Pergamon

Talanta, Vol. 41, No. 2, pp. 343–345, 1994
Elsevier Science Ltd
Printed in Great Britain
0039-9140/94 $6.00 + 0.00

BOOK REVIEWS

Drug Stereochemistry—Analytical Methods and Pharmacology, Second Edition: I. W. WAINER (editor), Dekker, New York, 1993. Pages xvi + 425. US$165.00. ISBN 0-8247-8819-2.

The new edition of this book (Number 18 in the Clinical Pharmacology series) supercedes the original (Number 11) edition. Its appearance is timely due to the increasing interest in single-isomer drugs as shown by the appearance of two new journals: *Chirality* and *Tetrahedron Asymmetry*. Indeed, texts dealing with this topic are assured an eager readership due to the now widespread recognition of pharmacological differences between drug enantiomers.

The book consists of four parts: Introduction (2 chapters), The Separation and Preparation of Stereochemically Pure Drugs (6 chapters), Pharmacokinetic and Pharmacodynamic Differences Between Drug Stereoisomers (6 chapters) and Perspectives on the use of Stereochemically Pure Drugs (4 chapters). Contributions to the 16 chapters are made by 19 authors from North America and Europe. Each chapter is followed by numerous up-to-date references and throughout the quality of the presentations is high.

The new chapters in this edition include: Enzymatic Synthesis and Resolution of Enantiomerically Pure Compounds (Chapter 8), Toxicological Consequences and Implications of Stereoselective Biotransformations (Chapter 9), Stereoselective Transport Across Epithelia (Chapter 10) and Assessment of Bioavailability and Bioequivalence of Stereoisomeric Drugs (Chapter 11). The chapter on Stereoselective Protein Binding has been completely rewritten and new contributions on regulatory, industrial, and clinical aspects of stereoisomeric drugs are included.

Perhaps the three revised and expanded chapters on stereoselective chromatographic separations will be most of interest to the analyst. Here both indirect and direct methods for the chromatographic resolution of drug enantiomers are covered and the editor contributes a chapter on HPLC chiral stationary phases which is state-of-the-art.

Throughout the text numerous chiral drugs are examined including propanolol, ibuprofen, atropine, nicotine, warfarin, etc. and a whole chapter is devoted to verapamil. Many aspects of chiral drugs are covered: synthetic, analytical, biochemical, clinical, and industrial. The text is an excellent review of the relevance of drug stereochemistry and is essential reading for all those who work in this area. The book is highly priced but it is good value for money. Highly recommended.

P. J. Cox

XRF Analysis of Ceramics, Minerals and Allied Materials: H. BENNETT and G. OLIVER, Wiley, Chichester, 1992. Pages: xv + 298. £45.00 ISBN 0-471-93457-7.

This book is a practical laboratory guide to the X-ray fluorescence analysis of ceramics, minerals and related substances. No theoretical treatment of the physics of XRF is given; the authors have concentrated on the analytical procedures required for reliable analysis, which they have developed over 25 years at Ceram Research (formerly the British Ceramic Research Association). Their wealth of experience is described with remarkable thoroughness.

The book falls naturally into two parts. The first 11 chapters are essentially discursive, while the remaining eight chapters give summarized procedures. There are also five appendices.

Chapter 1 is a brief introduction to the book. Chapter 2 deals with apparatus and equipment from very basic items such as mills, sample splitters, burners and furnaces to the choice of spectrometers and analysing crystals. The importance of proper drying and weighing of samples is discussed. There is also a section on the care of platinum ware. The chapter ends with a discussion of the importance of blank determinations. Procedures for the analysis of non-XRF elements are given in Chapter 3. These fall into several categories; light elements such as Li and B which are not readily detected, volatiles such as S, As or Sb and those which alloy with platinum. Chapter 4 is a lengthy discussion of the principles and practice of the determination of the loss on ignition. Complications arising from the presence of carbonate, sulphate and halides are comprehensively aired. Fusion procedures, guidance on the choice of fluxes and methods for dealing with difficult elements follow in Chapter 5. The attention given to these topics reflects their crucial role in the execution of reliable analyses.

The selection of instrumental parameters and the choice of element line are detailed in Chapters 6 and 7. For each of the elements considered there is a brief description of its use and occurrence in ceramics followed by the preferred analytical line and instrument settings (collimator, crystal, counter type and kV). Possible interferences are also discussed.

A standard procedure for the preparation of sample beads for uncomplicated materials is given in Chapter 8. It is based on BS 1902 and builds on the information given in the previous chapters of the book. The importance of rigorously following the given methods is stressed. Calibration is very thoroughly treated in Chapter 9. Chapter 10 gives instructions on how to present the sample bead to the spectrometer and how to calculate the results. This part of the book concludes with Chapter 11 which, complementing Chapter 8, describes routine techniques to be used in conjunction with the lists given in the second part.

