

Book Reviews

***Modern Aspects of Emulsion Science*; B.P. Binks (Ed.); The Royal Society of Chemistry, London, 1999, XII + 430 pages, ISBN 0-85404-439-6 £79.00**

An emulsion may be defined as a heterogeneous system of two immiscible liquid phases, where one of the phases is dispersed in the other as droplets.

Modern Aspects of Emulsion Science published by The Royal Society of Chemistry presents a comprehensive description of both the scientific principles and latest advances in the area of surface and colloid science.

The book begins with a recent review of emulsions. To make an emulsion, oil, water, surfactant and energy are needed. The most important aspects of emulsion formation are detailed in chapters two and three. Various factors affect the stability of an emulsion. Flocculation and creaming, rheology, phase inversion, coalescence, lifetime and molecular diffusion are discussed respectively in the following six chapters.

Emulsions are much more complex than suspensions of solid particles due to their fluidity and deformability. Chapter ten summarises the recent efforts to define and calculate the pair energy between two droplets, including the effect of their deformation.

Gel emulsions are highly concentrated emulsions which form either water or oil rich regions of water/surfactant/oil systems. The formation and structural aspects of gel emulsions are reviewed in chapter eleven. The book concludes with a description of the various applications of emulsions.

This is an extremely informative and detailed volume. It would be a useful source of reference for anyone connected with this field and would be invaluable as part of a scientific or university library.

J.F. Kennedy, T.A. Norris
*Birmingham Carbohydrate and Protein Technology Group,
The University of Birmingham, Edgbaston, Birmingham
B15 2TT, UK*

E-mail address: jfkennedy@chemistry.bham.ac.uk (J.F. Kennedy)
0144-8617/99/\$ - see front matter © 1999 Elsevier Science Ltd. All rights reserved.
PII: S0144-8617(99)00040-5

***Dictionary of Carbohydrates*; P.M. Collins (Ed.); Chapman & Hall, London, 1998, xv + 937 pages, ISBN 0-412-38670-4, £395.00, also available on CD-ROM,**

ISBN 0-412-80350-X, £395.00 (Book and CD-ROM package: £495.00)

The '*Dictionary of Carbohydrates*' is a subset of the Chapman & Hall Chemical Database, and is available as either a single volume dictionary or as a database on CD-ROM. The *Dictionary* presents descriptive and numerical data on chemical, physical and biological properties of compounds; systematic and common names of compounds; literature references; structure diagrams and their associated connection tables, based upon primary literature that has been evaluated up to mid-1996. The *Dictionary* contains some 20 000 compounds grouped together in approximately 3800 entries, an entry containing stereoisomers and derivatives of a parent compound. The compounds covered in the *Dictionary* are largely monosaccharides and their derivatives, and disaccharides (mostly unmodified). Additionally there are entries covering oligosaccharides, polysaccharides and glycosides. The polysaccharides detailed consist predominantly of homopolysaccharides, e.g. starch and cellulose and not complex heteropolysaccharides such as those of bacterial origin. For each compound the full systematic IUPAC name is given, together with melting points and boiling points, optical rotations, densities and refractive indexes, where available.

The CD-ROM version contains all of the information in cross-referenced form and is fully text and substructure searchable and contains easy to use drawing software. Search indexes can be used to search quickly and easily throughout the entire database. Results can be rapidly transferred between text and substructure searching. Another useful feature is the ability to search using the '*type of compound*' index in which carbohydrates are classified under one or more of over 100 headings according to structural type. This facility complements searching by substructure allowing easy access to carbohydrates of a certain type whether they are listed as main entries or as derivatives. The minimum system requirements for using the CD-ROM are an IBM compatible PC with 486 processor, 8 Mb RAM, 20 Mb hard disk space, a VGA colour monitor, Windows™ 3.1 or 95. Adobe Acrobat v. 3 (or later version) is also required, however this is included on the CD-ROM.

In summary, both the dictionary and CD-ROM database provide the researcher with access to an abundance of important information that cannot be located in any other single source. We therefore highly recommend these

invaluable research tools to individuals involved in all aspects of carbohydrate chemistry.

J.F. Kennedy, C.J. Knill

*Birmingham Carbohydrate & Protein Technology Group,
School of Chemistry, The University of Birmingham,
Birmingham B15 2TT, UK*

E-mail address: jfkennedy@chemistry.bham.ac.uk (J.F. Kennedy)

0144-8617/99/\$ - see front matter © 1999 Elsevier Science Ltd. All rights reserved.

