

A Dictionary of Concepts in NMR (Revised Edition); by S.W. Homans, Oxford University Press; Oxford, 1992; vii + 372 pages. £ 17.50 (paperback).

High resolution NMR spectroscopy has had an enormous impact in many fields in the last eighteen years, in particular in the area of structural determination of biological and chemical molecules, this impact being due predominantly to the advent of multi-dimensional NMR. With the ever-increasing number of experimental techniques, sophistication of spectrometers and the increasing number of disciplines using this method, it is necessary to have convenient access to definitions of NMR terminology and to concise explanations of concepts covering both theoretical and practical aspects. A greater understanding of how and why certain experiments work would allow users to improve existing techniques, create new ones and analyze why experiments fail; this is important both to the spectroscopist and to those using modern NMR methods as a tool in their particular area(s) of interest. A lack of clear understanding of the method (in both practical and theoretical terms) can lead to an under-utilization of expensive equipment, wastage of time and materials, together with frustration and misinterpretation of data.

Steve Homans has tried to address the need for an NMR 'dictionary' with the biochemist and chemist in mind. This book attempts to give a theoretical explanation of many of the basic concepts used in modern NMR techniques, such as density matrices, quantum mechanics, product operators, coherence transfer pathways, and relaxation. In addition, the practical aspects of an NMR experiment, such as parts of the spectrometer, field-frequency locks, lincshapes, signal-to-noise ratios, quadrature detection, etc., are all discussed in some detail. Attempts are made to give a theoretical analysis of many of the different types of experiments. The book contains a large number of useful equations and basic mathematical principles. The coverage is very comprehensive, with the revised edition containing aspects of three-dimensional NMR.

Although it must be borne in mind that this is meant to be a dictionary, and hence is constrained by space and by the fact that each concept definition must be self-contained, there are aspects of the book that could have been improved upon in order to make

it more readable. Because the concepts are inter-related, it is not possible to define each strictly in isolation; poor cross-referencing and definitions not placed in their correct context have made the text fragmented, with the readers finding it difficult to correlate various concepts. For example, two-dimensional NMR should have been explained additionally in the context of coherence transfer pathways, quantum coherence, density matrices and/or product operators and phase cycling; all these five concepts have been explained in isolation but not mentioned at all in the discussion on two-dimensional NMR.

There is some lack of consistency. Related concepts are explained using both the classical and quantum mechanics theories, thereby making similar experiments appear completely different. It would perhaps have been more beneficial to draw initially a relationship between the classical and quantum mechanics theory and then to use the latter to describe a particular set of experiments. This approach would have helped to avoid much repetition and multiple definitions of similar concepts. Inconsistencies are also found in the use of terms; for example, the population states at thermal equilibrium are represented in at least three different ways. Many definitions of terms could have been more precise. Finally, we feel that the lack of useful diagrams has made certain of the entries unnecessarily protracted and complicated.

This is a good book for more-experienced users of NMR who understand the fundamentals and want a quick reference to refresh their memory. It contains a very comprehensive coverage of modern NMR concepts and techniques. On the other hand, for those who want a clear and more detailed explanation of concepts, it is recommended that this book be used in conjunction with others, such as Andy Derome's "Modern NMR Techniques for Chemistry Research" and Ray Freeman's "A Handbook of Nuclear Magnetic Resonance".

Lu-Yun Lian and Igor Barsukov

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Abbott, N.J. (ed.) Glial-neuronal interaction. From a conference, Cambridge, UK, Sep. 1990. *Annals of the New York Academy of Sciences*, vol. 633. New York Academy of Sciences; New York, 1991. xxii + 639 pp. \$ 154.00.

Aggarwal, B.B. and Gutterman, J.V. (eds.) Human cytokines. Handbook for basic and clinical research. Blackwell Scientific; Cambridge, MA, 1992. xvi + 441 pp. \$ 49.95.

Agosta, W.G. Chemical communication: the language of pheromones. W.H. Freeman; London, New York, 1992. 179 pp. £ 17.95; \$ 32.95. Reviewed in: *Nature*, 8 Oct. 1992, 359, 492 by D. Crews.

Bender, D.A. Nutritional biochemistry of the vitamins. Cambridge

University Press; New York, 1992. xx + 431 pp. \$ 89.95.

Ben-Naim, A. Statistical thermodynamics for chemists and biochemists. Plenum; New York, 1992. xviii + 697 pp. \$ 85.00.

Berger, J.R. et al. (eds) AIDS 91 summary: a practical synopsis of the VII International Conference. Philadelphia Sciences Group; 11232 Midlothian Turnpike, Suite 325, Richmond, Virginia 23235-9620 USA, 1992. 350 pp. \$ 85.00 (pbk). Reviewed in: *Nature*, 8 Oct. 1992, 359, 491 by R. Vile.

Block, T.M. et al. (eds) Innovations in antiviral development and the detection of virus infections. From a symposium, Philadelphia, PA,

Publisher Oxford University Press. Imprint Clarendon Press. Publication City/Country Oxford, United Kingdom. Language English. Edition Revised. Edition Statement Revised edition. Illustrations note numerous line illustrations. ISBN10 019854765X. Other books in this series. A Dictionary of Concepts in NMR. S. W. Homans. 14 Jan 1993. Paperback. The Oxford Advanced Learner's Dictionary (OALD) was the first advanced learner's dictionary of English. It was first published in 1948. It is the largest English-language dictionary from Oxford University Press aimed at a non-native audience. Users with a more linguistic interest, requiring etymologies or copious references, usually prefer the Concise Oxford English Dictionary, or indeed the comprehensive Oxford English Dictionary, or other dictionaries aimed at speakers of English with native-level Oxford Children's Dictionaries have once again teamed up with BBC Radio 2 Breakfast Show's 500 Words to identify the 2020 Oxford Children's Word of the Year! The short story writing competition received over 134,000 entries this year, as budding young writers across the UK put pen to paper. Oxford Children's Dictionaries has, for the ninth year running, analysed all of the entries to reveal a wealth of insights into children's use of language. Oxford Children's Word of the Year revealed here. accelerate. verb.