Computer Software Reviews

Statistical Navigator Professional. Version 1.0. The Idea Works, Inc., 607 Jackson Street, Columbia, MO 65203. List price $150.00.

Statistical Navigator Professional is sophisticated statistics software aimed at advising the user on strategies to take in the analysis of data or in the design of future experimentation. However, this program does not incorporate any computational statistical data analysis. The program is not copy protected and is easily installed on MS-DOS (IBM compatible) systems. We evaluated it on both 80286/7 and 80386/7 systems with VGA color graphics and a mouse. The program is menu driven with multiple menus able to be stacked on screen. The program is space intensive (at least 640K RAM and a hard disk drive) and does not make use of either extended or expanded memory options, although the supplier claims that this will be available in the next version of the program. The program will work with CGA, EGA, VGA, and monochrome monitors.

The program has two principle modes of operation—Browse Mode and Consult Mode. In Browse Mode the user is able to explore the various types of statistical analyses which are able to be used. It is especially helpful to the novice statistician to be able to seek definitions of key terms used in the program at nearly any point. In this manner the program is very helpful in teaching the user about options for data analysis which may have not been considered previously. But often in this mode the user must wait for a very long time for memory reorganization and disk access to occur.

In Consult Mode the user is asked to supply information about a data or future data set to be analyzed and the degree of confidence in various parameters describing that data set. However, the user–software interface to do this is very cumbersome and inconsistent leaving the user at times guessing how to respond. At specific points the user is asked to input numerical estimates of confidence levels, etc. To the average Chemist, the questions asked by the program will seem vague and, in all probability, confusing. Having entered a set of numerical estimates, the user is given the option of editing these entries. However, this editing process is a slow recycling of the entry process and not really an editing process. In some of these data entry sections all of the questions are displayed simultaneously and in others the questions are displayed one at a time.

A report is able to be formed summarizing the results of the Consult Mode and this is useful as a hardcopy of a rather complicated evaluation of statistical analysis strategies. The program writes as ASCII file to disk that contains the report. This file also contains a few program control statements. The printout of the ASCII file is to the default printer and the output is unformatted. Nonetheless, we were able to easily reformat this file within a standard wordprocessor.

We found the program to be slow in execution even on a fast 80386/7 system. It is our opinion that this program might be useful to chemists who are interested in exploring possible ways to analyze large blocks of data. For example, the program may be useful to those interested in finding statistical relationships which exist between physical properties and molecular structure. However, on the whole, this program will find little application in the traditional chemistry laboratory which produces limited data sets mainly from undimensional experiments.

David A. Landis and Carl J. Seliskar, *University of Cincinnati*

Book Reviews*

The Alkaloids. Chemistry and Pharmacology. Volume 41. By Arnold Brossi (National Institutes of Health) and Geoffrey A. Cordell (University of Illinois at Chicago). Academic Press: San Diego. 1992. ix + 252 pp. $85.00. ISBN 0-12-469541-8.

This book constitutes the forty-first issue of the well-known series on alkaloids edited formerly by Manske and, in more recent times, by Brossi. It consists of four chapters: (a) alkaloids from Thai plants, (b) marine alkaloids, (c) tropolonic Colchicum alkaloids, and (d) Veratrum alkaloids of the cevane type. Whereas the first chapter constitutes a deviation from the norm (the chapter on alkaloids from Chinese medicinal plants in Volume 32 having been an earlier deviation) in its emphasis on a geographical region and whereas it is dubious whether the Thai flora recognizes the frontiers of Burma, Laos, Cambodia, and Malaysia, the write-up is lucid, smoothly flowing, and instructive. Only three flaws were recognizable in the review: (1) the unacceptable redundancy of "new and Novel" (page 11), popular especially in the American, organochemical, primary literature; (2) the omission of the nuclear oxygen from glycosides 102 and 103 (page 35); and (3) the inadmissibility of plant metabolites 58–64 (page 25) and 93–101 (pages 33 and 34) as alkaloids (see discussion below).

