

## BOOK REVIEWS

**Dictionary of Analytical Reagents:** A. TOWNSHEND, D. T. BURNS, G. G. GUILBAULT, R. ŁOBIŃSKI, Z. MARCZENKO, E. J. NEWMAN and H. ONISHI (editors), Chapman & Hall, London, 1993. Pages: xxix + 1370. £595.00. ISBN 0-412-35150-1.

The publishers, Chapman & Hall, have produced a number of very large A4-size dictionaries devoted to various fields of chemistry. This work provides information on over 5000 analytical reagents and as most of the compounds are organic the text is uniform with entries in the fifth edition of the *Dictionary of Organic Chemistry*. The main text, as expected, consists of reagents arranged alphabetically and each entry is numbered. Many reagents are included as derivatives, for example, under 1-naphthol the acetyl, benzoyl and 3,5-dinitrobenzoyl derivatives are mentioned. For each of the main entry reagents chemical names, synonyms including trade names, a molecular structure diagram, analytical uses and selective bibliographies are normally presented.

Four indexes are included at the end of the dictionary. A *Name Index* lists in alphabetical order all reagent names and synonyms including stereoisomeric forms and derivatives. A *Molecular Formula Index* and a *CAS Registry Number Index* are also present. Of particular interest is the *Type of Compound Index* which classifies nearly all reagents listed under one or more of three headings: analyte (element, e.g., copper, or organic compound, pesticide), compound group (e.g., EDTA-type compounds) and Use (e.g., titrant).

As stated on the inside sleeve of the book coverage extends to metal extractants and spectrophotometric reagents, indicators, fluorescence labelling reagents and reference standards, buffers, gc and ms derivatization reagents, amperometric reagents, biological stains and dyes. Excluded from the dictionary are macromolecular materials (e.g. enzymes, ion-exchange resins and antibodies) which cannot readily be defined by a molecular formula.

There are two useful, but short, introductions which describe the main applications and classes of analytical reagents. The amount of information given for each reagent varies and only the melting point of a derivative may be presented. Typically one two-column page of the dictionary gives information on about five main reagents. Analytical uses are described briefly and typical examples include: "used in detn of water", "used as a chelating agent" and "used as a 1% soln in EtOH for gravimetric detn of Cu(II)". More detail is given for some of the more common reagents and  $\lambda_{\max}$  values are included when photometric use is indicated. The source of reagents which are natural products (e.g., strychnine, starch, sucrose) is also given. Reference to the literature is essential for detailed information and the contents of each literature citation is indicated by an abbreviation (e.g., synth, props, struct, etc.).

I chose some reagents at random and checked the dictionary for their inclusion. First of all DCTA which I had used for Al analysis—it was there with synonyms, isomeric forms and 13 literature references including the 1955 work by Pribil. I was impressed. Next sodium tetraphenylborate which I had once used as an alternative to the official pharmaceutical analysis of cetrime—again it was present, several uses were listed and 10 literature references were given. Finally I chose ninhydrin—again it was included with the sought-for-statement that it can be used as a sensitive reagent for determination of amino acids and related substances.

Overall a very welcome addition to the literature on analytical chemistry and just the type of compilation that would be suitable for a CD-ROM. Too expensive for purchase by the individual but certainly recommended for the library.

P. J. Cox

**The Kirk-Othmer Encyclopedia of Chemical Technology:** Volume 6, Fourth Edition. Chlorocarbons and Chlorohydrocarbons-C<sub>2</sub> to Combustion Technology. J. I. KROSCHWITZ and M. HOWE-GRANT (editors), Wiley-Interscience, Chichester, 1993. Pages: xxviii + 1072. £150.00. ISBN 0-471-52674-6 (v.6).

Each volume of this encyclopedia is approximately the same size and contains roughly the same number of chapters. Volume 6 covers 30 topics—all beginning with the letter "C"—by numerous authors based mainly in the U.S.A. Four topics occupy more than half the volume: colour (199 pages), coal (173 pages), coatings (166 pages) and chlorocarbons and chlorohydrocarbons (140 pages). The latter topic continues from Volume 5.

This volume differs from the previous five in that 10 colour plates are included. The treatise on colour starts with some fundamental concepts and proceeds to discuss colourants for: ceramics, food, drugs, cosmetics, medical devices and plastics. The chemistry of colour photography is also covered in some detail. Technological aspects of coal—carbonization, desulphurization, gasification and liquefaction—are also mentioned in detail.

I found it somewhat disappointing that given the length devoted to other topics the whole of chromatography—one of the most important techniques for those working in analytical chemistry—was summarized in only 22 pages. However, several texts on chromatography for further reading are given in the bibliography at the end of the appropriate chapter.

A separate chapter is devoted to the phenylpropanoids: cinnamic acid, cinnamaldehyde and cinnamyl alcohol. Similarly, citric acid and choline are dealt with separate chapters as are chlorohydrins, chlorophenols and chlorosulphuric acid. The only element and its compounds specifically covered in this volume is chromium. Other chapters deal with chocolate, coffee, clays and colloids.