PII: S0144-8617(99)00071-5

***Food Emulsions and Foams; Interfaces, Interactions and Stability*; by E. Dickinson, J.M. Rodriguez Patino; The Royal Society of Chemistry, Cambridge, 1999, 390 pages, ISBN 0-85404-753-0, £85.00**

Food emulsions and foams are areas that have always been of great interest in the scientific world of food chemistry. Due to ever increasing interest, a conference was established in the mid 1980s with the sole purpose of furthering the studies and knowledge of food colloids. Since 1986 the conference has been held every two years, with the latest held in March 1998 covering interfaces, interactions and stability within food emulsions and foams.

The primary objective of the text currently under review is to chart the progress in specific fields related to food emulsions and foams, as well as describing the physical chemistry underlying the stabilisation of foams and emulsions. The text also aids the fundamental understanding of the stability and rheological properties of food dispersions containing particles, droplets and bubbles.

Food Emulsions and Foams contains several review articles, describes experimental and theoretical developments and covers key topics ranging from colloid rheology and stabilisation by polymers to protein surfactant and protein polysaccharide interactions. Contained within are several essential tables and charts which assist the clarification, comprehension and general understanding of the text.

Over all, this book is well presented, a good length (having 390 pages), thorough and a very readable text. Another fine publication from the Royal Society of Chemistry range on food colloids.

J.D. Law, J.F. Kennedy

*Birmingham Carbohydrate & Protein Technology Group,
The University of Birmingham, Edgbaston, Birmingham
B15 2TT, UK*

E-mail address: jfkennedy@chemistry.bham.ac.uk (J.F. Kennedy)

0144-8617/99/\$ - see front matter © 1999 Elsevier Science Ltd. All rights reserved.

PII: S0144-8617(99)00073-9

Mass Spectrometry; Second Ed., by J. Barker; Analytical Chemistry by Open Learning; John Wiley & Sons, Chichester, 1999, xxii + 509 pages, ISBN 0471-967-629, £37.50

Mass spectrometry is still a fairly empirical subject. There is still some way to go to understand and fully predict the fragmentation patterns of many complex organic and biological molecules. However, from knowledge of the basic concepts of organic chemistry and with the help of computer database searches, it may be possible to characterise and formulate structures for many organic molecules. Together with complementary spectroscopic techniques such as infrared, ultraviolet/visible and nuclear magnetic resonance, mass spectrometry holds the key to qualitative and quantitative chemical analysis.

This second edition has been expanded: the earlier material has been reorganised in order to bring it completely up-to-date. In addition to the basic theory of ion formation and behaviour, instrumentation and the interpretation of the spectrum of simple organic compounds, this new edition reflects a number of the important developments that have taken place in this field since the first publication of the book in 1987. These include the rapidly growing area of hyphenated mass spectral techniques, including gas chromatography-mass spectrometry (GC-MS), liquid chromatography-gas chromatography (LC-GC) and tandem mass spectrometry (MS-MS). Associated newer methods of interfacing, such as electrospray and ionspray, particle beam and continuous flow coupling and atmospheric pressure-chemical ionisation are also covered. The current widespread use of computing techniques in structure elucidation is also considered, along with the important area of inorganic mass spectrometry for analysing surfaces, bulk solids and solutions.

The goal of this second edition of 'Mass Spectrometry', to provide the analyst with an excellent introduction to mass spectrometry by the adoption of a practical approach in which the theoretical and operational aspects of this major analytical technique are combined, has been achieved. The learning objectives of each chapter are clearly identified and the student's understanding of the material is constantly challenged by self-assessment questions with reinforcing or remedial responses. It is therefore a valuable text reference for analytical chemists, those studying for the Licentiate of the Royal Society of Chemistry (LRSC) qualification, or its equivalent, and by those who wish to obtain a more detailed knowledge of mass spectrometry, beyond that required for LRSC.

M. Garaita, J.F. Kennedy

*Birmingham Carbohydrate & Protein Technology Group,
The University of Birmingham, Edgbaston, Birmingham
B15 2TT, UK*

E-mail address: jfkennedy@chemistry.bham.ac.uk (J.F. Kennedy)

0144-8617/99/\$ - see front matter © 1999 Elsevier Science Ltd. All rights reserved.

PII: S0144-8617(99)00074-0