In view of the massive outpouring of publications on marine natural products during the last decade, a second chapter on marine alkaloids (the first having appeared in Volume 24, 1985) was in order. The authors of the second chapter of the present book address the presumed topic with enthusiasm and clarity but, with the acceptance of the editors, run into the ground the definition of an alkaloid. In fairness, the least the authors could have done is to call their chapter "Marine Alkaloids and Other Nitrogenous Metabolites". Even though the alkaloid realm has broadened since the days of The Alkaloids. Volume 1 (at which time an alkaloid was defined as a nitrogenous, basic, pharmacologically active, higher plant product, the admitted exceptions having been amides such as colchicine, piperine, and their relatives), this reviewer, at least, feels that alkaloids are not all nitrogenous natural products.

The third chapter entitled "Tropolonic Colchicum Alkaloids and Allo Congeners" constitutes the fifth contribution to this field in the forty-one volumes of The Alkaloids but is nicely updated and appropriate for the moment. It is rich in chemistry (especially synthesis), including some experimental details, and intriguing on the discussion of conformational analysis. It shows only a few trivial flaws. One major mistake, unforgivable in a credible review, is the omission of a discussion (or, at least, citation) of the following formal, total synthesis of colchicine: Wenkert, E.; Kim, H. S. In *Studies in Natural Product Chemistry, Stereoselective Synthesis*, Part B; Atta-ur-Rahman, Ed.; Elsevier Science Publisher B.V.: Amsterdam, The Netherlands, 1989; Vol. 3, p 287.

The fourth chapter is made up mostly of tables of structures of cevanic veratrum alkaloids (including structures, mp, [alpha]D and references) and some synthetic transformations. It is questionable whether another review of this research-dormant field was warranted (only one-third of all citations, 69 out of 212, having appeared in the 1980s).

Finally it is worthy of comment that the time is ripe for review books and journals to come to some concensus on the avoidance of redundancy and relief of the heavy financial pressure on library and individual subscribers. Thus, for example, there is no need for both The Alkaloids and Natural Product Reports to feature nearly identical alkaloid reviews.

Ernest Wenkert, *University of California—San Diego*

Organic Syntheses, Volume 70. Edited by Albert I. Meyers. John Wiley and Sons: New York. 1992. xxii + 306 pp. $39.95. ISBN 0-471-57743X.

This volume continues the high standards of previous volumes in this series. Procedures for the preparation of a variety of compounds are included. Of particular interest is the resolution of 1,1′-bi-2-naphthol; tris(trimethylsilyl)silane; and 9-borabicyclo[3.3.1]nonane dimer.

Patai's 1992 Guide to the Chemistry of Functional Groups. By Saul Patai (The Hebrew University). John Wiley and Sons: New York. 1992. x + 524 pp. $95.00. ISBN 0-471-93022-9.

This guide serves as an extremely useful entry into Patai's series on the chemistry of functional groups. It represents more than a collected table of contents because the subject matter of each chapter in each volume is briefly detailed. In addition, cross references to complementary and relevant chapters in other volumes are provided with the description of each of the chapters. This volume should serve as a handy entry into the Patai series and can be recommended not only as an addition to individual libraries but also for those who use the series frequently.

*Unsigned book reviews are by the Book Review Editor.

Chemistry of Superconductor Materials: Preparation, Chemistry, Characterization and Theory. Edited by Terrell A. Vanderah (Naval Weapons Center). Noyes Publications: Park Ridge, New Jersey. 1992. xxvi + 818 pp. $125.00. ISBN 0-8155-1279-1.

Since the discovery of superconductivity in the copper oxides materials by Bednorz and Müeller in 1986, there has been a veritable flood of research activity directed at the study of high-T_c materials. Because of a lack of understanding of their physical and chemical properties, many of the initial studies conducted in this area were completed using impure and ill-characterized materials. Only recently have strategies been developed to produce high quality superconductor samples with reproducible chemical composition, structures, and superconductive properties. This book provides, in a single volume, thorough coverage of areas related to the solid state chemistry of oxide superconductors. The text is well written by a number of researchers who are experts in the field and is extremely well organized. Consequently, the book will serve as a very useful reference text for those interested in the preparation, characterization, and crystal chemistry of oxide superconductors.

The book is extensively referenced through 1990 and includes information such as tables of X-ray diffraction data, phase diagrams, crystal structures, and synthetic procedures that will be of great utility to the experimentalist. Moreover, two appendices are included to direct the interested reader to other sources of information such as review articles and additional texts related to solid state chemistry and superconductivity.