Many interesting items are presented, three of these are: soot, sometimes referred to as carbon, is actually hydrocarbon; coffee, first cultivated by the Arabians in 575AD, was only introduced to the western hemisphere in 1725, and a table listing the 15 causes of colour.

As with all previous volumes extensive lists of references are given after each chapter and cross-referencing is used. For certain entries the reader is referred to a different volume, e.g. compact discs—see information storage materials. The high quality of this encyclopedia continues to impress.

P. J. Cox

**Trends In Analytical Chemistry—Reference Edition, Volume 11:** Elsevier, Amsterdam, 1992. Pages viii + 402. US\$387.50, Dfl 620.00. ISBN 0-444-89926-X.

The latest Reference Edition of Trends in Analytical Chemistry contains all the archival material from the 1992 Library Edition of TrAC. For subscribers to the Library Edition the cost of this compilation is included in the subscription charges.

As usual the 10 issues of TrAC are maintained as separate sections within the Reference Edition, with the articles divided up under such headings as: opinions, trends, monitor, computer corner and interface. The subject coverage is as comprehensive as ever and written in the house-style of the Trends Journals (with their highly successful emphasis on readability and accessibility to a multidisciplinary audience). There are an increasing number of articles that address specific applications. This is especially evident in the bioanalytical area where arguably some of the most exciting developments in analytical chemistry are being made with excellent contributions on capillary electrophoresis, sample preparation by microdialysis, biomolecular tracing with accelerator mass spectrometry, viral protein modifications by mass spectrometry, electrophoresis of biopolymers, ICP/MS analysis of biological materials, etc.

The articles are mostly commissioned so the authors are established authorities in their respective fields. Authors adhere to a strict policy of length, number of references, etc. This format has widespread appeal to the specialist (to keep abreast of related fields) and to the novice who may be looking for new ways of solving problems. TrAC is also a terrific source of materials for lecturers and for students on projects or assignments.

Purchasers of this compilation should consider the relative cost of taking up a subscription to Library Edition of TrAC. Part of the strength of the Trends Journals is their speed of publication and current relevance to new areas/developments. To some extent this appeal is lost to those who only subscribe to the Reference Editions.

Finally, at Dfl 620 the price is a 14% increase on last year—quite steep in this age of recession and cost cutting.

B. A. McGAW

**Nucleic Acid Targeted Drug Design:** C. L. PROPST and T. J. PERUN (editors), Dekker, New York, 1992. Pages xiii + 619. \$165.00. ISBN 0-8247-8662-9.

Drugs that interact with DNA, thereby directly inhibiting cell growth and replication, cover a very wide range of chemical type, as well as mechanisms of interaction. Some bind reversibly, typified by the classic intercalators. Others bond covalently, at a variety of sites on DNA, depending on their stereoelectronic properties. A number of DNA-interactive drugs are active and clinically-important anti-cancer agents, albeit with a number of severe drawbacks. The continuing search for new agents with enhanced selectivity to tumour cells has been a major impetus for many studies in the drug-DNA field. An increasingly important goal now and in the future is to devise compounds that will specifically recognize particular sequences of DNA (or RNA), thereby artificially regulating the expression of a particular gene. This approach will clearly have implications for a wide range of human diseases.

This timely book provides a number of authoritative reviews of the drug-DNA area, focusing on the rational design of new agents on the basis of mainly biophysical information. In this, the editors are reflecting modern approaches to molecular and drug design, with heavy reliance on results from X-ray crystallography, NMR and molecular modelling. All of these techniques are well represented in this book, with contributions from some leading experts, in 13 chapters. That by A. H.-J. Wang and H. Robinson is notable for discussing combined crystallographic and NMR studies on several intercalation complexes, largely studied in their laboratory, and for providing a useful account of the scope and limitations of the two methods in the context of drug-DNA interactions. Results from crystallography also dominate the thorough review of DNA groove-binding agents by M. L. Kopka and T. A. Larsen. Several other chapters describe either the contributions of individual laboratories (that by W. A. Remers, M. D. Barklay and L. H. Hurley on combined fluorescence, NMR and molecular modelling is especially useful) or attempt to cover an entire field, with that by J. C. Dabrowiak, A. A. Stankus and J. Goodisman on "sequence specificity" being an outstanding example. A few contributions are of lesser quality and make the book somewhat of a curate's egg; that on modelling and computational chemistry approaches (an important topic and one of very considerable current activity), not only fails to provide the reader with a balanced view, but is fatally flawed with some glaring and serious errors, such as incorrectly defining the various polymorphs of DNA, and ignoring much of the basic experimental data on which sensible modelling must be based.

At \$165, this book is not destined for individual bookshelves. However it does have a useful place in the libraries of all those interested in the molecular basis of action and the design of new anticancer, antiviral and antiparasitic agents.

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