Amer. Chem. Soc., Washington DC, 1991. x + 333 pp. ISBN 0-8412-1903-6. Price US \$79.95.

This book gives the proceedings of a symposium sponsored by the ACS's Division of Agriculture and Food Chemistry at the 199th National Meeting of the American Chemical Society at Boston. The meeting was held in late April 1990 and remarkably this volume appeared in the UK well within a year.

Some changes from the original presentations at the Symposium as regards title, arrangement of topics, etc., are noticeable but this is to be expected since the authors appear to have had a full four months period in which to prepare their chapters.

After an opening section by Eric Walters, on the rational discovery of sweeteners, the rest of the book is

divided into three major parts and one part titled 'conclusion', which discusses regulatory issues and implications and the future of synthetic sweeteners. The major sections deal respectively with sweeteners, discovery and structure-taste studies (100+ pp), sweetener and sweet taste receptor modelling (100 pp) and mechanisms of sweet taste perception (75 pp).

In the sweetener discovery and structure-taste section the eight chapters are presented in the same typeface and generally the formulae and diagrams are well drawn. The contributions here include chapters on the shortly to be released new sweeteners sucralose and alitame. In the second major section the emphasis is on the various approaches to sweet receptor modelling. Three different types of characters are used here in the seven chapters but the presentation is clear. The six chapters in the last section cover such topics as sweet taste transduction, inhibition of sweetness, electrophysiological studies of sweeteners and time-intensity and concentration-response studies of sweeteners.

Author and affiliation indexes are followed by a good subject index. This is essential reading for those interested in the sweetener and general tastant fields. A few errors in the chemical formulae were noted here and there but these are easily detected and do not detract seriously from this useful volume.

W. J. Spillane

**Breakfast Cereals and How They are Made.** Edited by Robert B. Fast and Elwood F. Caldwell. American Association of Cereal Chemists, 1990. 372 pp. ISBN 0-913250-70-8. Price US\$ 79.00.

A very large number of non-technical people use the term 'cereals' to describe *the food they choose to eat at breakfast*. The book 'Breakfast Cereals and How They are Made' is therefore an obvious title for the American Association of Cereal Chemists to publish. The editors have gathered together 21 American experts whose contributions fill 372 pages (using 110 illustrations) to cover such topics as: Raw materials used in the manufacture of breakfast cereals, including flavourings and sweeteners; the manufacturing technology of both ready-to-eat cereals and hot cereals with an emphasis on the equipment used and packaging; the fortification and nutritional aspects of breakfast cereals; and quality assurance.

The volume is well indexed and contains a handy list of equipment manufacturers (handy if you are American that is!). The descriptions of cereal grains are kept to a minimum so that the characteristics necessary for quality breakfast cereals can be discussed. The AACC publish excellent books detailing our in-depth understanding of each cereal and these are included in the authors' list of references. (The reviewer strongly recommends these books to the serious student.)

The illustrations of equipment, contained in this volume, are really excellent. The mysteries surrounding puffing guns, batch and continuous cookers, driers, etc., are soon dispelled. Heat transfer in cereal processing is tackled using simple mathematical formulae and clear diagrams, which are easily understood. I would recommend this book for the splendid explanations of extrusion cooking alone.

This is a book which will be of interest, not just to the curious, but also to those who are newly involved in breakfast cereal manufacture or who supply the raw materials. It is affordable at its price and suitable for technical libraries. It is a shame that the contributors centred their attention on the American industry at the expense of the rest of the world.

Barbara Brockway

**Spices, Condiments and Seasonings. 2nd edition.** By K. T. Farrell. Van Nostrand Reinhold, New York, 1990. xiv + 414 pp. ISBN 0-442-00464-8. Price: £47.50.

The new edition to this book is timely in view of the renewed interest in the food industry in spices and seasonings with increased consumer demand for 'ethnic' foods and interest developing in the so-called 'functional' foods.

The aim in producing the book was to prepare a general reference text for those in the food industry requiring information on condiments and seasonings. Spice and extract manufacturers will find the book invaluable as will those in the processed meat industry. However, as well as being of value to food technologists, there is also a spice-substitute section with suggestions to replace sodium in low sodium diets, which should be of value to dietitians. Those involved in research and teaching of food technology will also find it useful.

There are five sections of unequal length in the book. The first section is a major one, in which 58 spices are described in detail, including historical and legendary background, sources of supply and composition and nutritional value. Photographs or drawings of the spice plant and photographs of a commercial sample of the spice or condiment are included in each case. Other useful information includes the antioxidant capacity and microbiological aspects of the spices with means for sterilizing them and specification of spice blends for specific purposes such as curry or chili powder. Soluble spices are also covered, including essential oil.

The book includes a discussion of up-to-date analytical methods, world trade figures and purchasing specifications. Simple and compound condiments are described, from garlic salt to Worcestershire sauce, soy sauce to mango chutney. Indeed, there are data for