The book is composed of twenty chapers and is partitioned into four sections. The first section consists of a single chapter and provides a detailed history of the chemistry of superconductivity starting with the first observation of the phenomenon in mercury in 1911. The second section contains ten chapters which focus on "Structure and Preparative Chemistry". The third section entitled "Sample Characterization" is composed of six chapters covering X-ray diffraction, electron microscopy, oxidation state analysis, transport, and magnetic phenomena. Two chapters comprise the final section which focuses on "Structure-Property Considerations".

Although it is difficult in a single volume to cover all the important and relevant information related to the chemistry of superconductors, this text does a reasonably good job in focusing on the more important developments in the area. Lacking are substantive discussions of the corrosion reactivity of high-T_c phases and thin film deposition procedures. In spite of these deficiencies, the text is well worth the investment and will be of great utility as a day-to-day reference for the experienced high-T_c researcher. It will also serve to educate and entice newcomers to begin participating in this exciting area of research.

John T. McDevitt, *The University of Texas at Austin*

Studies in Natural Products Chemistry. Volume 10. Stereoselective Synthesis (Part F). Edited by Atta-ur-Rahman (University of Karachi, Pakistan). Elsevier: Amsterdam, London, New York, Tokyo. 1992. xiv + 718 pp. $297.00. ISBN 0-444-89558-2.

This excellent volume is the tenth in a continuing series devoted to the latest developments by notable organic chemists in the field of natural products. In particular, the volume is a compilation of fourteen review articles, pertaining to recent advances in the stereoselective synthesis of a variety of natural products of diverse structural classes. Subject matter is broad and encompasses, for example, a very comprehensive and up to date review on recent developments in the synthesis of C-glycosides, studies on the synthesis of cembranes, vitamin D, and isoquinolinequinone antibiotics, and chemistry of didemnins. Also included are several chapters dealing with basic development of new synthetic methods and how these methods influence evolving synthetic targets and strategies. Advances in the synthesis of medium size ring ethers, extended conjugate additions to polyunsaturated carbonyl compounds, the synthesis of macrocyclic oligopeptides and oligosaccharides, and the use of the Claisen rearrangement with carbohydrate substrates are discussed within the realm of natural product synthesis.

The chapters are well written and readable, contain a wealth of information, and utilize high quality graphics. The references are plentiful (>1500) and up to date (latest 1990). The volume does contain a subject index, which makes finding a certain natural product or reaction quite easy.

The volume is a valuable collection of recent synthetic endeavors for organic chemists who find the strategy and execution of a total synthesis appealing and interesting. The high price tag may limit personal ownership, but all research libraries will find it a sound investment for their users.

Kirk L. Sorgi, *The R. W. Johnson Pharmaceutical Research Institute*

Spectrochemical Analysis by Atomic Absorption and Emission. By L. H. J. Lajunen (University of Onlu, Finland). Royal Society of Chemistry: Thomas Graham House, The Science Park, Cambridge CB4 4Wf, U.K. 1992. xii + 241 pp. £18.50. ISBN 0-85186-873-8.

The book reads well and is written primarily for the beginner, the undergraduate. Although the author probably succeeds in his goal, I don't see much of a market for this book in the U.S. There are few undergraduate courses in the United States where this book would be used in addition to or instead of an instrumental analysis book. The book is not sufficiently advanced to be of much value for the technicians using the methods or the analytical chemist developing atomic methods.

The title of the book is poor, since more methods than atomic absorption and atomic (actually optical is better) emission spectrometries are discussed. The author briefly discusses atomic fluorescence spectrometry and inductively coupled plasma-mass spectrometry.

The theory sections are written at an elementary level. The shapes of spectral lines and their effects on atomic absorption, emission, and fluorescence are not discussed. The shapes of analytical calibration curves are not discussed in a fundamental way. Spectral interferences are also discussed only sparsely, especially from a fundamental approach.

Certainly, most beginners will find this book useful. However, someone who wishes to apply atomic techniques to research or applications would need to go much further. The book by Lajunen reads very well, contains many excellent illustrations, and should be a good introduction to atomic spectrochemical methods for the beginner, especially the undergraduate who wishes to learn more about atomic spectrochemical methods.

James D. Winefordner, *University of Florida*