The remaining eight chapters which make up this second part give summarized procedures for the analysis of various classes of materials. The classifications are silica/alumina, calcium-, magnesium- and zircon-rich materials, various oxides,

glasses, glazes and frits, reduced materials (carbides, nitrides and elements) and, finally, unknown materials. these are supported by a number of appendices which list specific techniques for the determination of the loss on ignition and for the fusion of a large number of substances ranging from raw materials to products. Problem elements are also listed here, as are certified reference materials. A final appendix briefly discusses the desirability of various accreditation schemes.

It is obvious that a great deal of thought has been put into the content of the book and the way the material is set out in order to make it readily accessible. At first I thought that in some subject areas there was far more detail than was really necessary, for example, there is even a description of the best way to label specimens. But that was before I have encountered some of the sillier aspects of BS5750. This book is intended as a manual of procedures for use in laboratories which wish to achieve accreditation under this standard. If you follow the methods given here you will not only go a long way towards complying with the bureaucratic strictures of BS5750, but you will also produce analyses of the highest attainable quality, which is not necessarily the same thing.

E. LACHOWSKI

HPLC Detection—Newer Methods: G. PATONAY (editor), VCH, New York, 1992. Pages xii + 336, DM158.00. ISBN 3-527-28219-X.

This is an interesting book because, as explained in the preface, its purpose is to cover aspects of less well known detection methods in HPLC without discussion of detection methods in general use. The content is consistent with the title and the book is an in depth series of reviews on the newer and correspondingly lesser used detection methodologies. Given the number and scope of existing texts on generally used detection principles and equipment, it thus provides a unique and valuable addition to the literature of HPLC. It will provide stimulating reading for many practising chromatographers by showing the range and potential of what some may term more esoteric HPLC detection techniques. Methods covered are long lived luminescence, chemiluminescence, photothermal, electrochemical and near infrared absorption. The various applications of lasers in a range of optical detection methods are reviewed, particularly in the context of microcolumn technology. In reviewing most of these detection methods a good balance has been struck by the various contributors between background theory, which may be new to some of us, and applications. In the chapter dealing with laser applications to microseparation systems a more general analytical approach is taken and includes sections on analytical figures of merit and concentration and mass sensitivity. The last three chapters each provide substantial coverage of what have come to be called hyphenated techniques in which additional, usually spectroscopic, information is obtained about the analyte on-line with the separation process. The chapter on HPLC/FT–IR reviews principles and equipment design and compares analytical and microbore chromatography in the context of interfaces needed. The chapter on detection by mass spectrometry outlines the various types of chromatography—spectrometer interfaces that have been developed and gives a selective overview of applications of HPLC/MS, concentrating particularly on natural products. The last chapter, which in the preface is described as "a peek into the future", outlines progress in the coupling of HPLC with nuclear magnetic resonance. The use of both stopped and continuous flow are described and a number of applications are cited. Overall the book is well produced and its usefulness is considerably enhanced by the extensive references on each topic.

R. B. TAYLOR

Silica Gel and Bonded Phases—Their Production, Properties and Use in LC: R. P. W. SCOTT, Wiley, Chichester, 1993. Pages xii + 261. £35.00. ISBN 0-471-93985-4.

This book provides an appropriate companion volume to *Liquid Chromatography Column Theory* by the same author. As previously, the present volume provides an individual assessment of current knowledge and theory and draws extensively on research by the author and co-workers. The major part of the book describes silica as a material for chromatography and traces the development of modified silicas. The last few chapters focus more closely on the silica in chromatography and explores ideas on molecular interactions between bonded reverse phase silicas and components of the mobile phase.

The book starts with a review of the structure, preparation and size classification of silica gel as a material. This provides useful background information about the ubiquitous chromatographic material although it is, perhaps, of minimal direct use to most chromatographers. Chapter 3 combines coverage of methods for determining porosity, surface area and particle size distribution with a review of current methods for packing silica gel into chromatography columns including dry and slurry packing and also radial compression methods. The next two chapters deal with the chemical nature of the silica surface including the techniques used in its study and also the properties of silica gel as a size exclusion material. This leads logically to a discussion of the interactions of solvents and solutes with the silica gel surface. In Chapters 7 and 8 there is excellent coverage of the history and classification of bonded phase silica based materials including the technology for their production.

The last three chapters are devoted to aspects of reverse phase bonded silicas. Properties such as wetting and stability of bulk and brush phases are described along with a discussion of solute and solvent interactions with such materials. Adsorption isotherms of various mobile phase components are described including what are referred to as ion exchange reagents, a sensible change from pairing ions. The book concludes with a thermodynamic treatment of solute retention which it is suggested can help in identifying molecular interactions while pointing out the lack of predictive capability.